

# ***Demex International, Inc.***

**7144 Dummy Line Road – Picayune – Mississippi – 39466**

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# **DISCLAIMER**

OSHA's "Safety and Health Regulations" are continuously being reinterpreted. Therefore, Safety Services Company is unable to completely guarantee the exactness of the information conveyed in this publication. Safety Services Company assumes no responsibility and shall be held harmless for any inaccuracies or omissions contained within this manual and shall not be held liable to any extent or form for any injury or loss resulting from the manner in which this information is interpreted and/or applied.

Careful effort has been dedicated in order to provide a simplified, understandable explanation of OSHA regulations based on currently available information. This "Safety and Health Manual" is distributed with the agreement that Safety Services Company is not employed in providing legal or other specialized business services. Should expert assistance be required, retain the services of a competent professional.

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# **Chapter 1**

## **Company Safety Policy and Procedures**

***Demex International, Inc.***

**7144 Dummy Line Road – Picayune – Mississippi – 39466**

Gary L. DeMarsh is the designated Company Safety Coordinator.

## **SAFETY & HEALTH POLICY STATEMENT**

**The Occupational Safety and Health Act** of 1970 clearly defines the requirement to provide safe and healthful working conditions for all employees. Therefore, the safety and health of our employees is the first consideration in operating this business.

**Safety and health in our business** must be part of every operation. Without question, it is every employee's responsibility at all levels.

**It is the intent of Demex International, Inc.** to comply with all laws. To do this, we must constantly be aware of conditions in all work areas that can produce injuries. No employee is required to work at a job they know is not safe or healthful. Your cooperation in detecting hazards and, in turn, controlling them, is a condition of your employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct.

**The personal safety and health** of each employee of *Demex International, Inc.* is of primary importance. Prevention of occupationally-induced injuries and illnesses is of such consequence that it will be given precedence over operating productivity, whenever necessary. To the greatest degree possible, management will provide all mechanical and physical activities required for personal safety and health, in keeping with the highest standards.

**We will maintain** an occupational safety and health program conforming to the best practices of organizations of this type. To be successful, such a program must embody proper attitudes towards injury and illness prevention on the part of supervisors and employees. It also requires cooperation in all safety and health matters, not only between supervisor and employee, but also between each employee and their co-workers. Only through such a cooperative effort can a safety and health program, in the best interest of all, be established and preserved.

**Our objective is** a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum, not merely in keeping with, but surpassing, the best experience of operations similar to ours. Our goal is zero accidents and injuries.

### **Our safety and health program includes:**

- Providing mechanical and physical safeguards to the maximum extent possible.
- Conducting a program of safety and health inspections to find and eliminate unsafe working conditions or practices, to control health hazards, and to fully comply with OSHA safety and health standards for every job.
- Training all employees in good safety and health practices.
- Providing necessary personal protective equipment, and instructions for proper use and care.
- Developing and enforcing safety and health rules, and requiring that employees cooperate with these rules as a condition of employment.
- Investigating, promptly and thoroughly, every accident to find out what caused it, and correct the problem so it will not happen again.

### **We recognize that responsibilities for occupational safety & health are shared:**

- This employer accepts responsibility for leadership of the safety and health program, for its effectiveness and improvement, and for providing the safeguards required to ensure safe work conditions.
- Supervisors are responsible for developing proper attitudes toward safety and health in themselves and in those they supervise, and for ensuring that all operations are performed with the utmost regard for the safety and health of all personnel involved, including themselves.
- Employees are responsible for wholehearted, genuine operations of all aspects of the safety and health program – including compliance with the rules and regulations – and for continuously practicing safety and health while performing their duties.

**Gary L. DeMarsh** shall see that all employees are properly instructed and supervised in the safe operation of any machinery, tools, equipment, process, or practice which they are authorized to use or apply while at work.

**Production is never so urgent that we can not take the time to do our work safely.**

## **Program Goals**

Why have a workplace “Safety and Health Plan”? Taking risks is part of running a business, particularly for small business owners. You take risks in product development, marketing, and advertising in order to stay competitive. But there are some risks that should never be taken. One of these is risking the **safety** and **health** of workers. Safety begins at the top and goes downward throughout The Company. The primary goal of *Demex International, Inc.* is to continue operating a profitable business while protecting employees from injuries or illness. This can be achieved by delegating responsibility and accountability to all involved in *Demex International, Inc.*’s operation.

- **Responsibility:** Having to answer for activities and results.
- **Accountability:** The actions taken by management to ensure the performance of responsibilities.

In other words, to reach our goal of a safe workplace everyone needs to take responsibility and be held accountable.

**Benefits of achieving our goals are:**

- Minimizing of injuries and accidents
- Minimizing the loss of property and equipment
- Elimination of potential fatalities
- Elimination of potential permanent disabilities
- Elimination of potential OSHA fines
- Reductions in Workers' Compensation costs
- Reductions in operating costs
- Having the best "Safety and Health" conditions possible in the workplace

## **Management Commitment**

*Demex International, Inc.* is committed to building an effective ***injury*** and ***illness*** prevention plan, putting it in ***writing***, and ***integrating*** it into the entire operation.

The management of *Demex International, Inc.* is committed to the Company's safety policy, and to provide direction and motivation by:

- Appointing Safety Coordinator(s) and/or Safety Committee Chairmen.
- Establishing Company safety goals and objectives.
- Developing and implementing this written Safety and Health program.
- Ensuring total commitment to the Safety and Health program.
- Facilitating employees' safety training.
- Establishing responsibilities for management and employees to follow.
- Ensuring that management and employees are held accountable for performance of their safety responsibilities.
- Establishing and enforcing disciplinary procedures for employees.
- Reviewing the Safety and Health program annually, and revising or updating as needed.

## **Labor & Management Accountability**

All employees, both *labor* and *management*, need to understand their responsibilities under OSHA rules and be held accountable for complying with the rules as well as the Company's related policies.

It is the responsibility of *Demex International, Inc.* to provide a safe and healthful work environment for their employees. However, holding everyone accountable for their part in workplace safety and health is critical for a successful injury and illness prevention plan.

# Assignment of Responsibility

## The Safety Coordinator(s) and/or Safety Committee Members

Demex International, Inc. has designated:

Safety Coordinator	<b>Gary L. DeMarsh</b>
Safety Coordinator	
Safety Committee Chair	
Safety Committee Vice-chairman	
Safety Committee Alternate Chair/Vice-chair	

Their cell phone and office phone numbers are:

Safety Person's Name	Office Phone #	Cell Phone #

It shall be the duty of **Gary L. DeMarsh** to assist the Supervisor/Foreman and all other levels of Management in the initiation, education, and execution of an effective safety program including the following:

- Introducing the safety program to new employees.
- Following up on recommendations, suggestions, etc., made at the "Weekly" safety meetings. All topics of safety concerns must be documented accordingly.
- Assisting the personnel in the execution of standard policies.
- Conducting safety inspections on a periodic basis.
- Addressing all hazards or potential hazards as needed.
- Preparing monthly accident reports and investigations.
- Maintaining adequate stock of first aid supplies and other safety equipment to ensure their immediate availability.
- Making sure there is adequate number of qualified "First Aid Certified" people on the work site.
- Becoming thoroughly familiar with OSHA regulations and local and state safety codes.
- Defining the responsibilities for safety and health of all subordinates and holding each person accountable for their results through the formal appraisal system and where necessary, disciplinary procedures.
- Emphasizing to employees that accidents create unnecessary personal and financial losses.

# **Employee Involvement**

Employees are required to *work in compliance* with the safety rules, *report* all accidents and near misses, and report all *unsafe* conditions or *unsafe practices*. To demonstrate *Demex International, Inc.*'s commitment to support the employees in these responsibilities, *Demex International, Inc.* will do the following:

## **Communication System:**

- Encourage employees to inform *Demex International, Inc.* about workplace hazards without fear of reprisal.
- Establish and maintain a centrally located "Safety Bulletin Board" where current, relevant information may be easily reviewed by employees.
- Schedule general employee meetings at which time safety is freely and openly discussed by those present. These meetings will be regular, scheduled, and announced to all employees and managers to achieve maximum attendance. The purpose of these meetings is safety, and the concentration will be on:
  1. Occupational accident and injury history at our work sites, with possible comparison to other locations within The Company.
  2. Feedback from the Safety Committee.
  3. Guest speakers concerned with workplace safety and health.
  4. When possible, brief audio-visual materials that relate to our business.
    - Conduct training programs for communicating with employees.
    - Provide a safety suggestion box so that employees, anonymously if desired, can communicate their concerns with management.
    - Document all communication efforts to demonstrate that an effective communication system is in place.

# **Hazard Identification & Control**

Periodic inspections and procedures for correction provide methods of identifying existing or potential hazards in the workplace, and eliminating or controlling them. Hazard control is essential to an effective injury and illness plan. We will be sure to look at safe work practices and ensure that they are being followed, and that unsafe conditions or procedures are identified and corrected properly and promptly.

Employees are encouraged to report possible hazardous situations, knowing their reports will be given prompt and serious attention.

Workplace equipment and personal protective equipment will be maintained in good, safe working condition.

Hazards, where possible, will be corrected as soon as they are identified. For those that can not be immediately corrected, a target date for correction will be set. *Demex International, Inc.* will provide interim protection for workers while hazards are being corrected. A written tracking system will be established to help monitor the progress of the hazard correction process.

# **Accident/Incident Investigation**

Employers and safety committees are required to investigate or assign responsibility for investigating accidents. Accidents/incidents will be investigated by trained individuals, with the primary focus of understanding why the accident or incident occurred, and what actions can be taken to preclude recurrence. The focus will be on **solutions** and never on **blame**. They will be in writing, and adequately identify the causes of the accident or near-miss occurrence.

# **Worker Training**

Training is another essential element of any injury and illness prevention plan. OSHA rules require each employer to train workers for any job or task they are assigned.

Our plan includes training and instruction:

- For all employees when they are first hired.
- For all new employees for each specific task.
- For all employees given new job assignments for which training has not already been received.
- Whenever new substances, processes, procedures, or equipment are introduced into the workplace and present a new hazard.
- Whenever new personal protective equipment or different work practices are used on existing hazards.
- Whenever *Demex International, Inc.* is made aware of a new or previously unrecognized hazard.
- For all supervisors to ensure they are familiar with the safety and health hazards to which employees under their immediate direction and control may be exposed.

An effective safety and health plan requires proper job performance by everyone in the workplace.

It is the determination of *Demex International, Inc.* to ensure that all employees are knowledgeable about the *materials* and equipment with which they work, what known *hazards* are present, and how they are *controlled*.

# **Periodic Program Evaluation**

A periodic review is scheduled to look at each critical component in our safety and health plan to determine what is working well and what changes, if any, are needed. All employees are encouraged to participate by keeping *Demex International, Inc.* informed of their concerns regarding the elements of this safety and health plan.

The success of this safety and health plan is dependant upon two things: First, *Demex International, Inc.* must provide a **safe** and **healthful** environment in which the employee has the opportunity to work safe, and second, the employee must **choose** to work safe.

# **Supervisor/Foreman**

The Supervisors and/or Foremen will establish an operating atmosphere to ensure that safety and health is managed in the same manner and with the same emphasis as production, cost, and quality control. This will be accomplished by:

- Regularly emphasizing that accident and health hazard exposure prevention are not only moral responsibilities, but also a condition of employment.
- Identifying operational oversights that could contribute to accidents which often result in injuries and property damage.
- Participating in safety and health related activities, including routinely attending safety meetings, reviews of the facility, and correcting employee behavior that can result in accidents and injuries.
- Spending time with each person hired explaining the safety policies and the hazards of his/her particular work.
- Ensuring that initial orientation of "new hires" is properly carried out.
- Making sure that if a "Competent Person" is required, that one is present to oversee, and instruct employees when necessary.
- Never short-cutting safety for expediency, nor allowing workers to do so.
- Enforcing safety rules consistently, and following **Demex International, Inc.** discipline and enforcement procedures.
- Conducting daily job-site inspections and correcting noted safety violations.

# **Employees**

It is the duty of each and every employee to know the safety rules, and conduct his work in compliance with these rules. Disregard of the safety and health rules shall be grounds for disciplinary action up to and including termination. It is also the duty of each employee to make full use of the safeguards provided for their protection. Every employee will receive an orientation when hired and receive a copy of any Company Safety and Health Programs. Employee responsibilities include the following:

- Reading, understanding and following safety and health rules and procedures.
- Signing the Code of Safe Practices and any other policy acknowledgements.
- Wearing Personal Protective Equipment (PPE) at all times when working in areas where there is a possible danger of injury.
- Wearing suitable work clothes as determined by the supervisor/foreman.
- Performing all tasks safely as directed by their supervisor/foreman.
- Reporting ALL injuries, no matter how slight, to their supervisor/foreman immediately and seeking treatment promptly.
- Knowing the location of first aid, fire fighting equipment, and safety devices.
- Attending any and all required safety and health meetings.
- Not performing potentially hazardous tasks, or using any hazardous material until properly trained, and following all safety procedures for those tasks.
- STOPPING AND ASKING QUESTIONS IF EVER IN DOUBT ABOUT THE SAFETY OF ANY OPERATION

## **Notes:**

# **Chapter 2**

## ***Demex International, Inc.***

### **Company Policy on Safety Committees**

***Demex International, Inc.*** Safety Committee members are:

**Gary L. DeMarsh and as assigned by Gary L. DeMarsh**

The Safety Committee will meet a minimum of **4** times per year.

#### ***Committee Goal***

Our Company will strive to meet the following goals:

- Minimize injury and illness in the workplace.
- Open up the lines of communication between management and employees concerning safety at every level of The Company.
- Improve safety of facilities(s) and equipment for a better work environment.

#### ***Mission Statement***

It is our Company's and committee's goal to create clear avenues of communication among management and staff to create a safe working environment.

#### ***Company Commitment***

The management of our Company is committed to excelling at safety and will support the safety committee's purpose and recommendations.

#### ***Communication of Safety Matters***

The committee will handle all safety issues with diligence. We hope to encourage an atmosphere where all employees report safety violations or concerns, ask questions, seek training, or come to us with any safety issues.

## **Safety Committee Policy Statement**

#### ***Introduction***

***Demex International, Inc.*** is committed to accident prevention in order to protect the safety and health of all our employees. Injury and illness losses due to hazards are needless, costly and preventable. To prevent these losses, a joint management/worker safety committee will be established. Employee involvement in accident prevention and support of safety committee members and activities is necessary to ensure a safe and healthful workplace for all employees.

#### ***Purpose***

The purpose of our safety committee is to bring workers and management together in a non-adversarial, cooperative effort to promote safety and health in the workplace. The safety committee will assist management and make recommendations for change.

#### ***Organization***

There shall be, in most cases, an equal number of employee and employer representatives. However, there may be more employee representatives than employer representatives if both groups agree. Employee representatives shall be volunteers or elected by their peers. If no employees volunteer or are elected, then they may be appointed by management. Employer representatives will be appointed. Safety committee members will serve a continuous term of at least one year.

Committee membership terms will be staggered so that at least one experienced member is always on the committee.

## **Extent of Authority**

It must be clearly understood that the safety committee advises management on issues that will promote safety and health in the workplace. Written recommendations are expected from the safety committee and they will be submitted to management. In turn, management will give serious consideration to the recommendations submitted and will respond in writing to the committee within a reasonable time.

## **Functions**

- Committee meetings and employee involvement.
- Hazard assessment and control.
- Safety and health planning.
- Evaluation of accountability system.
- Evaluation of management commitment to workplace safety and health.
- Evaluation of accident and incident investigation program.
- Safety and health training.

## **Recommendations**

1. All recommendations submitted to management must be written and should:
2. Be clear and concise.
3. Provide reasons for implementation.
4. Give recommended options.
5. Show implementation costs and recommended completion dates.
6. List benefits to be gained.

## **Procedures**

The committee's plan of action requires procedures by which the committee may successfully fulfill its role. Procedures developed should include but not be limited to:

- Meeting date, time, and location (Safety Committee Meeting Agenda)
- Election of chairperson and secretary
- Order of business
- Records (Safety Committee Meeting Minutes)

## **Duties of each member must include, but not be limited to:**

- Reporting unsafe conditions and practices
- Attending all safety and health meetings
- Reviewing all accidents and near-misses
- Recommending ideas for improving safety and health
- Working in a safe and healthful manner
- Observing how safety and health is enforced in the workplace
- Completing assignments given to them by the chairperson
- Acting as a work area representative in matters of health and safety
- Others as determined by Company safety and health needs

**The Safety Coordinator(s) and/or Safety Committee Members**

**Demex International, Inc.** has designated:

Safety Coordinator	<b>Gary L. DeMarsh</b>
Safety Coordinator	
Safety Committee Chair	
Safety Committee Vice-chairman	
Safety Committee Alternate Chair/Vice-chair	

Their cell phone and office phone numbers are:

Safety Person's Name	Office Phone #	Cell Phone #

It shall be the duty of **Gary L. DeMarsh**, the Safety Coordinator to assist the Supervisor/Foreman and all other levels of Management in the initiation, education, and execution of an effective safety program.

## **Safety Committee Operations**

The purpose of a safety committee is to bring workers and managers together to achieve and maintain a safe, healthful workplace. It is easy to start a safety committee, but developing an effective one – one that achieves and maintains a safe, healthful workplace – requires workers and managers who are committed to achieving that goal. Effective safety committees find solutions to problems that cause workplace accidents, illnesses, and injuries. And fewer accidents, injuries, and illnesses mean lower Workers' Compensation claims costs and insurance rates.

### **Understand a Safety Committee's Seven Essential Activities**

Anyone can start a safety committee, but, to make it effective, the committee must be built on a foundation of **management commitment** and must be **accountable** for achieving its goals. The committee must do the following:

- Involve employees in achieving the committee's goals
- Identify workplace hazards
- Review reports of accidents and near misses
- Keep accurate records of committee activities
- Evaluate its strengths and weaknesses

### **Commitment**

The committee will not survive without management support. Management demonstrates support by encouraging employees to get involved in achieving a safe, healthful workplace and by acting on the committee's recommendations. Representatives demonstrate commitment by attending committee meetings, following through on their assigned tasks, and encouraging other employees to get involved in identifying hazards.

## **Accountability**

Representatives should understand that the committee expects them to contribute; each representative shares responsibility for accomplishing safety committee goals, which benefit everyone who works for The Company.

The safety committee is also responsible for monitoring how management holds employees accountable for working safely and for recommending ways to strengthen accountability.

## **Employee Involvement**

To become effective, a safety committee needs help from everyone in The Company. The safety committee must have a method for employees to report hazards and to offer safety suggestions.

### ***Ways the safety committee can encourage employees to get involved:***

- Encourage employees to report hazards and unsafe work practices to a safety-committee representative.
- Act on employee suggestions and recognize their contributions to a safer workplace.
- Promote the committee's activities and accomplishments.

Make sure employees know that you are starting a safety committee. Tell them why you are starting the committee, describe its role in The Company's safety-and-health program, and explain management's commitment to the committee.

You can inform employees in a memo or a newsletter, by e-mail, or – better yet – meet with them to promote the committee and to answer questions.

## **Hazard Identification**

The safety committee plays an important role in keeping the workplace hazard-free:

- Ensure that representatives know how to recognize hazards and understand basic principles for controlling them.
- Focus on identifying hazards and unsafe work practices that are likely to cause serious injuries.
- Conduct thorough workplace inspections at least quarterly.
- Document hazards during quarterly inspections and discuss how to control them at regular safety-committee meetings.
- Include employer and employee representatives on the inspection team.

## **Accident Investigation**

The committee must have a procedure for investigating all workplace accidents, illness, and deaths. It is not necessary for the committee to conduct accident investigations or to participate in investigations; however, the committee should ensure that management does so. The committee should also carefully review accident reports to help management identify accident causes and determine how to control them.

## **Recordkeeping**

You may not think of record keeping as an essential activity, but accurate, well-organized records document the committee's accomplishments and can inform the committee what it needs to do to improve.

The following documents are required for the safety committee's file:

- Accurate minutes of each safety committee meeting
- Committee reports, evaluations, and recommendations
- Management's response to committee recommendations
- Employee safety suggestions and hazard concerns

### ***Evaluation***

Evaluation answers the question "Are we effective?" Effective safety committees periodically evaluate their strengths and weaknesses, and the evaluation helps them set new goals.

At least once a year, schedule a half-day safety-committee meeting to accomplish the following: identify the committee's achievements over the past 12 months, review essential activities, and set goals for the next 12 months.

## **Notes:**

# **Chapter 3**

## ***Demex International, Inc.***

### **General Safety Rules and Code of Safe Practices**

**Gary L. DeMarsh** is responsible for the implementation and enforcement of the following safety rules. Disciplinary procedures will be enforced.

#### ***Employee Safety Training***

OSHA requires that employees be trained in the safe methods of performing their job.

***Demex International, Inc.*** is committed to:

- "Instructing all employees in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury."
- "Frequent and regular inspections of job sites, materials, and equipment will be made by the Company-designated competent person(s)."
- "Only employees qualified by training or experience will be permitted to operate equipment and machinery."
- Any machinery, tool, material, or equipment which is not in compliance with any applicable OSHA requirement is prohibited. *Gary L. DeMarsh* will ensure that any such machine, tool, material, or equipment will either be identified as unsafe by tagging or locking the controls to render them inoperable, or will be physically removed from its place of operation.

Awareness of potential hazards, as well as knowledge of how to control them, is critical to maintaining a safe and healthful work environment and preventing injuries. To achieve this goal, we will provide training to each employee on general safety issues and safety procedures specific to that employee's work assignment.

Every new employee will be given instruction by their foreman in the general safety requirements of their job. A copy of our Code of Safe Practices shall also be provided to each employee. Tailgate or toolbox safety training will be conducted at least every 10 working days. All training will be documented on the forms provided. Managers, superintendents, and foremen will be trained at least twice per year on various applicable accident prevention topics.

#### ***Training provides the following benefits:***

- Makes employees aware of job hazards
- Teaches employees to perform jobs safely
- Promotes two way communication
- Encourages safety suggestions
- Creates interest in the safety program
- Fulfils OSHA requirements

#### ***Employee training will be provided at the following times:***

1. All new employees will receive a safety orientation their first day on the job.
2. All new employees will be given a copy of the Code of Safe Practices and required to read and sign for it.
3. All field employees will receive training at tailgate or toolbox safety meetings held at the job site.
4. All employees given a new job assignment for which training has not been previously provided will be trained before beginning the new assignment.

5. Whenever new substances, processes, procedures or equipment that represent a new hazard are introduced into the workplace.
6. Whenever *Demex International, Inc.* is made aware of a new or previously unrecognized workplace hazard.
7. Whenever management believes that additional training is necessary.
8. After all serious accidents.
9. When employees are not following safe work rules or procedures.

***Training topics will include, but not be limited to:***

- Employee's safety responsibilities
- General safety rules
- Code of Safe Practices
- Safe job procedures
- Use of hazardous materials
- Use of equipment
- Emergency procedures
- Safe lifting and material handling practices
- Use of boom and scissor lifts
- Use of fall-protection
- Contents of safety program

***Documentation of Training***

All employee safety training will be documented on one of the following three forms:

1. New Employee Safety Orientation.
2. Specialized, formal employee training plans. (confined spaces, fall protection, lockout/tagout, first aid, etc.)
3. Tailgate/Toolbox Safety Training Report.

The following informal training methods will be used. Actual demonstrations of the proper way to perform a task will be used in most cases, for example:

- Instruct employee how to do the job safely.
- Demonstrate to employee how to do the job safely.
- Have employee explain to instructor how to do the job safely.
- Have employee demonstrate to instructor how to do the job safely.
- Follow up to ensure they are still performing the job safely.

***Safety Communication***

Employee safety communication procedures are designed to develop and maintain employee involvement and interest in the Safety and Health Program. These activities will also ensure effective communication between management and employees on safety related issues that is of prime importance to The Company.

The following are some of the safety communication methods that may be used:

- Tailgate/Toolbox safety training with employees that encourage participation and open, two-way communication.
- New employee safety orientation and provision of the Code of Safe Practices.
- Provision and maintenance of employee bulletin boards discussing safety issues, accidents, and general safety suggestions.
- Written communications from management or the Safety Coordinator, including memos, postings, payroll stuffers, and newsletters.
- Anonymous safety suggestion program.

Employees will be kept advised of highlights and changes relating to the safety program. Supervisors will relay changes and improvements regarding the safety program to employees, as appropriate. Employees will be involved in future developments and safety activities, by requesting their opinions and comments, as necessary.

All employee-initiated safety related suggestions shall be properly answered, either verbally or in writing, by the appropriate level of management. Unresolved issues shall be relayed to **Gary L. DeMarsh**.

All employees are encouraged to bring any safety concerns they may have to the attention of management. **Demex International, Inc.** will not discriminate against any employee for raising safety issues or concerns.

The Company also has a system of anonymous notification, whereby employees who wish to inform The Company of workplace hazards without identifying themselves may do so, by phoning or sending written notification to the following address:

## **CODE OF SAFE PRACTICES**

**Demex International, Inc.** will maintain a "Safety and Health Program" conforming to the best practices of organizations of this type. To be successful, such a program must embody the proper attitudes toward injury and illness prevention on the part of supervisors and employees. It also requires cooperation in all safety and health matters, not only between supervisor and employee, but also between each employee and his or her co-workers. Only through such a cooperative effort can a safety program in the best interest of all be established and preserved. Safety and health in our business must be a part of every operation.

### ***The Company Safety & Health Program includes:***

- Providing mechanical and physical safeguards to the maximum extent possible.
- Conducting a program of safety and health inspections to find and eliminate unsafe working conditions or practices, to control health hazards, and to comply fully with the safety and health standards for every job.
- Training all employees in good safety and health practices.
- Providing necessary personal protective equipment and instructions for its use and care.
- Developing and enforcing safety and health rules and requiring that employees cooperate with these rules as a condition of employment.
- Investigating, promptly and thoroughly, every accident to find out what caused it and to correct the problem so that it will not happen again.
- Setting up a system of recognition and awards for outstanding safety service or performance.

**We recognize that the responsibilities for safety and health are shared:**

- **Demex International, Inc.** accepts the responsibility for leadership of the safety and health program, for its effectiveness and improvement, and for providing the safeguards required to ensure safe conditions.
- **Supervisors** are responsible for developing the proper attitudes toward safety and health in themselves and in those they supervise, and for ensuring that all operations are performed with the utmost regard for the safety and health of all personnel involved, including themselves.
- **Employees** are responsible for wholehearted, genuine operation with all aspects of the Safety and Health Program including compliance with all rules and regulations – and for continuously practicing safety while performing their duties.

## **GENERAL SAFETY RULES**

- **Demex International, Inc.** employees shall follow these safe practice rules, render every possible aid to safe operations, and report all unsafe conditions or practices to their supervisor.
- **Failure to abide** by the Code of Safe Practices may result in disciplinary action up to and including termination.
- **Supervisors shall** insist that employees observe and obey every rule, regulation, and order necessary to the safe conduct of the work, and shall take such action necessary to obtain compliance.
- **If you are unsure** of the safe method to do your job, **STOP** and ask your supervisor. Ignorance is no excuse for a safety violation.
- **All employees shall** be given frequent accident prevention instructions. Instructions, practice drills, or articles concerning workplace safety and health shall be given at least once every 5 working days.
- **No one shall knowingly** be permitted to work while the employee's ability or alertness is impaired by fatigue, illness, and prescription or over the counter drugs. Employees who are suspected of being under the influence of illegal or intoxicating substances, impaired by fatigue or an illness, shall be prohibited from working.
- **Anyone known** to be under the influence of alcohol and/or drugs shall not be allowed on the job while in that condition. Persons with symptoms of alcohol and/or drug abuse are encouraged to discuss personal or work-related problems with the supervisor/employer.
- **Employees should** be alert to see that all guards and other protective devices are in proper places and adjusted, and shall report deficiencies. Approved protective equipment shall be worn in specified work areas.
- **Horseplay, scuffling, fighting** and other acts that tend to have an adverse influence on the safety or well being of the employees are prohibited. Do not run on the job site or in the shop or office area.
- **Work shall be** well-planned and supervised to prevent injuries when working with equipment and handling heavy materials. When lifting heavy objects, employees should bend their knees and use the large muscles of the legs instead of the smaller muscles of the back. Back injuries are the most frequent and often the most persistent and painful type of workplace injury.

- **Workers shall not** handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instructions from their supervisor. Do not operate equipment that you are not familiar with. Do not attempt to use such equipment until you are fully trained and authorized.
- **Keep your work area clean**, free of debris, electrical cords and other hazards. Immediately clean up spilled liquids.
- **Always notify** all other individuals in your area who might be endangered by the work you are doing.
- **A red tag system** identifies equipment that is NOT to be operated, energized or used. All lock-out/tag-out notices and procedures must be observed and obeyed.
- **Do not block exits**, fire doors, aisles, fire extinguishers, first aid kits, emergency equipment, electrical panels, or traffic lanes.
- **Do not leave tools**, materials, or other objects on the floor that might cause others to trip and fall.
- **Do not distract others** while working. If conversation is necessary, make sure eye contact is made prior to communicating.
- **Employees shall not** enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined that it is safe to enter. Confined space protocols will be followed.
- **Materials, tools, or other objects** shall not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.
- **Employees shall cleanse thoroughly** after handling hazardous substances, and follow special instructions from authorized sources.
- **Gasoline or other flammable liquids** shall not be used for cleaning purposes.
- **No burning, welding, or other source** of ignition shall be applied to any enclosed tank or vessel, even if there are some openings, until it has first been determined that no possibility of explosion exists, and authority for the work is obtained from the foreman or superintendent.
- **Any damage to scaffolds**, falsework, or other supporting structures shall be immediately reported to the foreman and repaired before use.
- **Possession of firearms**, weapons, illegal drugs or alcoholic beverages on Company or customer property or the job site is strictly prohibited.
- **All injuries shall** be reported promptly to your supervisor so that arrangements can be made for medical and/or first-aid treatment.

## SPECIFIC SAFETY RULES

### **Electrical Safety**

- **Only trained, qualified, and authorized employees** are allowed to make electrical repairs or work on electrical equipment or installations.
- **All electrical equipment** and systems shall be treated as energized until tested or otherwise proven to be de-energized.

- **All energized equipment** and installations will be de-energized prior to the commencement of any work. If the equipment or installation must be energized for test or other purposes, special precautions will be taken to protect against the hazards of electric shock.
- **All equipment shall be locked out** to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy-isolating device bearing a lock.
- **Safety grounds** shall always be used where there is a danger of shock from back feeding or other hazards.
- **Polyester clothing or other flammable types** of clothing shall not be worn near electrical circuits. Cotton clothing is much less likely to ignite from arc blast. Employees working on live circuits shall be provided Nomex or equivalent fire resistant clothing.
- **Suitable eye protection** must be worn at all times while working on electrical equipment.
- **Always exercise caution** when energizing electrical equipment or installations. Take steps to protect yourself and other employees from arc blast and exploding equipment in the event of a fault.
- **All power tools** will be grounded or double insulated. Tools with defective cords or wiring shall not be used.
- **Metal jewelry** should not be worn around energized circuits.
- **Extension and temporary power cords** must be heavy duty and grounded. Frayed or defective cords shall not be used.
- **Suitable temporary barriers** or barricades shall be installed when access to opened enclosures containing exposed energized equipment is not under the control of an authorized person.
- **Electrical installations** must be protected from accidental contact by enclosures or tight fitting covers.
- **GFCI's are required** on all power outlets.
- **Circuits shall not** be overloaded with equipment or extension cords.
- **Metal measuring tapes**, fish tapes, ropes or other metal devices are prohibited where they may contact energized parts of equipment or circuits.

## **Personal Protective Equipment (PPE)**

- **Use the correct PPE** for each job assignment. If you do not know, ask.
- **PPE shall be maintained** in good condition and cleaned regularly.
- **PPE shall be stored properly** when not in use to protect it from damage.
- **Damaged or broken PPE** must be returned to your foreman for replacement.
- **Hard hats must be worn** on job sites at all times.
- **ANSI approved** safety glasses must be worn when working with power tools, compressed air or gasses, chemicals, or any other item that creates an eye injury hazard.
- **Face shields** with safety glasses are recommended when grinding or working with hazardous chemicals.

- **Employees must wear** industrial work shoes in the shop and on the job site. The shoes must have complete leather uppers and skid resistant soles and be in good condition. Steel toe protection is recommended.
- **Athletic style shoes**, tennis shoes, open toe shoes, plastic or vinyl shoes or shoes with decorative accessories are not allowed.
- **Hearing protectors must be worn** when working with loud equipment such as cut off saws, chain saws, air hammers or grinders.
- **Back support belts** should be worn for heavy lifting tasks. They do not help you lift more, but may provide some protection from back injuries.
- **Be sure the protective clothing you wear** will not hamper or restrict freedom of movement due to improper fit.
- **Long pants** of heavy-duty material must be worn. No shorts or sweat pants are allowed.
- **Do not wear loose, torn or frayed clothing**, dangling ties, finger rings, dangling earrings, jewelry items, or long hair unless contained in a hair net, while operating any machine that could cause entanglement.
- **If required, wear NIOSH approved respirators** when applying adhesives, paint, welding, grinding or working with chemicals. Read the applicable MSDS to find out which types of respirators are required. Facial hair may not be permitted in certain circumstances.

## **Hazardous Materials and Chemicals**

- **Read all warning labels** and Material Safety Data Sheets (MSDS) before using any chemicals. MSDS contain personal protective equipment and safety information and are available from your foreman.
- **Hazardous materials shall be handled** in accordance with the MSDS and label. If protective equipment is required, use it.
- **Eye protection must be worn** when working with hazardous materials or chemicals.
- **Mixing of chemicals is prohibited** at all times unless required by the label. Before you mix - review all MSDS.
- **Always wash your hands thoroughly** after handling chemicals and before eating or smoking, even if you were wearing protective gloves.
- **Never use solvents** for hand cleaning. Use the non-toxic hand cleaners provided.
- **Store all hazardous materials properly** in suitable containers that are properly labeled.
- **Use chemicals** only in well-ventilated areas.
- **When using secondary containers**, ensure that they are labeled as to their contents and hazards.
- **Do not disturb any asbestos.** STOP work and tell your foreman. If you are not sure, STOP and ask.
- **Do not cut or weld** stainless steel or galvanized metal without respiratory protection. These items create toxic fumes.
- **Work with lead, asbestos**, cadmium and other toxic compounds require special precautions. Do not attempt to perform this work without special equipment and training.

## **Fire Prevention and Housekeeping**

- **Always take precautions** to prevent fires which may be started, particularly from oily waste, rags, gasoline, flammable liquids, acetylene torches, improperly installed electrical equipment and trash.
- **Fire fighting equipment is** to be inspected on a regular basis. All discharged, damaged or missing equipment is to be immediately reported to a supervisor. Tampering with fire equipment is prohibited.
- **Access to fire extinguishers** must be kept clear at all times. Make note of the location of fire fighting equipment in your work area.
- **Never use gasoline** or flammable solvents for cleaning purposes.
- **Smoking is prohibited** within 20 feet of where flammable substances are present.
- **In case of fire**, employees shall consider the safety of themselves and other individuals before saving property.
- **Keep your work areas** free of debris. Remove useless material from the work area as fast as required to help reduce tripping hazards.
- **Maintain awareness** of potential hazards when walking about the job site.
- **Keep tools**, materials and equipment out of walkways and stairways at all times.
- **Sharp wires** or protruding nails must be kept bent.
- **Place tools** and equipment so they will not slide off the roof.
- **Tie material down** at day's end so the wind will not blow it off the roof.

## **Fall Protection**

- **Fall protection, such as standard railings** or a safety harness and lanyard, shall be used at all times, when working 6 feet or more above the level below.
- **Floor and wall openings**, unfinished balconies, elevator shafts and similar areas must be railed, covered or barricade to prevent falls.
- **Never remove fall protection rails**, covers, or barricades without permission from your foreman and special precautions. Always replace these items when finished with your task.
- **All safety harnesses** shall be the full body type with a shock-absorbing lanyard attached to a substantial anchorage capable of supporting twice the maximum load. Lanyards shall be attached at the wearer's upper back. Body belts are not to be worn as fall protection.
- **Read and obey all** manufacturers' instructions relating to your fall arrest system (safety harness and lanyard).
- **Inspect all components** of your harness and lanyard prior to each use and after a fall. Defective equipment is not to be used. Lanyards must be destroyed after a fall and never reused.
- **Safety harnesses and lanyards** should limit free fall distance to less than 4 feet and prevent contact with any level or objects below you.
- **Never use any part** of a fall arrest system, such as a harness or lanyard, to hoist materials or for any other purpose.
- **Safety harnesses** and shock absorbing lanyards are required to be worn at all times while in boom lifts.

## **Ladder Safety**

- **Inspect the ladder before using it.** If it is broken, throw it out. Never repair a broken ladder, get a new one. Keep portable stairways, ladders and step stools in good condition and use them only in a safe manner.
- **Use the proper ladder for the job.** Do not use "A" frame ladders as straight ladders. Make sure the ladder is tall enough to reach the work area. Do not use metal ladders for electrical work.
- **Do not place ladders** in passageways, doorways, or any location where they might be hit or jarred, unless protected by barricades or guards.
- **Ladder rungs and steps** must be kept free of grease, oil, mud, or other slippery substances.
- **Ladders should only be placed** on hard level surfaces. Make sure the ladder feet are not placed on sandy, slippery, or sloping surfaces. Clean or sweep the area where the ladder feet will be and make sure the rubber feet are in good shape.
- **Arrange your work** so you are able to face the ladder and use both hands while climbing. Do not carry tools or equipment while climbing a ladder. Climb the ladder, and then hoist the tools or equipment with a line or a hoisting device.
- **Avoid temporary ladders.** Always use a commercially made, construction grade ladder of the proper length for the work being performed.
- **Secure portable ladders** in place and at a pitch so the leveling indicator is in alignment or the distance from the wall to the base of the ladder is at least 1 foot for every 4 feet of height.
- **Straight ladders shall** be tied off the top of the ladder to prevent slipping.
- **Be aware of objects** below you, move or cover sharp objects in case you fall. Cap or bend all rebar.
- **Do not stand** on or work from the 2nd rung from the top or above. Also do not reach too far from the ladder. Keep your belt buckle between the side rails.
- **Extension ladders shall** extend at least 36" above the level being accessed.
- **On all ladders,** do not step on cross bracing that is not intended to be used for climbing.

## **Scaffolds**

- **Scaffolds are to be erected,** dismantled, altered, or repaired by the Company competent person or the scaffold contractor ONLY.
- **Inspect scaffolds prior** to use and report any damage immediately to your foreman. Do not use damaged scaffolds.
- **You are not permitted** to ride on rolling scaffolds being moved.
- **At least 2 people are required** to move rolling towers. Secure or remove all tools and materials before moving.
- **Always use guard railings** on all scaffolds regardless of height.
- **Use only high quality planking** on scaffolds and be sure the planks are secure to prevent shifting.
- **Always apply caster brakes** and use outriggers when scaffolds are stationary.
- **Do not use planks** or guard rails as a temporary means of obtaining greater height.

- **Be aware of the objects below you;** move or cover sharp objects in case you fall. Cap or bend all rebar.

## **Lockout/Tagout**

- **All machinery** and electrical equipment shall be locked out and tagged prior to repair, cleaning, or adjustment unless power is necessary to perform the work. If so, other precautions, specified by your foreman, will be taken.
- **Use your own lock** and key. No one else should have a key for your lock. Destroy all duplicate keys.
- **Maintain control** of your key at all times to prevent unauthorized use.
- **Never remove another** employee's lock or energize tagged equipment.
- **If multiple employees** are working on the same equipment, each employee should install their own lock.
- **Notify all affected employees** that lockout/tagout is required and reasoning.
- **If the equipment is operating,** shut it down by the normal stopping procedure (depress stop button, open toggle switch, etc.).
- **Operate the switch,** valve or other energy isolating devices so that the energy source(s) (electrical, mechanical, hydraulic, etc.) is disconnected or isolated from the equipment.
- **Stored energy,** such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas or water pressure, etc. must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
- **Lock-out all** energy isolation devices with an individual lock.
- **After ensuring** that no employees are exposed and as a check of having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. Caution: Return operating controls to neutral position after the test. The equipment is now locked-out. Install red lock-out tag on operating controls.
- **After repair is complete** and the equipment is ready for testing or normal operation, check the equipment to see that all cover plates and safety devices have been reinstalled.
- **When the equipment is clear,** remove all locks and tags. The energy isolating devices may be operated to restore energy to the equipment.

## **Boom and Scissor Lifts**

- **Only trained and authorized employees** are allowed to use boom or scissor lifts. If you are not trained, stay off.
- **Read and obey all** manufacturers' instructions and safety precautions.
- **Inspect all lifts** prior to use. Defective equipment shall not be used.
- **A safety harness** with shock absorbing lanyard or a safety belt positioning device must be worn while using boom lifts. Harnesses are not required for scissor lifts, provided guardrails are adequate and you do not leave the work platform.
- **Always stay inside** the platform railing. Do not use planks or ladders to extend your reach.
- **Always lower** the lift before moving.

- **Never use scissor lifts** on uneven ground. They are designed primarily for use on concrete floors.

## **Hand and Power Tools**

- **Proper eye protection** must be worn when using hand and power tools.
- **Know your** hand and power tool applications and limitations. Always use the proper tool for the job.
- **Inspect cords** and tools prior to use. Do not use tools that are faulty in any way. Exchange them for safe tools immediately.
- **Power tools must** be grounded or double insulated. All power tools are to be plugged into a grounded GFCI outlet.
- **Do not use** power tools in damp, wet or explosive atmospheres.
- **Do not lift**, lower or carry portable electrical tools by the power cord.
- **Keep all safety guards** in place and in proper working order.
- **Use clamps** or vises to secure work pieces.
- **Do not force** hand power tools. Apply only enough pressure to keep the unit operating smoothly.
- **Return all tools** and other equipment to their proper place after use.
- **Unplug all** power tools before changing bits and/or grinding disks.
- **Never leave** chuck keys in the tool during operation.
- **Do not use** a screwdriver as a chisel.
- **Before using sledges**, axes or hammers, be sure the handles are securely fastened with a wedge made of sound material.
- **Do not use a handle extension** or ‘cheater’ on any wrench.
- **Files shall be equipped** with handles and should not be used as a punch or pry.

## **Trenching and Excavation**

- **All excavations and trenches 5 feet deep** or greater must be shored, sloped, or benched to protect workers from the hazards of moving earth. All trenching must be done in accordance with OSHA regulations.
- **Always locate underground utilities** before digging. Also contact regional notification centers in advance.
- **Do not work under loads** handled by lifting or digging equipment.
- **Ladders shall be provided** for access to trenches and excavations 4' deep or greater. Use them.
- **Keep all spoil piles** a minimum of 2 feet from the edge of the trench.
- **Barricade trenches** or use caution tape to warn others of their presence.
- **All trenches and excavations** must be inspected by the Company competent person each day, before work, to look for signs of shifting earth.

## **Cranes and Rigging**

- **No employee is permitted** to ride on loads, hooks, or slings of any crane, hoist, or derrick.
- **Do not work or stand under** any suspended load. Crane operators shall avoid swinging loads over people.

- **Inspect all slings**, chains, ropes, and hooks prior to use. Do not use defective slings, chains, or rigging.

## **Welding and Cutting**

- **Make sure** your welding equipment is installed properly, is properly grounded, and in good working condition.
- **Always wear** protective clothing suitable for the welding or cutting to be done.
- **Always wear proper eye protection** when welding, brazing, soldering or flame cutting. Once you remove your welding helmet, put on safety glasses.
- **Keep your work area** clean and free of hazards. Make sure that no flammable, volatile or explosive materials are in or near the work area.
- **Handle all compressed gas cylinders** with extreme care. Keep caps on when not in use. Make sure that all compressed gas cylinders are secured to the equipment carriage, wall or other structural supports. When compressed gas cylinders are empty close the valve, install the cap and return to correct bottle storage area.
- **Store compressed gas cylinders** in a safe place with good ventilation. Acetylene cylinders and oxygen cylinders should be kept at least 20 feet apart.
- **Do not weld or cut** in confined spaces without special precautions and your foreman's authorization.
- **Do not weld on containers** that have held combustibles or flammable materials.
- **Use mechanical exhaust ventilation** at the point of welding when welding lead, cadmium, chromium, manganese, brass, bronze, zinc or galvanized metals. These metals are highly toxic and their fumes should not be breathed.
- **Make sure all electrical connections** are tight and insulated. Do not use cables with frayed, cracked or bare spots in the insulation.
- **When the electrode holder** or cutting torch is not in use, hang it on the brackets provided. Never let it touch a compressed gas cylinder.
- **Dispose of electrode** and wire stubs in proper containers since stubs and rods on the floor are a safety hazard.
- **Use weld curtains** to shield others from the light rays produced by your welding.
- **Make sure all compressed gas connections** are tight and check for leaks. Do not use hoses with frayed or cracked spots.
- **Keep your leads** orderly and out of walkways. Suspend them whenever possible.
- **DO NOT WELD** if leads or machine are in or near water.
- **Make sure** a portable fire extinguisher is nearby.
- **Keep your work area clean** and free of hazards. When flame cutting, sparks can travel 30-40 feet. Do not allow flame cut sparks to hit hoses, regulators or cylinders.
- **Use oxygen and acetylene** or other fuel gases with the appropriate torches and tips only for the purpose intended.
- **Never use acetylene** at a pressure in excess of 15 pounds per square inch. Higher pressure can cause an explosion.

- **Never use oil, grease or any other** material on any apparatus or thread fitting in the oxyacetylene or oxy-fuel gas system. Oil and grease in contact with oxygen will cause spontaneous combustion.
- **Always use the correct** sequence and technique for assembling and lighting the torch. Always use the correct sequence and technique for shutting off a torch.
- **Check valves must be used** on all compressed gas cylinders to prevent back flow of the gas.

## **Company Vehicles**

- **Only authorized employees** are permitted to operate Company vehicles. Do not let anyone else drive your Company vehicle.
- **Company vehicles** are to be used for Company business only. Personal, off duty and family use is prohibited.
- **Drive defensively** and obey all traffic and highway laws.
- **Always wear** your seat belt, whether the driver or a passenger.
- **Report all accidents** as soon as possible to your supervisor and obtain a police report.
- **Keys must be removed** from all unattended vehicles and the vehicles must be locked, unless parking inside the facility.
- **Do not jump** from the cab or bed of Company vehicles. Always use the stairs or a ladder.
- **Inspect your vehicle** and report any defects or operating problems to your supervisor so that repairs can be made.
- **No smoking** while refueling.
- **If your driver's license** is revoked or expired, immediately notify your supervisor and do not drive or operate Company vehicles or equipment.

## **Traffic Safety**

- **All employees exposed** to traffic hazards are required to wear orange flagging garments (shirts, vests, jackets) at all times.
- **When possible**, construction vehicles are to be placed between the employees and traffic to prevent vehicles from entering the work area and hitting members of the crew.
- **All traffic controls** will be established in accordance with the Manual of Traffic Controls for Construction and Maintenance Work Zones.
- **Traffic controls** are to be properly maintained throughout the workday. Signs and cones must be kept upright, visible and in their proper position at all times.

# CODE OF SAFE PRACTICES RECEIPT

***Demex International, Inc.***

***This is to certify*** that I have received a copy of The Company Code of Safe Practices.

***I have read*** these instructions, understand them, and will comply with them while working for the Company.

***I understand*** that failure to abide by these rules may result in disciplinary action and possible termination of my employment with *Demex International, Inc.*

***I also understand*** that I am to report any injury to my foreman or superintendent immediately and report all safety hazards.

***I further understand*** that I have the following "Safety Rights":

- I am not required to work in any area I feel is not safe.
- I am entitled to information on any hazardous material or chemical I am exposed to while working.
- I am entitled to see a copy of The Company Safety and Health Manual.
- I will not be discriminated against for reporting safety concerns.

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Employee Name

Signature

Date

---

Supervisor Name

Signature

Date

cc: Employee File

# **Chapter 4**

## ***Demex International, Inc.***

### **Company Policy for Access to Medical Records**

**Demex International, Inc.** is committed to the safety and health of our employees and to providing access to employee medical records. Therefore, the following Access to Medical Records Safety Program has been adopted.

This policy for Access to Medical Records is adopted in accordance with the following OSHA regulations:

#### **§1910.1020 – Access to employee exposure and medical records**

**Demex International, Inc.** has implemented this plan to ensure that Access to employee exposure and medical records are available to employees at all times in accordance with 29 CFR §1910.1020(e) **Gary L.** DeMarsh is the Company administrator who has the overall supervisory responsibility for the effectiveness of this program and for maintaining medical and training records.

#### **Definition**

Employee exposure record means a record containing any of the following kinds of information:

- Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained;
- Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs;
- Material safety data sheets indicating that the material may pose a hazard to human health; or
- In the absence of the above, a chemical inventory or any other record which reveals where and when used and the identity (e.g., chemical, common, or trade name) of a toxic substance or harmful physical agent. Employee medical record means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician, including:

Employee medical record means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician, including:

- Medical and employment questionnaires or histories (including job description and occupational exposures),

- The results of medical examinations (pre-employment, pre-assignment, periodic, or episodic) and laboratory tests (including chest and other X-ray examinations taken for the purpose of establishing a base-line or detecting occupational illnesses and all biological monitoring not defined as an "employee exposure record"),
- Medical opinions, diagnoses, progress notes, and recommendations,
- First aid records,
- Descriptions of treatments and prescriptions, and
- Employee medical complaints.

"Employee medical record" does not include medical information in the form of:

- Physical specimens (e.g., blood or urine samples) which are routinely discarded as a part of normal medical practice; or
- Records concerning health insurance claims if maintained separately from *Demex International, Inc.*'s medical program and its records, and not accessible to *Demex International, Inc.* by employee name or other direct personal identifier (e.g., social security number, payroll number, etc.); or
- Records created solely in preparation for litigation which are privileged from discovery under the applicable rules of procedure or evidence; or
- Records concerning voluntary employee assistance programs (alcohol, drug abuse, or personal counseling programs) if maintained separately from *Demex International, Inc.*'s medical program and its records.

## **Purpose**

The purpose of this plan is to provide employees and their designated representatives a right of access to relevant exposure and medical records; and to provide representatives of the Assistant Secretary a right of access to these records in order to fulfill responsibilities under the Occupational Safety and Health Act.

Access by employees, their representatives, and the Assistant Secretary is necessary to yield both direct and indirect improvements in the detection, treatment, and prevention of occupational disease.

*Demex International, Inc.* is responsible for assuring compliance with this section, but the activities involved in complying with the access to medical records provisions can be carried out, on behalf of *Demex International, Inc.*, by the physician or other health care personnel in charge of employee medical records.

Except as expressly provided, nothing in this section is intended to affect existing legal and ethical obligations concerning the maintenance and confidentiality of employee medical information, the duty to disclose information to a patient/employee or any other aspect of the medical-care relationship, or affect existing legal obligations concerning the protection of trade secret information.

*Demex International, Inc.* will establish and maintain an accurate record for each employee with occupational exposure, in accordance with §1910.1020. Training records will include the dates and contents of training, and the names and job titles of persons attending. Training records will be maintained for 3 years from the date of training and medical records will be maintained for at least the duration of employment plus 30 years. Employee exposure records must be retained for 30 years.

*Demex International, Inc.* will ensure that all records required by this section will be made available upon request of employees, Assistant Secretary, and the Director for examination and copying. Medical records will have the written consent of the employee before being released. *Demex International, Inc.* will comply with the requirements involving transfer of records set forth in §1910.1020 (h).

### **Access to records**

Whenever an employee or designated representative requests access to a record, *Demex International, Inc.* shall assure that access is provided in a reasonable time, place, and manner.

If *Demex International, Inc.* cannot reasonably provide access to the record within fifteen (15) working days, *Demex International, Inc.* shall within the fifteen (15) working days apprise the employee or designated representative requesting the record of the reason for the delay and the earliest date when the record can be made available.

Whenever an employee or designated representative requests a copy of a record, *Demex International, Inc.* shall assure that either:

- A copy of the record is provided without cost to the employee or representative,
- The necessary mechanical copying facilities (e.g., photocopying) are made available without cost to the employee or representative for copying the record, or
- The record is loaned to the employee or representative for a reasonable time to enable a copy to be made

### **Analyses using exposure or medical records**

*Demex International, Inc.* shall, upon request, assure the access of each employee and designated representative to each analysis using exposure or medical records concerning the employee's working conditions or workplace.

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc) *Demex International, Inc.* shall assure that personal identifiers are removed before access is provided. If *Demex International, Inc.* can demonstrate that removal of personal identifiers from an analysis is not feasible, access to the personally identifiable portions of the analysis need not be provided.

### **OSHA access**

*Demex International, Inc.* shall, upon request, assure the prompt access of representatives of the Assistant Secretary of Labor for Occupational Safety and Health to employee exposure and medical records and to analyses using exposure or medical records.

## **Trade secrets**

If *Demex International, Inc.* denies a written request for disclosure of a specific chemical identity, the denial must:

- Be provided to the health professional, employee or designated representative within thirty days of the request;
- Be in writing;
- Include evidence to support the claim that the specific chemical identity is a trade secret;
- State the specific reasons why the request is being denied; and,
- Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

## **Employee information**

Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section of the following:

The existence, location, and availability of any records covered by this section;

The person responsible for maintaining and providing access to records; and

Each employee's rights of access to these records.

## **Transfer of records**

If *Demex International, Inc.* is ceasing to do business, *Demex International, Inc.* shall transfer all records subject to this section to the successor employer. The successor employer shall receive and maintain these records.

If *Demex International, Inc.* is ceasing to do business and there is no successor employer to receive and maintain the records subject to this standard, *Demex International, Inc.* shall notify affected current employees of their rights of access to records at least three (3) months prior to the cessation of *Demex International, Inc.*'s business.

If *Demex International, Inc.* either is ceasing to do business and there is no successor employer to receive and maintain the records, or intends to dispose of any records required to be preserved for at least thirty (30) years, *Demex International, Inc.* shall:

- Transfer the records to the Director of the National Institute for Occupational Safety and Health (NIOSH) if so required by a specific occupational safety and health standard.

# **Chapter 5**

## ***Demex International, Inc.***

### **Company Policy for Toxic and Hazardous Materials**

#### **Benzene**

**Demex International, Inc.** has adopted and initiated this policy for the prevention of hazardous employee exposure to Benzene is adopted in accordance with the following OSHA regulations:

**§1910.1028 – Benzene, and Appendices A, B, C, and D**

**§1910.1200 – Hazard Communication Standards for Employers**

**§1910.134 – Respiratory Protection**

*Demex International, Inc.* has implemented this policy to ensure that no employee is exposed to Benzene at levels in excess of the permissible exposure limits (PELs). **Gary L. DeMarsh** is the supervisor responsible for ensuring the following engineering controls and work practices are enforced:

- *Gary L. DeMarsh* will provide employees with information and training at the time of their initial assignment to a work area where Benzene is present. If exposures are above the action level (PEL), employees will be provided with information and training at least annually thereafter.
- When any exposures are over the PEL, *Demex International, Inc.* will establish and implement a written program to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls, as required by OSHA.
- The written program includes a schedule for development and implementation of the engineering and work practice controls. These plans will be reviewed and revised as appropriate based on the most recent exposure monitoring data, to reflect the current status of the program.
- Written compliance programs will be furnished upon request for examination and copying to OSHA, affected employees and designated employee representatives.
- Employees will be informed of all regulated areas and are properly trained in entrance procedure, safety requirements, and practices when in regulated areas.
- Employees are required to wear the appropriate PPE as necessary, eye, face, boots, gloves, sleeves and aprons.
- *Demex International, Inc.* has implemented and will maintain a Respiratory Protection Program in accordance with §1910.134.
- The Respiratory Protection Program and respiratory protective equipment is provided for all employees with potential for exposure to Benzene.
- For employees who use respirators required by this section, *Demex International, Inc.* will provide respirators that comply with the Company Respiratory Protection Program and OSHA requirements. Respirators will be used during:
  - Periods necessary to install or implement feasible engineering and work practice controls.
  - Emergencies.

Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the PELs.

- Work operations for which *Gary L. DeMarsh* establishes that compliance with either the TWA or STEL through the use of engineering and work-practice controls is not feasible; for example, some maintenance and repair activities, vessel cleaning, or other operations for which engineering and work-practice controls are infeasible because exposures are intermittent and limited in duration.
- For air-purifying respirators, *Gary L. DeMarsh* will ensure the replacement of the air-purifying element at the expiration of its service life or at the beginning of each shift in which such elements are used, whichever comes first. If NIOSH approves an air-purifying element with an end-of-service-life indicator for benzene, such an element may be used until the indicator shows no further useful life.
- *Gary L. DeMarsh* will select approved respirators according to airborne concentrations of benzene and condition of use from Table 1 below:

**Table 1 – Respiratory Protection for Benzene**

Airborne concentration of benzene or condition of use	Respirator type
(a) Less than or equal to 10 ppm	(1) Half-mask air-purifying respirator with organic vapor cartridge.
(b) Less than or equal to 50 ppm	(1) Full facepiece respirator with organic vapor cartridges. (1) Full facepiece gas mask with chin style canister1.
(c) Less than or equal to 100 ppm	(1) Full facepiece powered air-purifying respirator with organic vapor canister1.
(d) Less than or equal to 1,000 ppm	(1) Supplied air respirator with full facepiece in positive-pressure mode.
(e) Greater than 1,000 ppm or unknown concentration	(1) Self-contained breathing apparatus with full facepiece in positive pressure mode. (2) Full facepiece positive-pressure supplied-air respirator with auxiliary self-contained air supply.
(f) Escape	(1) Any organic vapor gas mask; or (2) Any self-contained breathing apparatus with full facepiece.
(g) Firefighting	(1) Full facepiece self-contained breathing apparatus in positive pressure mode.

1Canisters must have a minimum service life of four (4) hours when tested at 150 ppm benzene, at a flow rate of 64 LPM, 25 °C, and 85% relative humidity for non-powered air purifying respirators. The flow rate shall be 115 LPM and 170 LPM respectively for tight fitting and loose fitting powered air-purifying respirators

- Any employees who cannot use a negative-pressure respirator will be allowed to use a respirator with less breathing resistance, such as a powered air-purifying respirator or supplied-air respirator.
- Employees will wear appropriate PPE at all times when working in the proximity of Benzene. This PPE will include proper eye and face protection, boots, gloves, sleeves, aprons, etc. in accordance with 29 CFR 1910.133 where appropriate.
- Personal protective clothing and equipment will be worn where appropriate to prevent eye contact and limit dermal exposure to liquid benzene. Protective clothing and equipment will be provided by *Demex International, Inc.* at no cost to the employee and *Demex International, Inc.* will assure its use where appropriate.
- Adequate ventilation will be ensured in all enclosed work areas.
- Regular monitoring of air quality in work areas will be provided to ensure that PELs are not being exceeded. Records of all monitoring tests will be kept available at the Company office.

- *Demex International, Inc.* will make available a medical surveillance program for employees who potentially may be exposed to Benzene at or above the action level or PEL. This service will be provided at no cost to employees under the supervision of a licensed physician.
- *Demex International, Inc.* will make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer.
- All appropriate signs and labels will be posted in areas of potential exposure to Benzene.
- All containers or vessels containing Benzene will be appropriately labeled to indicate the contents and the hazards of the contents.
- Employees will be instructed as to potential locations where they may be exposed to Benzene including:(Benzene can accumulate in any low lying area as it is heavier than air)
  - Petroleum refining sites.
  - Tank Gauging (tanks at producing, pipeline, and refining operations).
  - Field maintenance.
  - Confined Spaces
- Employees will be instructed as to the characteristics of Benzene including:
 

<ul style="list-style-type: none"> <li>▪ Toxicity</li> <li>▪ Color</li> <li>▪ Odor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Solubility</li> <li>▪ Flammability</li> <li>▪ Toxic by-products</li> </ul>
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(See Appendix A – Benzene Substance Safety Data Sheet.)

- Employees will be instructed as to the health effects of overexposure to Benzene including:
  - Short-term (acute) overexposure: If you are overexposed to high concentrations of Benzene, well above the levels where its odor is first recognizable, you may feel breathless, irritable, euphoric, or giddy; you may experience irritation in eyes, nose, and respiratory tract. You may develop a headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.
  - Long-term (chronic) exposure: Repeated or prolonged exposure to Benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Many blood disorders associated with Benzene exposure may occur without symptoms

(See Appendix C – Medical Surveillance Guidelines for Benzene.)

- Fire extinguishers of the carbon dioxide, dry chemical, or foam type will be readily available. Employees will know where they are located and how to operate them. Benzene is classified as a 1 B flammable liquid and is highly flammable and vapors may form explosive mixtures in air. Locations where Benzene may be present in quantities sufficient to produce explosive or ignitable mixtures are considered Class I Group D locations.
- Smoking is prohibited in areas where Benzene is used or stored.

- *Gary L. DeMarsh* will meet with the Facility Owner's managers in order to acquire provisions for a Site-specific Contingency Plan that apply to mishaps involving Benzene.
- Employees will be informed where Benzene is used at the host facility and be made aware of additional plant safety rules.
- MSDS for Benzene and all other hazardous materials *Demex International, Inc.* uses are available to employees for review upon request.

## **§1910.1028 – BENZENE.**

### **(a) Scope and application:**

(1) This chapter applies to all occupational exposures to benzene. Chemical Abstracts Service Registry No. 71-43-2, except as provided in paragraphs (a)(2) and (a)(3) below.

(2) This section does not apply to:

(i) The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities, except that operations where gasoline or motor fuels are dispensed for more than 4 hours per day in an indoor location are covered by this section.

(ii) Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section.

(iii) The storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section.

(iv) Containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene.

(v) Work operations where the only exposure to benzene is from liquid mixtures containing 0.5 percent or less of benzene by volume, or the vapors released from such liquids until September 12, 1988; work operations where the only exposure to benzene is from liquid mixtures containing 0.3 percent or less of benzene by volume or the vapors released from such liquids from September 12, 1988, to September 12, 1989; and work operations where the only exposure to benzene is from liquid mixtures containing 0.1 percent or less of benzene by volume or the vapors released from such liquids after September 12, 1989; except that tire building machine operators using solvents with more than 0.1 percent benzene are covered by paragraph (i) of this section.

(vi) Oil and gas drilling, production and servicing operations.

(vii) Coke oven batteries.

(3) The cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) methods of compliance, paragraph (e)(1) exposure monitoring – general, and paragraph (e)(6) accuracy of monitoring. Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible.

### **(c) Permissible exposure limits (PEL)s:**

(1) **Time-weighted average limit (TWA).** The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of one part of benzene per million parts of air (1 ppm) as an 8-hour time-weighted average.

(2) **Short-term exposure limit (STEL).** The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period.

### **(d) Regulated areas:**

(1) The employer shall establish a regulated area wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

(2) Access to regulated areas shall be limited to authorized persons.

(3) Regulated areas shall be determined from the rest of the workplace in any manner that minimizes the number of employees exposed to benzene within the regulated area.

**(e) Exposure monitoring:**

**(1) General.**

- (i)** Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene.
- (ii)** Representative 8-hour TWA employee exposures shall be determined on the basis of one sample or samples representing the full shift exposure for each job classification in each work area.
- (iii)** Determinations of compliance with the STEL shall be made from 15 minute employee breathing zone samples measured at operations where there is reason to believe exposures are high, such as where tanks are opened, filled, unloaded or gauged; where containers or process equipment are opened and where benzene is used for cleaning or as a solvent in an uncontrolled situation. The employer may use objective data, such as measurements from brief period measuring devices, to determine where STEL monitoring is needed.
- (iv)** Except for initial monitoring as required under paragraph (e)(2) of this section, where the employer can document that one shift will consistently have higher employee exposures for an operation, the employer shall only be required to determine representative employee exposure for that operation during the shift on which the highest exposure is expected.

**(2) Initial monitoring.**

- (i)** Each employer who has a place of employment covered under paragraph (a)(1) of this section shall monitor each of these workplaces and work operations to determine accurately the airborne concentrations of benzene to which employees may be exposed.
- (ii)** The initial monitoring required under paragraph (e)(2)(i) of this section shall be completed within 30 days of the introduction of benzene into the workplace. Where the employer has monitored within one year prior to the effective date of this standard and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of paragraph (e)(2)(i) of this section.

**(3) Periodic monitoring and monitoring frequency.**

- (i)** If the monitoring required by paragraph (e)(2)(i) of this section reveals employee exposure at or above the action level but at or below the TWA, the employer shall repeat such monitoring for each such employee at least every year.
- (ii)** If the monitoring required by paragraph (e)(2)(i) of this section reveals employee exposure above the TWA, the employer shall repeat such monitoring for each such employee at least every six (6) months.
- (iii)** The employer may alter the monitoring schedule from every six months to annually for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to the TWA or below, but is at or above the action level.
- (iv)** Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short term exposures.

**(4) Termination of monitoring.**

- (i)** If the initial monitoring required by paragraph (e)(2)(i) of this section reveals employee exposure to be below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by paragraph (e)(5) of this section.
- (ii)** If the periodic monitoring required by paragraph (e)(3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by paragraph (e)(5).

**(5) Additional monitoring.**

- (i)** The employer shall institute the exposure monitoring required under paragraphs (e)(2) and (e)(3) of this section when there has been a change in the production, process, control equipment, personnel or work practices which may result in new or additional exposures to benzene, or when the employer has any reason to suspect a change which may result in new or additional exposures.
- (ii)** Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure, the employer shall monitor (using area or personal sampling) after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.

**(6) Accuracy of monitoring.**

Monitoring shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of benzene.

**(7) Employee notification of monitoring results.**

(i) The employer shall, within 15 working days after the receipt of the results of any monitoring performed under this standard, notify each employee of these results in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(ii) Whenever the PELs are exceeded, the written notification required by paragraph (e)(7)(i) of this section shall contain the corrective action being taken by the employer to reduce the employee exposure to or below the PEL, or shall refer to a document available to the employee which states the corrective actions to be taken.

**(f) Methods of compliance:**

**(1) Engineering controls and work practices.**

(i) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to benzene at or below the permissible exposure limits, except to the extent that the employer can establish that these controls are not feasible or where the provisions of paragraph (f)(1)(iii) or (g)(1) of this section apply.

(ii) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the PELs, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) of this section.

(iii) Where the employer can document that benzene is used in a workplace less than a total of 30 days per year, the employer shall use engineering controls, work practice controls or respiratory protection or any combination of these controls to reduce employee exposure to benzene to or below the PELs, except that employers shall use engineering and work practice controls, if feasible, to reduce exposure to or below 10 ppm as an 8-hour TWA.

**(2) Compliance program.**

(i) When any exposures are over the PEL, the employer shall establish and implement a written program to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls, as required by paragraph (f)(1) of this section.

(ii) The written program shall include a schedule for development and implementation of the engineering and work practice controls. These plans shall be reviewed and revised as appropriate based on the most recent exposure monitoring data, to reflect the current status of the program.

(iii) Written compliance programs shall be furnished upon request for examination and copying to the Assistant Secretary, the Director, affected employees and designated employee representatives.

**(g) Respiratory protection:**

**(1) General.** For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this paragraph. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work practice controls.

(ii) Work operations for which the employer establishes that compliance with either the TWA or STEL through the use of engineering and work-practice controls is not feasible; for example, some maintenance and repair activities, vessel cleaning, or other operations for which engineering and work-practice controls are infeasible because exposures are intermittent and limited in duration.

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient, or are not required under paragraph (f)(1)(iii) of this section, to reduce employee exposure to or below the PELs.

(iv) Emergencies.

**(2) Respirator program.**

(i) The employer must implement a respiratory protection program in accordance with 29 CFR 1910.134(b) through (d) (except (d)(1)(iii), (d)(3)(iii)(B)(1), and (2)), and (f) through (m).

(ii) For air-purifying respirators, the employer must replace the air-purifying element at the expiration of its service life or at the beginning of each shift in which such elements are used, whichever comes first.

(iii) If NIOSH approves an air-purifying element with an end-of-service-life indicator for benzene, such an element may be used until the indicator shows no further useful life.

**(3) Respirator selection.**

- (i) The employer must select the appropriate respirator from Table 1 of this section.**
- (ii) Any employees who cannot use a negative-pressure respirator must be allowed to use a respirator with less breathing resistance, such as a powered air-purifying respirator or supplied-air respirator.**

Table 1. Respiratory Protection for Benzene

Airborne concentration of Benzene or condition of use	Respirator type
(a) Less than or equal to 10 ppm	(1) Half-mask air-purifying respirator with organic vapor cartridge.
(b) Less than or equal to 50 ppm	(1) Full facepiece respirator with organic vapor cartridges. (2) Full facepiece gas mask with chin style canister. <sup>1</sup>
(c) Less than or equal to 100 ppm	(1) Full facepiece powered air-purifying respirator with organic vapor canister. <sup>1</sup>
(d) Less than or equal to 1,000 ppm	(1) Supplied air respirator with full facepiece in positive-pressure mode.
(e) Greater than 1,000 ppm or unknown concentration	(1) Self-contained breathing apparatus with full facepiece in positive pressure mode. (2) Full facepiece positive-pressure supplied-air respirator with auxiliary self-contained air supply.
(f) Escape	(1) Any organic vapor gas mask; or (2) Any self-contained breathing apparatus with full facepiece.
(g) Firefighting	(1) Full facepiece self-contained breathing apparatus in positive pressure mode.

<sup>1</sup> Canisters must have a minimum service life of four (4) hours when tested at 150 ppm benzene, at a flow rate of 64 LPM, 25° C, and 85% relative humidity for non-powered air purifying respirators. The flow rate shall be 115 LPM and 170 LPM respectively for tight fitting and loose fitting powered air-purifying respirators.

**(h) Protective clothing and equipment:**

Personal protective clothing and equipment shall be worn where appropriate to prevent eye contact and limit dermal exposure to liquid benzene. Protective clothing and equipment shall be provided by the employer at no cost to the employee and the employer shall assure its use where appropriate. Eye and face protection shall meet the requirements of 29 CFR 1910.133.

**(i) Medical surveillance:**

**(1) General.**

- (i) The employer shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.**
- (ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician and that all laboratory tests are conducted by an accredited laboratory.**
- (iii) The employer shall assure that persons other than licensed physicians who administer the pulmonary function testing required by this section shall complete a training course in spirometry sponsored by an appropriate governmental, academic or professional institution.**
- (iv) The employer shall assure that all examinations and procedures are provided without cost to the employee and at a reasonable time and place.**

**(2) Initial examination.**

(i) Within 60 days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by paragraph (i)(1)(i) of this section with a medical examination including the following elements:

(A) A detailed occupational history which includes:

- (1) Past work exposure to benzene or any other hematological toxins;
- (2) A family history of blood dyscrasias including hematological neoplasms;
- (3) A history of blood dyscrasias including genetic hemoglobin abnormalities, bleeding abnormalities, abnormal function of formed blood elements;
- (4) A history of renal or liver dysfunction;
- (5) A history of medicinal drugs routinely taken;
- (6) A history of previous exposure to ionizing radiation and
- (7) Exposure to marrow toxins outside of the current work situation.

(B) A complete physical examination.

(C) Laboratory tests. A complete blood count including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC). The results of these tests shall be reviewed by the examining physician.

(D) Additional tests as necessary in the opinion of the examining physician, based on alterations to the components of the blood or other signs which may be related to benzene exposure; and

(E) For all workers required to wear respirators for at least 30 days a year, the physical examination shall pay special attention to the cardiopulmonary system and shall include a pulmonary function test.

(ii) No initial medical examination is required to satisfy the requirements of paragraph (i)(2)(i) of this section if adequate records show that the employee has been examined in accordance with the procedures of paragraph (i)(2)(i) of this section within the twelve months prior to the effective date of this standard.

**(3) Periodic examinations.**

(i) The employer shall provide each employee covered under paragraph (i)(1)(i) of this section with a medical examination annually following the previous examination. These periodic examinations shall include at least the following elements:

(A) A brief history regarding any new exposure to potential marrow toxins, changes in medicinal drug use, and the appearance of physical signs relating to blood disorders;

(B) A complete blood count including a leukocyte count with differential, quantitative thrombocyte count, hemoglobin, hematocrit, erythrocyte count and erythrocyte indices (MCV, MCH, MCHC); and

(C) Appropriate additional tests as necessary, in the opinion of the examining physician, in consequence of alterations in the components of the blood or other signs which may be related to benzene exposure.

(ii) Where the employee develops signs and symptoms commonly associated with toxic exposure to benzene, the employer shall provide the employee with an additional medical examination which shall include those elements considered appropriate by the examining physician.

(iii) For persons required to use respirators for at least 30 days a year, a pulmonary function test shall be performed every three (3) years. A specific evaluation of the cardiopulmonary system shall be made at the time of the pulmonary function test.

**(4) Emergency examinations.**

(i) In addition to the surveillance required by (i)(1)(i), if an employee is exposed to benzene in an emergency situation, the employer shall have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within 72 hours. The urine specific gravity shall be corrected to 1.024.

(ii) If the result of the urinary phenol test is below 75 mg phenol/L of urine, no further testing is required.

(iii) If the result of the urinary phenol test is equal to or greater than 75 mg phenol/L of urine, the employer shall provide the employee with a complete blood count including an erythrocyte count, leukocyte count with differential and thrombocyte count at monthly intervals for a duration of three (3) months following the emergency exposure.

(iv) If any of the conditions specified in paragraph (i)(5)(i) of this section exists, then the further requirements of paragraph (i)(5) of this section shall be met and the employer shall, in addition, provide the employees with periodic examinations if directed by the physician.

**(5) Additional examinations and referrals.**

**(i)** Where the results of the complete blood count required for the initial and periodic examinations indicate any of the following abnormal conditions exist, then the blood count shall be repeated within 2 weeks.

**(A)** The hemoglobin level or the hematocrit falls below the normal limit (outside the 95% confidence interval (C.I.)) as determined by the laboratory for the particular geographic area and/or these indices show a persistent downward trend from the individual's pre-exposure norms; provided these findings cannot be explained by other medical reasons.

**(B)** The thrombocyte (platelet) count varies more than 20 percent below the employee's most recent values or falls outside the normal limit (95% C.I.) as determined by the laboratory.

**(C)** The leukocyte count is below 4,000 per mm<sup>3</sup> or there is an abnormal differential count.

**(ii)** If the abnormality persists, the examining physician shall refer the employee to a hematologist or an internist for further evaluation unless the physician has good reason to believe such referral is unnecessary. (See Appendix C for examples of conditions where a referral may be unnecessary.)

**(iii)** The employer shall provide the hematologist or internist with the information required to be provided to the physician under paragraph (i)(6) of this section and the medical record required to be maintained by paragraph (k)(2)(ii) of this section.

**(iv)** The hematologist's or internist's evaluation shall include a determination as to the need for additional tests, and the employer shall assure that these tests are provided.

**(6) Information provided to the physician.** The employer shall provide the following information to the examining physician:

**(i)** A copy of this regulation and its appendices;

**(ii)** A description of the affected employee's duties as they relate to the employee's exposure;

**(iii)** The employee's actual or representative exposure level;

**(iv)** A description of any personal protective equipment used or to be used; and

**(v)** Information from previous employment-related medical examinations of the affected employee which is not otherwise available to the examining physician.

**(7) Physician's written opinions.**

**(i)** For each examination under this section, the employer shall obtain and provide the employee with a copy of the examining physician's written opinion within 15 days of the examination. The written opinion shall be limited to the following information:

**(A)** The occupationally pertinent results of the medical examination and tests;

**(B)** The physician's opinion concerning whether the employee has any detected medical conditions which would place the employee's health at greater than normal risk of material impairment from exposure to benzene;

**(C)** The physician's recommended limitations upon the employee's exposure to benzene or upon the employee's use of protective clothing or equipment and respirators.

**(D)** A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions resulting from benzene exposure which require further explanation or treatment.

**(ii)** The written opinion obtained by the employer shall not reveal specific records, findings and diagnoses that have no bearing on the employee's ability to work in a benzene-exposed workplace.

**(8) Medical removal plan.**

**(i)** When a physician makes a referral to a hematologist/internist as required under paragraph (i)(5)(ii) of this section, the employee shall be removed from areas where exposures may exceed the action level until such time as the physician makes a determination under paragraph (i)(8)(ii) of this section.

**(ii)** Following the examination and evaluation by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This decision shall be communicated in writing to the employer and employee. In the case of removal, the physician shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

**(iii)** For any employee who is removed pursuant to paragraph (i)(8)(ii) of this section, the employer shall provide a follow-up examination. The physician, in consultation with the hematologist/internist, shall make a decision within 6 months of the date the employee was removed as to whether the employee shall be returned to the usual job or whether the employee should be removed permanently.

**(iv)** Whenever an employee is temporarily removed from benzene exposure pursuant to paragraph (i)(8)(i) or (i)(8)(ii) of this section, the employer shall transfer the employee to a comparable job for which

the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible, but in no event higher than the action level. The employer shall maintain the employee's current wage rate, seniority and other benefits. If there is no such job available, the employer shall provide medical removal protection benefits until such a job becomes available or for 6 months, whichever comes first.

(v) Whenever an employee is removed permanently from benzene exposure based on a physician's recommendation pursuant to paragraph (i)(8)(iii) of this section, the employee shall be given the opportunity to transfer to another position which is available or later becomes available for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible but in no event higher than the action level. The employer shall assure that such employee suffers no reduction in current wage rate, seniority or other benefits as a result of the transfer.

**(j) Communication of benzene hazards to employees:**

**(1) Signs and labels.**

(i) The employer shall post signs at entrances to regulated areas. The signs shall bear the following legend:



(ii) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of benzene within the workplace. There is no requirement to label pipes. The labels shall comply with the requirements of CFR 1910.1200(f) and in addition shall include the following legend:



**(2) Material safety data sheets.**

(i) Employers shall obtain or develop, and shall provide access to their employees, to a material safety data sheet (MSDS) which addresses benzene and complies with 29 CFR 1910.1200.

(ii) Employers who are manufacturers or importers shall:

(A) Comply with paragraph (a) of this section, and

(B) Comply with the requirement in OSHA's Hazard Communication Standard, 29 CFR 1910.1200, that they deliver to downstream employers an MSDS which addresses benzene.

**(3) Information and training.**

(i) The employer shall provide employees with information and training at the time of their initial assignment to a work area where benzene is present. If exposures are above the action level, employees shall be provided with information and training at least annually thereafter.

(ii) The training program shall be in accordance with the requirements of 29 CFR 1910.1200(h)(1) and (2), and shall include specific information on benzene for each category of information included in that section.

- (iii) In addition to the information required under 29 CFR 1910.1200, the employer shall:
- (A) Provide employees with an explanation of the contents of this section, including Appendices A and B, and indicate to them where the standard is available; and
  - (B) Describe the medical surveillance program required under paragraph (i) of this section, and explain the information contained in Appendix C.

**(k) Recordkeeping:**

**(1) Exposure measurements.**

- (i) The employer shall establish and maintain an accurate record of all measurements required by paragraph (e) of this section, in accordance with 29 CFR 1910.1020.
- (ii) This record shall include:
  - (A) The dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;
  - (B) A description of the sampling and analytical methods used;
  - (C) A description of the type of respiratory protective devices worn, if any; and
  - (D) The name, social security number, job classification and exposure levels of the employee monitored and all other employees whose exposure the measurement is intended to represent.
- (iii) The employer shall maintain this record for at least 30 years, in accordance with 29 CFR 1910.1020.

**(2) Medical surveillance.**

- (i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance required by paragraph (i) of this section, in accordance with 29 CFR 1910.1020.
- (ii) This record shall include:
  - (A) The name and social security number of the employee;
  - (B) The employer's copy of the physician's written opinion on the initial, periodic and special examinations, including results of medical examinations and all tests, opinions and recommendations;
  - (C) Any employee medical complaints related to exposure to benzene;
  - (D) A copy of the information provided to the physician as required by paragraphs (i)(6)(ii) through (v) of this section; and
  - (E) A copy of the employee's medical and work history related to exposure to benzene or any other hematologic toxins.
- (iii) The employer shall maintain this record for at least the duration of employment plus 30 years, in accordance with 29 CFR 1910.1020.

**(3) Availability.**

- (i) The employer shall assure that all records required to be maintained by this section shall be made available upon request to the Assistant Secretary and the Director for examination and copying.
- (ii) Employee exposure monitoring records required by this paragraph shall be provided upon request for examination and copying to employees, employee representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a) through (e) and (g) through (i).
- (iii) Employee medical records required by this paragraph shall be provided upon request for examination and copying, to the subject employee, to anyone having the specific written consent of the subject employee, and to the Assistant Secretary in accordance with 29 CFR 1910.1020.

**(4) Transfer of records.**

- (i) The employer shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.1020(h).
- (ii) If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director, at least three (3) months prior to disposal, and transmit them to the Director if required by the Director within that period.

**(l) Observation of monitoring:**

- (1) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe the measuring or monitoring of employee exposure to benzene conducted pursuant to paragraph (e) of this section.

**(2) Observation procedures.** When observation of the measuring or monitoring of employee exposure to benzene requires entry into areas where the use of protective clothing and equipment or respirators is required, the employer shall provide the observer with personal protective clothing and equipment or respirators required to be worn by employees working in the area, assure the use of such clothing and equipment or respirators, and require the observer to comply with all other applicable safety and health procedures.

**(m) Dates:**

**(1) Effective date.** The standard became effective December 10, 1987.

**(2) Start-up dates.**

**(i)** The requirements of paragraph (a) through (m) of this section, except the engineering control requirements of paragraph (f)(1) of this section shall be completed within sixty (60) days after the effective date of the standard.

**(ii)** Engineering and work practice controls required by paragraph (f)(1) of this section shall be implemented no later than 2 years after the effective date of the standard.

**(iii)** Coke and coal chemical operations may comply with paragraph (m)(2)(ii) of this section or alternately include within the compliance program required by paragraph (f)(2) of this section, a requirement to phase in engineering controls as equipment is repaired and replaced. For coke and coal chemical operations choosing the latter alternative, compliance with the engineering controls requirements of paragraph (f)(1) of this section shall be achieved no later than 5 years after the effective date of this standard and substantial compliance with the engineering control requirements shall be achieved within 3 years of the effective date of this standard.

**(n) Appendices:**

The information contained in Appendices A, B, C, and D is not intended, by itself, to create any additional obligations not otherwise imposed or to detract from any existing obligations. The protocols on respiratory fit testing in Appendix E are mandatory.

## **APPENDIX A – SUBSTANCE SAFETY DATA SHEET, BENZENE**

### **I. SUBSTANCE IDENTIFICATION**

**A. Substance: Benzene.**

**B. Permissible Exposure:** Except as to the use of gasoline, motor fuels and other fuels subsequent to discharge from bulk terminals and other exemptions specified in §1910.1028(a)(2):

**1. Airborne:** The maximum time-weighted average (TWA) exposure limit is 1 part of benzene vapor per million parts of air (1 ppm) for an 8-hour workday and the maximum short-term exposure limit (STEL) is 5 ppm for any 15 -minute period.

**2. Dermal:** Eye contact shall be prevented and skin contact with liquid benzene shall be limited.

**C. Appearance and odor:** Benzene is a clear, colorless liquid with a pleasant, sweet odor. The odor of benzene does not provide adequate warning of its hazard.

### **II. HEALTH HAZARD DATA**

**A. Ways in which benzene affects your health.** Benzene can affect your health if you inhale it, or if it comes in contact with your skin or eyes. Benzene is also harmful if you happen to swallow it.

**B. Effects of overexposure.**

**1. Short-term (acute) overexposure:** If you are overexposed to high concentrations of benzene, well above the levels where its odor is first recognizable, you may feel breathless, irritable, euphoric, or giddy; you may experience irritation in eyes, nose, and respiratory tract. You may develop a headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.

**2. Long-term (chronic) exposure.** Repeated or prolonged exposure to benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Many blood disorders associated with benzene exposure may occur without symptoms.

### **III. PROTECTIVE CLOTHING AND EQUIPMENT**

**A. Respirators.** Respirators are required for those operations in which engineering controls or work practice controls are not feasible to reduce exposure to the permissible level. However, where employers can document that benzene is present in the workplace less than 30 days a year, respirators may be used in lieu of engineering controls.

If respirators are worn, they must have joint Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (NIOSH) seal of approval, and cartridge or canisters must be replaced before the end of their service life, or the end of the shift, whichever occurs first. If you experience difficulty

breathing while wearing a respirator, you may request a positive pressure respirator from your employer. You must be thoroughly trained to use the assigned respirator, and the training will be provided by your employer.

**B. Protective Clothing.** You must wear appropriate protective clothing (such as boots, gloves, sleeves, aprons, etc.) over any parts of your body that could be exposed to liquid benzene.

**C. Eye and Face Protection.** You must wear splash-proof safety goggles if it is possible that benzene may get into your eyes. In addition, you must wear a face shield if your face could be splashed with benzene liquid.

#### **IV. EMERGENCY AND FIRST AID PROCEDURES**

**A. Eye and face exposure.** If benzene is splashed in your eyes, wash it out immediately with large amounts of water. If irritation persists or vision appears to be affected see a doctor as soon as possible.

**B. Skin exposure.** If benzene is spilled on your clothing or skin, remove the contaminated clothing and wash the exposed skin with large amounts of water and soap immediately. Wash contaminated clothing before you wear it again.

**C. Breathing.** If you or any other person breathes in large amounts of benzene, get the exposed person to fresh air at once. Apply artificial respiration if breathing has stopped. Call for medical assistance or a doctor as soon as possible. Never enter any vessel or confined space where the benzene concentration might be high without proper safety equipment and at least one other person present who will stay outside. A life line should be used.

**D. Swallowing.** If benzene has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.

#### **V. MEDICAL REQUIREMENTS**

If you are exposed to benzene at a concentration at or above 0.5 ppm as an 8-hour time-weighted average, or have been exposed at or above 10 ppm in the past while employed by your current employer, your employer is required to provide a medical examination and history and laboratory tests within 60 days of the effective date of this standard and annually thereafter. These tests shall be provided without cost to you. In addition, if you are accidentally exposed to benzene (either by ingestion, inhalation, or skin/eye contact) under emergency conditions known or suspected to constitute toxic exposure to benzene, your employer is required to make special laboratory tests available to you.

#### **VI. OBSERVATION OF MONITORING**

*Demex International, Inc.* will perform measurements that are representative of your exposure to benzene, and employees or their designated representative are entitled to observe the monitoring procedure. Employees are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, employees or their representative must also be provided with, and must wear the protective clothing and equipment.

#### **VII. ACCESS TO RECORDS**

Employees or their representative are entitled to see the records of measurements of your exposure to benzene upon written request. Your medical examination records can be furnished to yourself, your physician, or designated representative upon request by you to your employer.

#### **VIII. PRECAUTIONS FOR SAFE USE, HANDLING AND STORAGE**

Benzene liquid is highly flammable. It should be stored in tightly closed containers in a cool, well ventilated area. Benzene vapor may form explosive mixtures in air. All sources of ignition must be controlled. Use non-sparking tools when opening or closing benzene containers. Fire extinguishers, where provided, must be readily available. Know where they are located and how to operate them. Smoking is prohibited in areas where benzene is used or stored. Ask your supervisor where benzene is used in your area and for additional plant safety rules.

## **APPENDIX B – SUBSTANCE TECHNICAL GUIDELINES, BENZENE**

### **I. PHYSICAL AND CHEMICAL DATA**

#### **A. Substance identification.**

- 1. Synonyms:** Benzol, benzole, coal naphtha, cyclohexatriene, phene, phenyl hydride, pyrobenzol. (Benzin, petroleum benzin and Benzine do not contain benzene).
- 2. Formula:** C<sub>6</sub>H<sub>6</sub> (CAS Registry Number: 71-43-2)

#### **B. Physical data.**

- 1. Boiling Point (760 mm Hg):** 80.1° C (176° F)
- 2. Specific Gravity (water = 1):** 0.879
- 3. Vapor Density (air = 1):** 2.7
- 4. Melting Point:** 5.5° C (42° F)
- 5. Vapor Pressure at 20° C (68° F):** 75 mm Hg
- 6. Solubility in Water:** .06%
- 7. Evaporation Rate (ether = 1):** 2.8
- 8. Appearance and Odor:** Clear, colorless liquid with a distinctive sweet odor.

### **II. FIRE, EXPLOSION, AND REACTIVITY HAZARD DATA**

#### **A. Fire.**

- 1. Flash Point (closed cup):** -11° C (12° F)
- 2. Autoignition Temperature:** 580° C (1076° F)
- 3. Flammable limits in Air, % by Volume:** Lower: 1.3%, Upper: 7.5%
- 4. Extinguishing Media:** Carbon dioxide, dry chemical, or foam.
- 5. Special Fire-Fighting procedures:** Do not use solid stream of water, since stream will scatter and spread fire. Fine water spray can be used to keep fire-exposed containers cool.
- 6. Unusual fire and explosion hazards:** Benzene is a flammable liquid. Its vapors can form explosive mixtures. All ignition sources must be controlled when benzene is used, handled, or stored. Where liquid or vapor may be released, such areas shall be considered as hazardous locations. Benzene vapors are heavier than air; thus the vapors may travel along the ground and be ignited by open flames or sparks at locations remote from the site at which benzene is handled.
- 7. Benzene is classified as a 1 B flammable liquid for the purpose of conforming to the requirements of 29 CFR 1910.106. A concentration exceeding 3,250 ppm is considered a potential fire explosion hazard. Locations where benzene may be present in quantities sufficient to produce explosive or ignitable mixtures are considered Class I Group D for the purposes of conforming to the requirements of 29 CFR 1910.309.**

#### **B. Reactivity.**

- 1. Conditions contributing to instability:** Heat.
- 2. Incompatibility:** Heat and oxidizing materials.
- 3. Hazardous decomposition products:** Toxic gases and vapors (such as carbon monoxide).

### **III. SPILL AND LEAK PROCEDURES**

**A. Steps to be taken if the material is released or spilled.** As much benzene as possible should be absorbed with suitable materials, such as dry sand or earth. That remaining must be flushed with large amounts of water. Do not flush benzene into a confined space, such as a sewer, because of explosion danger. all ignition sources. Ventilate enclosed places.

**B. Waste disposal method.** Disposal methods must conform to other jurisdictional regulations. If allowed, benzene may be disposed of:

- (a) By absorbing it in dry sand or earth and disposing in a sanitary landfill;
- (b) if small quantities, by removing it to a safe location from buildings or other combustible sources, pouring it in dry sand or earth and cautiously igniting it; and
- (c) if large quantities, by atomizing it in a suitable combustion chamber.

### **IV. MISCELLANEOUS PRECAUTIONS**

**A.** High exposure to benzene can occur when transferring the liquid from one container to another. Such operations should be well ventilated and good work practices must be established to avoid spills.

**B.** Use non-sparking tools to open benzene containers which are effectively grounded and bonded prior to opening and pouring.

**C.** Employers must advise employees of all plant areas and operations where exposure to benzene could occur. Common operations in which high exposures to benzene may be encountered are: the primary production and utilization of benzene, and transfer of benzene.

## **APPENDIX C – MEDICAL SURVEILLANCE GUIDELINES FOR BENZENE**

(This Material Should Be Made Available to Your Monitoring Physician)

### **I. ROUTE OF ENTRY:** Inhalation; skin absorption.

**II. TOXICOLOGY:** Benzene is primarily an inhalation hazard. Systemic absorption may cause depression of the hematopoietic system, pancytopenia, aplastic anemia, and leukemia. Inhalation of high concentrations can affect central nervous system function. Aspiration of small amounts of liquid benzene immediately causes pulmonary edema and hemorrhage of pulmonary tissue. There is some absorption through the skin. Absorption may be more rapid in the case of abraded skin, and benzene may be more readily absorbed if it is present in a mixture or as a contaminant in solvents which are readily absorbed. The defatting action of benzene may produce primary irritation due to repeated or prolonged contact with the skin. High concentration are irritating to the eyes and the mucous membranes of the nose, and respiratory tract.

**III. SIGNS AND SYMPTOMS:** Direct skin contact with benzene may cause erythema. Repeated or prolonged contact may result in drying, scaling dermatitis, or development of secondary skin infections. In addition, there is benzene absorption through the skin. Local effects of benzene vapor or liquid on the eye are slight. Only at very high concentrations is there any smarting sensation in the eye.

Inhalation of high concentrations of benzene may have an initial stimulatory effect on the central nervous system characterized by exhilaration, nervous excitation, and/or giddiness, followed by a period of depression, rowsiness, or fatigue. A sensation of tightness in the chest accompanied by breathlessness may occur and ultimately the victim may lose consciousness. Tremors, convulsions and death may follow from respiratory paralysis or circulatory collapse in a few minutes to several hours following severe exposures. The detrimental effect on the blood-forming system of prolonged exposure to small quantities of benzene vapor is of extreme importance. The hematopoietic system is the chief target for benzene's toxic effects which are manifested by alterations in the levels of formed elements in the peripheral blood. These effects have occurred at concentrations of benzene which may not cause irritation of mucous membranes, or any unpleasant sensory effects. Early signs and symptoms of benzene morbidity are varied, often not readily noticed and non-specific. Subjective complaints of headache, dizziness, and loss of appetite may precede or follow clinical signs. Rapid pulse and low blood pressure, in addition to a physical appearance of anemia, may accompany a subjective complaint of shortness of breath and excessive tiredness. Bleeding from the nose, gums, or mucous membranes, and the development of purpuric spots (small bruises) may occur as the condition progresses. Clinical evidence of leukopenia, anemia, and thrombocytopenia, singly or in combination, has been frequently reported among the first signs. Bone marrow may appear normal, aplastic, or hyperplastic, and may not, in all situations, correlate with peripheral blood forming tissues. Because of variations in the susceptibility to benzene morbidity, there is no "typical" blood picture. The onset of effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased and identification or correlation with benzene exposure must be sought out in the occupational history.

**IV. TREATMENT OF ACUTE TOXIC EFFECTS:** Remove from exposure immediately. Make sure you are adequately protected and do not risk being overcome by fumes. Give oxygen or artificial resuscitation if indicated. Flush eyes, wash skin if contaminated and remove all contaminated clothing. Symptoms of intoxication may persist following severe exposures. Recovery from mild exposures is usually rapid and complete.

### **V. SURVEILLANCE AND PREVENTIVE CONSIDERATIONS**

**A. General:** The principal effects of benzene exposure which form the basis for this regulation are pathological changes in the hematopoietic system, reflected by changes in the peripheral blood and manifesting clinically as pancytopenia, aplastic anemia, and leukemia. Consequently, the medical surveillance program is designed to observe, on a regular basis, blood indices for early signs of these effects, and although early signs of leukemia are not usually available, emerging diagnostic technology and innovative regimes make consistent surveillance for leukemia, as well as other hematopoietic effects, essential. Initial examinations are to be provided within 60 days of the effective date of this standard, or at the time of initial assignment, and periodic examinations annually thereafter. There are special provisions for medical tests in the event of hematologic abnormalities or for emergency situations. The blood values which require referral to a hematologist or internist are noted in the standard in paragraph (i)(5). The standard specifies that blood abnormalities that persist must be referred "unless the physician has good reason to believe such referral is unnecessary" (paragraph (i)(5)). Examples of conditions that could make a referral unnecessary despite abnormal blood limits are iron or folate deficiency, menorrhagia, or blood loss due to some unrelated medical abnormality. Symptoms and signs of benzene toxicity can be non-specific. Only a detailed history and appropriate investigative procedures will enable a physician to rule out or confirm conditions that place the employee at increased risk.

To assist the examining physician with regard to which laboratory tests are necessary and when to refer an employee to the specialist, OSHA has established the following guidelines.

**B. Hematology Guidelines:** A minimum battery of tests is to be performed by strictly standardized methods.

1. Red cell, white cell, platelet counts, white blood cell differential, hematocrit and red cell indices must be performed by an accredited laboratory. The normal ranges for the red cell and white cell counts are influenced by altitude, race, and sex, and therefore should be determined by the accredited laboratory in the specific area where the tests are performed.

Either a decline from an absolute normal or an individual's base line to a subnormal value or a rise to a supranormal value, are indicative of potential toxicity, particularly if all blood parameters decline. The normal total white blood count is approximately 7,200/mm<sup>3</sup> plus or minus 3,000. For cigarette smokers the white count may be higher and the upper range may be 2,000 cells higher than normal for the laboratory. In addition, infection, allergies and some drugs may raise the white cell count. The normal platelet count is approximately 250,000 with a range of 140,000 to 400,000. Counts outside this range should be regarded as possible evidence of benzene toxicity. Certain abnormalities found through routine screening are of greater significance in the benzene-exposed worker and require prompt consultation with a specialist, namely:

- a. Thrombocytopenia.
- b. A trend of decreasing white cell, red cell, or platelet indices in an individual over time is more worrisome than an isolated abnormal finding at one test time. The importance of trend highlights the need to compare an individual's test results to baseline and/or previous periodic tests.
- c. A constellation or pattern of abnormalities in the different blood indices is of more significance than a single abnormality. A low white count not associated with any abnormalities in other cell indices may be a normal statistical variation, whereas if the low white count is accompanied by decreases in the platelet and/or red cell indices, such a pattern is more likely to be associated with benzene toxicity and merits thorough investigation.

Anemia, leukopenia, macrocytosis or an abnormal differential white blood cell count should alert the physician to further investigate and/or refer the patient if repeat tests confirm the abnormalities. If routine screening detects an abnormality, follow-up tests which may be helpful in establishing the etiology of the abnormality are the peripheral blood smear and the reticulocyte count.

The extreme range of normal for reticulocytes is 0.4 to 2.5 percent of the red cells, the usual range being 0.5 to 1.2 percent of the red cells, but the typical value is in the range of 0.8 to 1.0 percent. A decline in reticulocytes to levels of less than 0.4 percent is to be regarded as possible evidence (unless another specific cause is found) of benzene toxicity requiring accelerated surveillance. An increase in reticulocyte levels to above 2.5 percent may also be consistent with (but is not as characteristic of) benzene toxicity.

2. An important diagnostic test is a careful examination of the peripheral blood smear. As with the reticulocyte count the smear should be with fresh uncoagulated blood obtained from a needle tip following venipuncture or from a drop of earlobe blood (capillary blood). If necessary, the smear may, under certain limited conditions, be made from a blood sample anticoagulated with EDTA (but never with oxalate or heparin). When the smear is to be prepared from a specimen of venous blood which has been collected by a commercial Vacutainer® type tube containing neutral EDTA, the smear should be made as soon as possible after the venesection. A delay of up to 12 hours is permissible between the drawing of the blood specimen into EDTA and the preparation of the smear if the blood is stored at refrigerator (not freezing) temperature.

3. The minimum mandatory observations to be made from the smear are:

- a. The differential white blood cell count.
- b. Description of abnormalities in the appearance of red cells.
- c. Description of any abnormalities in the platelets.
- d. A careful search must be made throughout of every blood smear for immature white cells such as band forms (in more than normal proportion, i.e., over 10 percent of the total differential count), any number of metamyelocytes, myelocytes or myeloblasts. Any nucleate or multinucleated red blood cells should be reported. Large "giant" platelets or fragments of megakaryocytes must be recognized.

An increase in the proportion of band forms among the neutrophilic granulocytes is an abnormality deserving special mention, for it may represent a change which should be considered as an early warning of benzene toxicity in the absence of other causative factors (most commonly infection). Likewise, the appearance of metamyelocytes, in the absence of another probable cause, is to be considered a possible indication of benzene-induced toxicity.

An upward trend in the number of basophils, which normally do not exceed about 2.0 percent of the total white cells, is to be regarded as possible evidence of benzene toxicity. A rise in the eosinophil count is less specific but also may be suspicious of toxicity if it rises above 6.0 percent of the total white count.

The normal range of monocytes is from 2.0 to 8.0 percent of the total white count with an average of about 5.0 percent. About 20 percent of individuals reported to have mild but persisting abnormalities caused by exposure to benzene show a persistent monocytosis. The findings of a monocyte count which persists at more than 10 to 12 percent of the normal white cell count (when the total count is normal) or persistence of an absolute monocyte count in excess of 800/mm<sup>3</sup> should be regarded as a possible sign of benzene-induced toxicity.

A less frequent but more serious indication of benzene toxicity is the finding in the peripheral blood of the so-called "pseudo" (or acquired) Pelger-Huet anomaly. In this anomaly many, or sometimes the majority, of the neutrophilic granulocytes possess two round nuclear segments – less often one or three round segments – rather than three normally elongated segments. When this anomaly is not hereditary, it is often but not invariably predictive of subsequent leukemia. However, only about two percent of patients who ultimately develop acute myelogenous leukemia show the acquired Pelger-Huet anomaly.

Other tests that can be administered to investigate blood abnormalities are discussed below; however, such procedures should be undertaken by the hematologist.

An uncommon sign, which cannot be detected from the smear, but can be elicited by a "sucrose water test" of peripheral blood, is transient paroxysmal nocturnal hemoglobinuria (PNH), which may first occur insidiously during a period of established aplastic anemia, and may be followed within one to a few years by the appearance of rapidly fatal acute myelogenous leukemia. Clinical detection of PNH, which occurs in only one or two percent of those destined to have acute myelogenous leukemia, may be difficult; if the "sucrose water test" is positive, the somewhat more definitive Ham test, also known as the acid-serum hemolysis test, may provide confirmation.

e. Individuals documented to have developed acute myelogenous leukemia years after initial exposure to benzene may have progressed through a preliminary phase of hematologic abnormality. In some instances pancytopenia (i.e., a lowering in the counts of all circulating blood cells of bone marrow origin, but not to the extent implied by the term "aplastic anemia") preceded leukemia for many years. Depression of a single blood cell type or platelets may represent a harbinger of aplasia or leukemia. The finding of two or more cytopenias, or pancytopenia in a benzene-exposed individual, must be regarded as highly suspicious of more advanced although still reversible, toxicity. "Pancytopenia" coupled with the appearance of immature cells (myelocytes, myeloblasts, erythroblasts, etc.), with abnormal cells (pseudo Pelger-Huet anomaly, atypical nuclear heterochromatin, etc.), or unexplained elevations of white blood cells must be regarded as evidence of benzene overexposure unless proved otherwise. Many severely aplastic patients manifested the ominous finding of 5-10 percent myeloblasts in the marrow, occasional myeloblasts and myelocytes in the blood and 20-30% monocytes. It is evident that isolated cytopenias, pancytopenias, and even aplastic anemias induced by benzene may be reversible and complete recovery has been reported on cessation of exposure. However, since any of these abnormalities is serious, the employee must immediately be removed from any possible exposure to benzene vapor.

Certain tests may substantiate the employee's prospects for progression or regression. One such test would be an examination of the bone marrow, but the decision to perform a bone marrow aspiration or needle biopsy is made by the hematologist.

The findings of basophilic stippling in circulating red blood cells (usually found in 1 to 5% of red cells following marrow injury), and detection in the bone marrow of what are termed "ringed sideroblasts" must be taken seriously, as they have been noted in recent years to be premonitory signs of subsequent leukemia.

Recently peroxidase-staining of circulating or marrow neutrophil granulocytes, employing benzidine dihydrochloride, have revealed the disappearance of, or diminution in, peroxidase in a sizable proportion of the granulocytes, and this has been reported as an early sign of leukemia. However, relatively few patients have been studied to date. Granulocyte granules are normally strongly peroxidase positive. A steady decline in leukocyte alkaline phosphatase has also been reported as suggestive of early acute leukemia. Exposure to benzene may cause an early rise in serum iron, often but not always associated with a fall in the reticulocyte count. Thus, serial measurements of serum iron levels may provide a means of determining whether or not there is a trend representing sustained suppression of erythropoiesis.

Measurement of serum iron, determination of peroxidase and of alkaline phosphatase activity in peripheral granulocytes can be performed in most pathology laboratories. Peroxidase and alkaline phosphatase staining are usually undertaken when the index of suspicion for leukemia is high.

## **APPENDIX D – SAMPLING AND ANALYTICAL METHODS FOR BENZENE**

### **MONITORING AND MEASUREMENT PROCEDURES**

Measurements taken for the purpose of determining employee exposure to benzene are best taken so that the representative average 8-hour exposure may be determined from a single 8-hour sample or two (2) 4-hour samples. Short-time interval samples (or grab samples) may also be used to determine average exposure level if a minimum of five measurements are taken in a random manner over the 8-hour work shift. Random sampling means that any portion of the work shift has the same chance of being sampled as any other. The arithmetic average of all such random samples taken on one work shift is an estimate of an employee's average level of exposure for that work shift. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee). Sampling and analysis must be performed with procedures meeting the requirements of the standard.

There are a number of methods available for monitoring employee exposures to benzene. The sampling and analysis may be performed by collection of the benzene vapor on charcoal adsorption tubes, with subsequent chemical analysis by gas chromatography. Sampling and analysis may also be performed by portable direct reading instruments, real-time continuous monitoring systems, passive dosimeters or other suitable methods.

The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his unique field conditions. The standard requires that the method of monitoring must have an accuracy, to a 95 percent confidence level, of not less than plus or minus 25 percent for concentrations of benzene greater than or equal to 0.5 ppm.

The OSHA Laboratory modified NIOSH Method S311 and evaluated it at a benzene air concentration of 1 ppm. A procedure for determining the benzene concentration in bulk material samples was also evaluated. This work, reported in OSHA Laboratory Method No. 12, includes the following two analytical procedures:

#### **I. OSHA METHOD 12 FOR AIR SAMPLES**

Analyte: Benzene

Matrix: Air

Procedure: Adsorption on charcoal, desorption with carbon disulfide, analysis by GC.

Detection limit: 0.04 ppm

Recommended air volume and sampling rate: 10L at 0.2 L/min.

##### **1. Principle of the Method.**

- 1.1 A known volume of air is drawn through a charcoal tube to trap the organic vapors present.
- 1.2 The charcoal in the tube is transferred to a small, stoppered vial, and the analyte is desorbed with carbon disulfide.
- 1.3 An aliquot of the desorbed sample is injected into a gas chromatograph.
- 1.4 The area of the resulting peak is determined and compared with areas obtained from standards.

##### **2. Advantages and disadvantages of the method.**

- 2.1 The sampling device is small, portable, and involved no liquids. Interferences are minimal, and most of those which do occur can be eliminated by altering chromatographic conditions. The samples are analyzed by means of a quick, instrumental method.
- 2.2 The amount of sample which can be taken is limited by the number of milligrams that the tube will hold before overloading. When the sample value obtained for the backup section of the charcoal tube exceeds 25 percent of that found on the front section, the possibility of sample loss exists.

##### **3. Apparatus.**

- 3.1 A calibrated personal sampling pump whose flow can be determined within  $\pm 5$  percent at the recommended flow rate.
- 3.2 **Charcoal tubes:** Glass with both ends flame sealed, 7 cm long with a 6-mm O.D. and a 4-mm I.D., containing 2 sections of 20/40 mesh activated charcoal separated by a 2-mm portion of urethane foam. The activated charcoal is prepared from coconut shells and is fired at 600° C prior to packing. The adsorbing section contains 100 mg of charcoal, the back-up section 50 mg. A 3-mm portion of urethane foam is placed between the outlet end of the tube and the back-up section. A plug of silanized glass wool is placed in front of the adsorbing section. The pressure drop across the tube must be less than one inch of mercury at a flow rate of 1 liter per minute.
- 3.3 Gas chromatograph equipped with a flame ionization detector.
- 3.4 Column (10-ft x 1/8-in stainless steel) packed with 80/100 Supelcoport coated with 20 percent SP 2100, 0.1 percent CW 1500.

- 3.5** An electronic integrator or some other suitable method for measuring peak area.
- 3.6** Two-milliliter sample vials with Teflon-lined caps.
- 3.7 Microliter syringes:** 10-microliter (10- $\mu$ L syringe, and other convenient sizes for making standards. 1- $\mu$ L syringe for sample injections.
- 3.8 Pipets:** 1.0 mL delivery pipets
- 3.9 Volumetric flasks:** convenient sizes for making standard solutions.

#### **4. Reagents.**

- 4.1 Chromatographic quality carbon disulfide (CS2).** Most commercially available carbon disulfide contains a trace of benzene which must be removed. It can be removed with the following procedure:  
Heat under reflux for 2 to 3 hours, 500 mL of carbon disulfide, 10 mL concentrated sulfuric acid, and 5 drops of concentrated nitric acid. The benzene is converted to nitrobenzene. The carbon disulfide layer is removed, dried with anhydrous sodium sulfate, and distilled. The recovered carbon disulfide should be benzene free. (It has recently been determined that benzene can also be removed by passing the carbon disulfide through 13x molecular sieve).
- 4.2** Benzene, reagent grade.
- 4.3** p-Cymene, reagent grade, (internal standard).
- 4.4 Desorbing reagent.** The desorbing reagent is prepared by adding 0.05 mL of p-cymene per milliliter of carbon disulfide. (The internal standard offers a convenient means correcting analytical response for slight inconsistencies in the size of sample injections. If the external standard technique is preferred, the internal standard can be eliminated).
- 4.5** Purified GC grade helium, hydrogen and air.

#### **5. Procedure.**

- 5.1 Cleaning of equipment.** All glassware used for the laboratory analysis should be properly cleaned and free of organics which could interfere in the analysis.
- 5.2 Calibration of personal pumps.** Each pump must be calibrated with a representative charcoal tube in the line.
- 5.3 Collection and shipping of samples.**
  - 5.3.1** Immediately before sampling, break the ends of the tube to provide an opening at least one-half the internal diameter of the tube (2 mm).
  - 5.3.2** The smaller section of the charcoal is used as the backup and should be placed nearest the sampling pump.
  - 5.3.3** The charcoal tube should be placed in a vertical position during sampling to minimize channeling through the charcoal.
  - 5.3.4** Air being sampled should not be passed through any hose or tubing before entering the charcoal tube.
  - 5.3.5** A sample size of 10 liters is recommended. Sample at a flow rate of approximately 0.2 liters per minute. The flow rate should be known with an accuracy of at least  $\pm 5$  percent.
  - 5.3.6** The charcoal tubes should be capped with the supplied plastic caps immediately after sampling.
  - 5.3.7** Submit at least one blank tube (a charcoal tube subjected to the same handling procedures, without having any air drawn through it with each set of samples).
  - 5.3.8** Take necessary shipping and packing precautions to minimize breakage of samples.

#### **5.4 Analysis of samples.**

- 5.4.1 Preparation of samples.** In preparation for analysis, each charcoal tube is scored with a file in front of the first section of charcoal and broken open. The glass wool is removed and discarded. The charcoal in the first (larger) section is transferred to a 2-mL vial. The separating section of foam is removed and discarded; the second section is transferred to another capped vial. These two sections are analyzed separately.
- 5.4.2 Desorption of samples.** Prior to analysis, 1.0 mL of desorbing solution is pipetted into each sample container. The desorbing solution consists of 0.05  $\mu$ L internal standard per mL of carbon disulfide. The sample vials are capped as soon as the solvent is added. Desorption should be done for 30 minutes with occasional shaking.

**5.4.3 GC conditions.** Typical operating conditions for the gas chromatograph are:

1. 30 mL/min (60 psig) helium carrier gas flow.
2. 30 mL/min (40 psig) hydrogen gas flow to detector.
3. 240 mL/min (40 psig) air flow to detector.
4. 150° C injector temperature.

5. 250° C detector temperature.
6. 100° C column temperature.

**5.4.4** Injection size. 1  $\mu$ L.

**5.4.5 Measurement of area.** The peak areas are measured by an electronic integrator or some other suitable form of area measurement.

**5.4.6** An internal standard procedure is used. The integrator is calibrated to report results in ppm for a 10 liter air sample after correction for desorption efficiency.

**5.5 Determination of desorption efficiency.**

**5.5.1 Importance of determination.** The desorption efficiency of a particular compound can vary from one laboratory to another and from one lot of chemical to another. Thus, it is necessary to determine, at least once, the percentage of the specific compound that is removed in the desorption process, provided the same batch of charcoal is used.

**5.5.2 Procedure for determining desorption efficiency.** The reference portion of the charcoal tube is removed. To the remaining portion, amounts representing 0.5X, 1X, and 2X and (X represents target concentration) based on a 10 L air sample are injected into several tubes at each level. Dilutions of benzene with carbon disulfide are made to allow injection of measurable quantities. These tubes are then allowed to equilibrate at least overnight. Following equilibration they are analyzed following the same procedure as the samples. Desorption efficiency is determined by dividing the amount of benzene found by amount spiked on the tube.

**6. Calibration and standards.** A series of standards varying in concentration over the range of interest is prepared and analyzed under the same GC conditions that will be used on the samples. A calibration curve is prepared by plotting concentration ( $\mu$ g/mL) versus peak area.

**7. Calculations.** Benzene air concentration can be calculated from the following equation:

$$\text{mg/m}^3 = (A)(B)/(C)(D)$$

Where:

A =  $\mu$ g/mL benzene, obtained from the calibration curve

B = desorption volume (1 mL)

C = Liters of air sampled

D = desorption efficiency

The concentration in mg/m<sup>3</sup> can be converted to ppm (at 25° and 760 mm) with following equation:

$$\text{ppm} = (\text{mg/m}^3)(24.46)/(78.11)$$

Where: 24.46 = molar volume of an ideal gas

25° C and 760 mm

78.11 = molecular weight of benzene

**8. Backup Data**

**8.1 Detection limit – Air Samples.** The detection limit for the analytical procedure is 1.28 ng with a coefficient of variation of 0.023 at this level. This would be equivalent to an air concentration of 0.04 ppm for a 10 L air sample. This amount provided a chromatographic peak that could be identifiable in the presence of possible interferences. The detection limit data were obtained by making 1  $\mu$ L injections of a 1.283  $\mu$ g/mL standard.

Injection	Area Count	
1	655.4	
2	617.5	
3	662.0	
4	641.1	
5	636.4	X = 640.2 SD = 14.9 CV = 0.023
6	629.2	

**8.2 Pooled coefficient of variation – Air Samples.** The pooled coefficient of variation for the analytical procedure was determined by 1  $\mu$ L replicate injections of analytical standards. The standards were 16.04, 32.08, and 64.16  $\mu$ g/mL, which are equivalent to 0.5, 1.0, and 2.0 ppm for a 10 L air sample respectively.

Injection	Area Counts		
	<u>0.5 ppm</u>	<u>1.0 ppm</u>	<u>2.0 ppm</u>
1	3996.5	8130.2	16481
2	4059.4	8235.6	16493
3	4052.0	8307.9	16535
4	4027.2	8263.2	16609
5	4046.8	8291.1	16552
6	4137.9	8288.8	16618
X=	4053.3	8254.0	16548.3
SD=	47.2	62.5	57.1
CV=	0.0116	0.0076	0.0034
CV=	0.008		

**8.3 Storage data – Air Samples.** Samples were generated at 1.03 ppm benzene at 80% relative humidity, 22° C, and 643 mm. All samples were taken for 50 minutes at 0.2 L/min. Six samples were analyzed immediately and the rest of the samples were divided into two groups by fifteen samples each. One group was stored at refrigerated temperature of -25° C, and the other group was stored at ambient temperature (approximately 23° C). These samples were analyzed over a period of fifteen days. The results are tabulated below.

Percent Recovery						
Day Analyzed		Refrigerated		Ambient		
0	97.4	98.7	98.9	97.4	98.7	98.9
0	97.1	100.6	100.9	97.1	100.6	100.9
2	95.8	96.4	95.4	95.4	96.6	96.9
5	93.9	93.7	92.4	92.4	94.3	94.1
9	93.6	95.5	94.6	95.2	95.6	96.6
13	94.3	95.3	93.7	91.0	95.0	94.6
15	96.8	95.8	94.2	92.9	96.3	95.9

**8.4 Desorption data.** Samples were prepared by injecting liquid benzene onto the A section of charcoal tubes. Samples were prepared that would be equivalent to 0.5, 1.0, and 2.0 ppm for a 10 L air sample.

Percent Recovery			
1	99.4	98.8	99.5
2	99.5	98.7	99.7
3	99.2	98.6	99.8
4	99.4	99.1	100.0
5	99.2	99.0	99.7
6	99.8	99.1	99.9
X =	99.4	98.9	99.8
SC =	0.22	0.21	0.18
CV =	0.0022	0.0021	0.0018
X =	99.4		

### 8.5 Carbon disulfide.

Carbon disulfide from a number of sources was analyzed for benzene contamination. The results are given in the following table. The benzene contaminant can be removed with the procedures given in section 4.1.

Sample	µg Benzene/mL	ppm equivalent (for 10 L air sample)
Aldrich Lot 83017	4.20	0.13
Baker Lot 720364	1.01	0.03
Baker Lot 822351	1.01	0.03
Malinkrodt Lot WEMP	1.74	0.05
Malinkrodt Lot WDSJ	5.65	0.18
Malinkrodt Lot WHGA	2.90	0.09
Treated CS2	—	—

## **II. OSHA LABORATORY METHOD NO. 12 FOR BULK SAMPLES**

Analyte: Benzene

Matrix: Bulk Samples

Procedure: Bulk samples are analyzed directly by high performance liquid chromatography (HPLC).

Detection limit: 0.01% by volume.

### **1. Principle of the method.**

- 1.1 An aliquot of the bulk sample to be analyzed is injected into a liquid chromatograph.
- 1.2 The peak area for benzene is determined and compared to areas obtained from standards.

### **2. Advantages and disadvantages of the method.**

- 2.1 The analytical procedure is quick, sensitive, and reproducible.
- 2.2 Reanalysis of samples is possible.
- 2.3 Interferences can be circumvented by proper selection of HPLC parameters.
- 2.4 Samples must be free of any particulates that may clog the capillary tubing in the liquid chromatograph. This may require distilling the sample or clarifying with a clarification kit.

### **3. Apparatus.**

- 3.1 Liquid chromatograph equipped with a UV detector.
- 3.2 HPLC Column that will separate benzene from other components in the bulk sample being analyzed. The column used for validation studies was a Waters uBondapack C18, 30 cm x 3.9 mm.
- 3.3 A clarification kit to remove any particulates in the bulk if necessary.
- 3.4 A micro-distillation apparatus to distill any samples if necessary.
- 3.5 An electronic integrator or some other suitable method of measuring peak areas.
- 3.6 Microliter syringes - 10 µL syringe and other convenient sizes for making standards. 10 µL syringe for sample injections.
- 3.7 Volumetric flasks, 5 mL and other convenient sizes for preparing standards and making dilutions.

### **4. Reagents.**

- 4.1 Benzene, reagent grade.
- 4.2 HPLC grade water, methyl alcohol, and isopropyl alcohol.

### **5. Collection and shipment of samples.**

- 5.1 Samples should be transported in glass containers with Teflon-lined caps.
- 5.2 Samples should not be put in the same container used for air samples.

### **6. Analysis of samples.**

**6.1 Sample preparation.** If necessary, the samples are distilled or clarified. Samples are analyzed undiluted. If the benzene concentration is out of the working range, suitable dilutions are made with isopropyl alcohol.

**6.2 HPLC conditions.** The typical operating conditions for the high performance liquid chromatograph are:

1. Mobile phase - Methyl alcohol/water, 50/50
2. Analytical wavelength - 254 nm
3. Injection size - 10 µL

**6.3 Measurement of peak area and calibration.** Peak areas are measured by an integrator or other suitable means. The integrator is calibrated to report results in % benzene by volume.

### **7. Calculations.**

Since the integrator is programmed to report results in % benzene by volume in an undiluted sample, the following equation is used:

$$\% \text{ Benzene by Volume} = A \times B$$

Where:

A = % by volume on report

B = Dilution Factor

(B = 1 for undiluted sample)

## **8. Backup Data.**

### **8.1 Detection limit – Bulk Samples.**

The detection limit for the analytical procedure for bulk samples is 0.88 µg, with a coefficient of variation of 0.019 at this level. This amount provided a chromatographic peak that could be identifiable in the presence of possible interferences.

The detection limit date were obtained by making 10 µL injections of a 0.10% by volume standard.

Inspection	Area Count	
1	45396	
2	44214	
3	43822	
4	44062	X = 44040.1 SD = 852.5 CV = 0.019
6	42724	

### **8.2 Pooled coefficient of variation – Bulk Samples.**

The pooled coefficient of variation for analytical procedure was determined by 50 µL replicate injections of analytical standards. The standards were 0.01, 0.02, 0.04, 0.10, 1.0, and 2.0% benzene by volume.

## **OSHA CFR 1910.28 (b)**

### **Definitions.**

**"Action level"** means an airborne concentration of benzene of 0.5 ppm calculated as an 8-hour time-weighted average.

**"Assistant Secretary"** means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

**"Authorized person"** means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under paragraph (l) of this section, or any other person authorized by the Act or regulations issued under the Act.

**"Benzene"** (C6H6) (CAS Registry No. 71-43-2) means liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials.

**"Bulk wholesale storage facility"** means a bulk terminal or bulk plant where fuel is stored prior to its delivery to wholesale customers.

**"Container"** means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, or the like, but does not include piping systems.

**"Day"** means any part of a calendar day.

**"Director"** means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

**"Emergency"** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which may or does result in an unexpected significant release of benzene.

**"Employee exposure"** means exposure to airborne benzene which would occur if the employee were not using respiratory protective equipment.

**"Regulated area"** means any area where airborne concentrations of benzene exceed or can reasonably be expected to exceed, the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

**"Vapor control system"** means any equipment used for containing the total vapors displaced during the loading of gasoline, motor fuel or other fuel tank trucks and the displacing of these vapors through a vapor processing system or balancing the vapor with the storage tank. This equipment also includes systems containing the vapors displaced from the storage tank during the unloading of the tank truck which balance the vapors back to the tank truck.

## **Notes:**

# **Chapter 6**

## ***Demex International, Inc.***

### **Company Policy for Toxic and Hazardous Materials**

#### **Bloodborne Pathogens**

**Demex International, Inc.** is committed to the safety and health of our employees and prohibiting the spread of Bloodborne Pathogens. Therefore, the following Bloodborne Pathogens Safety Programs has been adopted. In the event an employee is exposed to Bloodborne Pathogens, all measures within this program shall be provided to eliminate the spread of disease.

This policy for the prevention of hazardous employee exposure to Bloodborne Pathogens is adopted in accordance with the following OSHA regulations:

**§1910.1030 – *Bloodborne Pathogens***

**§1910.1028 – *Hazard Communication Standards for Employers*.**

**Demex International, Inc.** has implemented this plan to ensure that no employee is exposed to hazardous Bloodborne Pathogens in the workplace. **Gary L.** DeMarsh is the Company administrator who has the overall supervisory responsibility for the effectiveness of this program and for maintaining medical and training records.

**Demex International, Inc.** will ensure that a copy of the Exposure Control Plan is kept at the Company office, and in the workplace, available to employees at all times in accordance with 29 CFR §1910.1020(e).

- Upon initial hiring, all employees will be trained in exposure awareness and prevention techniques for bloodborne pathogens. Employees will receive refresher training annually, or if observed to commit unsafe acts regarding potentially infectious material, or when changing job conditions or assignments warrants it. Training records will include date of training, training content, attendance records including job title, and will be kept on file at the office for a minimum of 3 years.
- **Demex International, Inc.** will establish and maintain an accurate record for each employee with occupational exposure, in accordance with §1910.1020. Training records will include the dates and contents of training, and the names and job titles of persons attending. Training records will be maintained for 3 years from the date of training and medical records will be maintained for at least the duration of employment plus 30 years.
- **Demex International, Inc.** will ensure that all records required by this section will be made available upon request of employees, Assistant Secretary, and the Director for examination and copying. Medical records will have the written consent of the employee before being released. **Demex International, Inc.** will comply with the requirements involving transfer of records set forth in §1910.1020 (h).**Demex International, Inc.** will make available the Hepatitis B vaccine to all employees that have occupational exposure at no cost to the employee(s).

## **Exposure Control Plan**

- Employees with occupational exposure for the construction industry is limited to job duties that require workers to administer first aid and/or CPR when necessary. Employees trained in first aid and CPR and designated as First Aid Responders are considered at risk of occupational exposure due to the nature of these duties (e.g., assisting bleeding victims, resuscitation). Occupational exposure is defined as reasonably anticipated contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
- The exposure determination will be made without regard to the use of personal protective equipment. All employees who, as a result of performing their job duties, must engage in activities where exposure to blood or other potentially infectious materials is reasonably anticipated are considered to have occupational exposure to bloodborne pathogen. Employees will take necessary precautions to avoid direct contact with body fluids.
- Personal Protective equipment will be available at all times to prevent exposure to infectious material for employees required to handle potentially hazardous material, perform first aid procedures, or to perform routine duties which may bring an employee into contact with potentially infectious material.
- Employees in job classifications in which they may possibly have occupational exposure to bloodborne pathogens, or material possibly containing bloodborne pathogens, will be given the opportunity to participate in the hepatitis B vaccine program.
- Universal precautions will be observed. Under circumstances in which differentiation between body fluids is difficult or impossible, all body fluids will be considered potentially infectious. The term "universal precautions" refers to a method of bloodborne disease control that requires all human blood and other potentially infectious materials to be treated as if known to be infectious HIV, HBV or other bloodborne pathogens.
- If provision of handwashing facilities is not feasible, *Demex International, Inc.* will provide either an appropriate antiseptic hand cleanser in conjunction with cloth/paper towels or antiseptic towelettes. All employees are allowed access to proper restroom and sanitary facilities. Hand washing and disinfecting supplies are always available to employees either at restroom facilities or upon request.
- Blood-soaked bandages or other potentially infectious materials from the accident site will be put in properly marked, leak-proof bags for handling.
- Proper disposal containers for potentially infectious material are available as needed. Any such containers will be properly marked for biohazards and disposed of properly.
- All equipment or environmental surfaces will be cleaned and decontaminated after contact with blood or other infectious materials.
- Any injury to personnel must be reported immediately to a supervisor, and unauthorized personnel will be restricted from the area where the injury occurred until it is determined that no threat of infection is present, or until properly trained personnel can dispose of any infectious material.



**Regulation Label to be Used**

- Any exposed sharp edges or devices which may cause laceration or puncture on machines, tools, or equipment will be eliminated or protected to prevent injury to personnel. All machine guards will be inspected daily to ensure that they are in place and secure to prevent injury to personnel and the spread of bloodborne pathogens.
- Engineering and work practice controls will be used to eliminate or minimize employee exposure. Company assigned first aid responders will be trained in universal precautions and proper PPE use when giving first aid. Engineering controls will be examined and maintained or replaced on a regular schedule to ensure their effectiveness.
- PPE, such as gloves and gowns, is provided to our employees at no cost to them when the possibility of occupational exposure is present. Appropriate PPE in the proper sizes will be readily accessible. PPE will be cleaned laundered, and properly disposed. PPE will be repaired or replaced as needed to maintain its effectiveness. PPE will be used unless, under rare circumstances, the employee(s) temporarily declined to use PPE.

Training in the use of the appropriate PPE for specific tasks or procedures is provided by *Demex International, Inc.*. PPE may be obtained by contacting *Gary L. DeMarsh*, who is responsible for ensuring that PPE is available.

All employees using PPE must observe the following precautions:

- Wash hands as soon as feasible after removing gloves or other PPE.
- Remove PPE after it becomes contaminated and before leaving the work area.
- Contaminated PPE must be properly handled or disposed of in properly marked, leak-proof bags. When PPE is to be decontaminated, proper handling precautions and procedures will be observed during this process.
- Wear appropriate gloves when it is reasonably anticipated that there may be hand contact with blood or OPIM, and when handling or touching contaminated items or surfaces; replace gloves if torn, punctured or contaminated, or if their ability to function as a barrier is compromised.
- Wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eye, nose, or mouth.
- Remove immediately or as soon as feasible any garment contaminated by blood or OPIM, in such a way as to avoid contact with the outer surface.

*Demex International, Inc.* will ensure that a copy of this Exposure Control Plan is accessible to employees in accordance with §1910.1020 (e).

## **§1910.1030 Bloodborne Pathogens**

### **(a) Scope and Application.**

This section applies to all occupational exposure to blood or other potentially infectious materials (OPIM) as defined by paragraph (b) of this section.

### **(b) Definitions.** See definitions at the end of this section (not included here)

### **(c) Exposure Control.**

#### **(1) Exposure Control Plan.**

(i) Each employer having an employee(s) with occupational exposure as defined by paragraph (b) of this section shall establish a written Exposure Control Plan designed to eliminate or minimize employee exposure.

(ii) The Exposure Control Plan shall contain at least the following elements:

(A) The exposure determination required by paragraph (c)(2),

(B) The schedule and method of implementation for paragraphs (d) Methods of Compliance, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, (g) Communication of Hazards to Employees, and (h) Recordkeeping, of this standard, and

(C) The procedure for the evaluation of circumstances surrounding exposure incidents as required by paragraph (f)(3)(i) of this standard.

(iii) Each employer shall ensure that a copy of the Exposure Control Plan is accessible to employees in accordance with 29 CFR 1910.1020(e).

(iv) The Exposure Control Plan shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure. The review and update of such plans shall also:

(A) Reflect changes in technology that eliminate or reduce exposure to bloodborne pathogens; and

(B) Document annually consideration and implementation of appropriate commercially available and effective safer medical devices designed to eliminate or minimize exposure.

(v) An employer, who is required to establish an Exposure Control Plan shall solicit input from non-managerial employees responsible for the direct patient care who are potentially exposed to injuries from contaminated sharps in the identification, evaluation, and selection of effective engineering and work practice controls and shall document the solicitation in the Exposure Control Plan.

(vi) The Exposure Control Plan shall be made available to the Assistant Secretary and the Director upon request for examination and copying.

#### **(2) Exposure Determination.**

(i) Each employer who has an employee(s) with occupational exposure as defined by paragraph (b) of this section shall prepare an exposure determination. This exposure determination shall contain the following:

(A) A list of all job classifications in which all employees in those job classifications have occupational exposure;

(B) A list of job classifications in which some employees have occupational exposure, and

(C) A list of all tasks and procedures or groups of closely related task and procedures in which occupational exposure occurs and that are performed by employees in job classifications listed in accordance with the provisions of paragraph (c)(2)(i)(B) of standard.

(ii) This exposure determination shall be made without regard to the use of personal protective equipment.

**(d) Methods of Compliance.**

(1) General. Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

(2) Engineering and Work Practice Controls.

(i) Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.

(ii) Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

(iii) Employers shall provide hand washing facilities which are readily accessible to employees.

(iv) When provision of hand washing facilities is not feasible, the employer shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as feasible.

(v) Employers shall ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment.

(vi) Employers shall ensure that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials.

(vii) Contaminated needles and other contaminated sharps shall not be bent, recapped, or removed except as noted in paragraphs (d)(2)(vii)(A) and (d)(2)(vii)(B) below. Shearing or breaking of contaminated needles is prohibited.

(A) Contaminated needles and other contaminated sharps shall not be bent, recapped or removed unless the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical or dental procedure.

(B) Such bending, recapping or needle removal must be accomplished through the use of a mechanical device or a one-handed technique.

(viii) Immediately or as soon as possible after use, contaminated reusable sharps shall be placed in appropriate containers until properly reprocessed. These containers shall be:

(A) puncture resistant;

(B) labeled or color-coded in accordance with this standard;

(C) leakproof on the sides and bottom; and

(D) in accordance with the requirements set forth in paragraph (d)(4)(ii)(E) for reusable sharps.

(ix) Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.

(x) Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or benchtops where blood or other potentially infectious materials are present.

(xi) All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.

(xii) Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.

(xiii) Specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.

(A) The container for storage, transport, or shipping shall be labeled or color-coded according to paragraph (g)(1)(i) and closed prior to being stored, transported, or shipped. When a facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary provided containers are recognizable as containing specimens. This exemption only applies while such specimens/containers remain within the facility. Labeling or color-coding in accordance with paragraph (g)(1)(i) is required when such specimens/ containers leave the facility.

(B) If outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded according to the requirements of this standard.

(C) If the specimen could puncture the primary container, the primary container shall be placed within a secondary container which is puncture resistant in addition to the above characteristics.

**(xiv)** Equipment which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and shall be decontaminated as necessary, unless the employer can demonstrate that decontamination of such equipment or portions of such equipment is not feasible.

**(A)** A readily observable label in accordance with paragraph (g)(1)(i)(H) shall be attached to the equipment stating which portions remain contaminated.

**(B)** The employer shall ensure that this information is conveyed to all affected employees, the servicing representative, and/or the manufacturer, as appropriate, prior to handling, servicing, or shipping so that appropriate precautions will be taken.

**(3) Personal Protective Equipment.**

**(i) Provision.** When there is occupational exposure, the employer shall provide, at no cost to the employee, appropriate personal protective equipment such as, but not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices. Personal protective equipment will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

**(ii) Use.** The employer shall ensure that the employee uses appropriate personal protective equipment unless the employer shows that the employee temporarily and briefly declined to use personal protective equipment when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or public safety services or would have posed an increased hazard to the safety of the worker or co-worker. When the employee makes this judgment, the circumstances shall be investigated and documented in order to determine whether changes can be instituted to prevent such occurrences in the future.

**(iii) Accessibility.** The employer shall ensure that appropriate personal protective equipment in the appropriate sizes is readily accessible at the worksite or is issued to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

**(iv) Cleaning, Laundering, and Disposal.** The employer shall clean, launder, and dispose of personal protective equipment required by paragraphs (d) and (e) of this standard, at no cost to the employee.

**(v) Repair and Replacement.** The employer shall repair or replace personal protective equipment as needed to maintain its effectiveness, at no cost to the employee.

**(vi)** If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed immediately or as soon as feasible.

**(vii)** All personal protective equipment shall be removed prior to leaving the work area.

**(viii)** When personal protective equipment is removed it shall be placed in an appropriately designated area or container for storage, washing, decontamination or disposal.

**(ix) Gloves.** Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures except as specified in paragraph (d)(3)(ix)(D); and when handling or touching contaminated items or surfaces.

**(A)** Disposable (single use) gloves such as surgical or examination gloves, shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.

**(B)** Disposable (single use) gloves shall not be washed or decontaminated for re-use.

**(C)** Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they are cracked, peeling, torn, punctured, or exhibit other signs of deterioration or when their ability to function as a barrier is compromised.

**(D)** If an employer in a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary then the employer shall:

**(1)** Periodically reevaluate this policy;

**(2)** Make gloves available to all employees who wish to use them for phlebotomy;

**(3)** Not discourage the use of gloves for phlebotomy; and

(4) Require that gloves be used for phlebotomy in the following circumstances:

- (i) When the employee has cuts, scratches, or other breaks in his or her skin;
- (ii) When the employee judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative source individual; and
- (iii) When the employee is receiving training in phlebotomy.

(x) **Masks, Eye Protection, and Face Shields.** Masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

(xi) **Gowns, Aprons, and Other Protective Body Clothing.** Appropriate protective clothing such as, but not limited to, gowns, aprons, lab coats, clinic jackets, or similar outer garments shall be worn in occupational exposure situations. The type and characteristics will depend upon the task and degree of exposure anticipated.

(xii) Surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can reasonably be anticipated (e.g., autopsies, orthopedic surgery).

**(4) Housekeeping.**

(i) **General.** Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate written schedule for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area.

(ii) All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.

(A) Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.

(B) Protective coverings, such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper used to cover equipment and environmental surfaces, shall be removed and replaced as soon as feasible when they become overtly contaminated or at the end of the workshift if they may have become contaminated during the shift.

(C) All bins, pails, cans, and similar receptacles intended for reuse which have a reasonable likelihood for becoming contaminated with blood or other potentially infectious materials shall be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as feasible upon visible contamination.

(D) Broken glassware which may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means, such as a brush and dust pan, tongs, or forceps.

(E) Reusable sharps that are contaminated with blood or other potentially infectious materials shall not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.

**(iii) Regulated Waste.**

(A) **Contaminated Sharps Discarding and Containment.**

(1) Contaminated sharps shall be discarded immediately or as soon as feasible in containers that are:

- (i) Closable;
- (ii) Puncture resistant;
- (iii) Leak proof on sides and bottom; and
- (iv) Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard.

(2) During use, containers for contaminated sharps shall be:

- (i) Easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found (e.g., laundries);
- (ii) Maintained upright throughout use; and
- (iii) Replaced routinely and not be allowed to overfill.

(3) When moving containers of contaminated sharps from the area of use, the containers shall be:

(i) Closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping;

(ii) Placed in a secondary container if leakage is possible. The second container shall be:

(A) Closable;

(B) Constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping; and

(C) Labeled or color-coded according to paragraph (g)(1)(i) of this standard.

(4) Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of percutaneous injury.

(B) Other Regulated Waste Containment.

(1) Regulated waste shall be placed in containers which are:

(i) Closable;

(ii) Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

(iii) Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard; and

(iv) Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

(2) If outside contamination of the regulated waste container occurs, it shall be placed in a second container. The second container shall be:

(i) Closable;

(ii) Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

(iii) Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard; and

(iv) Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

(C) Disposal of all regulated waste shall be in accordance with applicable regulations of the United States, States and Territories, and political subdivisions of States and Territories.

(iv) Laundry.

(A) Contaminated laundry shall be handled as little as possible with a minimum of agitation.

(1) Contaminated laundry shall be bagged or containerized at the location where it was used and shall not be sorted or rinsed in the location of use.

(2) Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard. When a facility utilizes Universal Precautions in the handling of all soiled laundry, alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with Universal Precautions.

(3) Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.

(B) The employer shall ensure that employees who have contact with contaminated laundry wear protective gloves and other appropriate personal protective equipment.

(C) When a facility ships contaminated laundry off-site to a second facility which does not utilize Universal Precautions in the handling of all laundry, the facility generating the contaminated laundry must place such laundry in bags or containers which are labeled or color-coded in accordance with paragraph (g)(1)(i).

**(f) Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.**

**(1) General.**

- (i) The employer shall make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident.
- (ii) The employer shall ensure that all medical evaluations and procedures including the hepatitis B vaccine and vaccination series and post-exposure evaluation and follow-up, including prophylaxis, are:
  - (A) Made available at no cost to the employee;
  - (B) Made available to the employee at a reasonable time and place;
  - (C) Performed by or under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional; and
  - (D) Provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place, except as specified by this paragraph (f).

- (iii) The employer shall ensure that all laboratory tests are conducted by an accredited laboratory at no cost to the employee.

**(2) Hepatitis B Vaccination.**

- (i) Hepatitis B vaccination shall be made available after the employee has received the training required in paragraph (g)(2)(vii)(I) and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.
- (ii) The employer shall not make participation in a prescreening program a prerequisite for receiving hepatitis B vaccination.
- (iii) If the employee initially declines hepatitis B vaccination but at a later date while still covered under the standard decides to accept the vaccination, the employer shall make available hepatitis B vaccination at that time.
- (iv) The employer shall assure that employees who decline to accept hepatitis B vaccination offered by the employer sign the statement in Appendix A.
- (v) If a routine booster dose(s) of hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) shall be made available in accordance with section (f)(1)(ii).

**(g) Communication of Hazards to Employees.**

**(1) Labels and Signs.**

**(i) Labels.**

- (A) Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials, except as provided in paragraph (g)(1)(i)(E), (F) and (G).
- (B) Labels required by this section shall include the following legend:
- (C) These labels shall be fluorescent orange or orange-red or predominantly so, with lettering and symbols in a contrasting color.
- (D) Labels shall be affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.
- (E) Red bags or red containers may be substituted for labels.
- (F) Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use are exempted from the labeling requirements of paragraph (g).
- (G) Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.
- (H) Labels required for contaminated equipment shall be in accordance with this paragraph and shall also state which portions of the equipment remain contaminated.



(I) Regulated waste that has been decontaminated need not be labeled or color-coded.

(ii) Signs.

(A) The employer shall post signs at the entrance to work areas specified in paragraph (e), HIV and HBV Research Laboratory and Production Facilities, which shall bear the following legend:

(B) These signs shall be fluorescent orange-red or predominantly so, with lettering and symbols in a contrasting color.

(2) Information and Training.

(i) Employers shall ensure that all employees with occupational exposure participate in a training program which must be provided at no cost to the employee and during working hours.

(ii) Training shall be provided as follows:

(A) At the time of initial assignment to tasks where occupational exposure may take place;

(B) Within 90 days after the effective date of the standard; and

(C) At least annually thereafter.

(h) Recordkeeping.

(1) Medical Records.

(i) The employer shall establish and maintain an accurate record for each employee with occupational exposure, in accordance with 29 CFR 1910.1020.

(ii) This record shall include:

(A) The name and social security number of the employee;

(B) A copy of the employee's hepatitis B vaccination status including the dates of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination as required by paragraph (f)(2);

(C) A copy of all results of examinations, medical testing, and follow-up procedures as required by paragraph (f)(3);

(D) The employer's copy of the health-care professional's written opinion as required by paragraph (f)(5); and

(E) A copy of the information provided to the healthcare professional as required by paragraphs (f)(4)(ii)(B), (C) and (D).

(iii) Confidentiality. The employer shall ensure that employee medical records required by paragraph (h)(1) are:

(A) Kept confidential; and

(B) Not disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by this section or as may be required by law.

(iv) The employer shall maintain the records required by paragraph (h) for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.1020.

(2) Training Records.

(i) Training records shall include the following information:

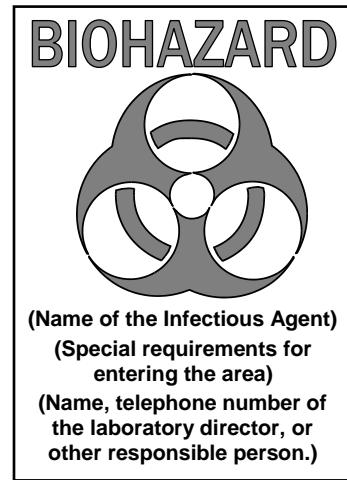
(A) The dates of the training sessions;

(B) The contents or a summary of the training sessions;

(C) The names and qualifications of persons conducting the training; and

(D) The names and job titles of all persons attending the training sessions.

(ii) Training records shall be maintained for 3 years from the date on which the training occurred.



**(3) Availability.**

- (i)** The employer shall ensure that all records required to be maintained by this section shall be made available upon request to the Assistant Secretary and the Director for examination and copying.
- (ii)** Employee training records required by this paragraph shall be provided upon request for examination and copying to employees, to employee representatives, to the Director, and to the Assistant Secretary.
- (iii)** Employee medical records required by this paragraph shall be provided upon request for examination and copying to the subject employee, to anyone having written consent of the subject employee, to the Director, and to the Assistant Secretary in accordance with 29 CFR 1910.1020.

**(4) Transfer of Records.**

- (i)** The employer shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.1020(h).
- (ii)** If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director, at least three months prior to their disposal and transmit them to the Director, if required by the Director to do so, within that three month period.

**(5) Sharps Injury Log.**

- (i)** The employer shall establish and maintain a sharps injury log for the recording of percutaneous injuries from contaminated sharps. The information in the sharps injury log shall be recorded and maintained in such manner as to protect the confidentiality of the injured employee. The sharps injury log shall contain, at a minimum:
  - (A)** The type and brand of device involved in the incident,
  - (B)** The department or work area where the exposure incident occurred, and
  - (C)** An explanation of how the incident occurred.
- (ii)** The requirement to establish and maintain a sharps injury log shall apply to any employer who is required to maintain a log of occupational injuries and illnesses under 29 CFR 1904.
- (iii)** The sharps injury log shall be maintained for the period required by 29 CFR 1904.6.

## **HEPATITIS B VACCINE DECLINATION (MANDATORY)**

*I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.*

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Employee Name

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Employee's Occupation/Assigned Work Station

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Employee Signature

---

Date

# **Chapter 7**

## ***Demex International, Inc.***

### **Company Policy for Disciplinary Procedures & Methods**

#### ***Enforcement of Safety Policies***

The compliance of all employees with ***Demex International, Inc.*** Safety and Health Program is mandatory and shall be considered a condition of employment. All safety rules, procedures, and plans in effect are to be followed as specified in the safety program. Employees found to be in violation of Company safety policy may be subject to penalty.

**Gary L. DeMarsh** is the supervisor for disciplinary actions and any employee in a position of management or supervisory capacity may initiate disciplinary action against any employee found to be in violation of Company policy. Not following verbal or written safety procedures, guidelines, rules, horse play, failure to wear selected PPE, abuse of selected PPE, and etc. constitutes a safety violation.

The following outlines the disciplinary measures which will be taken against employees found to be in violation:

Periodic safety inspections of the workplace and equipment will be undertaken to ensure that all personnel, including supervisory positions, are demonstrating the required commitment to safety. A general neglect of safe work procedures, practices, and requirements in the workplace, or neglect of equipment safety, will be viewed as a lack of supervisory enforcement of safety policy and the appropriate supervisor/management personnel will be subject to the same disciplinary procedures described below.

The following programs will be utilized to ensure employee compliance with the safety program and all safety rules:

- Training programs
- Retraining
- Optional safety incentive programs
- Disciplinary action

#### ***Training Programs***

The importance of safe work practices and the consequences of failing to abide by safety rules will be covered in the New Employee Safety Orientation and at Tailgate/Toolbox Safety Training. This will help ensure that all employees understand and abide by The Company's safety policies.

#### ***Retraining***

Employees that are observed performing unsafe acts or not following proper procedures or rules will be retrained by their foreman or supervisor. A Safety Contact Report may be completed by the supervisor to document the training. If multiple employees are involved, additional safety meetings will be held.

#### ***Safety Incentive Programs***

Although strict adherence to safety policies and procedures is required of all employees, The Company may choose to periodically provide recognition of safety-conscious employees and jobsites without accidents through a safety incentive program.

## **Disciplinary Action**

The failure of an employee to adhere to safety policies and procedures established by *Demex International, Inc.* can have a serious impact on everyone concerned. An unsafe act can threaten not only the health and well being of the employee committing the unsafe act but can also affect the safety of his/her coworkers and/or customers. Accordingly, any employee who violates any of The Company's safety policies will be subject to disciplinary action.

When a "Safety Violation Notice" is issued, appropriate supervisory personnel will meet with employee(s) to discuss the infraction and inform individual(s) of the rule or procedure that was violated and the corrective action to be taken.

**Note:** Failure to promptly report any on-the-job accident or injury, on the same day as occurrence, is considered a serious violation of The Company's Code of Safe Practices. Any employee who fails to immediately report a work-related accident or injury, no matter how minor shall be subject to disciplinary action.

Employees will be disciplined for infractions of safety rules and unsafe work practices that are observed, not just those that result in an injury. Often, when an injury occurs, the accident investigation will reveal that the injury was caused because the employee violated an established safety rule and/or safe work practice(s).

In any disciplinary action, the foreman should be cautious that discipline is given to the employee for safety violations, and not simply because the employee was injured on the job or filed a Workers' Compensation claim.

Violations of safety rules and the Code of Safe Practices are to be considered equal to violations of other Company policy. Discipline for safety violations will be administered in a manner that is consistent with The Company's system of progressive discipline. If, after training, violations occur, disciplinary action will be taken as follows:

1. **Oral warning.** Documented, including date and facts on the "Safety Warning Report" form. Add any pertinent witness statements. Restate the policy and correct practice(s).
2. **Written warning.** Retrain as to correct procedure/practice.
3. **Written warning with suspension.**
4. **Termination.**

As in all disciplinary actions, each situation is to be carefully evaluated and investigated. The particular step taken in the disciplinary process will depend on the severity of the violation, employee history, and regard to safety. Foremen and superintendents should consult with the office if there is any question about whether or not disciplinary action is justified. Employees may be terminated immediately for willful or extremely serious violations. Union employees are entitled to the grievance process specified by their contract.

**Note:** Consistency in the enforcement of safety rules shall be exercised at all times.

# EMPLOYEE SAFETY WARNING REPORT

<i>Employee's Name</i>	<i>Position</i>																																												
Date of Warning	Violation Time	<input type="checkbox"/> am <input type="checkbox"/> pm	Violation Date																																										
<i>Supervisor</i>		<i>Department</i>																																											
<i>Type of Warning</i>	<input type="checkbox"/> Verbal	<input type="checkbox"/> Written	<input type="checkbox"/> Serious <input type="checkbox"/> Other:																																										
<i>Type of Violation</i>	<input type="checkbox"/> Unsafe Act	<input type="checkbox"/> Improper Safety Attire	<input type="checkbox"/> Unsafe condition <input type="checkbox"/> Other																																										
<i>Supervisor's Statement</i>																																													
<p><i>Employee's Statement</i> (Check Proper Box)</p> <p><input type="checkbox"/> I agree with the Supervisor's statement    <input type="checkbox"/> I disagree with the Supervisor's statement because:</p> <hr/> <hr/> <hr/> <hr/> <hr/>																																													
<p><i>List all previous warnings and retraining below</i></p> <table border="1"> <tr> <td>When warned and by whom</td> <td colspan="2">I have read and understand this warning decision</td> </tr> <tr> <td><i>First Warning</i> (Describe reason)</td> <td><i>Employee's Signature</i></td> <td><i>Date</i></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>Date</td> <td>Date retrained</td> <td><i>Supervisor's Signature</i></td> </tr> <tr> <td><i>Second Warning</i> (Describe reason)</td> <td></td> <td><i>Date</i></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>Date</td> <td>Date retrained</td> <td><i>Copy Distribution</i></td> </tr> <tr> <td><i>Third Warning</i> (Describe reason)</td> <td></td> <td><input type="checkbox"/> Employee</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Employee's Supervisor</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Personnel Department</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Safety Committee</td> </tr> <tr> <td>Date</td> <td>Date retrained</td> <td></td> </tr> </table>				When warned and by whom	I have read and understand this warning decision		<i>First Warning</i> (Describe reason)	<i>Employee's Signature</i>	<i>Date</i>							Date	Date retrained	<i>Supervisor's Signature</i>	<i>Second Warning</i> (Describe reason)		<i>Date</i>							Date	Date retrained	<i>Copy Distribution</i>	<i>Third Warning</i> (Describe reason)		<input type="checkbox"/> Employee			<input type="checkbox"/> Employee's Supervisor			<input type="checkbox"/> Personnel Department			<input type="checkbox"/> Safety Committee	Date	Date retrained	
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<p>The Supervisor must complete this form immediately after the employee has been interviewed. A decision must be made on the following to ensure violators <u>will not</u> participate in the current safety incentive program.</p>																																													
<input type="checkbox"/> No further action		<input type="checkbox"/> Suspension	<input type="checkbox"/> Other:																																										
<input type="checkbox"/> Suspension from current safety incentive program		<input type="checkbox"/> Dismissal																																											
<i>Submit this form for review at the next Safety Committee meeting</i>																																													
<i>Safety Committee Notes</i>																																													

## **Notes:**

# **Chapter 8**

## ***Demex International, Inc.***

### **Company Policy for Emergency Action Plans**

**Demex International, Inc.** has implemented the following policy for the protection of our employees against emergency situations in the workplace from OSHA regulation §1910.38 – **Emergency Action Plans**.

*Demex International, Inc.* has designated **Gary L. DeMarsh** as the administrator/supervisor for Emergency Action Plans.

*Demex International, Inc.* will have an Emergency Action Plan whenever an OSHA standard requires one. Emergency Action Plans will be in writing, posted in the workplace, and available to employees for review. The names and job titles of every person in the chain of command will be posted.

*Gary L. DeMarsh* will ensure that all employees are informed and trained in the following minimum elements for Emergency Action Plans:

- Procedures for reporting a fire or other emergency.
- Procedures for emergency evacuation for all areas of work, including type of evacuation and exit route assignments.
- Safe assembly areas designated for all work areas in the event of evacuation.
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate.
- Procedures to account for all employees after evacuation.
- Procedures to be followed by employees performing rescue or medical duties.
- The members in the chain of command who may be contacted by employees who need more information about the Plan or for an explanation of their duties under the Plan.

*Demex International, Inc.* will have and maintain an employee alarm system. The employee alarm system will use a distinctive signal for each purpose.

*Demex International, Inc.* will designate and train employees to assist in a safe and orderly evacuation of other employees.

*Gary L. DeMarsh* will review the Emergency Action Plan with each employee covered by the plan:

- When each Plan is developed or an employee is initially assigned to a job.
- When the employee's responsibilities under the Plan change.
- When any element of the Plan is changed.

All fire extinguishers will be inspected by *Gary L. DeMarsh* on a monthly basis; this inspection will be recorded and documented with the required annual maintenance check. Records of inspection will be kept on file in the office.

- *Gary L. DeMarsh* will ensure that all employees are trained in the proper operation of all types of fire extinguishers provided by the company.
- Fire Protection/Prevention training will be required on initial hiring and annually thereafter.

- All employees will be trained in the hazards involved in incipient stage fire fighting. Employees are instructed to ensure the local EMS (Fire Department) is notified before attempting to extinguish any fire, and that if a fire is not immediately extinguished, or the fire recurs to evacuate immediately.

## ***Emergency Action Plans – Planning for Workplace Emergencies***

Workplace emergencies can happen at any time and prudence dictates that response procedures must be planned and prepared for in advance. Because it is hard to think clearly during an emergency, it is essential to plan our response.

Emergency planning is the first step, and it can be challenging even if the workplace only has a few employees. Determinations must be made as to what emergencies could affect our workplace, who will lead and make decisions during an emergency, and what procedures will ensure that employees respond appropriately. These elements are the foundation of our workplace Emergency Plan.

Emergency planning may not prevent emergencies, but it can protect lives, equipment, and property over the long term. The following information in this Section describes how *Demex International, Inc.* plans for workplace emergencies so that you and your coworkers respond appropriately when an unlikely event happens.

OSHA requires most employers to have Emergency Plans. Those that have more than 10 employees must have written plans. Those that have 10 or fewer employees do not have to put their plans in writing; however, they must ensure that their employees know what procedures to follow to protect themselves in an emergency.

## ***Managing Workplace Emergencies – The Incident-Management System***

Much can be learned about planning for workplace emergencies from professional emergency responders. When someone calls 911 to report an emergency, he or she connects with a local network of fire, police, and other emergency service professionals who will respond as efficiently as possible. This network is part of a larger incident-management system that can respond to an emergency and accomplish the following:

- Identify, locate, and determine the extent of the emergency.
- Determine the resources necessary to manage and control the emergency.
- Coordinate command-and-control responsibilities between police and fire departments, hospitals and other medical service providers, government agencies, and on-site responders.
- Establish and maintain communication between on-scene emergency responders and other emergency service providers.
- Provide for the safety of victims.

## ***An Incident-Management System for our Workplace***

With thoughtful planning, a small-scale version of the incident management system used by professional responders can be created. Our workplace will be ready to respond to any emergency – from a heart attack to an earthquake – and manage it in the most effective, efficient way possible. The essential parts of this system are our employees, our Emergency Action Plan, communication and emergency-response equipment, and our workplace.

The goal is for our Emergency Plan to ensure the well-being of everyone at our workplace. This is accomplished by involving employees in the ongoing planning processes, identifying emergencies that could affect our workplace, maintaining an emergency chain of command, and developing emergency response policy and procedures.

## ***Involving Employees in the Planning Process***

Perhaps the most important element of emergency planning is getting employees involved in the planning process; when employees participate, they will take the Plan seriously and be more likely to respond appropriately during an emergency. From the start, they should be aware that the purpose of the plan is to ensure their safety.

- Employees will review the Plan to ensure that they know the procedures to follow to respond safely in an emergency. Each employee will have a copy of the plan or know where to obtain one.
- Employees are encouraged to report workplace hazards and unsafe work practices that could contribute to an emergency.

## ***Identify Emergencies that Could Affect the Workplace***

Identify any external incident (outside our workplace) that could threaten employees or the public and any incident within our workplace that could cause an emergency.

### ***Examples include the following:***

- Earthquake: *external*
- Explosion: *external or internal*
- Fire: *external or internal*
- Hazardous-substance release: *external or internal*
- Medical: *internal*
- Weather-related event (hurricane, tornado, blizzard, etc.): *external*
- Threat of violence: *external or internal*

Electrical, heating and cooling, and telecommunication-system failures can disrupt workplace activities and contribute to emergencies. Human error also contributes to many workplace emergencies; employees will be trained to do their jobs safely.

## ***The Chain of Command***

The chain of command links one person with overall responsibility for managing an emergency to others responsible for carrying out specific emergency response tasks. A chain of command establishes who is in charge and ensures that everyone in the chain responds to emergencies in an organized way.

At the top of the chain is the emergency scene commander, a trained employee who has overall responsibility for managing emergencies.

Just below the emergency scene commander are the volunteer emergency scene coordinators.

In an organization that has multiple buildings or workplaces, the chain of command might also include a facility manager, an emergency director, and other management units.

At many small- to medium-sized workplaces, the chain of command consists of an emergency scene commander and one or two volunteer emergency scene coordinators.

## ***The Responsibilities of the Emergency Scene Commander***

The emergency scene commander has overall command of a workplace emergency, including the following responsibilities:

- Assessing incidents to determine if it is necessary to order emergency response.
- Supervising emergency scene coordinators' activities during an emergency.
- Directing shutdown of critical workplace equipment or operations.

- Coordinating the activities of professional responders such as ambulance, police, and fire departments.
- Determining if an evacuation is necessary and managing an evacuation.

The emergency scene commander will be an employee who has experience managing others, assessing complex events, and making effective decisions under difficult circumstances.

### ***The Role of the Emergency Scene Coordinators***

Emergency scene coordinators are responsible for coordinating other employees' activities during an emergency (guiding them to appropriate exits and safe areas during an evacuation, for example) and for other emergency-response tasks for which they have volunteered and been properly trained.

Generally, each coordinator will be responsible for no more than 20 employees within a designated work area. Emergency scene coordinators must know how to respond to all emergencies identified in our Emergency Plan, the evacuation procedures for the particular workplace, and how to use emergency communication equipment. They will also know CPR, first aid, and how to respond to threats of violence. Their primary responsibilities include the following:

- Checking rooms and other enclosed spaces for employees who may be trapped or unable to evacuate during an emergency.
- Knowing who may need assistance during an evacuation and how to assist them.
- Coordinating the emergency activities of employees.
- Ensuring that employees understand how to respond to workplace emergencies.
- Knowing the workplace layout, appropriate escape routes, and areas that employees must not enter during an evacuation.
- Verifying that employees are in designated safe areas after an evacuation.

The established chain of command minimizes confusion during an emergency. An effective chain of command helps ensure that responders manage an emergency in the most efficient way possible.

### ***Policy and Procedures for Responding to Emergencies***

The following Company Policy states the purpose of the Emergency Action Plan and emphasizes that *Demex International, Inc.* is committed to ensuring the safety of employees and others at our workplace during an emergency.

*"It is the policy of Demex International, Inc. to protect employees from physical harm, harassment, and intimidation. To provide a safe working environment for all employees, Demex International, Inc. is committed to establishing an effective Emergency Plan. The Plan is based on an "Incident Management System" (IMS) that consists of volunteer employees trained to respond to any workplace emergency. The system is modeled on the IMS system used by fire, police, and emergency medical-service responders. It provides for overall command and control of any emergency incident. It improves communication between IMS personnel and the fire, police, and medical personnel who respond to a call for help. It also provides appropriate emergency assistance during the first few minutes it takes for emergency responders to arrive."*

## **The Procedures**

Procedures are instructions for accomplishing specific tasks. Emergency procedures are important because they tell employees exactly what to do to ensure their safety during an emergency to accomplish each of the following tasks:

- Report emergencies to local fire and police departments.
- Inform the emergency chain of command of an emergency.
- Warn employees about an emergency.
- Conduct an orderly, efficient workplace evacuation.
- Assist employees with disabilities or injuries during an evacuation.
- Shut down critical equipment, operate fire extinguishers, and perform other essential services during an evacuation.
- Account for employees at a designated safe area after an evacuation.
- Perform rescue and first aid that may be necessary during an emergency.

## **Other Critical Information**

The following are included in our Company procedures:

- The names of the emergency scene commander, the emergency scene coordinators, and others responsible for carrying out the plan, and how to contact them during an emergency.
- The name of the person who has the authority to order a workplace evacuation (typically, the emergency scene commander).
- The names and phone numbers of those who understand the Emergency Plan and will inform others about it (typically the emergency scene commander and the emergency scene coordinators).

## **Planning Considerations – Accounting for Employees after an Evacuation**

A designated meeting area a safe distance away from the emergency site will be identified in advance to ensure that employees know they must meet there after they evacuate the workplace. An emergency scene coordinator should take a "Roll-Call" to identify employees not present. A determination will need to be made as to what information or assistance employees may need if they can not return to the workplace after an evacuation.

## **Alerting Employees to an Emergency**

The Company may use a public address system, portable radios, an alarm, an air-horn, or any other means that will reach and warn all employees. Alarms will be distinctive, be recognizable by all employees, and have a back-up power supply in case the primary power fails. We may need alarms that employees can hear and see.

## **Conducting Employee Rescues**

It takes more than good intentions to save lives. Would-be rescuers can endanger themselves and those they are trying to rescue. During most emergencies, leave rescue work to professional responders who are appropriately trained and equipped. The exceptions would be during a catastrophe, such as a severe earthquake, that could delay professional emergency responders for hours or days. Also, jobs such as handling hazardous substances or working in confined spaces could result in emergencies for which fire or police departments are not trained. We will need to find out what kind of emergencies local responders are trained and equipped to respond to. If they are unable to respond to emergencies unique to our workplace, our employees must be trained and able to respond promptly.

## ***Coordinating with Multi-Employer Workplaces***

If we happen to share a facility, building, or worksite with other employers, we will consider working with them to develop, if feasible, a facility-wide Emergency Plan. If a facility-wide plan is not feasible, we will ensure that our plan does not conflict with the plans of the other employers in the facility.

## ***Quick-Response Teams***

A quick-response team consists of volunteer employees trained to handle workplace incidents that require immediate action, such as medical emergencies, threatening or violent people, and hazardous-substance releases. The following considerations are relevant to quick response teams:

- Types of incidents that require immediate action.
- Roles and responsibilities of team members.
- Communication and response procedures for the team.

## ***Training Employees about Emergencies and Evacuations***

To protect themselves during an emergency, all employees must understand the following elements of the Emergency Plan:

- The roles of the emergency scene commander and coordinators.
- How to respond to threats and intimidation.
- The method(s) for warning employees of emergencies.
- The method for contacting employees' next of kin after an emergency.
- The procedure for summoning emergency responders.
- The location of safe meeting areas.
- How to respond to an emergency and to an order to evacuate.

New employees will be trained about the Emergency Plan when they are first hired and all employees will be informed about any changes to the plan.

Emergency scene coordinators will be trained in first aid and CPR, bloodborne-pathogen protection, and how to use rescue equipment.

Regular training drills will be scheduled so that employees can practice. Outside fire and police departments will be included in the drills when possible. The effectiveness of each drill will be evaluated and activities that need strengthening will be identified. The results will be shared with all employees.

When a workplace emergency requires an evacuation, all employees must know to leave, what emergency exits to take, and where to meet. Employees may also need to know how to shut down critical equipment during an evacuation.

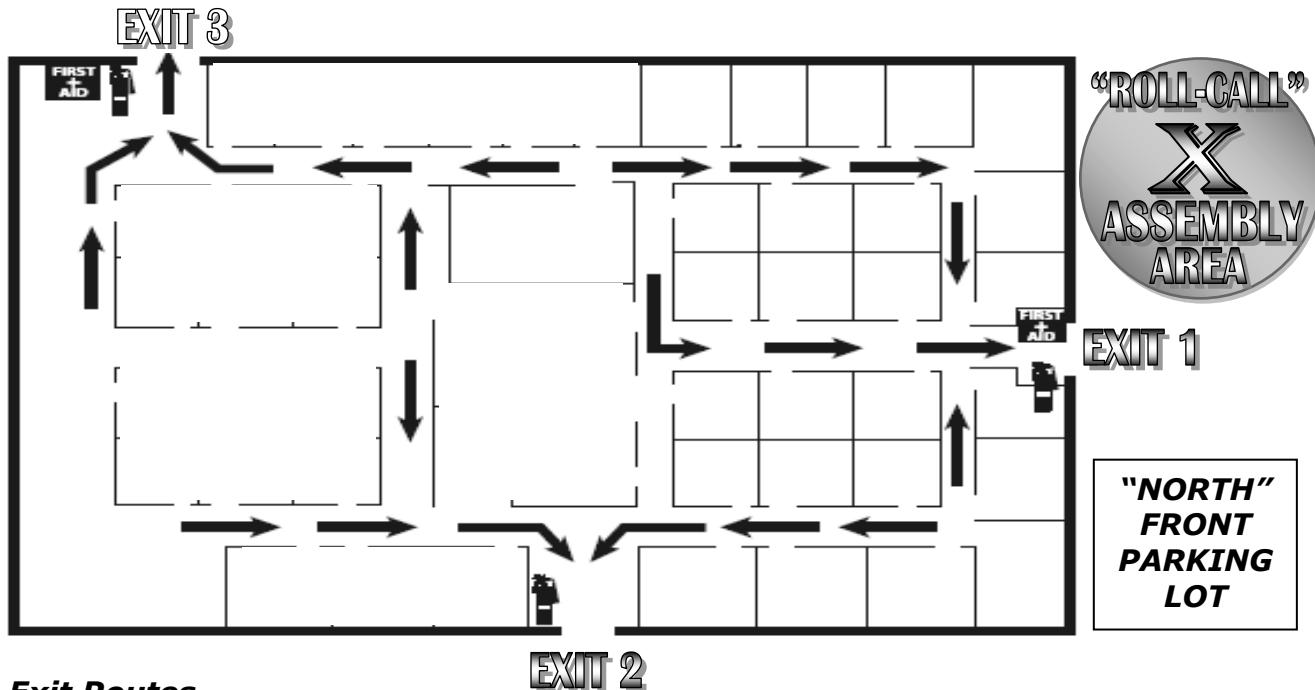
## ***Evacuation Exits***

Our workplaces will have a primary evacuation exit and an alternate exit. Diagrams will be posted that show the evacuation routes and the exits where all employees will see them. The exits and exit routes will be identified. Characteristics of exits include:

- They are clearly marked, well lit, and visible under emergency conditions.
- They are wide enough to accommodate employees during an evacuation.
- They are unobstructed and clear of debris at all times.
- They are unlikely to expose employees to other hazards.

An essential part of our Emergency Plan is an evacuation diagram – a floor plan of the facility or workplace that shows evacuation exits and describes the emergency evacuation procedure. Mark the exit routes and the “Roll-Call” assembly area on the diagram so that they are easy to see, for example:

### **Demex International, Inc. Main Office & Shop**



### **Exit Routes**

How would you escape from your workplace in an emergency? Do you know where all the exits are in case your first choice is too crowded? Are you sure the doors will be unlocked and that the exit access behind them will not be blocked during a fire, explosion, or other crisis? Knowing the answers to these questions could keep you safe during an emergency.

### **Workplace Exit Routes**

Usually, a workplace must have at least two exit routes for prompt evacuation. But more than two exits are required if the number of employees, size of the building, or arrangement of the workplace will not allow a safe evacuation. Exit routes must be located as far away as practical from each other in case one is blocked by fire or smoke.

### **General Requirements for Exits**

- Exits must be separated from the workplace by fire-resistant materials – that is, a one-hour fire-resistance rating if the exit connects three or fewer stories, and a two-hour fire-resistance rating if the exit connects more than three floors.
- Exits can have only those openings necessary to allow access to the exit from occupied areas of the workplace or to the exit discharge. Openings must be protected by a self-closing, approved fire door that remains closed or automatically closes in an emergency.
- Always keep the line-of-sight to exit signs clearly visible.
- Install "EXIT" signs using plainly legible letters.

### **Safety Features for Exit Routes**

- Keep exit routes free of explosives or highly flammable materials, equipment, or other obstructions.

- Exit routes will be arranged so that employees will not have to travel toward a high-hazard area unless the path of travel is effectively shielded from the high-hazard area.
- Ensure that exit routes are free and unobstructed by materials, equipment, locked doors, or dead-end corridors.
- Provide lighting for exit routes adequate for employees with normal vision.
- Keep exit route doors free of decorations or signs that obscure their visibility of exit route doors.
- Post signs along the exit access indicating the direction of travel to the nearest exit and exit discharge if that direction is not immediately apparent.
- Mark doors or passages along an exit access that could be mistaken for an exit "Not an Exit" or with a sign identifying its use (such as "Closet").
- Maintain exit routes during construction, repairs, or alterations.

### ***Design and Construction Requirements***

- Exit routes must be permanent parts of the workplace.
- Exit discharges must lead directly outside or to a street, walkway, refuge area, public way, or open space with access to the outside.
- Exit discharge areas must be large enough to accommodate people likely to use the exit route.
- Exit route doors must unlock from the inside. They must be free of devices or alarms that could restrict use of the exit route if the device or alarm fails.
- Exit routes can be connected to rooms only by side-hinged doors that swing out in the direction of travel if the room may be occupied by more than 50 people.
- Exit routes must support the maximum permitted occupant load for each floor served, and the capacity of an exit route may not decrease in the direction of exit route travel to the exit discharge.
- Exit routes must have ceilings at least 7 ft., 6 in. high. An exit access must be at least 28 inches wide at all points.

### ***Providing Medical Assistance and First Aid***

If there is not a nearby emergency clinic or hospital that will admit victims of emergencies from our workplace then emergency scene coordinators will ensure that some members of on-site personnel have appropriate first-aid training and supplies.

### ***Recording Critical Employee Information***

After a medical emergency, an employee may be unable to contact next of kin or other relatives. Supervisors will have access to employees' home telephone numbers, the names and telephone numbers of family members they want you to contact, physician names and phone numbers, and information employees have given about their medical conditions or medications. This information will be kept with employees' permanent employment records and updated annually.

### ***Reporting Fire and Other Emergencies***

Our Emergency Plan has a procedure for reporting fires and other emergencies to professional responders. Report all fires by calling 911. Fires are generally not reported to fire departments by fire alarms; most fire alarms warn only building occupants. The emergency scene commander will stay in a safe location to oversee and relay relevant information to professional emergency responders.

## **Selecting and Using Personal Protective Equipment**

Personal protective equipment includes clothing and equipment that protects emergency responders against specific hazards. Examples include work gloves, goggles, hard hats, and respirators.

Properly used, personal protective equipment offers protection against a hazard but does not eliminate the hazard. If it fails or is not appropriate for a particular task, the user risks exposure. Appropriate, effective protection depends on selecting, wearing, and using the equipment properly – which can be challenging. The following steps outline the procedures for selecting personal protective equipment:

- 1.** Identify emergency-related hazards for which personal protective equipment may be necessary; for example, those responding to medical emergencies need protection from bloodborne pathogens.
- 2.** Determine which personal protective equipment will protect users from the hazards; for example, latex gloves and face shields may be necessary to protect responders from bloodborne pathogens.
- 3.** Determine who will use the equipment; it is critical that the equipment fit the user and not cause allergic reactions or other health problems.
- 4.** Determine the conditions under which responders will use the equipment; the equipment must not fail under those conditions.
- 5.** Ensure that emergency responders know how to use the equipment. Whether they are wearing hard hats or atmosphere-supplying respirators, responders will know how the equipment will protect them and when it will not protect them. Responders will know how to wear, use, and maintain the equipment, and how to discard contaminated equipment.

## **Types of Emergencies**

Following are types of emergencies that could affect workplaces and summarizes what to do when responding to them. Consider factors such as workplace size and location, number of employees on-site, and the nature of their work in determining how to respond.

### **Earthquake**

During an earthquake, people in most workplaces are at greatest risk from collapsing ceilings, windows, light fixtures, and other falling objects. If you are indoors, the safest response is to take cover under sturdy furniture or to brace yourself against an inside wall. Stay away from windows, skylights, bookcases, and other heavy objects. Protect your head and neck.

#### **What to do:**

- If indoors, stay there. Take cover under sturdy furniture or against inside walls.
- Do not use elevators.
- Stay away from windows, skylights, and other objects that could fall.
- Use stairways to leave the workplace if the order is given to evacuate.
- Be ready to rescue victims; professional responders may not be able to respond; remove victims to a triage area if possible.

## **Explosion**

Any workplace that handles, stores, or processes flammable gases, liquids, and solids is vulnerable. Explosions offer no warnings, causing disorganization and panic.

### **What to do:**

- Try to establish communication with emergency scene coordinators.
- Assess damage to the workplace and estimate human casualties.
- Administer first aid if it is safe to do so.
- Do not use elevators.
- Evacuate following established procedures.

## **Fire**

If needed, invite a local fire department representative to our workplace to help identify fire hazards and to discuss how our workplace should respond to a fire. It is the byproducts of fire – smoke and fire gasses – that kill. A quick, orderly evacuation is the most effective response to an out-of-control fire.

### **What to do:**

- Pull the fire alarm (or set off the predetermined signal).
- Call 911; tell the dispatcher the location and the nature of the emergency.
- Inform an emergency scene coordinator.
- Do not use elevators.
- Permit only trained responders to use fire extinguishers.

If emergency scene coordinators or other employees are permitted to use fire extinguishers, they will be properly trained in their use.

## **Hazardous-Substance Release**

Hazardous substances include solvents, pesticides, paints, petroleum products, and heavy metals – any substance hazardous to health. Even if our workplace does not use hazardous substances, could it be affected by a nearby release or an accident on a local freeway? If so, our Emergency Plan describes how the scene commander and coordinators will respond and notify fire and police departments.

### **What to do:**

- Inform the emergency scene commander.
- Evacuate the area surrounding the release.
- Call 911; tell the dispatcher the location and the nature of the emergency.

If our workplace uses hazardous chemicals, our Company Hazard Communication (HAZCOM) Program requires that we inventory them, keep the manufacturer-supplied material safety data sheets, label the chemical containers, and train employees to protect themselves from the chemicals' hazards.

If employees must wear personal protective equipment during an emergency – chemical suits, gloves, hoods, boots, or respirators, for example – make sure that equipment will be available when they need it, that it fits them, and that they know how to use it.

## **Medical**

The most likely workplace emergency is a medical emergency. A serious medical emergency such as cardiac arrest requires immediate attention – response time is critical. It is essential that medical first responders know how to perform first aid/CPR.

***What to do:***

- Call 911. Tell the dispatcher the location and the nature of the emergency.
- Do not move the victim.
- Notify an emergency scene coordinator for CPR or other first-aid tasks.
- Inform the emergency scene commander.
- Assist professional medical responders when they arrive.
- Inform the victim's supervisor.

***Weather-Related Event***

Hurricanes, tornadoes, blizzards, and floods are likely to be the cause of weather-related workplace emergencies. Many communities experience floods following warm spring rain. Winter storms often bring strong winds, freezing rain, and snow that can cause structural damage and power outages.

***What to do:***

- Wait for instructions from the emergency scene commander; a power failure will slow communication.
- Tune a battery-powered radio to a station that broadcasts local news.
- Do not evacuate the workplace unless ordered to do so.

***Threats of Violence***

Threats of violence may be delivered in any form: face-to-face, by fax, e-mail, phone, or in writing. Threats can be directed toward the workplace or toward a specific person. Police departments, mental health professionals, and employee-assistance program counselors offer prevention information, security inspections, and employee training that help reduce the risk of workplace violence.

***What to do:***

- Inform an emergency scene coordinator.
- Activate a silent alarm if your workplace has one.
- Isolate the threatening person if it is possible to do so safely.
- Inform the emergency scene commander.

***Bomb Threats***

Take all bomb threats seriously. Do not use fire alarms or phones in the building – they generate radio waves that could trigger a bomb. If someone finds a package that may contain or that may be a bomb, he or she should note its size, shape, and whether it emits a sound, and then notify the emergency scene commander. Call 911 from outside the building to report the emergency and determine if an evacuation is necessary. Use a communication method that does not generate radio waves to order the evacuation.

Consider offering Threat-management training is available to emergency scene coordinators and if appropriate, members of quick-response teams.

***Terrorism***

Although terrorist acts pose minimal risks to most workplaces, the devastating effects of recent acts have changed the perception of a “secure workplace” and added a new dimension to emergency planning. What distinguishes terrorist acts is the use of threats and violence to intimidate or coerce. Factors to consider in emergency planning include the following:

***How do others perceive the mission of our Company in these contexts?***

- Political activities
- Business activities
- Economic activities
- Social responsibilities

***How vulnerable are our critical resources from terrorist attack?***

- Production machinery and equipment
- Mail and HVAC systems
- Electronic communication, power, data, and systems hardware
- Real estate and other physical property
- Finance and administrative transactions
- Employees at the workplace or at other locations

# **EMERGENCY ACTION PLAN**

To be posted at all Company facilities and workplaces

Page 1

<b>Company Name:</b>	<b>Job Location:</b>	
<b>Street Address:</b>		
<b>City:</b>	<b>State:</b>	<b>ZIP:</b>
<b>Prepared By:</b> (Print Name of Preparer)		
<b>Title:</b>	<b>Phone Number:</b>	
<b>Signature:</b>		<b>Date:</b>
<b>Emergency-Scene Commander</b>		<b>Emergency-Scene Coordinator</b>
<b>PURPOSE</b>		
This Plan identifies necessary management and employee actions during fires and other emergencies. Education and training are provided so that all employees know and understand the Emergency Action Plan.		
<b>LOCATION OF PLAN</b>		
The Emergency Action Plan can be found at the station or office of each:		(Foreman, Supervisor, etc.)
A copy is also maintained in THE COMPANY general offices.		
Upon request, an OSHA representative may obtain a copy of the plan from:		(Name and Title)
<b>EXIT ROUTES</b>		
Draw a diagram of jobsite or facility exit routes in space below:		
Locate meeting place or "Roll-Call" area on above diagram:		
<b>ACCOUNTING FOR EMPLOYEES</b>		
After exiting jobsite or facility, all employees are to assemble for "Roll-Call" at this location:		
Note location on above diagram		
The following persons are responsible for ensuring that employees comply with this requirement:		
Name and Title:		
Name and Title:		
<b>CRITICAL OPERATIONS</b>		
To minimize damage from the emergency, the following personnel are responsible for shutting down the listed critical operations:		
<b>Personnel Names</b>		<b>Critical Operations</b>
As soon as shutdowns are completed, the employees who performed critical operations will take the nearest exit route in accordance with general emergency procedures.		

**EMERGENCY ACTION PLAN****Page 2****RESCUE AND MEDICAL DUTIES**

The following personnel are certified and trained in both CPR and general first aid. These persons are to be contacted as specified in the "General Emergency Training":

Name and Title	Phone Number

**REPORTING EMERGENCIES**

The following personnel have the duty of contacting public responders to come to the emergency scene. The personnel are listed in descending order of availability:

Name and Title	Phone Number

**ALARM SYSTEMS AND NOTIFICATION OF EMERGENCIES**

In the event of a workplace or facility emergency, employees will be notified as follows:

Identify method(s) of notification:


**TYPES OF EVACUATION**

OSHA requires to have an established system of types of evacuation to follow for different emergency circumstances. The following listing represents company policy for various emergency situations:

**PARTIAL EVACUATION:** Code Yellow – 3 rings or horn blasts: RESPONDERS (trained extinguisher personnel and trained rescue and medical personnel)

**FULL EVACUATION:** Code Red – 4 rings or horn blasts: RESPONDERS (n/a)

**NOTE:** If there is more than one evacuation type, the alarm signal for each will be distinctive.

**OTHER:** (describe)

**OTHER:** (describe)

**PUBLIC EMERGENCY RESPONSE INFORMATION**

**Ensure that 911 emergency services cover the area this Emergency Action Plan covers.**

**Local Police Department:**

**Local Fire Department:**

**Local Ambulance/EMS:**

**Local Hospital:**

**FURTHER INFORMATION**

For further information or explanation about any duties under this Plan, contact:

Name and Title:

Name and Title:

**This Emergency Action Plan is authorized and approved by:**

Name

Signature

Title

Date

# **Chapter 9**

## ***Demex International, Inc.***

### **Fatigue Management**

#### ***Policy Statement:***

***Demex International, Inc.*** has adopted this policy to inform employees of the Fatigue Management Plan. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Training**

It is the determination of *Demex International, Inc.* to provide initial and annual training on how to,

- recognize fatigue,
- control fatigue through appropriate work and personal habits, and
- reporting of fatigue to supervision.

#### **Control of Worker Fatigue**

To control worker fatigue, allow for sufficient sleep, and increase mental fitness, *Demex International, Inc.* will set work hour limitations and will control job rotation schedules.

It is the policy of *Demex International, Inc.* to provide equipment such as,

- anti fatigue mats for standing,
- lift assist devices for repetitive lifting and other ergonomic devices as deemed appropriate, and
- chairs to sit in periodically.

*Demex International, Inc.* will provide periodic rest breaks for personnel and will also periodically evaluate and improve work tasks to control fatigue.

#### **Reporting Fatigue and Tiredness**

It is the policy of *Demex International, Inc.* that all employees feeling fatigue, tiredness or lack of mental acuity must report to their supervisor immediately.

Supervision must take appropriate actions to prevent loss.

#### **Over-the-Counter and Prescription Drugs**

It is the determination of *Demex International, Inc.* that employees must not use over-the-counter or prescription drugs to increase mental alertness.

All employees of *Demex International, Inc.* are discouraged from taking any substance known to increase fatigue, including fatigue that sets in after the effects if the drug wears off.

## Notes:

# **Chapter 10**

## ***Demex International, Inc.***

### **Company Policy for Fire Protection**

**Demex International, Inc.** has adopted this program for the prevention of employee exposure to fire hazards from the following OSHA regulations:

#### **§1926.150 – Fire Protection**

#### **§1910.157 – Portable Fire Extinguishers – Fire Protection and Prevention**

*Demex International, Inc.* has implemented this policy to ensure that proper safe work practices and procedures are followed for the protection of our employees against fire/explosion hazards. **Gary L. DeMarsh** is designated as the supervisor to manage the Fire Prevention Program. The following work practices, procedures, and engineering controls will be enforced as an integral part of our Company safety policy:

- *Gary L. DeMarsh* will ensure that all employees are trained in the proper operation of fire extinguishers provided by the company.
- All employees will be trained in the hazards involved in incipient stage fire fighting. Employees are instructed to ensure emergency response service (fire dept.) is notified before attempting to extinguish any fire, and that if a fire is not immediately extinguished, or the fire recurs to evacuate immediately.
- Personnel are trained in emergency evacuation plans for all areas of work.
- Safe assembly areas are designated for all work areas in the event of evacuation.
- Training will be required on initial hiring and annually thereafter.
- All fire extinguishers will be inspected by *Gary L. DeMarsh* on a monthly basis, this inspection will be documented to be recorded with the annual maintenance check. Records of inspection will be kept in the office.

## **§1910.157 PORTABLE FIRE EXTINGUISHERS.**

**(a) Scope and application.** The requirements of this section apply to the placement, use, maintenance, and testing of portable fire extinguishers provided for the use of employees. Paragraph (d) of this section does not apply to extinguishers provided for employee use on the outside of workplace buildings or structures. Where extinguishers are provided but are not intended for employee use and the employer has an emergency action plan and a fire prevention plan which meet the requirements of §1910.38, then only the requirements of paragraphs (e) and (f) of this section apply.

**(b) Exemptions.**

(1) Where the employer has established and implemented a written fire safety policy which requires the immediate and total evacuation of employees from the workplace upon the sounding of a fire alarm signal and which includes an emergency action plan and a fire prevention plan which meet the requirements of §1910.38, and when extinguishers are not available in the workplace, the employer is exempt from all requirements of this section unless a specific standard in Part 1910 requires that a portable fire extinguisher be provided.

(2) Where the employer has an emergency action plan meeting the requirements of §1910.38 which designates certain employees to be the only employees authorized to use the available portable fire extinguishers, and which requires all other employees in the fire area to immediately evacuate the affected work area upon the sounding of the fire alarm, the employer is exempt from the distribution requirements in paragraph (d) of this section.

**(c) General requirements.**

(1) The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury.

(2) Only approved portable fire extinguishers shall be used to meet the requirements of this section.

(3) The employer shall not provide or make available in the workplace portable fire extinguishers using carbon tetrachloride or chlorobromomethane extinguishing agents.

(4) The employer shall assure that portable fire extinguishers are maintained in a fully charged and operable condition and kept in their designated places at all times except during use.

(5) The employer shall remove from service all soldered or riveted shell self- generating soda acid or self- generating foam or gas cartridge water type portable fire extinguishers which are operated by inverting the extinguisher to rupture the cartridge or to initiate an uncontrollable pressure generating chemical reaction to expel the agent.

**(d) Selection and distribution.**

(1) Portable fire extinguishers shall be provided for employee use and selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use.

(2) The employer shall distribute portable fire extinguishers for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet (22.9 m) or less.

(3) The employer may use uniformly spaced standpipe systems or hose stations connected to a sprinkler system installed for emergency use by employees instead of Class A portable fire extinguishers, provided that such systems meet the respective requirements of §1910.158 or §1910.159, that they provide total coverage of the area to be protected, and that employees are trained at least annually in their use.

(4) The employer shall distribute portable fire extinguishers for use by employees on Class B fires so that the travel distance from the Class B hazard area to any extinguisher is 50 feet (15.2 m) or less.

(5) The employer shall distribute portable fire extinguishers used for Class C hazards on the basis of the appropriate pattern for the existing Class A or Class B hazards.

(6) The employer shall distribute portable fire extinguishers or other containers of Class D extinguishing agent for use by employees so that the travel distance from the combustible metal working area to any extinguishing agent is 75 feet (22.9 m) or less. Portable fire extinguishers for Class D hazards are required in those combustible metal working areas where combustible metal powders, flakes, shavings, or similarly sized products are generated at least once every two weeks.

**(e) Inspection, maintenance and testing.**

(1) The employer shall be responsible for the inspection, maintenance and testing of all portable fire extinguishers in the workplace.

(2) Portable extinguishers or hose used in lieu thereof under paragraph (d)(3) of this section shall be visually inspected monthly.

(3) **The employer shall assure that portable fire extinguishers are subjected to an annual maintenance check. Stored pressure extinguishers do not require an internal examination. The employer shall record the annual maintenance date and retain this record for one year after the last entry or the life of the shell, whichever is less. The record shall be available to the Assistant Secretary upon request.**

(4) The employer shall assure that stored pressure dry chemical extinguishers that require a 12-year hydrostatic test are emptied and subjected to applicable maintenance procedures every 6 years. Dry

chemical extinguishers having non-refillable disposable containers are exempt from this requirement. When recharging or hydrostatic testing is performed, the 6-year requirement begins from that date.

(5) The employer shall assure that alternate equivalent protection is provided when portable fire extinguishers are removed from service for maintenance and recharging.

**(f) Hydrostatic testing. (Not Applicable)**

**(g) Training and education.**

(1) Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.

(2) The employer shall provide the education required in paragraph (g)(1) of this section upon initial employment and at least annually thereafter.

(3) The employer shall provide employees who have been designated to use fire fighting equipment as part of an emergency action plan with training in the use of the appropriate equipment.

(4) The employer shall provide the training required in paragraph (g)(3) of this section upon initial assignment to the designated group of employees and at least annually thereafter.

## **§1926.150 — FIRE PROTECTION.**

**(a) General requirements.**

(1) The employer shall be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.

(2) Access to all available firefighting equipment shall be maintained at all times.

(3) All firefighting equipment, provided by the employer, shall be conspicuously located.

(4) All firefighting equipment shall be periodically inspected and maintained in operating condition. Defective equipment shall be immediately replaced.

(5) As warranted by the project, the employer shall provide a trained and equipped firefighting organization (Fire Brigade) to assure adequate protection to life.

**(b) Water supply.**

(1) A temporary or permanent water supply, of sufficient volume, duration, and pressure, required to properly operate the firefighting equipment shall be made available as soon as combustible materials accumulate.

(2) Where underground water mains are to be provided, they shall be installed, completed, and made available for use as soon as practicable.

**(c) Portable firefighting equipment.**

**(1) Fire extinguishers and small hose lines.**

(i) A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 100 feet.

(ii) One 55-gallon open drum of water with two fire pails may be substituted for a fire extinguisher having a 2A rating.

(iii) A 1/2-inch diameter garden-type hose line, not to exceed 100 feet in length and equipped with a nozzle, may be substituted for a 2A-rated fire extinguisher, providing it is capable of discharging a minimum of 5 gallons per minute with a minimum hose stream range of 30 feet horizontally. The garden-type hose lines shall be mounted on conventional racks or reels. The number and location of hose racks or reels shall be such that at least one hose stream can be applied to all points in the area.

(iv) One or more fire extinguishers, rated not less than 2A, shall be provided on each floor. In multistory buildings, at least one fire extinguisher shall be located adjacent to stairway.

(v) Extinguishers and water drums, subject to freezing, shall be protected from freezing.

(vi) A fire extinguisher, rated not less than 10B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the jobsite. This requirement does not apply to the integral fuel tanks of motor vehicles.

(vii) Carbon tetrachloride and other toxic vaporizing liquid fire extinguishers are prohibited.

(viii) Portable fire extinguishers shall be inspected periodically and maintained in accordance with Maintenance and Use of Portable Fire Extinguishers, NFPA No. 10A-1970.

(ix) Fire extinguishers which have been listed or approved by a nationally recognized testing laboratory, shall be used to meet the requirements of this subpart.

(x) Table F-1 may be used as a guide for selecting the appropriate portable fire extinguishers.

**(2) Fire hose and connections.**

- (i) One hundred feet, or less, of 1-1/2-inch hose, with a nozzle capable of discharging water at 25 gallons or more per minute, may be substituted for a fire extinguisher rated not more than 2A in the designated area provided that the hose line can reach all points in the area.
- (ii) If fire hose connections are not compatible with local firefighting equipment, the contractor shall provide adapters, or equivalent, to permit connections.
- (iii) During demolition involving combustible materials, charged hose lines, supplied by hydrants, water tank trucks with pumps, or equivalent, shall be made available.

**(d) Fixed firefighting equipment.**

**(1) Sprinkler protection.**

- (i) If the facility being constructed includes the installation of automatic sprinkler protection, the installation shall closely follow the construction and be placed in service as soon as applicable laws permit following completion of each story.
- (ii) During demolition or alterations, existing automatic sprinkler installations shall be retained in service as long as reasonable. The operation of sprinkler control valves shall be permitted only by properly authorized persons. Modification of sprinkler systems to permit alterations or additional demolition should be expedited so that the automatic protection may be returned to service as quickly as possible. Sprinkler control valves shall be checked daily at close of work to ascertain that the protection is in service.

**(2) Standpipes.** In all structures in which standpipes are required, or where standpipes exist in structures being altered, they shall be brought up as soon as applicable laws permit, and shall be maintained as construction progresses in such a manner that they are always ready for fire protection use. The standpipes shall be provided with Siamese fire department connections on the outside of the structure, at the street level, which shall be conspicuously marked. There shall be at least one standard hose outlet at each floor.

**(e) Fire alarm devices.**

- (1) An alarm system, e.g., telephone system, siren, etc., shall be established by the employer whereby employees on the site and the local fire department can be alerted for an emergency.
- (2) The alarm code and reporting instructions shall be conspicuously posted at phones and at employee entrances.

**(f) Fire cutoffs.**

- (1) Fire walls and exit stairways, required for the completed buildings, shall be given construction priority. Fire doors, with automatic closing devices, shall be hung on openings as soon as practicable.
- (2) Fire cutoffs shall be retained in buildings undergoing alterations or demolition until operations necessitate their removal.

# **Chapter 11**

## ***Demex International, Inc.***

### **Company Policy for First Aid & CPR**

**Demex International, Inc.** Medical Services and First Aid Policy is adopted from the following OSHA regulations:

#### **§1926.50 – Medical Services and First Aid**

It is the policy of *Demex International, Inc.* that training in first aid response is not a requirement for employment, but that local Emergency Medical Services are utilized for emergency medical care. **Gary L. DeMarsh** is designated as the administrator of the Medical Services Program.

- Medical services for employee evaluations, employment requirements, and special conditions of work are provided to employees at no cost as specified in OSHA requirements.
- A person(s) who has a valid certificate in first aid training, the American Red Cross, or equivalent will be available at work sites to render emergency first aid.
- Provisions will be made prior to commencement of a project for prompt medical attention in case of serious injury.
- First aid supplies will be easily accessible when required.
- Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service will be provided.
- *Gary L. DeMarsh* is the designated first aid provider and certified in CPR and is responsible for rendering first aid in the event of an injury requiring immediate response when emergency medical services are not available, and will also be responsible for first aid training of any employee required.
- Injured employees are to be transported to medical facilities by emergency medical services. If emergency medical service is not available in a timely manner, the injured employee will be transported to the nearest medical service in a company vehicle by the job foreman.
- In areas where 911 service is not available employees will be notified of phone numbers to contact local emergency response medical services. *Gary L. DeMarsh* will be responsible for posting of emergency phone numbers at all jobsites. The phone numbers will be conspicuously posted in all work locations.
- *Gary L. DeMarsh* is responsible for the accessibility of First Aid Kits and for checking the contents of all First Aid Kits before being sent out to each job and at least weekly on each job to ensure that the expended items are replaced.
- First aid kits are readily available in all company vehicles and in the company office. First aid kits will consist of appropriate items and stored in a weather proof container with individual sealed packages of each type of item and will stock a minimum of the following items:

- PPE for First Aid:
    - 3-Pair latex gloves
    - Surgical masks
    - Clear eye protection or Face Shield
    - Dust Masks or other needed Face Protection
    - Mouth-to-mouth barrier for CPR
  - Large, sterile gauze pads (6 each: 2X2's, 3X3's, and 4X4's)
  - Compress Dressings (4X8), 3 each
  - Rolled gauze bandages: 2" and 3" wide, 3 each
  - Large box assorted "band-aids"
  - Two elastic wrap bandages (ace)
  - Cotton balls and Q-tips
  - Surgical or athletic tape; 1" & 2" wide,
  - Antiseptics & Ointments:
    - Alcohol
    - burn gel or cream
    - alcohol swabs
    - peroxide
    - antiseptic spray and ointment
    - pain relief tabs
    - 6 burn treatment single-use packages, 0.5 g. application
  - Good quality eye-wash solution, with eye cup
  - 1 eye covering bandages (for two eyes)
  - Self-activating cold packs, 4x5 inches
  - Liquid antiseptic hand soap
  - Blunt-nose surgical scissors
  - Forceps, Tweezers & safety pins
- \* General First-aid Guidebook, textbook, or manual will be readily available, but not necessarily inside of the first-aid kit.**

- Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities will be provided within the work area for quick drenching or flushing of eyes or body.
- Eye wash bottles are available wherever eye wash stations are not available, for any employee required to work in an environment where exposure to eye hazards may exist. Wash facilities or drench barrels are available at each jobsite for employees.
- **Procedure for flushing eyes** — Eye membranes absorb chemicals quickly. This can lead to eye damage within minutes. Flood the eye with lukewarm (never hot) water poured from a large glass two to three inches from the eye. Continue for 15 minutes. Blink the eye as much as possible during the flooding. Do not force the eyelid open and do not allow the eyes to be rubbed. If lukewarm water is not available, rinse the eye quickly using a gentle stream from a hose for at least 15 minutes.
- **Procedure for drenching skin** — If poisons come in contact with the skin, they must be removed as quickly as possible. Remove contaminated clothing and flood the skin area with water for 10 minutes. Then gently wash the skin area with soap and water and rinse. Later, destroy contaminated clothing. For a chemical skin burn, rinse the area with lots of water, remove the clothes and cover with a soft, clean cloth. Do not apply grease or ointments.
- It is the policy of *Demex International, Inc.* that all of the requirements of OSHA §1926.50 will be met.

## **§1926.50 — MEDICAL SERVICES AND FIRST AID.**

- (a) The employer shall insure the availability of medical personnel for advice and consultation on matters of occupational health.
- (b) Provisions shall be made prior to commencement of the project for prompt medical attention in case of serious injury.
- (c) In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid.
- (d)
  - (1) First aid supplies shall be easily accessible when required.
  - (2) The contents of the first aid kit shall be placed in a weatherproof container with individual sealed packages for each type of item, and shall be checked by the employer before being sent out on each job and at least weekly on each job to ensure that the expended items are replaced.
- (e) Proper equipment for prompt transportation of the injured person to a physician or hospital, or a communication system for contacting necessary ambulance service, shall be provided.
- (f) In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.
- (g) Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for the quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

### **APPENDIX A – First Aid Kit & Supplies**

Every job site shall have access to at least one first-aid kit in a weatherproof container. The first-aid kit will be inspected regularly to ensure that it is well stocked, in sanitary condition, and any used items are promptly replaced. The contents of the first-aid kit shall be arranged to be quickly found and remain sanitary. First-aid dressings shall be sterile and in individually sealed packages. The following minimum first-aid supplies shall be kept:

#### ***Dressings in adequate quantities consisting of:***

Adhesive dressings	Triangular bandages
Adhesive tape rolls, 1-inch wide	Safety pins
Eye dressing packet	Tweezers and scissors
1-inch gauze bandage roll or compress	Cotton-tipped applicators
2-inch gauze bandage roll or compress	Forceps
4-inch gauze bandage roll or compress	Tongue depressors
Sterile gauze pads, 2-inch square	Petroleum jelly
Sterile gauze pads, 4-inch square	Antibiotic ointment
Sterile surgical pads suitable for pressure dressings	Aspirin

**First-aid textbook**, manual, or equivalent to be readily available but not necessarily within the first-aid kit.

## **Notes:**

# **Chapter 12**

## ***Demex International, Inc.***

### **Fit for Duty Policy**

#### **Policy Statement:**

***Demex International, Inc.*** has adopted this policy to inform employees of the Fit for Duty Policy. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Physically Fit**

It is the determination of *Demex International, Inc.* to ensure that all employees are physically fit and capable to perform the job duties assigned.

#### **Training**

It is the determination of *Demex International, Inc.* to ensure that all employees will be properly trained for their assigned task. Before any employee starts a new assigned task the employee must receive specific training. Examples might include:

- forklift operation,
- instrumentation,
- heavy equipment operation,
- scaffold building. Etc.

#### **Drug and Alcohol Testing**

It is the policy of *Demex International, Inc.* that drug and alcohol testing for pre employment, post accident, or random will be conducted by only a laboratory certified by the U.S. Department of Health and Humans Services (HHS) under the National Laboratory Certification Program (NLCP).

#### **Testing Procedures – Pre Employment**

Any offer of employment is deemed conditional upon the potential employee having a negative test result for drugs.

Pre-employment Drug testing shall be scheduled by the hiring supervisor directly with the third-party service provider immediately upon acceptance by the candidate of a conditional offer of employment. Testing should be done in a location most likely to ensure timely receipt of the results. Pre-employment test results will be reported by the Medical Review Officer.

## **Testing Procedures - Employees**

Any person who requires an employee to be tested for Alcohol or Drugs must tell the employee beforehand why the test is being requested. Any employee who refuses a request to be tested is in breach of this policy and may be subject to disciplinary action that may include termination of employment.

When testing for either Alcohol or Drugs is to occur, *Demex International, Inc.* will direct the employee to a sample collection site designated by a third-party service provider and provide transportation to the site. At *Demex International, Inc.* discretion, a qualified technician may be brought to the worksite to conduct the testing.

## **Safe Work Practices**

It is the determination of *Demex International, Inc.* that all employees will be informed of the safe work practices and procedures in the work place. Examples might include:

- Lockout Tagout.
- Process Safety Management,
- Asbestos Awareness,
- Electrical safety, Etc.

## **Prescription and Over-the-Counter Medications**

It is the policy of *Demex International, Inc.* that all employees must notify their supervisor when taking any prescription or over-the-counter medication that could impair their ability to work safely.

Over-the Counter medications such as allergy or cold and flu medications could also impair one's ability to perform safely and must be reported to their supervisor.

## **Employee Monitoring**

To determine if an employee should be removed from the work site, *Demex International, Inc.* will monitor employee behaviors and activities based on the Behavior Based Safety Policy.

## **Employee Responsibility**

Employees are responsible for notifying their supervisors if they are fatigued to the point of not being able to perform their duties safely.

Employees are also responsible for ensuring they are physically and mentally fit to perform their job function safely, they must take responsibility for their own safety as well as not reporting to work in a condition that could endanger their fellow workers.

# **Chapter 13**

## ***Demex International, Inc.***

### **General Waste Management**

#### ***Policy Statement:***

***Demex International, Inc.*** has adopted this policy to inform employees of the General Waste Management Plan. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Waste Estimation**

Prior to the commencement of work it is the policy of *Demex International, Inc.*, to ensure that an estimation of the wastes, trash & scrap materials that will be generated is conducted. This will be performed so the need for containers, and waste removal, if necessary, can be determined.

#### **Disposal of Waste**

It is the determination of *Demex International, Inc.* to coordinate with the project or site owner to ensure the proper disposal of wastes or scrap materials. *Demex International, Inc.* will ensure that the owner is aware of whether wastes and scrap materials will be taken off site or will be disposed of on the owner's site.

#### **Responsibilities**

To ensure the proper disposal wastes or reuse of scrap materials *Demex International, Inc.* has designated **Gary L. DeMarsh** to be responsible.

#### **Safety Hazards**

It is the determination of *Demex International, Inc.* to ensure that safe practices related to the immediate storage and handling of waste, scrap, or left over materials are carried out. Always be aware of what you are handling. The proper personal protective equipment will be used before handling.

#### **Handling, Organization, & Storage**

It is the policy of *Demex International, Inc.* to ensure that waste materials will be properly stored and handled to minimize the potential for a spill or impact to the environment. During outdoor activities, receptacles must be covered to prevent dispersion of waste materials and to control the potential for run-off.

It is the policy of *Demex International, Inc.* that all types of waste or scrape materials generated will be stored properly and in an organized fashion.

*Demex International, Inc.* ensures that project related wastes will be stored and maintained in an organized fashion to encourage proper disposal and minimize risks to employees. Proper waste receptacles will be provided for trash and materials that may be reused or recycled during a project.

## **Proper Methods of Disposal**

It is the policy of *Demex International, Inc.* to ensure that all employees are instructed in the proper method to dispose of wastes.

Employees of *Demex International, Inc.* will be instructed the general disposal of non-hazardous wastes, trash, or scrap materials. If wastes generated are classified as hazardous, employees will be trained to ensure proper disposal.

# **Waste Segregation**

It is the resolve of *Demex International, Inc.* to encourage employees to properly segregate waste or scrap materials to ensure the opportunity for reuse or recycle.

## **Notes:**

# **Chapter 14**

## ***Demex International, Inc.***

### **Company Policy for Hazard Communication**

**Demex International, Inc.** has adopted this policy for Hazard Communication from OSHA regulation:

#### ***§1910.1200 – Hazard Communication***

*Demex International, Inc.* has implemented this program to ensure that employees are informed of any chemical hazards and hazardous or toxic substances in their workplace:

**Gary L. DeMarsh** is the administrator of the Company Hazard Communication Program, and will document all necessary training of employees. *Demex International, Inc.* will provide employees and new hires at their initial assignment effective information and training on hazardous chemicals in their work area that will include:

- Requirements of this program.
- Any operations in their work area where hazardous chemicals are present.
- Location of written hazard communication program, listing of hazardous chemicals present & SDS.
- Methods and/or observations that may be used to detect the presence or release of hazardous chemicals by use of monitoring devices, visual appearance, or odor.
- The physical & health hazards of chemicals in the work area.
- Protection measures to be utilized to prevent exposure, appropriate work practices, emergency procedures, and proper PPE to be used.
- Details of the hazard communication program, explanation of the labeling system and the SDS and how employees can obtain & use the appropriate hazard information.
- *Demex International, Inc.* will develop, implement, and maintain at each workplace a written hazard communication program that describes how labels and other forms of warning, safety data sheets, and employee information will be accomplished.
- Employees will be notified of any hazardous substances used by any company other than *Demex International, Inc.* in the workplace, and make SDS available to employees.
- All containers used on the job will be labeled for content, and precautions if substance contained is hazardous. Materials will be left in their manufacturer's container, returned to the container immediately after use, or any unused portion disposed of properly. If labels become illegible for any reason, a new label will be affixed containing all required precautionary information, or the material disposed of properly. **See examples of precautionary labeling on pages 9 and 19 of this section.**

- A list of all chemicals known to be used at the workplace by Company employees will be available for review at the jobsite and in the office. SDS for all chemicals used in the workplace by *Demex International, Inc.* are available to employees at the worksite from the job foreman or in the office. Following is a list of all known hazardous chemicals used by *Demex International, Inc.* personnel in the workplace:

- Gary L. DeMarsh will ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the following information:
    - Identity of the hazardous chemical(s) contained therein.
    - Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under this Hazard Communication Program. Employees will be provided with the specific information regarding the physical and health hazards of the hazardous chemical.
    - Name and address of the chemical manufacturer, importer, or other responsible party.
  - Gary L. DeMarsh will ensure that labels or other forms of warning in English, are legible, and prominently displayed on the container, or readily available in the work area throughout each work shift.
  - When Demex International, Inc. has employees who are non-English speaking, information shall be presented in their language as well.
  - Changes of job assignments, changes in materials used, or any non-routine tasks involving hazardous substances or conditions will require notification and/or retraining of effected employees. Gary L. DeMarsh will inform or retrain employees of any new or additional hazards, detail methods of hazard abatement or elimination, and provide proper personal protective equipment or engineering controls necessary for the job. Notifications and retraining will be documented as to name of employee, date, description of action taken, and verification by Gary L. DeMarsh.
  - A copy of the Company's Hazard Communication Program is available to all employees, and will be kept at each jobsite by the foreman in charge, or in the office. Translations of the hazard communication program are available to non-English speaking employees upon request from Gary L. DeMarsh.

***Company Hazard Communication Plan & Program Follows This Page***

# **Company Hazard Communication Plan & Program**

## **General Policy Statement**

The management of **Demex International, Inc.** is committed to preventing accidents and ensuring the safety and health of our employees. We will comply with all applicable federal and state health and safety rules and provide a safe, healthful environment for all our employees. This written hazard-communication plan is available at the following location for review by all employees:

*Demex International, Inc. Company Office*

*7144 Dummyline Road*

*Picayune, Mississippi 39466*

## **Container Labeling**

- All hazardous chemical containers used at this workplace will clearly identify the chemical on the label, and include an appropriate hazard warning and the manufacturer's name and address.
- All containers used on the job must be labeled for content and precautions if substance contained is hazardous. Materials will be left in their manufacturer's container where possible. When hazardous materials are transferred to other containers for ease of use, the container will be clearly marked for content, and any remaining material returned to its original manufacturer's container immediately after use.
- If labels become illegible for any reason, a new label must be affixed containing all required information, or the material disposed of properly.
- No container will be released for use until this information is verified. *Gary L. DeMarsh* will ensure that all containers are labeled with a copy of the original manufacturer's label or a label that has the appropriate identification and hazard warning.

## **Safety Data Sheets**

Safety data sheets are readily available to all employees of *Demex International, Inc.*. Employees can review safety data sheets for all hazardous chemicals used at this workplace. SDS are kept with the hazard communication plan at the office location listed above. The safety data sheets are updated and managed by *Gary L. DeMarsh*. If a safety data sheet is not available for a hazardous chemical, before use, notify *Gary L. DeMarsh*, and a SDS will be obtained for the chemical to be used.

## **Employee Training**

Before they start their jobs, new employees will receive hazard communication training that covers the following topics:

- An overview of the requirements in OSHA's CFR 29 1910.1200 hazard communication rules.
- Hazardous chemicals present in their workplace.
- The written hazard-communication plan, and where it may be reviewed.
- Physical and health effects of the hazardous chemicals.

- Methods used to determine the presence or release of hazardous chemicals in the work area.
  - How to reduce or prevent exposure to these hazardous chemicals through use of control/work practices and personal protective equipment.
  - Steps we have taken to reduce or prevent exposure to these chemicals.
  - Emergency procedures to follow if an employee is exposed to these chemicals.
  - How to read labels and review safety data sheets.

After attending the training, each employee will sign a company training form verifying that they understand the above topics and how the topics are related to our hazard-communication plan.

## **Hazardous Chemicals List**

The following list identifies all hazardous chemicals used at this workplace. Detailed information about the physical and health effects of each chemical is included in a safety data sheet; the identity of each chemical on the list matches the identity of the chemical on its safety data sheet. Safety data sheets are readily available to employees in their work areas.

## **Hazardous Non-Routine Tasks**

Before employees perform non-routine tasks that may expose them to hazardous chemicals, they will be informed by their supervisors about the chemicals' hazards. Their supervisors also will inform them about the safe work practices necessary to control exposure and what to do in an emergency. Examples of non-routine tasks that may expose employees to hazardous chemicals include the following:

## ***Hazardous Chemicals in Pipes, Closed, or Hidden Systems***

Before working in areas where hazardous chemicals are transferred through pipes or where pipes are insulated with asbestos-containing material, employees will contact \_\_\_\_\_ for the following information:

- The chemicals in the pipes.
  - The physical or health effects of the chemicals or the asbestos insulation.
  - The safe work practices to prevent exposure.

## ***Notification of Contractors***

It is the responsibility of the assigned job foreman to provide any workplace associated contractors and their employees with the following information if they may be exposed to hazardous chemicals in our workplace:

- The identity of the chemicals, how to review safety data sheets, and an explanation of the container and pipe labeling system.
  - Safe work practices to prevent exposure.

This person will also obtain a safety data sheet for any hazardous chemical a contractor brings into the workplace to which an employee of *Demex International, Inc.* may be exposed.

## ***Hazard Communication in the Workplace***

The essence of hazard communication is a warning. We use thousands of chemical products throughout our lives, at home and at work. However, most of us would be hard-pressed to distinguish safe products from hazardous ones without a warning – the familiar skull-and-crossbones, for example. The warning tells us the product is hazardous, that it can harm us if we use it improperly.

In the workplace, hazard communication ensures that workers who may be exposed to hazardous chemicals know about the chemicals' hazards and understand how to protect themselves from exposure.

### ***The Hazard Communication Process***

Hazard communication begins when chemical manufacturers and importers evaluate their products to determine each product's chemical hazards. Next, they prepare a *Safety Data Sheet* – known by the abbreviation SDS – for each product. An SDS includes detailed information about the product's hazards. Manufacturers and importers must include an SDS and a warning label with each container of product that they ship to a customer.

The part of the process that affects your workplace is the "*Written Hazard-Communication Plan*." The plan identifies hazardous chemicals at your workplace and describes how you will use safety data sheets, warning labels, and training to protect employees and keep informed about the product's chemical hazards.

### ***Definition of a Hazardous Chemical***

OSHA's hazard-communication rule, 1910.1200, defines a hazardous chemical as "any element, chemical compound, or mixture that is a physical hazard or a health hazard."

### ***Chemicals that are physical hazards***

Chemicals that are physical hazards are unstable and, when handled improperly, can cause fires or explosions. A chemical that is a physical hazard has one of the following characteristics:

- Is a combustible liquid.
- Is a compressed gas.
- Is explosive.
- Is flammable.
- Is water-reactive.
- It starts or promotes combustion in other materials.
- It can ignite spontaneously in air.

### ***Chemicals that are health hazards***

Chemicals that are health hazards can damage an exposed person's tissue, vital organs, or internal systems. Generally, the higher the chemical's toxicity the lower the amount or dose necessary for it to have harmful effects. The effects vary from person to person, ranging from temporary discomfort to permanent damage, depending on the dose, the toxicity, and the duration of exposure to the chemical.

Health effects range from short-duration symptoms that often appear immediately (acute effects) to persistent symptoms that usually appear after longer exposures (chronic effects). Health effects can be classified by how they affect tissue, vital organs, or internal systems:

- Agents that damage the lungs, skin, eyes, or mucous membranes
- Carcinogens cause cancer
- Corrosives damage living tissue
- Hematopoietic agents affect the blood system
- Hepatotoxins cause liver damage
- Sensitizers cause allergic reactions & Irritants cause inflammation of living tissue
- Nephrotoxins damage cells or tissues of the kidneys
- Neurotoxins damage tissues of the nervous system
- Reproductive toxins damage reproductive systems, endocrine systems, or a developing fetus

## **How to determine if a chemical is hazardous**

A chemical is hazardous if it is listed in one of the following documents:

- OSHA Division 2, Subdivision Z safety and health rules, Toxic and Hazardous Substances; Division 3, Subdivision Z, Toxic and Hazardous Substances (Construction); Division 4, Subdivision Z, Chemical/Toxins (Agriculture)
- Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment (latest edition). Published by the American Conference of Industrial Hygienists (ACGIH)
- The Registry of Toxic Effects of Chemical Substances, published by the National Institute for Occupational Safety and Health (NIOSH)
- The container label of the product will issue a warning of hazardous effects.

## **Commonly used hazardous chemicals**

Listed below are chemicals among those most commonly used in U.S. workplaces.

<b>Hazardous Chemical</b>	<b>Harmful Effects</b>
1,1,1-Trichloroethane	May cause mutations in cells; can irritate the skin and eyes and cause unconsciousness and death. High exposures may damage the liver and kidneys.
Acetone	Can irritate the skin, eyes, nose, and throat. High concentrations can cause dizziness and loss of consciousness.
Aluminum oxide	Can irritate the eyes, nose, and throat. Repeated high exposure can cause scarring of the lungs and shortness of breath.
Ammonia	Can irritate the lungs and burn the eyes and skin. Long-term exposure can cause irritation of the eyes, nose, mouth, and throat.
Benzene	A cancer-causing agent that has been shown to cause leukemia. May also cause headaches and irritation of the eyes, nose, and throat. High exposure can cause convulsions and death.
Ethylbenzene	Can irritate the eyes, nose, and throat. Repeated contact can cause drying and scaling of skin and may cause liver damage. High concentrations may cause dizziness and loss of consciousness.
Ethylene glycol	Can irritate the eyes, nose, or throat and cause nausea, vomiting, and headaches. Repeated or high exposure levels can cause kidney damage or stones and brain damage. May cause birth defects.
Freon 113	May cause skin irritation and rashes as well as drowsiness.
Glycol ethers	Can irritate the eyes, nose, and throat and may cause birth defects. Repeated or high exposure can cause kidney damage or stones. Brain damage also may occur.
Hydrochloric acid	Can irritate the lungs. High exposure can cause buildup of fluid in the lungs, which can cause death.
Lead	Can cause weakness and insomnia. Higher exposure can result in damage to the nervous and reproductive systems.
Methanol	Irritates the eyes, nose, mouth, and throat and can cause liver damage.
Methyl ethyl ketone	Can cause dizziness, headaches, blurred vision, and loss of consciousness. May cause birth defects.
Methyl isobutyl ketone	Irritates the skin, eyes, nose, and throat, and may cause dizziness, nausea, diarrhea, and loss of consciousness. Long-term exposure may damage the liver and kidneys.
Phenol	Can irritate the mouth, nose, throat, and eyes. Long-term exposure may damage the liver and kidneys and lead to genetic damage. May be a cancer risk. Major skin contact or inhaling it can cause death.
Sodium hydroxide	Breathing the dust or droplets can irritate and burn the lungs. Contact can cause severe skin burns.
Sulfuric acid	Can severely burn the skin and eyes. Repeated long-term exposure can cause bronchitis, shortness of breath, and emphysema.
Tetrachloroethylene	A suspected human carcinogen that has caused liver cancer in animals. It may damage the liver and kidneys after low but repeated exposure. It can cause dizziness and loss of consciousness.
Xylene	Can irritate the eyes, nose, and throat; high levels can cause loss of consciousness and death. It may damage fetuses. Repeated exposure may damage bone marrow and eyes and cause stomach problems.

## **Using Safety Data Sheets**

A Safety Data Sheet contains detailed information about a hazardous chemical product's health effects, physical and chemical characteristics, and safe practices for using it.

### **Responsibilities of chemical manufacturers, importers, and distributors**

Chemical manufacturers and importers must prepare a Safety Data Sheet for each hazardous chemical product they produce. Distributors are responsible for ensuring that you have a Safety Data Sheet for each hazardous chemical product they sell to you.

### **What to do if you use hazardous chemical products at your workplace**

You must have a current Safety Data Sheet for each product. Employees must be able to review Safety Data Sheets in their work area at any time. You can keep Safety Data Sheets in a notebook or on a computer; however, employees must be able to obtain the information immediately in an emergency. One person should be responsible for managing all the Safety Data Sheets at your workplace. The person should ensure that the list of hazardous chemicals is current, that the identity of each chemical on the list matches its identity on its Safety Data Sheet, and that incoming hazardous-chemical containers have Safety Data Sheets.

### **What to do when you no longer use a hazardous chemical at your workplace**

When you no longer use a hazardous chemical, you do not need to keep its Safety Data Sheet. However, you do need to keep a record of the chemical's identity, the locations, and the calendar years it was used in your workplace, for at least 30 years. For more information about record-keeping requirements, see 1910.1020(d)(ii)(B), "Access to employee exposure and medical records."

### **Information required on Safety Data Sheets**

Chemical manufacturers and importers must prepare a Safety Data Sheet for each hazardous chemical product they ship to you. The following information must appear on each sheet.

<b>Required Information</b>	<b>Description</b>
<b>Identity of the chemical</b>	Typically, a common chemical name. (The identify of the chemical on a Safety Data Sheet must match its identity on the container label.)
<b>Physical &amp; chemical characteristics</b>	For example: vapor pressure, flashpoint, and solubility.
<b>Physical hazards</b>	For example: potential for fire, explosion, or reaction with water or other chemicals.
<b>Health hazards</b>	For example: signs and symptoms of exposure, and medical conditions that might be aggravated by exposure.
<b>Primary routes of chemical entry</b>	How the chemical enters the body.
<b>Permissible Exposure limit (PEL)</b>	The maximum amount of the chemical that one can be exposed to during an eight-hour work shift.
<b>Carcinogenicity</b>	Based on findings in the National Toxicology Program Annual Report on Carcinogens or the International Agency for Research on Cancer Monographs (latest editions).
<b>Precautions for safe use</b>	How to handle the chemical safely, hygiene and protective practices, and clean-up procedures for spills and leaks.
<b>Control measures</b>	The engineering controls, safe work practices, and personal protective equipment necessary to control exposure.
<b>Emergency and first aid procedures</b>	How to respond to spills, leaks, contamination, and overexposure.
<b>Preparation date</b>	The date the Safety Data Sheet was prepared or updated.
<b>Name, address, and phone number</b>	Who to contact for more information on the chemical's hazards and emergency-response procedures.

## **Using container warning labels**

The purpose of a container warning label is to warn employees about the container's contents and to refer employees to an appropriate Safety Data Sheet for more information about the chemical's physical and health hazards. Manufacturers, importers, and distributors must ensure that each hazardous chemical product sold to you has a label that includes the chemical's identity, a hazard warning, and a name and address for additional information about the product. If you use hazardous chemicals at your workplace, you must ensure that each hazardous chemical container has a legible label, in English, that identifies the chemical and warns of its hazards.

### **Containers that must be labeled**

Original containers of hazardous chemicals from a manufacturer, importer, or distributor must have warning labels. Do not remove or deface them. If you transfer a hazardous chemical from a labeled container to an unlabeled container, label the container.

### **An exception for portable containers**

You do not need to put a warning label on a portable container if you use it to transfer a hazardous chemical from a labeled container. However, the chemical in the container must be for immediate use. This means "*the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.*" See 1910.1200 (c), Definitions.

### **Content of a warning label**

A warning label must identify the chemical – a common chemical name or a code name is acceptable – and display a hazard warning such as **DANGER** or the familiar skull and crossbones.

- The identify of the chemical on the label, on its Safety Data Sheet, and on your hazardous chemical list must match.
- If you are not sure that a hazardous chemical container is properly labeled, contact the manufacturer or supplier.
- Make someone at your workplace responsible for ensuring that all hazardous-chemical containers are properly labeled.

### **Examples of container labels for acetone**

If you use hazardous chemicals at your workplace, you must ensure that each hazardous chemical container has a legible label, in English, that identifies the chemical and warns of its hazards. This illustration shows acetone warning labels on an original container, an unlabeled (secondary) container, and a portable container.



**If you transfer a hazardous chemical from a labeled container to an unlabeled container, you must label the container with the identity of the chemical and include an appropriate hazard warning.**



Portable containers are intended for immediate use of a hazardous chemical by the person who makes the transfer.

**Suggestion:** Mark the container with the identity of the chemical; a warning label is not necessary.

## Training Employees

### Required hazard-communication training

If you have employees who may be exposed to hazardous chemicals, you must inform them about the chemicals and train them when they are hired and whenever they are exposed to a new chemical hazard or a process change. Required employee training:

- Where to find and how to read the hazard-communication plan, the list of hazardous chemicals, and Safety Data Sheets.
- The operations in which hazardous chemicals are used.
- The physical and health hazards of hazardous chemicals used by employees.
- The meaning of warning labels on hazardous-chemical containers and on pipes that contain hazardous substances.
- How to recognize emergencies involving hazardous chemicals.
- How to use personal protective equipment.

### Who can train employees?

Choose a person who understands the above topics and has the skills to conduct the training. What is important is that employees are taught which hazardous chemicals they may be exposed to and understand how to use the information on container warning labels and Safety Data Sheets to protect themselves.

OSHA's hazard-communication rules affect all workplaces that have employees who may be exposed to hazardous chemicals. Following are rules that affect general industry and construction workplaces.

### Hazard Communication §1910.1200 – General Industry, §1926.59 – Construction

- Requires chemical manufacturers or importers to assess the hazards of the chemical products they produce or import and to prepare container warning labels and Safety Data Sheets for hazardous chemical products they ship to customers.
- Requires distributors to ensure that each container of a hazardous chemical product is properly labeled before it is shipped to a customer and to ensure that a Safety Data Sheet for each product is included in the customer's initial shipment.
- Requires employers to inform their employees about the hazardous chemicals to which they may be exposed through a written hazard communication plan, container warning labels, Safety Data Sheets, and training.

## **Label Elements Training**

Demex International, Inc. will ensure all employees know the following elements of the labels.

- *Product Identifier* – Including the chemical name, code number or batch number based on the manufacturer, importer or distributor's decisions.
- *Signal Word* – The two signal words "Danger" and "Warning" indicate the hazard's severity. Within a specific hazard class only one of the words will be used. "Danger" for more severe hazards and "Warning" for less severe. Danger will always be used if one of the hazards justifies it.
- *Pictogram* – Employees need to understand the OSHA designated pictograms to indicate a hazard category. The pictograms are a red diamond with a black hazard on a white background, and are sufficiently wide enough to be clearly visible.
- *Hazard Statement* – The Hazard Statement describes the nature of the hazard including the degree of the hazard. The hazard statements will be specific to the hazard classification category, and the same statements will be used regardless of which chemical or who produces it.
- *Precautionary Statement* – The precautionary statement is a phrase describing recommended measures taken to minimize or prevent effects of exposure, improper storage or handling.
- *Name, address and phone number of chemical manufacturer, distributor, or importer.*

Employees will also be trained on how to use the labels.

- Using the labels to ensure proper storage
- Quickly locate first aid information

Employees also need to know how the elements work together on a label.

- The different pictograms to indicate multiple hazards.
- Where there are similar precautions, the one with most protective information will be on the label.

## **Safety Data Sheet (SDS) Training**

Employees will be trained on the standardized 16-section format and the type of information found in each one.

Training will also explain how the SDS information is related to the label information.

**EMPLOYEE TRAINING RECORD**  
*To be kept in employee's personal records file*

**Employee Name:** \_\_\_\_\_

**Employee Job Description:** \_\_\_\_\_

***Demex International, Inc.***  
***Confirmation of Employee's Hazard Communication Training***

**I, \_\_\_\_\_, have been informed about  
(Employee Name)  
the hazardous chemicals that I may be exposed to during my work and I have  
received training on the following topics:**

- An overview of the requirements in OSHA's hazard communication rules.
- Hazardous chemicals present in the workplace.
- The written hazard-communication plan.
- Physical and health effects of the hazardous chemicals.
- Methods to determine the presence or release of hazardous chemicals in the work area.
- How to reduce or prevent exposure to these hazardous chemicals through use of exposure controls/work practices and personal protective equipment.
- Steps we have taken to reduce or prevent exposure to these chemicals.
- Emergency procedures to follow if exposed to these chemicals.
- How to read labels and review Safety Data Sheets.

**Note to employee:**

*This form becomes part of your personnel file; read and understand it before signing.*

*By signing below I attest and verify that I have received training in the above areas of hazard communication, and that I understand the content of that training.*

*Employee:\_\_\_\_\_ Date:\_\_\_\_\_*

*Trainer:\_\_\_\_\_ Date:\_\_\_\_\_*

## **§1910.1200 — HAZARD COMMUNICATION**

### **(a) Purpose.**

(1) The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, Safety Data Sheets and employee training.

(2) This occupational safety and health standard is intended to address comprehensively the issue of evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, and to preempt any legal requirements of a state, or political subdivision of a state, pertaining to this subject. Evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of Safety Data Sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political subdivision of a state may adopt or enforce, through any court or agency, any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

### **(b) Scope and application.**

(1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, Safety Data Sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers.

(Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers. Appendix E of this section is a general guide for such employers to help them determine their compliance obligations under the rule.)

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

### **(c) Definitions. (See Definitions at the end of this section)**

### **(e) Written hazard communication program.**

(1) Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, Safety Data Sheets, and employee information and training will be met, and which also includes the following:

(i) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate Safety Data Sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,

(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(2) Multi-employer workplaces. Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

(i) The methods the employer will use to provide the other employer(s) on-site access to Safety Data Sheets for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20(e).

(5) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f) Labels and other forms of warning.

(1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

- (i) Identity of the hazardous chemical(s);
- (ii) Appropriate hazard warnings; and
- (iii) Name and address of the chemical manufacturer, importer, or other responsible party.

(5) Except as provided in paragraphs (f)(6) and (f)(7) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

- (i) Identity of the hazardous chemical(s) contained therein; and,
- (ii) Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(8) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(9) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(g) Safety Data Sheets.

(1) Chemical manufacturers and importers shall obtain or develop a Safety Data Sheet for each hazardous chemical they produce or import. Employers shall have a Safety Data Sheet in the workplace for each hazardous chemical which they use.

(8) The employer shall maintain in the workplace copies of the required Safety Data Sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to maintaining paper copies of the Safety Data Sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

(9) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the Safety Data Sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(10) Safety Data Sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

(h) Employee information and training.

(1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and Safety Data Sheets.

(2) Information. Employees shall be informed of:

- (i) The requirements of this section;
- (ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and Safety Data Sheets required by this section.

(3) **Training.** Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the Safety Data Sheet, and how employees can obtain and use the appropriate hazard information.

## **Definitions**

**“Article”** means a manufactured item other than a fluid or particle:

(i) Which is formed to a specific shape or design during manufacture;

(ii) Which has end use function(s) dependent in whole or in part upon its shape or design during end use;

(iii) Which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

**“Assistant Secretary”** means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

**“Chemical”** means any element, chemical compound or mixture of elements and/or compounds.

**“Chemical manufacturer”** means an employer with a workplace where chemical(s) are produced for use or distribution.

**“Chemical name”** means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

**“Combustible liquid”** means any liquid having a flashpoint at or above 100° F (37.8° C), but below 200° F (93.3° C), except any mixture having components with flashpoints of 200° F (93.3° C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

**“Commercial account”** means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

**“Common name”** means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

**“Compressed gas”** means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70° F (21.1° C)

(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130° F (54.4° C) regardless of the pressure at 70° F (21.1° C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100° F (37.8° C) as determined by ASTM D-323-72.

**“Container”** means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

**“Designated representative”** means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

**“Director”** means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

**“Distributor”** means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

**“Employee”** means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

**“Employer”** means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

**“Explosive”** means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

**“Exposure”** or **“exposed”** means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. “Subjected” in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption).

**“Flammable”** means a chemical that falls into one of the following categories:

(i) **“Aerosol, flammable”** means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(ii) **“Gas, flammable”** means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) **“Liquid, flammable”** means any liquid having a flashpoint below 100° F (37.8° C), except any mixture having components with flashpoints of 100° F (37.8° C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) **“Solid, flammable”** means a solid, other than a blasting agent or explosive as defined in §1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

**“Flashpoint”** means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100° F (37.8° C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (See American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100° F (37.8° C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)). Organic peroxides, which undergo auto-accelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

**“Foreseeable emergency”** means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

**“Hazardous chemical”** means any chemical which is a physical hazard or a health hazard.

**“Hazard warning”** means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for “physical hazard” and “health hazard” to determine the hazards which must be covered.)

**“Health hazard”** means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term “health hazard” includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

**“Identity”** means any chemical or common name which is indicated on the safety data sheet (SDS) for the chemical. The identity used shall permit cross references to be made among the required list of hazardous chemicals, the label and the SDS.

**“Immediate use”** means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

**“Importer”** means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

**“Label”** means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

**“Safety data sheet (SDS)”** means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

**“Mixture”** means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

**“Organic peroxide”** means an organic compound that contains the bivalent -O-Ostructure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

**“Oxidizer”** means a chemical other than a blasting agent or explosive as defined in §1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

**“Physical hazard”** means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

**“Produce”** means to manufacture, process, blend, extract, generate, emit, formulate, or repackaging.

**“Pyrophoric”** means a chemical that will ignite spontaneously in air at a temperature of 130° F (54.4° C) or below.

**“Responsible party”** means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

**“Specific chemical identity”** means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

**“Trade secret”** means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.

**“Unstable (reactive)”** means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become selfreactive under conditions of shocks, pressure or temperature.

**“Use”** means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

**“Water-reactive”** means a chemical that reacts with water to release a gas that is either lammable or presents a health hazard.

**“Work area”** means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

**“Workplace”** means an establishment, job site, or project, at one geographical location containing one or more work areas.

## Hazardous Material Container Labels

All containers used on the job must be labeled for content and precautions if the substance contained is hazardous. Labels must contain the following information:

- Identity of hazardous chemicals
- Appropriate hazard warnings
- Name & address of the chemical manufacturer, importer, or distributor

Labels may use words, pictures, symbols, or a combination of these to indicate that a hazardous substance is contained. Following are examples of hazardous substance label warning information:



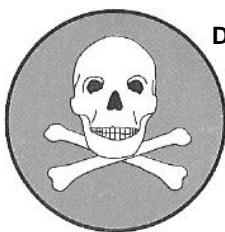
**WARNING:** CONTENTS ARE  
EXTREMELY CORROSIVE  
INGREDIENTS: Hydrochloric Acid



**CAUTION:** CONTAINS  
RADIOACTIVE MATERIALS  
CONTENTS: BARIUM



**DANGER:** CONTENTS ARE  
HIGHLY FLAMMABLE  
CONTAINS ETHANOL



**DANGER:** CONTENTS ARE TOXIC  
AND MAY BE HAZARDOUS TO  
YOUR HEALTH HARMFUL OR  
FATAL IF SWALLOWED

**WARNING:** contents are under pressure  
DO NOT puncture can or expose to high heat.

### ECHOLAB

#### **Great Reflection**

*Ultra High Wear Floor Finish*

**PRECAUCION:** SI NO PUEDE LEER INGLES, PREGUNTE A SU SUPERVISOR SOBRE LAS INSTRUCCIONES DU USO APROPIADAS ANTES DE TRABAJAR CON ESTE PRODUCTO

**CAUTION:** Contains Methyl Carbitol, Overexposure may cause eye and skin irritation.  
If swallowed can cause irritation, nausea and stomach distress.

#### **KEEP OUT OF REACH OF CHILDREN**

For additional information see safety data sheet (SDS)

#### **FIRST AID**

**EXTERNAL:** Flush skin with plenty of cool running water for at least 15 minutes.

**EYES:** Immediately flush with plenty of cool running water. Remove contacts if applicable. Continue flushing for at least 15 minutes, holding eyelids apart.

**INTERNAL:** If swallowed, DO NOT induce vomiting. Rinse mouth, then immediately drink 1 to 2 large glasses of water or milk. Never give anything by mouth to an unconscious person.

**INHALATION:** Immediately move to fresh air.

**CALL A POISON CONTROL CENTER OR PHYSICIAN IMMEDIATELY  
FOR EMERGENCY MEDICAL INFORMATION, CALL TOLL FREE: 1-800-327-2205**

**FORMULA CONTAINS NO PHOSPHOROUS**

Contains:

CAS#	Ingredients
113-8-7	Diethylene Glycol Methyl Ether
Mixture	Polyethylene Emulsion
Mixture	Polyacrylic Emulsion
7783-2-0	Water

**ECHOLAB**

Institutional Division  
Echolab Inc., Echolab  
Center

## **Notes:**

# **Chapter 15**

## ***Demex International, Inc.***

### **Company Policy for Hazard Identification & Risk Assessment**

**Demex International, Inc.** is committed to providing a safe and hazard free workplace and has adopted this policy for Hazard Identification & Risk Assessment from industry standards and best available practices.

**Gary L. DeMarsh** is the assigned Company Supervisor responsible for ensuring the following procedures, practices, and rules are implemented and enforced. *Gary L. DeMarsh* will administrate and review regularly scheduled facility-wide or area-specific analysis/inspections of all jobsites and facilities for hazards on a weekly or as needed basis that will also include spot-checks and random inspections.

- Assessment/inspections will be documented for review by the Company Safety Committee. Hazard assessments include inspection of the area as well as safe work practices. Hazard assessments will be appropriately documented using the appropriate form found at the end of this section.
- During the course of inspection, when a job hazard is identified it is immediately corrected if possible. If the hazard is not immediately correctable, all appropriate personnel are notified and the hazard is clearly identified by signs, barricades, or other warnings.
- *Demex International, Inc.* employees and/or subcontractors are actively involved in the hazard identification process and hazards are reviewed with all employees concerned.
- The hazard identification process is used for routine and non-routine activities as well as new process, changes in operation, products, or services as applicable.
- Gary L. DeMarsh will identify hazards base on hazard assessments and reports. Hazards will be addressed and mitigated. This will be accomplished by dedicated assignment, appropriate documentation of completion, and implemented controls.
- The *Demex International, Inc.* Hazard Identification & Risk Assessment Program will ensure employees will be trained in the hazard identification process, including the proper use and care of Personal Protective Equipment.
- The *Demex International, Inc.* Safety Committee will review all Hazard Assessments in order to avoid creating new hazards derived from the corrective measures.

## **Hazard Identification & Risk Assessment Plan**

### **What is a Job Hazard?**

A Job hazard is the potential for harm. In practical terms, a job hazard is often associated with a condition or activity that, if left uncontrolled, can result in an injury or illness. Identifying job hazards and eliminating or controlling them as early as possible will help prevent injuries and illnesses.

### **A Job Hazard Assessment**

A Job Hazard Assessment is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after identifying uncontrolled hazards, steps will be taken to eliminate or reduce them to an acceptable risk level.

### **The Importance of a Job Hazard Assessment**

Many workers are injured and killed at the workplace every day in the United States. Safety and health adds value to business, your job, and your life. Workplace injuries and illnesses can be prevented by looking at workplace operations, establishing proper job procedures, and ensuring that all employees are trained properly.

One of the best ways to determine and establish proper work procedures is to conduct a Job Hazard Assessment.

### **The Value of a Job Hazard Assessment**

Supervisors can use the findings of a Job Hazard Assessment to eliminate and prevent hazards in their workplaces. This is likely to result in fewer worker injuries and illnesses; safer, more effective work methods; reduced Workers' Compensation costs, and increased worker productivity. The assessment also can be a valuable tool for training new employees in the steps required to perform their jobs safely.

For a Job Hazard Assessment to be effective, managers and supervisors must demonstrate their commitment to safety and health and follow through to correct any uncontrolled hazards identified. Otherwise, management will lose credibility and employees may hesitate to go to supervisors when dangerous conditions threaten them.

### **Jobs Appropriate for Hazard Assessment**

Job Hazard Identification & Risk Assessment will be conducted on jobs in our workplace. Hazards are classified/prioritized and addressed based on the risk associated with the task (Risk analysis matrix outlining severity and probability on page 8).

Priority will go to the following job types:

- Jobs with the highest injury or illness rates.
- Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents.
- Jobs in which one simple human error could lead to a severe accident or injury.
- Jobs that are new to your operation or have undergone changes in processes and procedures.
- Jobs complex enough to require written instructions.

## **Where to Begin**

- **Involve employees and subcontractors.** It is very important to involve employees and subcontractors in the hazard assessment process. They have a unique understanding of the job, and this knowledge is invaluable for finding hazards. Involving employees will help minimize oversights, ensure a quality assessment, and get workers to “buy in” to the solutions because they will share ownership in their safety and health program.
- **Review accident history.** Review with employees our workplace’s history of accidents and occupational illnesses that needed treatment, losses that required repair or replacement, and any “near misses” – events in which an accident or loss did not occur, but could have. These events are indicators that the existing hazard controls (if any) may not be adequate and deserve more scrutiny.
- **Conduct a preliminary job review.** Discuss with employees and subs the hazards they know exist in their current work and surroundings. Brainstorm with them for ideas to eliminate or control those hazards.
- **If any hazards exist that pose an immediate danger to an employee’s life or health, take immediate action to protect the worker.** Any problems that can be corrected easily should be corrected as soon as possible. Do not wait to complete your Job Hazard Assessment. This demonstrates our commitment to safety and health and enables us to focus on the hazards and jobs that need more study because of their complexity. For those hazards determined to present unacceptable risks, evaluate types of hazard controls.
- **List, rank, and set priorities for hazardous jobs.** List jobs with hazards that present unacceptable risks, based on those most likely to occur, and with the most severe consequences. These jobs are first priority for assessment.
- **Outline the steps or tasks.** Nearly every job can be broken down into job tasks or steps. When beginning a Job Hazard Assessment, watch the employee perform the job and list each step as the worker takes it. Be sure to record enough information to describe each job action without getting overly detailed. Avoid making the breakdown of steps so detailed that it becomes unnecessarily long or so broad that it does not include basic steps. It is valuable to get input from other workers who have performed the same job. Later, review the job steps with the employee to make sure something was not omitted. Point out that the job itself is being evaluated, not the employee’s job performance. Include the employee in all phases of the assessment – from reviewing the job steps and procedures to discussing uncontrolled hazards and recommended solutions.
- Sometimes, in conducting a Job Hazard Assessment, it may be helpful to photograph or videotape the worker performing the job. These visual records can be handy references when doing a more detailed assessment of the work.

## **Identifying Workplace Hazards**

A Job Hazard Assessment is an exercise in detective work. The goal is to discover the following:

- What can go wrong?
- What are the consequences?
- How could it arise?
- What are other contributing factors?

- How likely is it that the hazard will occur?

To make our Job Hazard Assessment useful, document the answers to these questions in a consistent manner. Describing a hazard in this way helps to ensure that our efforts to eliminate the hazard and implement hazard controls help target the most important contributors to the hazard.

### **Good hazard scenarios describe:**

- Where it is happening? (environment)
- Who or what it is happening to? (exposure)
- What precipitates the hazard? (trigger)
- The outcome that would occur should it happen? (consequence)
- Any other contributing factors.

Rarely is a hazard a simple case of one singular cause resulting in one singular effect. More frequently, many contributing factors tend to line up in a certain way to create the hazard.

### **Here is an example of a hazard scenario:**

In the metal shop (environment), while clearing a snag (trigger), a worker's hand (exposure) comes into contact with a rotating pulley. It pulls his hand into the machine and quickly severs his fingers (consequences).

### **To perform a Job Hazard Assessment, you would ask:**

- **What can go wrong?** The worker's hand could come into contact with a rotating object that "catches" it and pulls it into the machine.
- **What are the consequences?** The worker could receive a severe injury and lose fingers and hands.
- **How could it happen?** The accident could happen as a result of the worker trying to clear a snag during operations or as part of a maintenance activity while the pulley is operating. Obviously, this hazard scenario could not occur if the pulley is not rotating.
- **What are other contributing factors?** This hazard occurs very quickly. It does not give the worker much opportunity to recover or prevent it once his hand comes into contact with the pulley. This is an important factor, because it helps determine the severity and likelihood of an accident when selecting appropriate hazard controls. Unfortunately, experience has shown that training is not very effective in hazard control when triggering events happen quickly because humans can react only so quickly.

### **How to Correct or Prevent Hazards**

After reviewing the list of hazards with the employee, consider what control methods will eliminate or reduce them. The most effective controls are engineering controls that physically change a machine or work environment to prevent employee exposure to the hazard. The more reliable or less likely a hazard control can be circumvented, the better. If this is not feasible, administrative controls may be appropriate.

This may involve changing how employees do their jobs. Discuss recommendations with all employees who perform the job and consider their responses carefully. If it is planned to introduce new or modified job procedures, be sure they understand what they are required to do and the reasons for the changes.

## **Before Starting a Job Hazard Assessment**

The job procedures discussed are for illustration only and do not necessarily include all the steps, hazards, and protections that apply. When conducting a job safety assessment, be sure to consult OSHA standards. Compliance with these standards is mandatory, and by incorporating their requirements into the Job Hazard Assessment, we can be sure that our Safety & Health Program meets Federal Standards.

## **Review the Job Hazard Assessment**

Periodically reviewing the Job Hazard Assessment ensures that it remains current and continues to help reduce workplace accidents and injuries. Even if the job has not changed, it is possible that during the review process you will identify hazards that were not identified in the initial assessment. It is particularly important to review the Job Hazard Assessment if an illness or injury occurs on a specific job.

Based on the circumstances, it may be determined that changes are needed in the job procedure to prevent similar incidents in the future. If an employee's failure to follow proper job procedures results in a "close call or near miss," discuss the situation with all employees who perform the job and remind them of proper procedures. Any time a Job Hazard Assessment is revised, it is important to train all employees affected by the changes in the new job methods, procedures, or protective measures adopted.

## **When to Hire a Professional**

If our employees are involved in many different or complex processes, we may need professional help conducting a Job Hazard Assessment. Even if we receive outside help, it is important that our employees remain involved in the process of identifying and correcting hazards because they are at the workplace every day and most likely to encounter these hazards. New circumstances and a recombination of existing circumstances may cause old hazards to reappear and new hazards to appear. In addition, we and our employees must be ready and able to implement whatever hazard elimination or control measures a professional consultant recommends.

## **Hazard Control Measures**

Information obtained from a Job Hazard Assessment is useless unless hazard control measures recommended in the assessment are incorporated into the tasks. Managers and supervisors must recognize that not all hazard controls are equal. Some are more effective than others at reducing the risk.

The order of precedence and effectiveness of hazard control is the following:

- Engineering controls.
- Administrative controls.
- Personal protective equipment.

### **Engineering controls include the following:**

- Elimination/minimization of the hazard – Designing the facility, equipment, or process to remove the hazard, or substituting processes, equipment, materials, or other factors to lessen the hazard.
- Enclosure of the hazard using enclosed cabs, enclosures for noisy equipment, or other means.
- Isolation of the hazard with interlocks, machine guards, blast shields, welding curtains, or other means.
- Removal or redirection of the hazard such as with local and exhaust ventilation.

**Administrative controls include the following:**

- Written operating procedures, work permits, and safe work practices.
- Exposure time limitations (used most commonly to control temperature extremes and ergonomic hazards).
- Monitoring the use of highly hazardous materials.
- Alarms, signs, and warnings.
- The "Buddy" system.
- Training.

**Personal Protective Equipment**

*Protective equipment such as respirators, hearing protection, protective clothing, safety glasses, and hardhats is acceptable as a control method in the following circumstances:*

- When engineering controls are not feasible or do not totally eliminate the hazard.
- While engineering controls are being developed.
- When safe work practices do not provide sufficient additional protection.
- During emergencies when engineering controls may not be feasible.

*Use of one hazard control method over another higher in the control precedence may be appropriate for providing interim protection until the hazard is abated permanently. In reality, if the hazard cannot be eliminated entirely, the adopted control measures will likely be a combination of all three items instituted simultaneously.*

*Demex International, Inc. will use the forms on the following pages for the Hazard Identification & Risk Assessment Program.*

## **COMMON WORKPLACE HAZARDS & DESCRIPTIONS**

<b>Hazards</b>	<b>Hazard Descriptions</b>
<b>Chemical (Toxic)</b>	A chemical that exposes a person by absorption through the skin, inhalation, or through the blood stream that causes illness, disease, or death. The amount of chemical exposure is critical in determining hazardous effects. Check Material Safety Data Sheets (MSDS), and/or OSHA 1910.1000 for chemical hazard information.
<b>Chemical (Flammable)</b>	A chemical that, when exposed to a heat ignition source, results in combustion. Typically, the lower a chemical's flash point and boiling point, the more flammable the chemical. Check MSDS for flammability information.
<b>Chemical (Corrosive)</b>	A chemical that, when it comes into contact with skin, metal, or other materials, damages the materials. Acids and bases are examples of corrosives.
<b>Explosion (Chemical Reaction)</b>	Self explanatory.
<b>Explosion (Over Pressurization)</b>	Sudden and violent release of a large amount of gas/energy due to a significant pressure difference such as rupture in a boiler or compressed gas cylinder.
<b>Electrical (Shock/Short Circuit)</b>	Contact with exposed conductors or a device that is incorrectly or inadvertently grounded, such as when a metal ladder comes into contact with power lines. 60Hz alternating current (common house current) is very dangerous because it can stop the heart.
<b>Electrical (Fire)</b>	Use of electrical power that results in electrical overheating or arcing to the point of combustion or ignition of flammables, or electrical component damage.
<b>Electrical (Static/ESD)</b>	The moving or rubbing of wool, nylon, other synthetic fibers, and even flowing liquids can generate static electricity. This creates an excess or deficiency of electrons on the surface of material that discharges (spark) to the ground resulting in the ignition of flammables or damage to electronics or
<b>Electrical (Loss of Power)</b>	Safety-critical equipment failure as a result of loss of power.
<b>Ergonomics (Strain)</b>	Damage of tissue due to overexertion (strains and sprains) or repetitive motion.
<b>Ergonomics (Human Error)</b>	A system design, procedure, or equipment that is error-provocative. (A switch goes up to turn something off).
<b>Fall (Slip, Trip)</b>	Conditions that result in falls (impacts) from height or traditional walking surfaces (such as slippery floors, poor housekeeping, uneven walking surfaces, exposed ledges, etc.)
<b>Fire/Heat</b>	Temperatures that can cause burns to the skin or damage to other organs. Fires require a heat source, fuel, and oxygen.

<b>Mechanical/Vibration (Chaffing/Fatigue)</b>	Vibration that can cause damage to nerve endings, or material fatigue that results in a safety-critical failure. (Examples are abraded slings and ropes, weakened hoses and belts.)
<b>Mechanical Failure</b>	Self explanatory; typically occurs when devices exceed designed capacity or are inadequately maintained.
<b>Mechanical</b>	Skin, muscle, or body part exposed to crushing, caught-between, cutting, tearing, shearing items or equipment.
<b>Noise</b>	Noise levels (>85 dBA 8 hr TWA) that result in hearing damage or inability to communicate safety-critical information.
<b>Radiation (Ionizing)</b>	Alpha, Beta, Gamma, neutral particles, and X-rays that cause injury (tissue damage) by ionization of cellular components.
<b>Radiation (Non-Ionizing)</b>	Ultraviolet, visible light, infrared, and microwaves that cause injury to tissue by thermal or photochemical means.
<b>Struck By (Mass Acceleration)</b>	Accelerated mass that strikes the body causing injury or death. (Examples are falling objects and projectiles.)
<b>Struck Against</b>	Injury to a body part as a result of coming into contact of a surface in which action was initiated by the person. (An example is when a screwdriver slips.)
<b>Temperature Extreme (Heat/Cold)</b>	Temperatures that result in heat stress, exhaustion, or metabolic slow down such as hypothermia.
<b>Visibility</b>	Lack of lighting or obstructed vision that results in an error or other hazard.
<b>Weather Phenomena (Snow/Rain/Wind/Ice)</b>	Self explanatory.

## **JOB HAZARD ALERT**

<i>Department:</i>	
<i>Location:</i>	
<i>Description of Hazard:</i>	
<i>Person who discovered hazard:</i>	
<i>Supervisor actions:</i>	
<i>Root Cause(s):</i>	
<i>Control(s):</i>	
<i>Reviewed by:</i>	<i>Date corrected:</i>

## **JOB HAZARD ASSESSMENT**

<b>Job Title:</b>		<b>Job Location:</b>
<b>Task #</b>	<b>Person Doing Assessment:</b>	
<b>Task Description:</b>		
<b>Hazard Type:</b>		
<b>Hazard Description:</b>		
<b>Consequence:</b>		
<b>Hazard Controls:</b>		
<b>Rational or Comment:</b>		
<b>Final Disposition:</b>		
<b>Supervisor Signature:</b>		<b>Date</b>

## HAZARD TRACKING LOG

## JOB HAZARD ASSESSMENT

**Demex International**, Inc. uses this program of self-inspection for our facilities and workplaces in order to identify hazards and assess risk. Self-inspection is a must if we are to know where probable hazards exist and whether they are under control. Safety inspection items are completed using the following self-inspection form. These checklists are designed to assist in this fact-finding. It will give The Company some indication of where we can take action to make our business safer and more healthful for all of our employees. Use sections on the checklist relevant to particular operations and disregard those which do not apply.

When a checklist has been completed, this material will be added to our injury information, our employee information, and to our process and equipment information. The Company will now possess many facts that will help determine what problems exist. Management will then use the OSHA standards in the problem-solving process and it will be much easier to determine the action needed to solve these problems. Corrective action is required to be documented on the form at the end of this section. Corrective action or preventive action plans will be reviewed by management at safety committee meetings.

### ***The scope of our self-inspections will include the following:***

- **Processing, Receiving, Shipping and Storage** – equipment, job planning, layout, heights, floor loads, projection of materials, materials-handling and storage methods, and training for material handling equipment.
- **Building and Grounds Conditions** – floors, walls, ceilings, exits, stairs, walkways, ramps, platforms, driveways, and aisles.
- **Housekeeping Program** – waste disposal, tools, objects, materials, leakage and spillage, cleaning methods, schedules, work areas, remote areas, and storage areas.
- **Electricity** – equipment, switches, breakers, fuses, switch-boxes, junctions, special fixtures, circuits, insulation, extensions, tools, motors, grounding, and national electric code compliance.
- **Lighting** – type, intensity, controls, conditions, diffusion, location, & glare and shadow control.
- **Heating and Ventilation** – type, effectiveness, temperature, humidity, controls, and natural and artificial ventilation and exhaust.
- **Machinery** – points of operation, flywheels, gears, shafts, pulleys, key ways, belts, couplings, sprockets, chains, frames, controls, lighting for tools and equipment, brakes, exhausting, feeding, oiling, adjusting, maintenance, lockout/tagout, grounding, work space, location, and purchasing standards.
- **Personnel** – experience training, including hazard identification training; methods of checking machines before use; type of clothing; personal protective equipment; use of guards; tool storage; work practices; and methods of cleaning, oiling, or adjusting machinery.
- **Hand and Power Tools** – purchasing standards, inspection, storage, repair, types, maintenance, grounding, use, and handling.
- **Chemicals** – storage, handling, transportation, spills, disposals, amounts used, labeling, toxicity or other harmful effects, warning signs, supervision, training, protective clothing and equipment, and hazard communication requirements.

- **Fire Prevention** – extinguishers, alarms, sprinklers, smoking rules, exits, personnel assigned, separation of flammable materials and dangerous operations, explosive-proof fixtures in hazardous locations, and waste disposal.
- **Maintenance, including tracking and abatement of preventive & regular maintenance** – regularity, effectiveness, training of personnel, materials and equipment used, records maintained, method of locking out machinery, and general methods.
- **Personal Protective Equipment** – type, size, maintenance, repair, storage, assignment of responsibility, purchasing methods, standards observed, training in care and use, rules of use, and method of assignment.
- **Transportation** – motor vehicle safety, seat belts, vehicle maintenance, and safe driver programs.
- **Review** – evacuation routes, equipment, and personal protective equipment.

# JOB SAFETY INSPECTION & REPORT

*Demex International, Inc.*

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**Jobsite Location**

**Date**

**Job Foreman/Supervisor**

**Time**

**Person(s) Making Inspection**

**Other Subcontractors On-Site (List Name and Trade)**

Company Name

Trade

Company Name

Trade

**Check Boxes:**

**A** = Adequate at time of inspection  
**B** = Needs consideration

**C** = Needs immediate attention  
**N/A** = Not applicable

**Category**

**Jobsite Information:**

Copy of Company Safety Program on site?  
 OSHA 300 and 301 Forms Posted and Complete?  
 Are required OSHA Posters posted?  
 Phone number to nearest medical center posted?  
 Tailgate/Toolbox training current?  
 Copy of HAZCOM program & MSDS sheets on site?  
 Work areas properly signed and barricaded?

	<b>A</b>	<b>B</b>	<b>C</b>	<b>N/A</b>	Action Taken/Comments
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**Housekeeping:**

Work area generally neat?  
 Projecting nails removed or bent over?  
 Waste containers in use?  
 Designated disposal area in place?  
 Passageways/walkways clear?  
 Cords, leads, and trip hazards off the floor?

	<b>A</b>	<b>B</b>	<b>C</b>	<b>N/A</b>	Action Taken/Comments
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**Fire Prevention:**

Charged & inspected fire extinguishers accessible?  
 Phone number of local fire department posted?  
 Flammables properly stored?  
 "No Smoking" signs posted near flammables?

	<b>A</b>	<b>B</b>	<b>C</b>	<b>N/A</b>	Action Taken/Comments
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**Electrical:**

Damaged extension cords removed from service?  
 Ground fault circuit interrupters used?  
 Terminal boxes equipped with required covers?  
 Employees trained in Lockout/Tagout?

	<b>A</b>	<b>B</b>	<b>C</b>	<b>N/A</b>	Action Taken/Comments
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**Hand, Power, & Powder-Actuated Tools:**

Hand tools inspected regularly?  
 Guards in place on machines?  
 Tools suited for their jobs?  
 Operators of powder-actuated tools licensed?

	<b>A</b>	<b>B</b>	<b>C</b>	<b>N/A</b>	Action Taken/Comments
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
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**Fall Protection:**

- Employees properly trained?  
 Safety rails and cables secured properly?  
 Guardrails properly installed and secured?  
 Employees have D- ring belts in center of back?  
 Employees exposed to fall hazards tied off?  
 Employees below protected from falling objects?

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**Ladders:**

- Ladders extend 36 inches above the landing?  
 Ladders secured to prevent slipping or sliding?  
 Damaged ladders removed from service?  
 Stepladders used in fully open position?  
 No stepping on top 2 rungs of stepladder?

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**Scaffold:**

- All scaffolding inspected daily?  
 Erected on solid, stable footing?  
 Tied-off to structure as required?  
 Guardrails, midrails, & toeboards in place?  
 Is scaffold properly planked?  
 Is working level of scaffold fully planked?  
 Proper access provided?  
 Employees below protected from falling objects?

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**Floor and Wall Openings:**

- All floor and deck openings covered or barricaded?  
 Perimeter protection in place?  
 Deck planks secured?  
 Materials stored away from edge?  
 Guardrails in place?

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**Trenches, Excavations, and Shoring:**

- Competent person on hand?  
 Employees properly trained?  
 No water in excavation or signs of cave-in?  
 Excavations shored or sloped back?  
 Materials stored at least two feet from trench?  
 Excavations properly identified & barricaded?  
 Ladders provided every 25 feet in trench?  
 Is equipment a safe distance from edge of trench?

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**Materials Handling:**

- Materials properly stored or stacked?  
 Employees using proper lifting methods?  
 Tag lines used to guide loads?  
 Proper number of workers for each operation?

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**Welding and Burning:**

- Gas cylinders stored correctly?  
 Proper separation between fuels and oxygen?  
 Burning/welding goggles or shields used?  
 Other required PPE being used?  
 Fire extinguishers in close proximity?  
 Hoses in good condition?  
 Employees properly trained?

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**Cranes:**

- Outriggers extended & properly placed?  
 Swing radius barricades in place?  
 Operators familiar with load charts?  
 Hand signal charts on crane?  
 Crane operators' logs up-to-date and on-site?  
 Employees kept from under suspended loads?  
 Chains & slings inspected and tagged as required?

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**Forklifts and Other Equipment:**

- Operators properly trained?  
 Pre-shift equipment inspection completed?  
 Are avenues of operation designated & marked?  
 Stationary running equipment properly located?

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**Concrete Construction:**

- Exposed rebar properly capped or covered?  
 Employees protected from cement dust and silica?  
 Exposed skin covered?  
 Runways adequate?

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**Personal Protective Equipment:**

- Fall protection inspected and used correctly?  
 Hard hats being worn?  
 Safety glasses/goggles being worn?  
 Respirators used when required?  
 (medical evaluations and fit-testing completed)  
 Hearing protection being worn when required?  
 Boots and long pants worn on jobsite?  
 Long hair tied back?  
 Traffic vests being worn?

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**Other:**


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**Unsafe Acts or Practices Observed:** \_\_\_\_\_

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**Comments:** \_\_\_\_\_

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Signature (person(s) performing evaluation)

Date

Signature (person(s) performing evaluation)

Date

File this document in the "Company Safety and Health File."

# **Chapter 16**

## ***Demex International, Inc.***

### **Heat Illness Prevention Program**

*Demex International, Inc.* has implemented this plan to ensure that no employee is exposed to "Heat Stress Illnesses" in the workplace and will evaluate if heat could be a problem on a particular day based on temperature and humidity levels, and then implement adequate controls, methods, or procedures to reduce the risk of HRI.

#### ***Heat Illness Prevention in Outdoor Places of Employment***

#### ***Recognizing and Avoiding Heat Stress***

##### ***Heat Stress in Construction***

Construction operations involving heavy physical work in hot, humid environments can put considerable heat stress on workers. Hot and humid conditions can occur either indoors or outdoors.

##### ***Outdoors***

- Road building
- Residential construction
- Work on bridges
- Trenching
- Pouring and spreading tar or asphalt
- Roofing operations
- Steel Erection
- Excavation and grading

##### ***Indoors***

- Steel mills and foundries
- Boiler rooms
- Pulp and paper mills
- Electrical utilities
- Petrochemical plants
- Smelters
- Furnace operations
- Oil and chemical refineries
- Electrical vaults
- Interior construction and renovation

Asbestos removal, work with hazardous wastes, and other operations that require workers to wear semi-permeable or impermeable protective clothing can contribute significantly to heat stress. Heat stress causes the body's core temperature to rise.

##### ***When the Body's Core Temperature Rises***

The human body functions best within a narrow range of internal temperature. This "core" temperature varies from 96.8° F to 100.4° F. A construction worker performing heavy work in a hot environment builds up body heat. To get rid of excess heat and keep internal temperature below 100.4° F, the body uses two cooling mechanisms:

- The heart rate increases to move blood – and heat – from heart, lungs, and other vital organs to the skin.
- Sweating increases to help cool blood and body. Evaporation of sweat is the most important way the body gets rid of excess heat.

When the body's cooling mechanisms work well, core temperature drops or stabilizes at a safe level (around 98.6° F). But when too much sweat is lost through heavy labor or working under hot, humid conditions, the body does not have enough water left to cool itself. The result is dehydration. Core temperature rises above 100.4° F. A series of heat-related illnesses, or heat stress disorders, can then develop.

### **Recognizing Heat Stress Disorders**

Heat stress disorders range from minor discomforts to life-threatening conditions:

- Heat Rash
- Heat Cramps
- Heat Exhaustion
- Heat Stroke

#### **Heat Rash**

Heat rash – also known as prickly heat – is the most common problem in hot work environments.

Symptoms include:

- Red blotches and extreme itchiness in areas persistently damp with sweat
- Prickling sensation on the skin where sweating occurs.

**Treatment** — cool shaded environment, cool shower, thorough drying. In most cases, heat rashes disappear a few days after heat exposure ceases. If the skin is not cleaned frequently enough, the rash may become infected.

#### **Heat Cramps**

Under extreme conditions, such as removing asbestos from hot water pipes for several hours in heavy protective gear, the body may lose salt through excessive sweating. Heat cramps can result. These are spasms in larger muscles – usually back, leg, and arm. Cramping creates hard painful lumps within the muscles.

**Treatment** — shade, stretch and massage muscles; replace salt by drinking commercially available carbohydrate/electrolyte replacement fluids.

#### **Heat Exhaustion**

Heat exhaustion occurs when the body can no longer keep blood flowing to supply vital organs and send blood to the skin to reduce body temperature at the same time. Signs and symptoms of heat exhaustion include:

- Weakness
- Difficulty continuing work
- Headache
- Breathlessness
- Nausea or vomiting
- Feeling faint or actually fainting

Workers fainting from heat exhaustion while operating machinery, vehicles, or equipment can injure themselves and others.

**Treatment** — heat exhaustion casualties respond quickly to prompt first aid. If not treated promptly, however, heat exhaustion can lead to heat stroke—a medical emergency.

- Call 911
- Help the casualty to cool off by:
  - Resting in a cool shaded place
  - Drinking cool water
  - Removing unnecessary clothing
  - Loosening clothing
  - Showering or sponging with cool water

***It takes at least 30 minutes to cool the body down once a worker becomes overheated and suffers heat exhaustion.***

### **Heat Stroke**

Heat stroke occurs when the body can no longer cool itself and body temperature rises to critical levels.

**WARNING:** Heat stroke requires immediate medical attention.

The primary signs and symptoms of heat stroke are:

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- Lack of sweating
- Hot, dry skin
- Abnormally high body temperature
  - for example, 104° F

**Treatment** — For any worker showing signs or symptoms of heat stroke, Call 911.

- Provide immediate, aggressive, general cooling in a shaded area.
  - Immerse casualty in tub of cool water or
  - Place in cool shower or
  - Spray with cool water from a hose
  - Wrap casualty in cool, wet sheets and fan rapidly
- Transport casualty to hospital
- Do not give anything by mouth to an unconscious casualty

**WARNING** — Heat stroke can be fatal even after first aid is administered. Anyone suspected of suffering from heat stroke should not be sent home or left unattended unless that action has been approved by a physician. If in doubt as to what type of heat-related disorder the worker is suffering from, call for medical assistance.

### **Heat Stress Risk Assessment Factors**

Factors that should be considered in assessing heat stress include:

- Personal Risk Factors
- Job Factors.
- Environmental Factors

## **Personal Risk Factors**

It is difficult to predict just who will be affected by heat stress and when, because individual susceptibility varies. There are, however, certain physical conditions that can reduce the body's natural ability to withstand high temperatures:

It is the determination of *Demex International, Inc.* to ensure that prior to assigning a task where heat related illness may occur, the following most common personal factors that contribute to heat related illness will be taken into consideration:

**Weight** – Workers who are overweight are less efficient at losing heat.

**Poor physical condition** – Being physically fit aids your ability to cope with the increased demands that heat places on your body.

**Previous heat illnesses** – Workers are more sensitive to heat if they have experienced a previous heat-related illness.

**Age** – As the body ages, its sweat glands become less efficient. Workers over the age of 40 may therefore have trouble with hot environments. Acclimatization to the heat and physical fitness can offset some age-related problems.

**Heart disease or high blood pressure** – In order to pump blood to the skin and cool the body, the heart rate increases. This can cause stress on the heart .

**Recent illness** – Workers with recent illnesses involving diarrhea, vomiting, or fever have an increased risk of dehydration and heat stress because their bodies have lost salt and water.

**Alcohol consumption** – Alcohol consumption during the previous 24 hours leads to dehydration and increased risk of heat stress.

**Medication** – Certain drugs may cause heat intolerance by reducing sweating or increasing urination. People who work in a hot environment should consult their physician or pharmacist before taking medications.

**Lack of acclimatization** – When exposed to heat for a few days, the body will adapt and become more efficient in dealing with raised environmental temperatures. This process is called acclimatization. Acclimatization usually takes 6 to 7 days.

Benefits include:

- Lower pulse rate and more stable blood pressure
- More efficient sweating (causing better evaporative cooling)
- Improved ability to maintain normal body temperatures

Acclimatization may be lost in as little as three days away from work. People returning to work after a holiday or long weekend – and their supervisors – should understand this. Workers should be allowed to gradually re-acclimatize to work conditions.

## **Environmental Factors**

Environmental factors such as ambient air temperature, air movement, and relative humidity can all affect an individual's response to heat. The body exchanges heat with its surroundings mainly through radiation and sweat evaporation. The rate of evaporation is influenced by humidity and air movement.

## **Radiant Heat**

Radiation is the transfer of heat from hot objects through air to the body. Working around heat sources such as kilns or furnaces will increase heat stress. Additionally, working in direct sunlight can substantially increase heat stress. A worker is far more comfortable working at 80° F under cloudy skies than working at 80° F under sunny skies.

## **Humidity**

Humidity is the amount of moisture in the air. Heat loss by evaporation is hindered by high humidity but helped by low humidity. As humidity rises, sweat tends to evaporate less. As a result, body cooling decreases and body temperature increases.

## **Air Movement**

Air movement affects the exchange of heat between the body and the environment. As long as the air temperature is less than the worker's skin temperature, increasing air speed can help workers stay cooler by increasing both the rate of evaporation and the heat exchange between the skin surface and the surrounding air.

## **Job Factors**

### **Clothing and Personal Protective Equipment (PPE)**

Heat stress can be caused or aggravated by wearing PPE such as fire - or chemical - retardant clothing. Coated and non-woven materials used in protective garments block the evaporation of sweat and can lead to substantial heat stress. The more clothing worn or the heavier the clothing, the longer it takes evaporation to cool the skin. Remember that darker clothing absorbs more radiant heat than lighter-colored clothing.

## **Workload**

The body generates more heat during heavy physical work. For example, construction workers shoveling sand or laying brick in hot weather generate a tremendous amount of heat and are at risk of developing heat stress without proper precautions. Heavy physical work requires careful evaluation even at temperatures as low as 75° F to prevent heat disorders. This is especially true for workers who are not acclimated to the heat.

## **Controlling Heat Stress**

Heat stress can be controlled through education, engineering, and work procedures. Controls will:

- **Protect Health**

Illness can be prevented or treated while symptoms are still mild.

- **Improve Safety**

Workers are less liable to develop a heat-related illness and have an accident. Heat stress often creeps up without warning. Many heat-induced accidents are caused by sudden loss of consciousness.

- **Increase Productivity**

Workers feel more comfortable and are likely to be more productive as a result.

## **Training and Education**

According to the National Institute of Occupational Safety and Health (NIOSH), heat stress training should cover the following components:

- Knowledge of heat stress hazards.
- Recognition of risk factors, danger signs, and symptoms.

- Awareness of first-aid procedures for, & potential health effects of, heat stroke.
- Employee responsibilities in avoiding heat stress.
- Dangers of using alcohol and/or drugs (including prescription drugs) in hot work environments.

### ***Employee Training***

Training in the following topics will be provided to all supervisory and non-supervisory employees:

- Environmental and personal risk factors for heat illness.
- Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness.
- Importance of frequent consumption of water (up to 4 cups per hour).
- The importance of acclimatization.
- Different types of heat illness and common signs and symptoms of heat illness.
- The importance of immediately reporting to the employer or designee symptoms or signs of heat illness.
- Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.
- Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by medical service personnel.
- How to provide clear and precise directions to the work site.

### ***Supervisor Training***

Prior to assignment to supervision of employees working in the heat, training on the following topics will occur:

- The information provided for employee training.
- Procedures the supervisor will follow to implement controls as determined by the employer.
- Procedures the supervisor will follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

### ***Engineering Controls***

Engineering controls are the most effective means of preventing heat stress disorders and should be the first method of control. Engineering controls seek to provide a more comfortable workplace by using:

- Reflective shields to reduce radiant heat.
- Fans and other means to increase airflow in work areas.
- Mechanical devices to reduce the amount of physical work.

Given the constantly changing nature of construction sites, engineering controls are not usually feasible. Proper work procedures are therefore required to prevent heat stress disorders.

### ***Work Procedures***

The risks of working in hot construction environments can be reduced if labor and management cooperate to help control heat stress.

## **Management**

- Give workers frequent breaks in a cool shaded area away from heat (cooling period no less than 5 minutes). The area should not be so cool that it causes cold shock – around 75° F is ideal.
- Increase air movement by using fans where possible. This encourages body cooling through the evaporation of sweat.
- Provide unlimited amounts of conveniently located potable drinking water.
- Allow sufficient time for workers to become acclimated. A properly designed and applied acclimatization program decreases the risk of heat-related illnesses. Such a program exposes employees to work in a hot environment for progressively longer periods. NIOSH recommends that for workers who have had previous experience in hot jobs, the regimen should be:
  - 50% exposure on day one
  - 60% on day two
  - 80% on day three
  - 100% on day four
- For new workers in a hot environment, the regimen should be 20% on day one, with a 20% increase in exposure each additional day.
- Make allowances for workers who must wear personal protective clothing and equipment that retains heat and restricts the evaporation of sweat.
- Schedule hot jobs for the cooler part of the day; schedule routine maintenance and repair work in hot areas for the cooler seasons of the year.
- Consider the use of cooling vests containing ice packs or ice water to help rid bodies of excess heat.

## **Labor**

- Wear light, loose clothing that permits the evaporation of sweat.
- Drink plenty of water or sports beverages to keep hydrated. Do not wait until you are thirsty.
- Avoid beverages such as tea, coffee, or beer that make you pass urine more frequently.
- Where personal PPE must be worn:
  - Use the lightest weight clothing and respirators available.
  - Wear light-colored garments that absorb less heat from the sun.
  - Use PPE that allows sweat to evaporate.
- Avoid eating hot, heavy meals. They tend to increase internal body temperature by redirecting blood flow away from the skin to the digestive system.
- Do not take salt tablets unless a physician prescribes them. Natural body salts lost through sweating are easily replaced by a normal diet.

## **Workplace Responsibilities Regarding Heat Stress**

### **Employers**

- Adjust work practices as necessary when workers complain of heat stress.
- Make controlling exposures through engineering controls the primary means of control wherever possible.

- Oversee heat stress training and acclimatization for new workers and for workers who have been off the job for a while.
- Provide worker education and training, including periodic safety meetings on heat stress during hot weather or during work in hot environments.
- Monitor the workplace to determine when hot conditions arise.
- Determine whether workers are drinking enough water.
- Determine a proper work/rest regimen for workers.
- Arrange first aid training for workers.
- When working in a manufacturing plant, for instance, a contractor may wish to adopt the plant's heat stress program if one exists.
- Ensure that the program and procedures are documented and available to all employees.

### **Workers**

- Follow instructions and training for controlling heat stress.
- Be alert to symptoms in yourself and others.
- Avoid consumption of alcohol, illegal drugs, and excessive caffeine.
- Find out whether any prescription medications you are required to take can increase heat stress.
- Get adequate rest and sleep.
- Drink small amounts of water regularly (up to 4 cups per hour) to maintain fluid levels and avoid dehydration.

### **Emergency Medical Response**

*Demex International, Inc.* will have a written plan to provide emergency medical services.

*Demex International, Inc.* will ensure the availability of a suitable number of appropriately trained persons to render first aid. *Demex International, Inc.* will inform all employees of the procedure to follow in case of injury or illness.

### **Emergency Transportation**

Before workers are sent to a work site, *Demex International, Inc.* will ensure that arrangements are in place to transport injured or ill workers from the work site to the nearest health care facility. If ambulance service is not readily available to the work site or travel conditions are not normal, *Demex International, Inc.* will provide proper equipment for the prompt transportation of the injured or ill person to a physician or hospital where emergency care is provided. *Demex International, Inc.* will ensure that other transportation is available that:

- Is suitable, considering the distance to be traveled and the types of acute illnesses or injuries that may occur at the work site.
- Protects occupants from the weather.
- Have systems that allow the occupants to communicate with the health care facility to which the injured or ill worker is being taken.
- Can accommodate a stretcher and an accompanying person if required to.

## ***Emergency Communication***

*Demex International, Inc.* will provide an effective communication system for contacting hospitals or other emergency medical facilities, physicians, ambulance, or fire services. In the case of remote job sites, provisions for CB-type, 2-way radio communications will be implemented. The telephone numbers of the following emergency services in the area shall be posted near the job telephone or otherwise made available to the employees where no job site telephone exists:

- A physician and at least one alternate if available.
- Hospitals.
- Ambulance services.
- Fire-protection services.

## ***Response Time of EMS***

*Demex International, Inc.* regards as important that from the time an accident happens, how many minutes it would take trained medical personnel to reach an injured worker. Things *Demex International, Inc.* will consider include:

- How long would it take our employees to reach a phone to call 911? Are phones conveniently located in the work area or would they have to go to an office to call?
- How far are the emergency medical services (hospital, fire station, etc.) from our work site?
- How would emergency medical services get to our work site? They may only be 100 feet away, but if it is across a limited access road, they may have to go 5 miles in one direction to turn around and come back.
- How bad is traffic? Are back-ups common in the area at certain times?
- How available are emergency medical services? If there is only one ambulance and one medical team, they may be out on another emergency. It could take a long time for someone to respond to our call.
- How large and complex is our work site? How difficult would it be for emergency services to find the place where the injured worker is? We may need to arrange for the emergency service to go to a central location (such as a reception area) and receive directions from there.
- *Demex International, Inc.* will contact the local emergency medical service within the proximity of the work site and verify their response to the above inquiries and adjust our plan accordingly.
- Our work site supervisor is responsible for inspecting, stocking, and maintaining first aid kits.

New or temporary employees will be trained in these elements of *Demex International, Inc.*'s Emergency Medical Response Plan as part of their safety orientation, before they start work.

## ***Conclusion***

Heat stress at its simplest is the stress placed on the body by heat. Heat stress can be as minor as a heat rash or as critical as heat stroke. The foregoing plans, procedures, and actions have been established to manage activities under hot, humid conditions.

## **Notes:**

# **Chapter 17**

## ***Demex International, Inc.***

### **Company Policy for Hydrogen Sulfide Specific Training**

This policy for the prevention of hazardous employee exposure to Hydrogen Sulfide ( $H_2S$ ) is adopted by ***Demex International, Inc.*** in accordance with the following OSHA regulations:

#### ***§1910.1200 – Hazard Communication Standards for Employers***

#### ***§1910.134 – Respiratory Protection***

*Demex International, Inc.* has implemented this policy to ensure that no employee is exposed to Hydrogen Sulfide ( $H_2S$ ) at levels in excess of the PEL (permissible exposure limit is 20 PPM). This policy is available to all employees request. *Gary L. DeMarsh* is the assigned supervisor responsible for ensuring the following engineering controls and work practices are enforced:

- *Gary L. DeMarsh* will provide employees with information and training at the time of their initial assignment to a work area where  $H_2S$  is present. Training will address characteristics and health effects of  $H_2S$ . If exposures are above the action level, employees will be provided with information and training at least annually thereafter. Necessary employee training will be documented to include:
  - Identity of the employee trained.
  - The signature and title of the employee trainer.
  - The date of the training.
- Employees will be informed of all regulated areas and will be properly trained in entrance procedures, safety requirements, and practices while in regulated areas.

#### ***Characteristics of Hydrogen Sulfide include:***

- $H_2S$  is a colorless, extremely poisonous gas that has the characteristic odor of rotten eggs. The sense of smell becomes rapidly fatigued and can NOT be relied upon to warn of the continuous presence of  $H_2S$ . Large amounts of  $H_2S$  are obtained in the removal of sulfur from petroleum.

#### ***Hydrogen Sulfide is:***

- Extremely toxic. 100 ppm is the IDLH (Immediately Dangerous to Life or Health concentration.)
- Colorless
- Solubility in water at 68 °F is 0.4% by weight.
- Flammable Gas
- Incompatible and reacts with strong oxidizers, strong nitric acid, and metals.
- UEL (upper explosive [flammable] limit in air) is 44.0% by volume (at room temperature)
- LEL (lower explosive [flammable] limit in air) is 4.0% by volume (at room temperature)

- Contact and exposure occurs through inhalation, skin and/or eye contact.
- Target organs are the eyes, respiratory system, and central nervous system.
- Health affects and symptoms include: Irritation of the eyes and respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation (blisters); dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance. Affects the nerve centers of the brain which control breathing.
- Potential employee exposure to Hydrogen Sulfide includes:
  - Drilling Operations.
    - 1.** Recycled Drilling Mud.
    - 2.** Water from sour crude wells.
    - 3.** Blowouts.
  - Tank Gauging (tanks at producing, pipeline, and refining operations).
  - Field Maintenance.
- **4.** Tank batteries and wells, etc.

### **Respiratory Protection Requirements**

- The Respiratory Protection Program, in compliance with OSHA §1910.134, and respiratory protective equipment is provided at no cost for all employees with potential for exposure to H<sub>2</sub>S.
- The following NIOSH respirator recommendations with their APF (assigned protection factors) will be used under these hazardous conditions:
  - H<sub>2</sub>S Concentrations up to 100 ppm:
    - Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern/(APF = 50).
    - Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/(APF = 10).
    - Any supplied-air respirator/(APF = 50).
    - Any self-contained breathing apparatus with a full facepiece
  - Emergency or planned entry into unknown H<sub>2</sub>S concentrations or IDLH conditions:
    - Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000).
    - Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

■ Escape:

- Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus/(APF = 50).
- In the event of an emergency where H<sub>2</sub>S is released at hazardous levels, employees not wearing sufficient PPE for the situation will be immediately evacuated to a safe area until the hazard is contained.
- Adequate ventilation will be ensured in all enclosed work areas. Employees engaged in maintenance of ventilation systems, including filter changes, are required to use proper PPE for the task.
- Regular monitoring of air quality in work areas will be provided to ensure that PEL of H<sub>2</sub>S are not being exceeded. Records of all monitoring tests will be kept available at the Company office.
- Employees working at job-sites where there is a potential for exposure to an H<sub>2</sub>S hazardous atmospheres will be supplied with personal monitoring equipment which must be carried outside of clothing on the worker at all times when in the work area.
- The supplied monitors will be capable of sensing a minimum of 10 ppm of H<sub>2</sub>S in the atmosphere; and will activate audible and visual alarms when the concentration of H<sub>2</sub>S in the atmosphere reaches 10 ppm. When monitor alarms sound, employees will vacate the area and will not re-enter without proper respiratory protection.
- In the event that PEL of H<sub>2</sub>S are exceeded within any facility where employees are contracted to work, all work will be stopped and employees evacuated until the facility's management can ensure that H<sub>2</sub>S levels are brought down to an acceptable level for safe work.
- The management of any facility where *Demex International, Inc.* contracts to work must provide a list of all operations in the facility where H<sub>2</sub>S is emitted. Facility management will provide a copy of the facility's contingency plan provisions.
- Special precautions will be taken when employees are working inside tanks or vessels. Employees will adhere to the *Demex International, Inc.* written Confined Space Program per §1910.146 and employees will be trained under §1910.146(g).
- The medical surveillance program for employees who potentially may be exposed to H<sub>2</sub>S at or above the action level or PEL will be provided under the supervision of a licensed physician at no cost to the employee.
- Employees must wear proper Personal Protective Equipment (PPE) at all times while in work areas where H<sub>2</sub>S is present. This PPE will include proper eye/face protection in accordance with §1910.133 where appropriate.
- All required signs and labels will be posted in areas of potential exposure to H<sub>2</sub>S.
- All containers or materials containing H<sub>2</sub>S will be appropriately labeled to indicate the contents and the hazards of the contents.
- MSDS for H<sub>2</sub>S and all hazardous materials at *Demex International, Inc.* are available to employees at the Company office upon request.

## **Hazards of Hydrogen Sulfide ( $H_2S$ )**

Hydrogen Sulfide ( $H_2S$ ) presents a potential hazard to workers at the work site. It usually occurs as an unwanted by-product and can result in worker exposure in many different industries or occupations. To ensure protection against exposure to  $H_2S$ , both workers and employers must be aware of its properties, how it affects the body, and what to do in emergency situations. Demex International, Inc. shall ensure that all personnel who will be working at the job site will be properly trained in  $H_2S$  awareness and contingency procedures.

### **$H_2S$ Characteristics**

Hydrogen sulfide is a powerful and deadly gas which is colorless and smells like rotten eggs at low concentrations and has a sweet smell at high concentrations. But workers should not rely on the smell as a warning as the gas quickly paralyzes the olfactory nerves which allow you to smell. The result could be instant death. Long exposure to low concentrations will also deaden the sense of smell.

$H_2S$  is explosive - it will ignite and explode when subjected to a spark or ordinary flame - in any concentration from 4% to 44% of the air. It is also soluble in water and oil, so it may flow for a considerable distance from its origin before escaping above ground or in an entirely unexpected place. Because the vapor (gas) is heavier than air, it may travel for a long way until ignited and then flash back towards the source. One of the products of burning  $H_2S$  is Sulfur Dioxide, also a toxic gas.

If the gas is burned, toxic products such as sulfur dioxide will be formed. Hydrogen sulfide is incompatible with oxidizing agents, such as nitric acid and chlorine trifluoride, and may react violently or ignite spontaneously.

### **Sources of $H_2S$**

$H_2S$  is found widely in industry and few workers are warned of its dangers, or their exposure. It is formed by the decomposition of organic materials, so it is found in natural gas and oil, recycled drilling mud, water from sour crude wells, in mines, wells, fertilizers, sewers, and cesspools. It is given off as a by-product in the manufacture of rayon, synthetic rubber, dyes, and the tanning of leather.

Hydrogen sulfide is found in large amounts in natural gas and petroleum. Any worker involved in extracting gas and petroleum from the ground, or in storing, transporting, or processing gas is at risk from exposure to  $H_2S$ . Hydrogen sulfide exists in solution in crude oil, and workers are exposed when the gas begins to "pass off" as it reaches the surface or comes into contact with air. This can occur at any point, including all stages of the refining operation, and it is accelerated by heat or hot weather.

Fundamentally, employers and employees must be alert to the fact that working with a "closed system" does not always ensure safety. Operations involving the opening of valves or pumps on otherwise closed systems or working on such equipment that is not isolated or locked out are particular sources of danger. When a normally closed system is opened, the potential exists for releasing hazardous chemicals into the workers' breathing zones in unknown concentrations.

### **Health Effects on the Body**

Hydrogen Sulfide is extremely toxic. When you breathe in  $H_2S$ , it goes directly through your lungs and into your bloodstream. To protect itself, your body "oxidizes" (breaks down) the  $H_2S$  as rapidly as possible into a harmless compound.

If you breathe in so much H<sub>2</sub>S that your body cannot oxidize all of it, the H<sub>2</sub>S builds up in the blood and you become poisoned. It may cause death instantaneously in high airborne concentrations. The nervous centers in your brain that control breathing are paralyzed. Your lungs stop working and you are asphyxiated - just as though someone had come up and put their hands around your neck and strangled you.

A single breath of hydrogen sulfide at about 1000 ppm may paralyze the respiratory system and result in coma and death. A worker can be overcome by H<sub>2</sub>S and lose consciousness in a few seconds; luckily if he is rescued in time and is given artificial respiration within a few minutes, the worker may recover. Either artificial mouth-to-mouth or an oxygen supply system of resuscitation will work if it is done in time, because, with an adequate source of oxygen and no further H<sub>2</sub>S intake, the body will quickly break down the H<sub>2</sub>S still in the blood.

Low levels may be extremely irritating to the lungs, nose, throat, and eyes. Hydrogen Sulfide can be detected by smell at levels as low as 0.13 parts H<sub>2</sub>S per million parts air (ppm). Odor cannot be used as a warning because the gas can deaden the sense of smell within 2 to 15 minutes in exposures of approximately 100 ppm. Convulsions may also occur. Prolonged exposure at about 250 ppm H<sub>2</sub>S may cause the lung tissue to swell and fill up with water (pulmonary edema). This effect may occur after the exposed worker recovers from the irritant effects of the gas. Exposures of 20 to 50 ppm hydrogen sulfide for one hour may cause inflammation of the cornea and the delicate lining of the eye and eyelid (a condition called keratoconjunctivitis). Exposures for long periods at 50 ppm may cause severe irritation of the nose, throat and lungs. Workers exposed to lower concentrations of H<sub>2</sub>S may develop headaches, eye disorders, and chronic bronchitis.

### **Chronic effects**

Hydrogen Sulfide can also cause a wide range of sub-acute and chronic effects. At very low concentrations of 10-100 ppm.) headache, dizziness, nausea, and vomiting may develop, together with irritation of the eyes and respiratory tract (the lungs and trachea and bronchi, or air pipes from the nose and mouth to the lungs). The eyes become red, sore, inflamed, and sensitive to light. Respiratory system effects include cough, pain in the nose and throat, and pain on breathing.

If exposure at low levels continues, the worker may develop a state of chronic poisoning. In addition to eye and respiratory tract irritation, there will be a slowed pulse rate, fatigue, insomnia, digestive disturbances, and cold sweats. More dangerous, if exposure at the level of 100 ppm (which results in eye and respiratory tract irritation and drowsiness after 15 minutes) lasts for several hours, it may result in death within the next 48 hours. Symptoms of chronic exposures at low levels are conjunctivitis (eye infections), headache, attacks of dizziness, diarrhea, and loss of weight.

Chronic H<sub>2</sub>S intoxication is marked by headaches, eye disorders, chronic bronchitis, and a grey-green line on the gums. Reports of nervous system disorders including paralysis, meningitis, and neurological problems have been reported, but not confirmed.

A study of workers and community residents of a California refinery engaged in extracting sulfur from crude oil, which is rich in H<sub>2</sub>S, complained of headaches, nausea, vomiting, depression, personality changes, nosebleeds, and breathing difficulties. When compared to a non-exposed group of people, the exposed people showed abnormalities of color discrimination, eye-hand coordination, balance, and mood disturbances.

Hydrogen Sulfide can penetrate the skin and cause toxicosis in people exposed to large concentrations over long periods. The speed of onset of acute H<sub>2</sub>S poisoning and the potency of H<sub>2</sub>S are almost the same as for cyanide gas. In rats, exposure to H<sub>2</sub>S has caused teratogenic (biological monstrosities and malformations) effects.

### **Symptoms of H<sub>2</sub>S exposure.**

H<sub>2</sub>S is classified as a chemical asphyxiant, similar to carbon monoxide and cyanide gases. It inhibits cellular respiration and uptake of oxygen, causing biochemical suffocation. Exposure levels to H<sub>2</sub>S and symptoms of that exposure are divided into different toxicity levels, shown in the chart below.

10 ppm	Beginning eye irritation
50-100 ppm	Slight conjunctivitis and respiratory tract irritation after 1 hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes and drowsiness after 15-30 minutes followed by throat irritation after 1 hour. Several hours exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours.
200-300 ppm	Marked conjunctivitis and respiratory tract irritation after 1 hour of exposure
500-700 ppm	Loss of consciousness and possibly death in 30 minutes to 1 hour.
700-1000 ppm	Rapid unconsciousness, cessation of respiration, and death.
1000-2000 ppm	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

### **Use and operation of H<sub>2</sub>S monitoring systems & detection methods used on site**

Employees working at jobsites where there is a potential for exposure to hazardous atmospheres, will be supplied with personal monitoring equipment that must be carried outside of clothing on the worker at all times when in the work area. The monitors supplied will be capable of sensing a minimum of 10 ppm of H<sub>2</sub>S in the atmosphere; and will activate audible and visual alarms when the concentration of H<sub>2</sub>S in the atmosphere reaches 20 ppm. 20 ppm is the acceptable ceiling concentration for H<sub>2</sub>S exposure, and 50 ppm is the acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift with a one-time 10-minute exposure only if no other measured exposure exists.

Alternatively, stationary monitors may be installed. Personal or stationary monitors must be capable of sounding an audible alarm or warning. *Gary L. DeMarsh* will administer the monitor maintenance program for *Demex International, Inc.*. Monitors will be calibrated and maintained per manufacturer's instructions.

### **Proper use and maintenance of PPE.**

See *Demex International, Inc.* Policy on respiratory protection. Employees working in areas where the possibility of exposure to toxic gases exists will be provided NIOSH approved full face SCBA respiratory equipment, and trained in their use and maintenance according to the company Respiratory Protection Program which is administered by *Gary L. DeMarsh*. Demonstrated proficiency in using PPE is required by the program.

### **Locations and use of safety equipment.**

Personal hazardous atmosphere detection monitors and respiratory protective equipment will be immediately available to each employee at all times in the work area. Safety equipment will be kept immediately available to all employees on the job-site.

All employees of *Demex International, Inc.* must be notified of the location of safety equipment on each jobsite prior to commencement of work. Only personnel trained in the proper use of any required safety equipment will be allowed on the job-site.

### ***Recognition and response to H<sub>2</sub>S warnings at the workplace***

*Demex International, Inc.* employees at will be required to respond immediately to audio or visual warnings issued either by personal monitoring equipment or established workplace general warning signals. Workplace site-specific contingency plans of the plant owner will be reviewed with personnel and provisions of the plan followed. When a warning signal is sounded, employees must immediately put on SCBA respiratory protection and initiate evacuation procedures. Evacuation plans must be established for each work-site prior to commencement of work. *Gary L. DeMarsh*, or the foreman in charge of the job-site, will be responsible for supervision of evacuation procedures, checking for proper use of respiratory protection, ensuring all employees are cleared of the hazard area, notification of the facility management, and assembly and head-count of evacuated personnel at designated safe areas.

### ***Proper rescue techniques and first aid procedures to be used in a H<sub>2</sub>S exposure.***

First aid kit and oxygen will be kept in the supervisor's work vehicle and available to all employees. A litter for transport of incapacitated workers will be provided by *Demex International, Inc.*, and kept on-site, if one is not available from the facility.

In the event an employee is exposed to H<sub>2</sub>S, the employee will immediately be evacuated to a safe briefing area, emergency medical services will be notified, and oxygen will be administered, along with CPR if required. Oxygen will be administered regardless of the condition of the victim to ensure a reduction of the absorption concentration of H<sub>2</sub>S. If an employee is rendered unconscious due to H<sub>2</sub>S exposure, assigned personnel wearing proper SCBA must respond to perform rescue operations of the victim.

### ***Locations of safe briefing areas.***

Safe briefing areas will be designated outside the work zone for each work location where the possibility of hazardous atmospheres exist. At least two briefing areas will be designated for each work-site. Workers will be notified of these areas prior to the commencement of work. *Gary L. DeMarsh* will be responsible for evaluation and designation of safe briefing areas for *Demex International, Inc.*.

### ***Wind direction awareness and routes of egress.***

Wind direction will be monitored by *Gary L. DeMarsh* at the beginning of each shift to determine safe egress routes for employees in the event of an evacuation. Wind direction will be regularly checked and noted throughout the work shift for wind shift which will necessarily facilitate a change of egress routes for evacuation. Evacuation routes will be determined for each work area before commencement of work, and routes will be clearly marked and posted in conspicuous areas in the workplace. In the event of an emergency evacuation, *Gary L. DeMarsh* will be responsible for determination and notification of the proper egress route to be used for employee safety.

### ***Confined space and enclosed facility entry procedures.***

Whenever employees enter a confined space, such as a tank, strict work practices will be followed, including the company permit entry system.

Gary L. DeMarsh will ensure that the Demex International, Inc. Confined Space Entry program is adhered to, that the air is continually monitored for the presence of H<sub>2</sub>S, and that a worker be stationed as a monitor outside of a confined space. Supplied-air respirators, lifelines, and rescue equipment must be immediately available.

See Demex International, Inc. Policy on Permit Required Confined Spaces. These procedures will be enforced in all confined work situations.

<b>Hydrogen Sulfide (H<sub>2</sub>S)</b>		<b>CAS</b> 7783-06-4 <b>RTECS</b> MX1225000
<b>Synonyms &amp; Trade Names</b> Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen		<b>DOT ID &amp; Guide</b> 1053 117
<b>Exposure Limits</b> NIOSH REL: C 10 ppm (15 mg/m <sup>3</sup> ) [10-minute] OSHA PEL†: C 20 ppm 50 ppm [10-minute maximum peak]		
<b>IDLH</b> 100 ppm		<b>Conversion</b> 1 ppm = 1.40 mg/m <sup>3</sup>
<b>Physical Description</b> Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued & can NOT be relied upon to warn of the continuous presence of H <sub>2</sub> S. Shipped as a liquefied compressed gas.]		
MW: 34.1	BP: -77°F	FRZ: -122°F
VP: 17.6 atm	IP: 10.46 eV	RGasD: 1.19
Fl.P: NA (Gas)	UEL: 44.0%	LEL: 4.0%
Flammable Gas		
<b>Incompatibilities &amp; Reactivities</b> Strong oxidizers, strong nitric acid, metals		
<b>Measurement Methods</b> NIOSH 6013; OSHA ID141		
<b>Personal Protection &amp; Sanitation</b> Skin: Frostbite Eyes: Frostbite Wash skin: No recommendation Remove: When wet (flammable) Change: No recommendation Provide: Frostbite		<b>First Aid (See procedures)</b> Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
<b>Respirator Recommendations</b> NIOSH		
<b>Up to 100 ppm:</b> (APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/(APF = 10) Any supplied-air respirator*/(APF = 50) Any self-contained breathing apparatus with a full facepiece		
<b>Emergency or planned entry into unknown concentrations or IDLH conditions:</b> (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.		
<b>Escape:</b> (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus		
<b>Exposure Routes</b> - inhalation, skin and/or eye contact		
<b>Symptoms</b> - Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesication; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite		
<b>Target Organs</b> - Eyes, respiratory system, central nervous system		

**Uses:** Hydrogen Sulfide - H<sub>2</sub>S - is used in metallurgy for the preparation of metallic sulfides. It is also used in the preparation of phosphors, oil additives, and as an analytical reagent in chemical analysis. It is in metals separation, removal of metallic impurities and for reaction with numerous functional organic compounds.

# **Chapter 18**

## ***Demex International, Inc.***

### **Incident Investigation and Reporting Policy**

#### **Policy Statement**

**Demex International, Inc.** is committed to investigating all accidents/incidents. **Gary L. DeMarsh** is responsible for ensuring that the Incident Investigation and Reporting policy is followed.

*Demex International, Inc.* will investigate all lost-time injuries. Fatalities and catastrophes must be reported to OSHA within 8 hours. Serious accidents must be reported to OSHA within 24 hours. OSHA requires reporting of work related incidents resulting in the death of an employee or the hospitalization of three or more employees. Owner clients require all incidents to be reported including, but not limited to, injuries, spills, property damage, fires, explosions, and vehicle damage.

Accidents and near miss incidents that result in personal injury, property damage, chemical spill, or other emergency situations will be immediately reported to the assigned supervisor at the time of the event and Emergency Medical Service, Fire Department, or Hazmat Services will be immediately summoned. Such events will be investigated and documented on the appropriate Company form. All forms will be fully completed and submitted to *Gary L. DeMarsh* for review and for discussion at the next scheduled Safety Committee meeting. These investigations demonstrate the company's commitment to providing a safe and healthful work environment. Disciplinary Policy will be enforced.

To ensure that accidents will be reported, employees must be encouraged to participate in the "fact-finding" process. The point emphasized must be that "hazardous conditions" and "unsafe practices" are an indication of a much bigger problem with a breakdown in the safety and health policy. The purpose of the accident investigation then becomes one that will uncover these system problems and provide solutions that will result in long term corrective action.

It is important to gather facts and interview witnesses as soon as possible after an accident to ensure the most accurate information is being recorded. The efficiency of the corrective measures is determined by the accuracy of the information gathered. The best place to conduct an interview is wherever the employee being interviewed feels most comfortable. The most important interviewing technique you can use to ensure accuracy is to "listen".

**Note:** Consider the event a "serious accident" if an employee is admitted to a hospital for treatment or observation as a result of injuries suffered from a workplace accident.

#### **Accident/Incident Causes**

Accidents occur when hazards escape detection during preventive measures, such as a job or process safety assessment, when hazards are not obvious, or as the result of combinations of circumstances that were difficult to foresee. A thorough accident investigation may identify previously overlooked physical, environmental, or process hazards, the need for new or more extensive safety training, or unsafe work practices.

The primary focus of any accident investigation should be the determination of the facts surrounding the incident and the lessons that can be learned to prevent future similar occurrences. The focus of the investigation should NEVER be to place blame. The process should be positive and thought of as an opportunity for improvement.

## **When Accident/Incident Investigations are Required**

As a general rule, investigations should be conducted for:

- All injuries (even the very minor ones).
- All accidents with potential for injury.
- Fires, explosions, Spills
- Property and/or product damage situations.
- All "Near Misses" where there was potential for serious injury.

Near-miss and incident reporting and investigation allow you to identify and control hazards before they cause a more serious incident. Accident/incident investigations are a tool for uncovering hazards that either were missed earlier or hazards where controls were defeated. However, it is important to remember that the investigation is only useful when its objective is to identify root causes. In other words, every contributing factor to the incident must be uncovered and recommendations made to prevent recurrence.

## **Accident/Incident Investigation Plan**

When a serious accident occurs in the workplace, everyone will be too busy dealing with the emergency at hand to worry about putting together an investigation plan, so the best time to develop effective accident investigation procedures is before the accident occurs. Part of an effective Accident and Incident Investigation Plan is to assign responsibilities

**The plan should include procedures that determine:**

- Who should be notified of accident?
- Who is authorized to notify outside agencies? (fire, police, etc.)
- Who is assigned to conduct investigations?
- Training required for accident investigators:
- Who receives and acts on investigation reports?
- Timetables for conducting hazard correction.

## **Reporting Requirements**

Local reporting sequence of events

### **For Injuries**

- If a fatal injury, illness, or hospitalization of three (3) or more employees occurs, the plant manager will immediately notify the following persons and agency:
  - Corporate Environmental Health and Safety (EHS) Director
  - Division Manager (or any superior in this level)
  - Group Manager or Team Leader (or any superior in this level)
  - The area OSHA office (must be notified within 8 hours)

### **Involving the Environment**

- If an environmental incident occurs that is required to be reported to local, state and/or federal agencies, the following persons should be notified:
  - Corporate EHS Director
  - Division Manager (or any superior in this level)
  - Group Manager or Team Leader (or any superior in this level)
  - Appropriate local, state and/or federal agency

### **Time elements of when incident should be reported**

*Demex International, Inc.* is required to verbally report incidents to OSHA within 8 hours of discovery.

Incidents must be reported to owner client as soon as possible (or within 24 hours).

### **Reportable Incidents**

- injury, illness, death, hospitalization of employees
- spills, property damage, fires, explosions, vehicle damage

## **Secure the Accident/Incident Scene**

For a serious accident, the first action the accident team needs to take is to secure the accident scene so material evidence is not moved or removed. Material evidence has a tendency to walk off after an accident. If the accident is quite serious, OSHA may inspect and require that all material evidence be marked and remain at the scene of the accident.

### **On site first response**

Employees who could be first responders should be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase.

### **Prevent further loss.**

After an immediate rescue, *Demex International, Inc.* will take actions to prevent further loss: for example:

Maintenance personnel should be summoned to assess integrity of building and equipment, engineering personnel to evaluate the need for bracing of structures, and special equipment/response requirements such as safe rendering of hazardous materials or explosives employed.

### **Gather Information**

The next step is to gather useful information about what directly and indirectly contributed to the accident.

The proper equipment will be available to assist in conducting an investigation:, Writing equipment such as paper, pens, pens, measuring equipment, cameras, small tools, audio recorder, PPE, marking devices such as flags, equipment manuals, etc.

The following tools should be used to gather as much information as possible:

- Locate witnesses, ensuring unbiased testimony, & obtain appropriate interviewing location
- To ensure detailed interviews, interviewers must be trained
- Interview eye witnesses as soon as possible after the accident. Interview witnesses separately, never as a group. Statements must be collected.
- Interview other interested persons such as supervisors, co-workers, etc.
- Follow-up interviews with all witnesses.
- Review related records such as:
  - Training records
  - Disciplinary records
  - Medical records (as allowed)
  - Maintenance records
  - OSHA 300 Log (past similar injuries)
  - Safety Committee records
- Document the scene with photographs, videotape, or sketches AND appropriate measurements.

### **Evidence**

Initial Identification of evidence immediately following the incident will include a listing of People, equipment, and materials involved and a recording of factors such as weather, illumination temperature, noise, ventilation, Etc.

*Demex International, Inc.* must keep a collection of evidence, and ensure that it is preserved and secure. Evidence such as people, positions of equipment, parts, and papers must be preserved, secured, and collected through, notes, photographs, witness statements, flagging, and impounding of documents and equipment.

## **Develop a Sequence of Events**

Use the information gathered to develop a detailed step by step description of the accident. Make sure the accident is documented in enough detail to enable an individual unfamiliar with the situation to envision the sequence of events. Do not just describe the accident itself; include a description of events that led up to the accident.

## **Analyze the Accident/Incident**

The next step is to determine the cause(s) of the accident. This is the most difficult step because first the events must be analyzed to discover surface cause(s) for the accident, and then, by asking "why" a number of times, the related root causes are uncovered. Remember, surface causes are usually pretty obvious and not too difficult to determine. However, it may take a great deal more time to accurately determine the weaknesses in the management system, or root causes, that contributed to the conditions and practices associated with the accident.

### **More on surface causes:**

The surface causes of accidents are those hazardous conditions and individual unsafe employee/manager behaviors that have directly caused or contributed in some way to the accident.

### **Hazardous conditions may exist in any of the following categories:**

- Materials
- Machinery
- Equipment
- Tools
- Chemicals
- Environment
- Workstations
- Facilities
- People
- Workload

It is important to know that most hazardous conditions in the workplace are the result of unsafe behaviors that produced them. Individual unsafe behaviors may occur at any level of the organization.

### **Some example of unsafe employee/manager behaviors include:**

- Failing to comply with rules
- Using unsafe methods
- Taking shortcuts
- Horseplay
- Failing to report injuries
- Failing to report hazards
- Allowing unsafe behaviors
- Failing to train
- Failing to supervise
- Failing to correct
- Scheduling too much work
- Ignoring worker stress

## **More on root causes:**

The root causes for accidents are the underlying system weaknesses that have somehow contributed to the existence of hazardous conditions and unsafe behaviors that represent surface causes of accidents. Root causes always pre-exist surface causes. Inadequately designed system components have the potential to feed and nurture hazardous conditions and unsafe behaviors. If root causes are left unchecked, surface causes will flourish!

## **Root causes may be separated into two categories:**

**System design weaknesses** — Missing or inadequately designed policies, programs, plans, processes, and procedures will affect conditions and practices generally throughout the workplace. Defects in system design represent hazardous system conditions.

**System implementation weaknesses** — Failures to initiate, carry out, or accomplish safety policies, programs, plans, processes, and procedures. Defects in implementation represent ineffective management behavior.

<b>System Design Weaknesses</b>	<b>System Weaknesses</b>	<b>Implementation</b>
<ul style="list-style-type: none"><li>• Missing or inadequate safety policies/rules</li><li>• Training program not in place</li><li>• Poorly written plans</li><li>• Inadequate process</li><li>• No procedures in place</li><li>• Develop Preventive Actions</li></ul>	<ul style="list-style-type: none"><li>• Safety policies/rules are not being enforced</li><li>• Safety training is not being conducted</li><li>• Adequate supervision is not conducted</li><li>• Incident/Accident analysis is inconsistent</li><li>• Lockout/Tagout procedures are not reviewed annually</li></ul>	

## **Corrective Actions**

This is the most important piece of any investigation. All of the work done to this point culminates with recommendations to prevent similar accidents from happening in the future. Recommendations should relate directly to the surface and root causes of the accident.

These recommendations should include recommended actions such as:

- Assigned responsibilities relative to the corrective actions.
- Actions should be tracked to closure.
- Engineering controls (for example, local exhaust ventilation or use of a lift assisting device).
- Work practice controls (for example, pre-plan work, and remove jewelry and loose fitting clothing before operating machinery).
- Administrative controls (e.g., standard operating procedures or worker rotation).
- Personal protective equipment (for example, safety glasses or respirators).

It is crucial that, after making recommendations to eliminate or reduce the surface causes, that the same procedure is used to recommend actions to correct the root causes. If root causes are not corrected, it is only a matter of time before a similar accident occurs.

## **Roles and Responsibilities**

As part of a proactive safety and health policy **Gary L. DeMarsh** will ensure all employees understand their responsibilities and roles prior to the occurrence of an incident.

### **Gary L. DeMarsh is responsible for:**

- implementing this procedure in their area of responsibility and accountability
- ensuring that appropriate staff receive suitable training to carry out their role in hazard and incident reporting, investigation and recording;
- completing training for Incident Investigation
- promptly reporting and investigating incidents in their area of responsibility and accountability
- completing and forwarding incident report forms as soon as practicable and within designated time lines using approved forms for incident reporting
- implementing identified risk control measures to prevent recurrence of incidents
- consulting with staff in relation to the measures to be taken to prevent recurrence of incidents
- reviewing hazard/incident reports for their area to ensure that all recommendations are implemented
- ensuring, as far as is reasonably practicable, that adequate financial provision and other resources are made available to institute the recommended actions

### **Staff is responsible for:**

- not placing themselves or others at risk of injury
- reporting incidents to their supervisor or manager, and health and safety representative (if applicable), as soon as possible after the event
- participating in the development of appropriate risk control measures to prevent recurrence of similar incidents
- using risk control measures as required and any other action taken, which is designed to protect health and safety.

Health and Safety Representatives (HSR) are encouraged to participate in investigations of incidents and assist with the development of measures to prevent their recurrence.

- Personnel must be trained in their roles and responsibilities for incident response and incident investigation techniques.
- Training requirements relative to incident investigation and reporting (Awareness, First Responder, investigation, and training frequency) should be identified in this program.

### **Written Incident report**

- Written incident reports should be prepared and include an incident report form and a detailed narrative statement concerning the event. The format of the narrative may include an introduction, methodology, summary of the incident, investigation board members names, narrative of the event, findings, and recommendations. Photographs, witness statements, drawings, etc. should be included

### **Documentation and Communications of lessons learned**

Lessons learned should be reviewed and communicated. Changes to processes must be placed into effect to prevent reoccurrences or similar events.

## **Training**

All personnel will receive, as part of their training in avoiding and preventing accidents and injuries, instruction concerning their roles and responsibilities in the event of an accident or incident. This training should include:

- What qualifies as reportable accidents or incidents (and near-misses);
- Who should be contacted in the event of a reportable incident;
- An explanation of the accident/incident investigation plan; and
- Incident investigation techniques and employee responsibilities during and after an incident/accident.

## **Summary**

A successful accident investigation determines not only what happened, but also finds how and why the accident occurred. Investigations are crucial as an effort to prevent a similar or perhaps more disastrous sequence of events. Research has shown that a typical accident is the result of many related and unrelated factors that somehow all come together at the same time. It is estimated that there are usually more than ten factors that contribute to a serious accident. Although, this combination of factors normally makes an investigation very time consuming and resource intensive, the good news is that the accident can normally be prevented by removing only a few of the contributing factors.

# **EMPLOYEE INCIDENT REPORT**

Work site: \_\_\_\_\_

Manager/Supervisor: \_\_\_\_\_

Employee name \_\_\_\_\_ Date \_\_\_\_\_

Job title \_\_\_\_\_

Incident:

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Action taken:

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## **CODE OF CONDUCT**

- Proactive management includes Supervisory leadership and control to change unproductive activities. Conformance with safety policies, rules, and regulations is a necessary component of our Safety Program.
- Employee safety responsibilities are communicated during initial orientation. Safety rules and regulations are reviewed with employees by their supervisors and are part of the documented Employee Safety Training Process.
- Supervisors understand and enforce safety rules as a part of their job. This process may involve coaching, counseling, verbal, or written reprimands, and discipline in the form of suspension and/or termination. When appropriate, documented verbal warnings and reprimands are issued and carried out by supervisors.
- Failure to adhere to any of the Safety Rules and Safe Work Practices will result in disciplinary action. All discipline will be documented in the employee's folder. Discipline may be more severe depending on the offense.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Employee

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Supervisor

# ACCIDENT / INCIDENT REPORT

*Demex International, Inc.*

PAGE 1

Date of Accident	Time	Day of Week <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> S	Shift <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Department
<b>INJURED PERSON</b>				
Name:		Address:		
Age:	Phone:			
Job Title:		Supervisor Name:		
Length of Employment at Company:		Length of Employment at Job:		
Employee Classification: <input type="checkbox"/> Full Time <input type="checkbox"/> Part Time <input type="checkbox"/> Contract <input type="checkbox"/> Temporary				
<b>Nature of Injury</b>		<input type="checkbox"/> Bruising	<input type="checkbox"/> Dislocation	<input type="checkbox"/> Other (specify)
<input type="checkbox"/> Strain/Sprain		<input type="checkbox"/> Scratch/Abrasions	<input type="checkbox"/> Internal	
<input type="checkbox"/> Fracture		<input type="checkbox"/> Amputation	<input type="checkbox"/> Foreign Body	Remarks:
<input type="checkbox"/> Laceration/Cut		<input type="checkbox"/> Burn/Scald	<input type="checkbox"/> Chemical Reaction	
<b>Treatment</b>		<b>Name and Address of Treating Physician or Facility:</b>		
<input type="checkbox"/> First Aid				
<input type="checkbox"/> Emergency Room				
<input type="checkbox"/> Dr.'s Office				
<input type="checkbox"/> Hospitalization				
<b>DAMAGED PROPERTY</b>				
<b>Property, Equipment, or Material Damaged</b>		<b>Describe Damage</b>		
<b>Object or Substance Inflicting Damage:</b>				
<b>INCIDENT DESCRIPTION</b>				
Describe what happened (attach photographs or diagrams if necessary)				
<b>ROOT CAUSE ANALYSIS (Check All that Apply)</b>				
<b>Unsafe Acts</b>		<b>Unsafe Conditions</b>	<b>Management Deficiencies</b>	
<input type="checkbox"/> Improper work technique		<input type="checkbox"/> Poor workstation design/layout	<input type="checkbox"/> Lack of written policies &procedures	
<input type="checkbox"/> Safety rule violation		<input type="checkbox"/> Congested work area	<input type="checkbox"/> Safety rules not enforced	
<input type="checkbox"/> Improper PPE or PPE not used		<input type="checkbox"/> Hazardous substances	<input type="checkbox"/> Hazards not identified	
<input type="checkbox"/> Operating without authority		<input type="checkbox"/> Fire or explosion hazard	<input type="checkbox"/> PPE unavailable	
<input type="checkbox"/> Failure to warn or secure		<input type="checkbox"/> Inadequate ventilation	<input type="checkbox"/> Insufficient worker training	
<input type="checkbox"/> Operating at improper speeds		<input type="checkbox"/> Improper material storage	<input type="checkbox"/> Insufficient supervisor training	
<input type="checkbox"/> By-passing safety devices		<input type="checkbox"/> Improper tool or equipment	<input type="checkbox"/> Improper maintenance	
<input type="checkbox"/> Guards not used		<input type="checkbox"/> Insufficient knowledge of job	<input type="checkbox"/> Inadequate supervision	
<input type="checkbox"/> Improper loading or placement		<input type="checkbox"/> Slippery conditions	<input type="checkbox"/> Inadequate job planning	
<input type="checkbox"/> Improper lifting		<input type="checkbox"/> Poor housekeeping	<input type="checkbox"/> Inadequate hiring practices	
<input type="checkbox"/> Servicing machinery in motion		<input type="checkbox"/> Excessive noise	<input type="checkbox"/> Inadequate workplace inspection	
<input type="checkbox"/> Horseplay		<input type="checkbox"/> Inadequate hazards guarding	<input type="checkbox"/> Inadequate equipment	
<input type="checkbox"/> Drug or alcohol use		<input type="checkbox"/> Defective tools/equipment	<input type="checkbox"/> Unsafe design or construction	
<input type="checkbox"/> Unnecessary haste		<input type="checkbox"/> Insufficient lighting	<input type="checkbox"/> Unrealistic scheduling	
<input type="checkbox"/> Unsafe act of others		<input type="checkbox"/> Inadequate fall protection	<input type="checkbox"/> Poor process design	
<input type="checkbox"/> Other:		<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	

# ACCIDENT / INCIDENT REPORT

## ACCIDENT/INCIDENT ANALYSIS

Using the root cause analysis list on the previous page, explain the cause(s) of the incident in as much detail as possible.

Make sketches or illustrations to help describe incident:

### How bad could the accident have been?

Very Serious    Serious    Minor

### What is the chance of the accident happening again?

Frequent    Occasional    Rare

## PREVENTIVE ACTIONS

Describe actions that will be taken to prevent recurrence:

Deadline

By Whom

Complete

## INVESTIGATION TEAM

Name

Signature

Position

# **Chapter 19**

## ***Demex International, Inc.***

### **Injury / Illness Recordkeeping Policy**

#### **Policy Statement:**

**Demex International, Inc.** has adopted this policy for Injury / Illness Recordkeeping in accordance with the following OSHA regulations:

#### **§1904 – Injury / Illness Recordkeeping**

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Records**

It is the policy of *Demex International, Inc.* to keep records of fatalities, injuries, and illnesses that:

- Are work related,
- Is a new case, and
- Meets one or more of the general recording criteria.

It is the policy of *Demex International, Inc.* to enter each recordable injury or illness on an OSHA 300 Log and 301 incident report, or other equivalent form, within seven (7) calendar days of receiving information that a recordable injury or illness has occurred.

At the end of each calendar year **Gary L. DeMarsh** must examine the OSHA 300 Log and certify that, based on the knowledge of the process by which the information was recorded, that the annual summary is correct and complete. A designated company official must sign the OSHA 300A Summary and make it available for posting. See §1904.32 (b)(3).

#### **Annual Summary Posting**

It is the intent of *Demex International, Inc.* to post a copy of the annual summary in each facility. The summary must be posted in a conspicuous place or places where notices to employees are customarily posted.

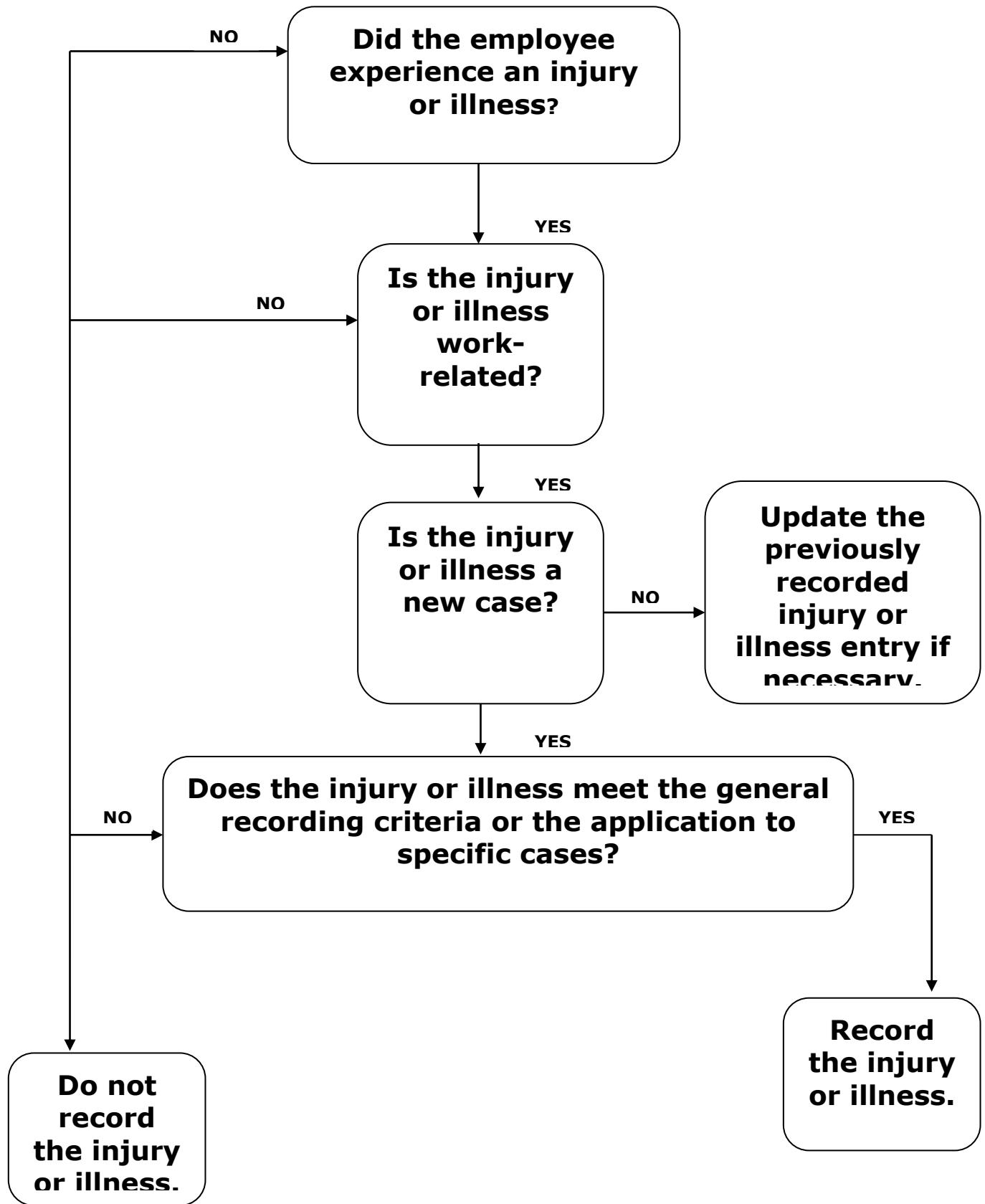
It is the determination of *Demex International, Inc.* to ensure that the posted annual summary is:

- Not altered,
- Defaced, or
- Covered by other material.

It is the policy of *Demex International, Inc.* that the annual summary must be posted no later than February 1<sup>st</sup> of the year following the year covered by the records. The posting must be kept in place until April 30<sup>th</sup>.

It is the determination of *Demex International, Inc.* to save the OSHA 300 Log, the privacy case list (if one exists), the annual summary, and the OSHA 301 Incident Report Forms for five (5) years following the end of the calendar year that these records cover.

The decision tree for recording work-related injuries and illnesses on the next page shows the steps involved in how to decide whether a particular injury or illness is recordable.



## **General Recording Criteria**

(a) Basic requirement. You must consider an injury or illness to meet the general recording criteria, and therefore to be recordable, if it results in any of the following: death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. You must also consider a case to meet the general recording criteria if it involves a significant injury or illness diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness.

(b) Implementation.

(1) How do I decide if a case meets one or more of the general recording criteria?

A work-related injury or illness must be recorded if it results in one or more of the following:

- (i) Death. See §1904.7 (b)(2).
- (ii) Days away from work. See §1904.7 (b)(3).
- (iii) Restricted work or transfer to another job. See §1904.7 (b)(4).
- (iv) Medical treatment beyond first aid. See §1904.7 (b)(5).
- (v) Loss of consciousness. See §1904.7 (b)(6).
- (vi) A significant injury or illness diagnosed by a physician or other licensed health care professional. See §1904.7 (b)(7).

(2) How do I record a work-related injury or illness that results in the employee's death?

You must record an injury or illness that results in death by entering a check mark on the OSHA 300 Log in the space for cases resulting in death. You must also report any work-related fatality to OSHA within eight (8) hours, as required by §1904.39.

(3) How do I record a work-related injury or illness that results in days away from work?

When an injury or illness involves one or more days away from work, you must record the injury or illness on the OSHA 300 Log with a check mark in the space for cases involving days away and an entry of the number of calendar days away from work in the number of days column. If the employee is out for an extended period of time, you must enter an estimate of the days that the employee will be away, and update the day count when the actual number of days is known.

(i) Do I count the day on which the injury occurred or the illness began?

No, you begin counting days away on the day after the injury occurred or the illness began.

(ii) How do I record an injury or illness when a physician or other licensed health care professional recommends that the worker stay at home but the employee comes to work anyway?

You must record these injuries and illnesses on the OSHA 300 Log using the check box for cases with days away from work and enter the number of calendar days away recommended by the physician or other licensed health care professional. If a physician or other licensed health care professional recommends days away, you should encourage your employee to follow that recommendation. However, the days away must be recorded whether the injured or ill employee follows the physician or licensed health care professional's recommendation or not. If you receive recommendations from two or more physicians or other licensed health care professionals, you may make a decision as to which recommendation is the most authoritative, and record the case based upon that recommendation.

(4) How do I record a work-related injury or illness that results in restricted work or job transfer?

When an injury or illness involves restricted work or job transfer but does not involve death or days away from work, you must record the injury or illness on the OSHA 300 Log by placing a check mark in the space for job transfer or restriction and an entry of the number of restricted or transferred days in the restricted workdays column.

(i) How do I decide if the injury or illness resulted in restricted work?

Restricted work occurs when, as the result of a work-related injury or illness:

[A] You keep the employee from performing one or more of the routine functions of his or her job, or from working the full workday that he or she would otherwise have been scheduled to work; or

[B] A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of his or her job, or not work the full workday that he or she would otherwise have been scheduled to work.

(ii) What is meant by "routine functions"?

For recordkeeping purposes, an employee's routine functions are those work activities the employee regularly performs at least once per week.

(iii) Do I have to record restricted work or job transfer if it applies only to the day on which the injury occurred or the illness began?

No, you do not have to record restricted work or job transfers if you, or the physician or other licensed health care professional, impose the restriction or transfer only for the day on which the injury occurred or the illness began.

(iv) If you or a physician or other licensed health care professional recommends a work restriction, is the injury or illness automatically recordable as a "restricted work" case?

No, a recommended work restriction is recordable only if it affects one or more of the employee's routine job functions. To determine whether this is the case, you must evaluate the restriction in light of the routine functions of the injured or ill employee's job. If the restriction from you or the physician or other licensed health care professional keeps the employee from performing one or more of his or her routine job functions, or from working the full workday the injured or ill employee would otherwise have worked, the employee's work has been restricted and you must record the case.

(v) How do I record a case where the worker works only for a partial work shift because of a work-related injury or illness?

A partial day of work is recorded as a day of job transfer or restriction for recordkeeping purposes, except for the day on which the injury occurred or the illness began.

(vi) If the injured or ill worker produces fewer goods or services than he or she would have produced prior to the injury or illness but otherwise performs all of the routine functions of his or her work, is the case considered a restricted work case?

No, the case is considered restricted work only if the worker does not perform all of the routine functions of his or her job or does not work the full shift that he or she would otherwise have worked.

(vii) How do I handle vague restrictions from a physician or other licensed health care professional, such as that the employee engage only in "light duty" or "take it easy for a week"?

If you are not clear about the physician or other licensed health care professional's recommendation, you may ask that person whether the employee can do all of his or her routine job functions and work all of his or her normally assigned work shift. If the answer to both of these questions is "Yes," then the case does not involve a work restriction and does not have to be recorded as such. If the answer to one or both of these questions is "No," the case involves restricted work and must be recorded as a restricted work case. If you are unable to obtain this additional information from the physician or other licensed health care professional who recommended the restriction, record the injury or illness as a case involving restricted work.

- (viii) What do I do if a physician or other licensed health care professional recommends a job restriction meeting OSHA's definition, but the employee does all of his or her routine job functions anyway?

You must record the injury or illness on the OSHA 300 Log as a restricted work case. If a physician or other licensed health care professional recommends a job restriction, you should ensure that the employee complies with that restriction. If you receive recommendations from two or more physicians or other licensed health care professionals, you may make a decision as to which recommendation is the most authoritative, and record the case based upon that recommendation.

- (ix) How do I decide if an injury or illness involved a transfer to another job?

If you assign an injured or ill employee to a job other than his or her regular job for part of the day, the case involves transfer to another job.

Note: This does not include the day on which the injury or illness occurred.

- (x) Are transfers to another job recorded in the same way as restricted work cases?

Yes, both job transfer and restricted work cases are recorded in the same box on the OSHA 300 Log. For example, if you assign, or a physician or other licensed health care professional recommends that you assign, an injured or ill worker to his or her routine job duties for part of the day and to another job for the rest of the day, the injury or illness involves a job transfer. You must record an injury or illness that involves a job transfer by placing a check in the box for job transfer.

- (xi) How do I count days of job transfer or restriction?

You count days of job transfer or restriction in the same way you count days away from work, using §1904.7 (b)(3)(i) to (viii), above. The only difference is that, if you permanently assign the injured or ill employee to a job that has been modified or permanently changed in a manner that eliminates the routine functions the employee was restricted from performing, you may stop the day count when the modification or change is made permanent. You must count at least one day of restricted work or job transfer for such cases.

- (5) How do I record an injury or illness that involves medical treatment beyond first aid?

If a work-related injury or illness results in medical treatment beyond first aid, you must record it on the OSHA 300 Log. If the injury or illness did not involve death, one or more days away from work, one or more days of restricted work, or one or more days of job transfer, you enter a check mark in the box for cases where the employee received medical treatment but remained at work and was not transferred or restricted.

- (i) What is the definition of medical treatment?

"Medical treatment" means the management and care of a patient to combat disease or disorder. For the purposes of Part 1904, medical treatment does not include:

[A] Visits to a physician or other licensed health care professional solely for observation or counseling;

[B] The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or

[C] "First aid" as defined in paragraph (b)(5)(ii) of this section.

(ii) What is "first aid"?

For the purposes of Part 1904, "first aid" means the following:

[A] Using a non-prescription medication at nonprescription strength (for medications available in both prescription and non-prescription form, a recommendation by a physician or other licensed health care professional to use a non-prescription medication at prescription strength is considered medical treatment for recordkeeping purposes);

[B] Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment);

[C] Cleaning, flushing or soaking wounds on the surface of the skin;

[D] Using wound coverings such as bandages, Band-Aids, gauze pads, etc.; or using butterfly bandages or Steri-Strips (other wound closing devices such as sutures, staples, etc., are considered medical treatment);

[E] Using hot or cold therapy;

[F] Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes);

[G] Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.).

[H] Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;

[I] Using eye patches;

[J] Removing foreign bodies from the eye using only irrigation or a cotton swab;

[K] Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means;

[L] Using finger guards;

[M] Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes); or

[N] Drinking fluids for relief of heat stress.

(iii) Are any other procedures included in first aid?

No, this is a complete list of all treatments considered first aid for Part 1904 purposes.

(iv) Does the professional status of the person providing the treatment have any effect on what is considered first aid or medical treatment?

No, OSHA considers the treatments listed in §1904.7 (b)(5)(ii) of this Part to be first aid regardless of the professional status of the person providing the treatment. Even when these treatments are provided by a physician or other licensed health care professional, they are considered first aid for the purposes of Part 1904. Similarly, OSHA considers treatment beyond first aid to be medical treatment even when it is provided by someone other than a physician or other licensed health care professional.

(v) What if a physician or other licensed health care professional recommends medical treatment but the employee does not follow the recommendation?

If a physician or other licensed health care professional recommends medical treatment, you should encourage the injured or ill employee to follow that recommendation. However, you must record the case even if the injured or ill employee does not follow the physician or other licensed health care professional's recommendation.

(6) Is every work-related injury or illness case involving a loss of consciousness recordable?

Yes, you must record a work-related injury or illness if the worker becomes unconscious, regardless of the length of time the employee remains unconscious.

(7) What is a "significant" diagnosed injury or illness that is recordable under the general criteria even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness?

Work-related cases involving cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum must always be recorded under the general criteria at the time of diagnosis by a physician or other licensed health care professional.

Note to §1904.7: OSHA believes that most significant injuries and illnesses will result in one of the criteria listed in §1904.7 (a): death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness. However, there are some significant injuries, such as a punctured eardrum or a fractured toe or rib, for which neither medical treatment nor work restrictions may be recommended. In addition, there are some significant progressive diseases, such as byssinosis, silicosis, and some types of cancer, for which medical treatment or work restrictions may not be recommended at the time of diagnosis but are likely to be recommended as the disease progresses. OSHA believes that cancer, chronic irreversible diseases, fractured or cracked bones, and punctured eardrums are generally considered significant injuries and illnesses, and must be recorded at the initial diagnosis even if medical treatment or work restrictions are not recommended, or are postponed, in a particular case.

## **Notes:**

# **Chapter 20**

## ***Demex International, Inc.***

### **Manual Lifting**

#### **Policy Statement:**

***Demex International, Inc.*** has adopted this policy to inform employees of the Manual Lifting Policy. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Hazard Assessment**

*Demex International, Inc.* ensures that before manual lifting is performed, a hazard assessment will be conducted.

The assessment must consider,

- size, bulk, and weight of the objects,
- if mechanical lifting equipment is required,
- if two-man lift is required,
- whether vision is obscured while carrying, and
- the walking surface and path where the object is to be carried.

#### **Proper Lifting Techniques**

It is the determination of *Demex International, Inc.* to ensure that all employees who are to engage in manual lifting will be properly trained on lifting techniques and the avoidance of musculoskeletal injuries.

Training will include,

- general principals of ergonomics,
- recognition of hazards and injuries,
- procedures for reporting hazardous conditions, and
- methods and procedures for early reporting of injuries.

Job specific training shall be given on safe lifting and work practices, hazards, and controls.

#### **Manual Lifting Equipment & Engineering Controls**

It is the policy of *Demex International, Inc.* to provide and enforce the use of manual lifting equipment such as,

- |                       |          |
|-----------------------|----------|
| • dollies             | • jacks  |
| • hand trucks         | • carts  |
| • lift assist devices | • hoists |

Other engineering controls should be considered such as,

- conveyors
- lift tables
- work station design

### **Investigation of Injuries**

It is the determination of *Demex International, Inc.* to investigate musculoskeletal injuries caused by improper lifting and to incorporate the injury findings into safe work procedures to prevent future injuries.

It is the policy of *Demex International, Inc.* to ensure that all injuries will be recorded and reported as required by 29 CFR Part 1904.

### **Two-Man Lifts**

Where use of lifting equipment is impractical or not possible, two-man lifts must be used.

### **Periodic Evaluation**

It is the responsibility of supervisors to periodically evaluate work areas and employees' work techniques to assess the potential for and prevention of injuries.

New operations will be evaluated to engineer out hazards before work processes are implemented.

# **Chapter 21**

## ***Demex International, Inc.***

### **Marine Transportation**

#### **Policy Statement:**

***Demex International, Inc.*** has adopted this policy to inform employees of the Marine Transportation Policy. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Vessels Authority**

It is the policy of *Demex International, Inc.* that all vessel captains must possess current licences as issued by the proper authorities to navigate any vessel.

The vessel captain has full authority during,

- boarding,
- loading,
- when underway, and
- disembarking procedures.

The vessel captain has the authority to refuse passage to anyone considered an unsafe passenger, and to require that seatbelts be worn when available.

All employees of *Demex International, Inc.* must adhere to the Personal Floatation Device rules aboard the vessel.

The vessel captain will refuse to allow persons not adhering to the Personal Floatation Device rules aboard the vessel.

It is the determination of *Demex International, Inc.* that materials, equipment, tools, containers, and other items used in the outer continental shelf (OCS) that are of such shape of configuration that they are likely to snag or damage fishing devices will be handled as follows:

- all loose materials, small tools, and other small objects will be kept in a suitable storage area or a marked container when not in use,
- all cable, chain, or wire segments will be recovered after use and securely stored until suitable disposal is accomplished,
- skid-mounted equipment, portable containers, spools, reels, and drums will be marked with the owner's name before use or transport over offshore waters,
- all markings must clearly identify the owner and must be durable enough to resist the effects of the environmental conditions to which they may be exposed, and
- MMS PINC G-252 stipulates that the above markings **cannot** be made with,
  - chalk
  - grease pencil
  - crayon
  - parking pens
  - non-waterproof decals
  - water based paints

## Hazardous Material

It is the policy of *Demex International, Inc.* that any hazardous materials must be properly,

- identified,
  - classified,
  - named,
  - packaged,
  - marked,
  - labeled, and
  - manifested.

If the requirements are not met the vessel captain has the full authority to refuse transportation of hazardous materials.

## **Notes:**

# **Chapter 22**

## ***Demex International, Inc.***

### **Company Policy for Occupational Noise Exposure**

**Demex International, Inc.** Safety Policy for the prevention of employee exposure to hazardous levels of noise is adopted from the following OSHA regulations:

#### ***§1910.95 – Occupational Noise Exposure***

*Demex International, Inc.* has implemented this Policy to ensure that no employee is exposed to noise levels in excess of the action levels as listed in the following regulations. *Gary L. DeMarsh* is the designated supervisor for ensuring the following engineering controls and work practices will be enforced:

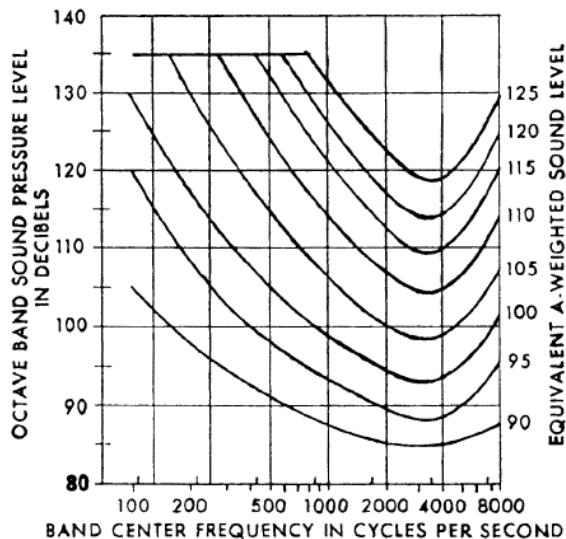
- Upon initial hiring, all employees who are exposed to action level noise will be trained in the hazards presented by excessive noise levels in the workplace, and the use and care of hearing protection devices. Training will be repeated annually for each employee and updated to reflect changes in personal protective equipment (PPE) and work processes or requirements. *Gary L. DeMarsh* will make copies of the noise exposure procedures available to affected employees and will also post a copy in the workplace and allow OSHA access to records.
- Hearing protectors are available upon request from *Gary L. DeMarsh* at no cost to all employees exposed to an 8-hr. time-weighted average of 85 decibels. Hearing protection will be replaced as necessary. Each employee will be properly trained in the use, care, and fitting of hearing protectors. *Gary L. DeMarsh* will ensure that hearing protectors are worn. Employees will be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors.
- *Demex International, Inc.* will provide a continuing effective hearing conservation program when employees are exposed to sound levels greater than 85 dBs on an 8 hour time-weighted average basis.
- When information indicates that employee exposure may equal/exceed the 8 hr time-weighted avg. of 85 decibels, *Gary L. DeMarsh* will implement a monitoring program to identify employees to be included in the hearing conservation program.
- Employees will be required to wear hearing protection in work areas whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent.
- *Gary L. DeMarsh* will maintain an audiometric testing program by making audiometric testing available to all employees whose exposures equal or exceed an 8-hr. time-weighted avg. 85 decibels. The program is provided at no cost to employees.
- Audio monitoring will be implemented if it is believed noise levels in work areas are approaching or exceed action level limits. If monitoring results indicate exposures equaling or exceeding safe limits, an employee will be included in a hearing conservation program.

- Within 6 months of an employee's first exposure at or above the action level, *Demex International, Inc.* shall establish a valid baseline audiogram against which future audiograms can be compared. When a mobile van is used, the baseline shall be established within 1 yr.
- Testing to establish a baseline audiogram will be preceded by at least 14 hours without exposure to workplace noise. Hearing protection may be used to meet the requirement. Employees will also be notified to avoid high levels of noise.
- At least annually after obtaining the baseline audiogram, *Gary L. DeMarsh* will obtain a new audiogram for each employee exposed at or above an 8-hour time-weighted average of 85 decibels. Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift, the employee shall be informed of this fact in writing, within 21 days of the determination.
- If a standard threshold shift occurs, use of hearing protection shall be re-evaluated and/or refitted and if necessary a medical evaluation may be required. The following procedures will be implemented:
  - Employees not using hearing protectors will be fitted with hearing protectors, trained in their use and care, and required to use them.
  - Employees already using hearing protectors will be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.
  - Employees will be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if it is suspected that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.
  - Employees will be informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.
  - Audiometric evaluation and testing conducted by a licensed physician using the guidelines contained in §1910.95 (g), and is available to all employees whose work requirements equals or exceeds an 8 hr. time-weighted average 85 decibels on a regular basis at no cost to the employee. Hearing protection is available at no cost to all employees upon request from the jobsite foreman or company office.
- *Gary L. DeMarsh* will evaluate hearing protection for the specific noise environments in which the protector will be used.
- An accurate record of all audio testing and monitoring will be kept at the company office and maintained as required. Evaluations will be done for suitable hearing protection from the noise levels encountered in the workplace. These records, as well as information on these OSHA regulations and appendices will be available to employees upon request.
- Hearing protection is available at no cost to all employees upon request from the jobsite foreman or company office.

## §1910.95 – Occupational Noise Exposure

a) Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G-16 when measured on the A scale of a standard sound level meter at slow response. When noise levels are determined by octave band analysis, the equivalent A-weighted sound level may be determined as follows:

**Equivalent sound level contours.** Octave band sound pressure levels may be converted to the equivalent A-weighted sound level by plotting them on this graph and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, is used to determine exposure limits from Table 1.G-16.



**Figure G-9**

TABLE G-16—PERMISSIBLE NOISE EXPOSURES<sup>1</sup>

Duration per day, hours	Sound level dBA slow response
8 .....	90
6 .....	92
4 .....	95
3 .....	97
2 .....	100
1½ .....	102
1 .....	105
½ .....	110
¼ or less .....	115

<sup>1</sup> When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions:  $C_1/T_1 + C_2/T_2 C_n/T_n$  exceeds unity, then, the mixed exposure should be considered to exceed the limit value.  $C_n$  indicates the total time of exposure at a specified noise level, and  $T_n$  indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

(c) Hearing conservation program.

(1) The employer shall administer a continuing, effective hearing conservation program, as described in paragraphs (c) through (o) of this section, whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with Appendix A and Table G-16a, and without regard to any attenuation provided by the use of personal protective equipment.

(2) For purposes of paragraphs (c) through (n) of this section, an 8-hour time-weighted average of 85 decibels or a dose of fifty percent shall also be referred to as the action level.

(d) Monitoring.

(1) When information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, the employer shall develop and implement a monitoring program.

(i) The sampling strategy shall be designed to identify employees for inclusion in the hearing conservation program and to enable the proper selection of hearing protectors.

- (ii) Where circumstances such as high worker mobility, significant variations in sound level, or a significant component of impulse noise make area monitoring generally inappropriate, the employer shall use representative personal sampling to comply with the monitoring requirements of this paragraph unless the employer can show that area sampling produces equivalent results.
- (2) (i) All continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels shall be integrated into the noise measurements.
- (ii) Instruments used to measure employee noise exposure shall be calibrated to ensure measurement accuracy.
- (3) Monitoring shall be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that:
- (i) Additional employees may be exposed at or above the action level; or
- (ii) The attenuation provided by hearing protectors being used by employees may be rendered inadequate to meet the requirements of paragraph (j) of this section.
- (e) **Employee notification.** The employer shall notify each employee exposed at or above an 8-hour time-weighted average of 85 decibels of the results of the monitoring.
- (f) **Observation of monitoring.** The employer shall provide affected employees or their representatives with an opportunity to observe any noise measurements conducted pursuant to this section.
- (g) **Audiometric testing program.**
- (1) The employer shall establish and maintain an audiometric testing program as provided in this paragraph by making audiometric testing available to all employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels.
- (2) **The program shall be provided at no cost to employees.**
- (4) All audiograms obtained pursuant to this section shall meet the requirements of Appendix C: Audiometric Measuring Instruments.
- (5) **Baseline audiogram.**
- (i) Within 6 months of an employee's first exposure at or above the action level, the employer shall establish a valid baseline audiogram against which subsequent audiograms can be compared.
- (ii) **Mobile test van exception.** Where mobile test vans are used to meet the audiometric testing obligation, the employer shall obtain a valid baseline audiogram within one year of an employee's first exposure at or above the action level, employees shall wear hearing protectors for any period exceeding six months after first exposure until the baseline audiogram is obtained.
- (iii) Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.
- (iv) The employer shall notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination.
- (6) **Annual audiogram.** At least annually after obtaining the baseline audiogram, the employer shall obtain a new audiogram for each employee exposed at or above an 8-hour time-weighted average of 85 decibels.
- (7) **Evaluation of audiogram.**
- (i) Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift as defined in paragraph (g)(10) of this section has occurred. This comparison may be done by a technician.
- (ii) If the annual audiogram shows that an employee has suffered a standard threshold shift, the employer may obtain a retest within 30 days and consider the results of the retest as the annual audiogram.
- (iii) The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. The employer shall provide to the person performing this evaluation the following information:
- (A) A copy of the requirements for hearing conservation as set forth in paragraphs (c) through (n) of this section;
- (B) The baseline audiogram and most recent audiogram of the employee to be evaluated;
- (C) Measurements of background sound pressure levels in the audiometric test room as required in Appendix D: Audiometric Test Rooms.
- (D) Records of audiometer calibrations required by paragraph (h)(5) of this section.
- (8) **Follow-up procedures.**

(i) If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift as defined in paragraph (g)(10) of this section has occurred, the employer shall be informed of this fact in writing, within 21 days of the determination.

(ii) Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, the employer shall ensure that the following steps are taken when a standard threshold shift occurs:

(A) Employees not using hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them.

(B) Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.

(C) The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if the employer suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

(D) The employee is informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.

(iii) If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 decibels indicates that a standard threshold shift is not persistent, the employer:

(A) Shall inform the employee of the new audiometric interpretation; and

(B) May discontinue the required use of hearing protectors for that employee.

(9) Revised baseline. An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist or physician who is evaluating the audiogram:

(i) The standard threshold shift revealed by the audiogram is persistent; or

(ii) The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.

**(10) Standard threshold shift.**

(i) As used in this section, a standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

(ii) In determining whether a standard threshold shift has occurred, allowance may be made for the contribution of aging (presbycusis) to the change in hearing level by correcting the annual audiogram according to the procedure described in appendix F: *Calculation and Application of Age Correction to Audiograms*.

**(h) Audiometric test requirements.**

(1) Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including as a minimum 500, 1000, 2000, 3000, 4000, and 6000 Hz. Tests at each frequency shall be taken separately for each ear.

(2) Audiometric tests shall be conducted with audiometers (including microprocessor audiometers) that meet the specifications of, and are maintained and used in accordance with, American National Standard Specification for Audiometers, S3.6-1969, which is incorporated by reference as specified in §1910.6.

(3) Pulsed-tone and self-recording audiometers, if used, shall meet the requirements specified in Appendix C: Audiometric Measuring Instruments.

(4) Audiometric examinations shall be administered in a room meeting the requirements listed in Appendix D: Audiometric Test Rooms.

**(5) Audiometer calibration.**

(i) The functional operation of the audiometer shall be checked before each day's use by testing a person with known, stable hearing thresholds, and by listening to the audiometer's output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.

(ii) Audiometer calibration shall be checked acoustically at least annually in accordance with Appendix E: Acoustic Calibration of Audiometers. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check. Deviations of 15 decibels or greater require an exhaustive calibration.

(iii) An exhaustive calibration shall be performed at least every two years in accordance with sections 4.1.2; 4.1.3.; 4.1.4.3; 4.2; 4.4.1; 4.4.2; 4.4.3; and 4.5 of the American National Standard Specification for Audiometers, S3.6-1969. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.

**(i) Hearing protectors.**

**(1) Employers shall make hearing protectors available to all employees exposed to an 8-hour time-weighted average of 85 decibels or greater at no cost to the employees. Hearing protectors shall be replaced as necessary.**

**(2) Employers shall ensure that hearing protectors are worn:**

**(i) By an employee who is required by paragraph (b)(1) of this section to wear personal protective equipment; and**

**(ii) By any employee who is exposed to an 8-hour time-weighted average of 85 decibels or greater, and who:**

**(A) Has not yet had a baseline audiogram established pursuant to paragraph (g)(5)(ii); or**

**(B) Has experienced a standard threshold shift.**

**(3) Employees shall be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors provided by the employer.**

**(4) The employer shall provide training in the use and care of all hearing protectors provided to employees.**

**(5) The employer shall ensure proper initial fitting and supervise the correct use of all hearing protectors.**

**(j) Hearing protector attenuation.**

**(1) The employer shall evaluate hearing protector attenuation for the specific noise environments in which the protector will be used. The employer shall use one of the evaluation methods described in Appendix B: Methods for Estimating the Adequacy of Hearing Protection Attenuation.**

**(2) Hearing protectors must attenuate employee exposure at least to an 8-hour time-weighted average of 90 decibels as required by paragraph (b) of this section.**

**(3) For employees who have experienced a standard threshold shift, hearing protectors must attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or below.**

**(4) The adequacy of hearing protector attenuation shall be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. The employer shall provide more effective hearing protectors where necessary.**

**(k) Training program.**

**(1) The employer shall institute a training program for all employees who are exposed to noise at or above an 8-hour time-weighted average of 85 decibels, and shall ensure employee participation in such program.**

**(2) The training program shall be repeated annually for each employee included in the hearing conservation program. Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.**

**(3) The employer shall ensure that each employee is informed of the following:**

**(i) The effects of noise on hearing;**

**(ii) The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and**

**(iii) The purpose of audiometric testing, and an explanation of the test procedures.**

**(l) Access to information and training materials.**

**(1) The employer shall make available to affected employees or their representatives copies of this standard and shall also post a copy in the workplace.**

**(2) The employer shall provide to affected employees any informational materials pertaining to the standard that are supplied to the employer by the Assistant Secretary.**

**(3) The employer shall provide, upon request, all materials related to the employer's training and education program pertaining to this standard to the Assistant Secretary and the Director.**

**(m) Recordkeeping.**

**(1) Exposure measurements.** The employer shall maintain an accurate record of all employee exposure measurements required by paragraph (d) of this section.

**(2) Audiometric tests.**

(i) The employer shall retain all employee audiometric test records obtained pursuant to paragraph (g) of this section:

(ii) This record shall include:

(A) Name and job classification of the employee;

(B) Date of the audiogram;

(C) The examiner's name;

(D) Date of the last acoustic or exhaustive calibration of the audiometer; and

(E) Employee's most recent noise exposure assessment.

(F) The employer shall maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.

**(3) Record retention.** The employer shall retain records required in this paragraph (m) for at least the following periods.

(i) Noise exposure measurement records shall be retained for two years.

(ii) Audiometric test records shall be retained for the duration of the affected employee's employment.

**(4) Access to records.** All records required by this section shall be provided upon request to employees, former employees, representatives designated by the individual employee, and the Assistant Secretary. The provisions of 29 CFR 1910.20(a)-(e) and (g)-(i) apply to access to records under this section.

**(5) Transfer of records.** If the employer ceases to do business, the employer shall transfer to the successor employer all records required to be maintained by this section, and the successor employer shall retain them for the remainder of the period prescribed in paragraph (m)(3) of this section.

## **APPENDIX A to §1910.95 — Noise Exposure Computation**

**This Appendix is Mandatory**

### **I. Computation of Employee Noise Exposure.**

**(1)** Noise dose is computed using Table G-16a as follows:

- (i)** When the sound level, L, is constant over the entire work shift, the noise dose, D, in percent, is given by:  $D = 100 C/T$  where C is the total length of the work day, in hours, and T is the reference duration corresponding to the measured sound level, L, as given in Table G-16a or by the formula shown as a footnote to that table.
- (ii)** When the workshift noise exposure is composed of two or more periods of noise at different levels, the total noise dose over the work day is given by:  $D = 100 (C_1/T_1 + C_2/T_2 + \dots + C_n/T_n)$ , where  $C_n$  indicates the total time of exposure at a specific noise level, and  $T_n$  indicates the reference duration for that level as given by Table G-16a.
- (2)** The eight-hour time-weighted average sound level (TWA), in decibels, may be computed from the dose, in percent, by means of the formula:  $TWA = 16.61 \log_{10} (D/100) + 90$ . For an eight-hour workshift with the noise level constant over the entire shift, the TWA is equal to the measured sound level.
- (3)** A table relating dose and TWA is given in Section II.

<b>A-weighted sound level, L (decibel)</b>	<b>Reference duration, T (hour)</b>	<b>A-weighted sound level, L (decibel)</b>	<b>Reference duration, T (hour)</b>
80	32	106	0.87
81	27.9	107	0.76
82	24.3	108	0.66
83	21.1	109	0.57
84	18.4	110	0.5
85	16	111	0.44
86	13.9	112	0.38
87	12.1	113	0.33
88	10.6	114	0.29
89	9.2	115	0.25
90	8	116	0.22
91	7.0	117	0.19
92	6.1	118	0.16
93	5.3	119	0.14
94	4.6	120	0.125
95	4	121	0.11
96	3.5	122	0.095
97	3.0	123	0.082
98	2.6	124	0.072
99	2.3	125	0.063
100	2	126	0.054
101	1.7	127	0.047
102	1.5	128	0.041
103	1.3	129	0.036
104	1.1	130	0.031
105	1		

In the above table the reference duration, T, is computed by

8

$$T = \frac{8}{2^{(L-90)/5}}$$

where L is the measured A-weighted sound level.

### **II. Conversion Between "Dose" and "8-Hour Time-Weighted Average" Sound Level.**

Compliance with paragraphs (c)-(r) of this regulation is determined by the amount of exposure to noise in the workplace. The amount of such exposure is usually measured with an audio dosimeter which gives a readout in terms of "dose." In order to better understand the requirements of the amendment, dosimeter readings can be converted to an "8-hour time-weighted average sound level." (TWA).

In order to convert the reading of a dosimeter into TWA, see Table A-1, below. This table applies to dosimeters that are set by the manufacturer to calculate dose or percent exposure according to the relationships in Table G-16a. So, for example, a dose of 91 percent over an eight hour day results in a TWA of 89.3 dB, and, a dose of 50 percent corresponds to a TWA of 85 dB.

If the dose as read on the dosimeter is less than or greater than the values found in Table A-1, the TWA may be calculated by using the formula:  $TWA = 16.61 \log_{10} (D/100) + 90$  where TWA = 8-hour time-weighted average sound level and D = accumulated dose in percent exposure.

**Table A-1 - Conversion from "Percent Noise Exposure" or "Dose" to "8-hour Time-Weighted Average Sound Level" (TWA)**

Dose or percent noise exposure	TWA	Dose or percent noise exposure	TWA	Dose or percent noise exposure	TWA	Dose or percent noise exposure	TWA
10	73.4	104	90.3	260	96.9	640	103.4
15	76.3	105	90.4	270	97.2	650	103.5
20	78.4	106	90.4	280	97.4	660	103.6
25	80.0	107	90.5	290	97.7	670	103.7
30	81.3	108	90.6	300	97.9	680	103.8
35	82.4	109	90.6	310	98.2	690	103.9
40	83.4	110	90.7	320	98.4	700	104.0
45	84.2	111	90.8	330	98.6	710	104.1
50	85.0	112	90.8	340	98.8	720	104.2
55	85.7	113	90.9	350	99.0	730	104.3
60	86.3	114	90.9	360	99.2	740	104.4
65	86.9	115	91.1	370	99.4	750	104.5
70	87.4	116	91.1	380	99.6	760	104.6
75	87.9	117	91.1	390	99.8	770	104.7
80	88.4	118	91.2	400	100.0	780	104.8
81	88.5	119	91.3	410	100.2	790	104.9
82	88.6	120	91.3	420	100.4	800	105.0
83	88.7	125	91.6	430	100.5	810	105.1
84	88.7	130	91.9	440	100.7	820	105.2
85	88.8	135	92.2	450	100.8	830	105.3
86	88.9	140	92.4	460	101.0	840	105.4
87	89.0	145	92.7	470	101.2	850	105.4
88	89.1	150	92.9	480	101.3	860	105.5
89	89.2	155	93.2	490	101.5	870	105.6
90	89.2	160	93.4	500	101.6	880	105.7
91	89.3	165	93.6	510	101.8	890	105.8
92	89.4	170	93.8	520	101.9	900	105.8
93	89.5	175	94.0	530	102.0	910	105.9
94	89.6	180	94.2	540	102.2	920	106.0
95	89.6	185	94.4	550	102.3	930	106.1
96	89.7	190	94.6	560	102.4	940	106.2
97	89.8	195	94.8	570	102.6	950	106.2
98	89.9	200	95.0	580	102.7	960	106.3
99	89.9	210	95.4	590	102.8	970	106.4
100	90.0	220	95.7	600	102.9	980	106.5
101	90.1	230	96.0	610	103.0	990	106.5
102	90.1	240	96.3	620	103.2	999	106.6
103	90.2	250	96.6	630	103.3		

## **APPENDIX B to §1910.95**

### **Methods for Estimating the Adequacy of Hearing Protector Attenuation**

**This Appendix is Mandatory**

For employees who have experienced a significant threshold shift, hearing protector attenuation must be sufficient to reduce employee exposure to a TWA of 85 dB. Employers must select one of the following methods by which to estimate the adequacy of hearing protector attenuation.

The most convenient method is the Noise Reduction Rating (NRR) developed by the Environmental Protection Agency (EPA). According to EPA regulation, the NRR must be shown on the hearing protector package. The NRR is then related to an individual worker's noise environment in order to assess the adequacy of the attenuation of a given hearing protector. This Appendix describes four methods of using the NRR to determine whether a particular hearing protector provides adequate protection within a given exposure environment. Selection among the four procedures is dependent upon the employer's noise measuring instruments.

Instead of using the NRR, employers may evaluate the adequacy of hearing protector attenuation by using one of the three methods developed by the National Institute for Occupational Safety and Health (NIOSH), which are described in the "List of Personal Hearing Protectors and Attenuation Data," HEW Publication No. 76-120, 1975, pages 21-37. These methods are known as NIOSH methods #1, #2 and #3. The NRR described below is a simplification of NIOSH method #2. The most complex method is NIOSH method #1, which is probably the most accurate method since it uses the largest amount of spectral information from the individual employee's noise environment. As in the case of the NRR method described below, if one of the NIOSH methods is used, the selected method must be applied to an individual's noise environment to assess the adequacy of the attenuation. Employers should be careful to take a sufficient number of measurements in order to achieve a representative sample for each time segment.

**NOTE:** The employer must remember that calculated attenuation values reflect realistic values only to the extent that the protectors are properly fitted and worn. When using the NRR to assess hearing protector adequacy, one of the following methods must be used:

(i) When using a dosimeter that is capable of C-weighted measurements:

- (A) Obtain the employee's C-weighted dose for the entire workshift, and convert to TWA (see App A, II).
- (B) Subtract the NRR from the C-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(ii) When using a dosimeter that is not capable of C-weighted measurements, the following method may be used:

- (A) Convert the A-weighted dose to TWA (see Appendix A).
- (B) Subtract 7 dB from the NRR.
- (C) Subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(iii) When using a sound level meter set to the A-weighting network:

- (A) Obtain the employee's A-weighted TWA.
- (B) Subtract 7 dB from the NRR, and subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(iv) When using a sound level meter set on the C-weighting network:

- (A) Obtain a representative sample of the C-weighted sound levels in the employee's environment.
- (B) Subtract the NRR from the C-weighted average sound level to obtain the estimated A-weighted TWA under the ear protector.

(v) When using area monitoring procedures and a sound level meter set to the A-weighting network:

- (A) Obtain a representative sound level for the area in question.
- (B) Subtract 7 dB from the NRR and subtract the remainder from the A-weighted sound level for that area.

(vi) When using area monitoring procedures and a sound level meter set to the C-weighting network:

- (A) Obtain a representative sound level for the area in question.
- (B) Subtract the NRR from the C-weighted sound level for that area.

# **Chapter 23**

## ***Demex International, Inc.***

## **Offshore Helicopter Safety**

### **Policy Statement:**

**Demex International, Inc.** has adopted this policy to inform employees of the Offshore Helicopter Policy. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

### **Helideck Escorts**

It is the policy of *Demex International, Inc.* to ensure that all passengers will be escorted by a competent person while on the helideck.

A member of the flight crew, the HLO or a qualified platform escort must escort passengers at all times while on the helideck.

### **Personal Gear**

It is the determination of *Demex International, Inc.* that all personal gear in the vicinity of helicopter operations must be properly stowed inside a bag or container.

It is the responsibility of all passengers to ensure that personal gear is stowed inside a bag or container. Hard hats and boots may be securely strapped to the exterior of a bag or container.

### **Personal Protective Equipment**

It is the policy of *Demex International, Inc.* that all personal protective equipment required to be worn in or around helicopter operations must be secured to the individual by an approved strap or method.

### **No Smoking**

Smoking is strictly prohibited by *Demex International, Inc.* and is not permitted on a helideck or in the vicinity of helicopter operations.

### **No Cell Phone Use.**

It is the policy of *Demex International, Inc.* that passenger use of cell phones will not be permitted and cell phones must be turned off and stored away during flight.

## **Notes:**

# **Chapter 24**

## ***Demex International, Inc.***

### **Company Policy for Personal Protective Equipment General Requirements**

**Demex International, Inc.** has adopted this program for Personal Protective Equipment (PPE) from the following OSHA regulations:

#### **§1910.132 – Personal Protective Equipment**

*Demex International, Inc.* has implemented this safety program to ensure the protection of personnel from hazards on the job which may be safeguarded against by the proper use of PPE. **Gary L. DeMarsh** is the supervisor responsible for ensuring the following work practices are enforced:

- *Gary L. DeMarsh* will ensure that all employees are properly trained in the recognition and assessment of hazards and hazardous situations, the proper selection and use of PPE equipment required for the hazard and methods to avoid, prevent, or abate such hazards.
- PPE training will include: When PPE is necessary; what PPE is necessary; how to properly on, off, adjust, and wear PPE; the limitations of PPE; the proper care, maintenance, useful life and disposal of PPE.
- Retraining of employees is required when the workplace changes, making the earlier training obsolete; the type PPE changes; or when the employee demonstrates lack of use, improper use, or insufficient skill or understanding.
- Employees will be trained on initial hiring to use, maintain, clean and disinfect, store, and service PPE properly. Employees will receive refresher training on PPE at least annually, or as work requirements, changing job assignments, changing equipment, or environment warrants it. Any employee who demonstrates a lack of knowledge or understanding of any aspect of PPE use or maintenance will be re-trained. An employee must verify his/her understanding of training content as a condition of employment.
- All training will be documented and will include the employee name, the dates of training, and the certification subject.
- *Gary L. DeMarsh* will do a hazard assessment of each jobsite prior to commencement of work to ascertain if hazards are present or likely to be encountered, what engineering controls may be implemented to minimize hazards, and what PPE is necessary for the performance of the job. The hazard assessment will include the certifier's name, signature, date(s), and identification of assessment documents. Affected employees will be notified of hazards, engineering controls needed, and PPE required.

**(See Job-Site Hazard Assessment form at the end of this section)**

- PPE will be provided for all work required by *Demex International, Inc.* and employees are required by company policy to use only proper company PPE at all times when required on the job or on company property. Failure to use PPE will result in disciplinary action against the violating employee.
- *Gary L. DeMarsh* will ensure that if employee-owned PPE is used, it will be adequate for the application, properly maintained, and kept in sanitary condition.

- PPE will be issued and fitted to each affected employee individually. Employees must demonstrate proficiency in donning and doffing equipment, and proper techniques of cleaning and maintaining their respective equipment.
- Defective or damaged PPE will NOT be used. Defective or damaged PPE will be immediately tagged "OUT OF SERVICE", removed from service, and replaced with serviceable equipment. PPE will be inspected by the individual employee at the beginning of each work shift.
- PPE must be used, stored, and maintained in a sanitary condition. All PPE must be cleaned and/or disinfected and stored according to manufacturer's recommendations.

## **§1910.132 GENERAL PPE REQUIREMENTS.**

(a) **Application.** Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(b) **Employee-owned equipment.** Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(c) **Design.** All PPE shall be of safe design and construction for the work to be performed.

*NOTE: This paragraph (1910.132(d)) applies only to eye and face, head, foot, and hand protection. See 1910.132(g).*

(d) **Hazard assessment and equipment selection.**

(1) The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

- Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;
- Communicate selection decisions to each affected employee; and,
- Select PPE that properly fits each affected employee.

*NOTE: Non-mandatory Appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.*

(2) The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

(e) **Defective and damaged equipment.** Defective or damaged PPE shall not be used.

*NOTE: This paragraph (1910.132(f)) applies only to eye and face, head, foot, and hand protection..*

(f) **Training.**

(1) The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

- When PPE is necessary;
- What PPE is necessary;
- How to properly don, doff, adjust, and wear PPE;
- The limitations of the PPE; and,
- The proper care, maintenance, useful life and disposal of the PPE.

(2) Each affected employee shall demonstrate an understanding of the training specified in paragraph (f)(1) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(3) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (f)(2) of this section, the employer shall retrain each such employee.

Circumstances where retraining is required include, but are not limited to situations where:

- (i) Changes in the workplace render previous training obsolete; or
- (ii) Changes in the types of PPE to be used render previous training obsolete; or
- (iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(4) The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

## **APPENDIX B TO §1910.132I**

### **Non-mandatory Compliance Guidelines for Hazard Assessment and PPE Selection**

**NOTE:** The Text of Appendix B was Adopted in its Entirety by Admin. Order 5-1994. This appendix is intended to provide compliance assistance for employers and employees in implementing requirements for a hazard assessment and the selection of personal protective equipment.

**1. Controlling hazards.** PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

**2. Assessment and selection.** It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the safety officer to exercise common sense and appropriate expertise to accomplish these tasks.

**3. Assessment guidelines.** In order to assess the need for PPE the following steps should be taken:

**a. Survey.** Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:

- |                             |                  |                               |
|-----------------------------|------------------|-------------------------------|
| (a) Impact                  | (d) Chemical     | (g) Light (optical) radiation |
| (b) Penetration             | (e) Heat         |                               |
| (c) Compression (roll-over) | (f) Harmful dust |                               |

**b. Sources.** During the walk-through survey the safety officer should observe:

- (a) Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
- (b) Sources of high temperatures that could result in burns, eye injury, or ignition of protective equipment.
- (c) Types of chemical exposures;
- (d) Sources of harmful dust;
- (e) Sources of light radiation, i.e. welding, brazing, cutting, furnaces, high intensity lights, etc;
- (f) Sources of falling objects or potential for dropping objects;
- (g) Sources of sharp objects which might pierce the feet or cut the hands;
- (h) Sources of rolling or pinching objects which could crush the feet;
- (i) Layout of workplace and location of co-workers; and
- (j) Any electrical hazards.

In addition, injury/accident data should be reviewed to help identify problem areas.

**c. Organize data.** Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

**d. Analyze data.** Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards (paragraph 3.a) should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.

**4. Selection guidelines.** After completion of the procedures in paragraph 3, the general procedure for selection of protective equipment is to: a) Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.; b) compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment; c) select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and d) fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

**5. Fitting the device.** Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

**6. Devices with adjustable features.** Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chin strap may be necessary to keep the helmet on an employee's head.

(Chin straps should break at a reasonable low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

**7. Reassessment of hazards.** It is the responsibility of the safety officer to reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

**8. Selection chart guidelines for eye and face protection.** Some occupations (not a complete list) for which eye protection should be routinely considered are: carpenters, electricians, machinists, mechanics and repairers, millwrights, plumbers and pipe fitters, sheet metal workers and tinsmiths, assemblers, sanders, grinding machine operators, lathe and milling machine operators, sawyers, welders, laborers, chemical process operators and handlers, and timber cutting and logging workers. The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard source operations.

### ***Eye and Face Protection Selection Chart***

Source	Assessment of Hazard	Protection
IMPACT --- Chipping, grinding, machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding	Flying fragments, objects, large chips, particles sand, dirt, etc.	Spectacles with side protection, goggles, face shields. For severe exposure, use face shield. See notes 1, 3, 5, 6, 10.
HEAT -- Furnace operations, pouring, casting, hot dipping, and welding	Hot sparks Splash from molten metals High temperature exposure Splash	Face shields, goggles, spectacles with side protection. For severe exposure use face shield. See notes 1, 2, 3. Face shields worn over goggles. See notes 1, 2, 3. Screen face shields, reflective face shields. See notes 1, 2, 3.
CHEMICALS -- Acid and chemicals handling, degreasing, plating	Irritating mists	Goggles, eyecup and cover types. For severe exposure, use face shield. See notes 3, 11.
DUST -- Woodworking, buffing, general dusty conditions	Nuisance dust	Special-purpose goggles. Goggles, eyecup and cover types. See note 8.
LIGHT AND/OR RADIATION		
Welding: Electric arc	Optical radiation	Welding helmets or welding shields. Typical shades: 10-14. See notes 9, 12.
Welding: Gas	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See note 9.
Cutting, Torch brazing, Torch soldering	Optical radiation	Spectacles or welding face-shield. Typical shades, 1.5-3. See notes 3, 9
Glare	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable. See notes 9, 10.

#### ***Notes to Eye and Face Protection Selection Chart:***

- (1) Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.
- (2) Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
- (3) Face shields should only be worn over primary eye protection (spectacles or goggles).
- (4) As required by the standard, filter lenses must meet the requirements for shade designations in §1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.
- (5) As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.
- (6) Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments might represent an additional hazard to contact lens wearers.
- (7) Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- (8) Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
- (9) Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).
- (10) Non-sideshield spectacles are available for frontal protection only, but are unacceptable for the sources and operations listed for "impact".
- (11) Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
- (12) Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

**9. Selection guidelines for head protection.** All head protection (helmets) is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important. Class G (Old Class A) helmets, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class E (Old Class B) helmets, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts.) Class C helmets provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards. Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors. Some examples of occupations for which head protection should be routinely considered are: carpenters, electricians, linemen, mechanics and repairers, plumbers and pipe fitters, assemblers, packers, wrappers, sawyers, welders, laborers, freight handlers, timber cutting and logging, stock handlers, and warehouse laborers.

**10. Selection guidelines for foot protection.** Safety shoes and boots which meet the ANSI Z41-1991 Standard provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate. Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and around heavy pipes, all of which could potentially roll over an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal, etc., could be stepped on by employees causing a foot injury.

Some occupations (not a complete list) for which foot protection should be routinely considered are: shipping and receiving clerks, stock clerks, carpenters, electricians, machinists, mechanics and repairers, plumbers and pipe fitters, structural metal workers, craters, punch and stamping press operators, sawyers, welders, freight handlers, and timber cutting and logging workers.

**11. Selection guidelines for hand protection.** Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. OSHA is unaware of any gloves that provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused. It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. These performance characteristics should be assessed by using standard test procedures. Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:

- (A) As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types; and,
- (B) The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

With respect to selection of gloves for protection against chemical hazards:

- (1) The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects;
- (2) Generally, any chemical resistant glove can be used for dry powders;
- (3) For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials; and,
- (4) Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

**12. Cleaning and maintenance.** It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision. For the purposes of compliance with §1910.132(a) and (b), PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection. It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

# JOB-SITE HAZARD ASSESSMENT

*Demex International, Inc.*

*A walk through inspection for assessment of hazards will be performed at each job-site prior to commencement of work operations.*

*An assessment for hazards will be performed prior to use of: new equipment, unfamiliar materials, tools, or chemicals.*

**Job Name/Number:**

**Date of Assessment:**

**Job Location:**

**Person Performing Assessment:**

**Position:**

**Area(s) Inspected:**

**Equipment:**

**Tool(s):**

**Chemical(s):**

**Material(s):**

Type of Hazard	Observed Hazards and Risk Factor			Recommended Controls or PPE
	Source of Hazard	Low	Med	
<input type="checkbox"/> Impact				
<input type="checkbox"/> Penetration				
<input type="checkbox"/> Compression (roll-over, crushing)				
<input type="checkbox"/> Chemical				
<input type="checkbox"/> Burn				
<input type="checkbox"/> Respiratory				
<input type="checkbox"/> Light (optical) radiation				
<input type="checkbox"/> Fall				
<input type="checkbox"/> Entanglement (Pinching, Crushing)				
<input type="checkbox"/> Electrical				
<input type="checkbox"/> Collision (Traffic, Vehicle)				
<input type="checkbox"/> Falling Objects				
<input type="checkbox"/> Other (Describe)				
<input type="checkbox"/> Other (Describe)				
<b>Affected Employee(s):</b>				<b>Employee Notified</b> <input checked="" type="checkbox"/>
Name:	Position:	PPE:		<input type="checkbox"/>
Name:	Position:	PPE:		<input type="checkbox"/>
Name:	Position:	PPE:		<input type="checkbox"/>
Name:	Position:	PPE:		<input type="checkbox"/>
Name:	Position:	PPE:		<input type="checkbox"/>
Name:	Position:	PPE:		<input type="checkbox"/>

**Type PPE recommended and reason for selection:**

**Additional Safety Concerns:**

**Additional Engineering Controls Recommended:**

**Signature of Person Performing Assessment:**

**Date:**

## **Notes:**

# **Chapter 25**

## ***Demex International, Inc.***

### **Company Policy for Process Safety Management**

**Demex International, Inc.** has adopted this program for the prevention or minimizing of catastrophic releases of toxic or hazardous substances from the following OSHA regulations:

#### ***§1910.119 – Process Safety Management of Highly Hazardous Chemicals***

*Demex International, Inc.* has implemented this policy to prevent or minimize the consequences of catastrophic releases, and to ensure that no employee is exposed to toxic or hazardous material at levels above the permissible exposure limits. **Gary L. DeMarsh** is the supervisor responsible for ensuring the following engineering controls and work practices are enforced:

- *Gary L. DeMarsh* will ensure that all employees are trained in the processes and practices necessary to perform his/her job safely. *Demex International, Inc.* will keep a record containing the identity of the employee (permanent or contract), the date of training, and the means used to verify that the employee understood the training.
- *Demex International, Inc.* employees are instructed that the purpose of Process Safety Management is to prevent or minimize consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals in various industries such as refineries, etc.
- Hazard communications will encompass all known hazards in the workplace, including fire, explosion, and toxic release hazards, and instruction in the avoidance and abatement of those hazards. All employees of *Demex International, Inc.* are required to abide by all Company Safety Policy and Procedure as presented in this written program or by instruction of their immediate supervisor. Any contract employees must be advised of all hazards to which they may be exposed in the workplace.
- Material Safety Data Sheets will be used to convey process safety information. MSDS will be reviewed for every toxic or hazardous substance in the workplace to which employees might potentially be exposed. MSDS are available to all employees at the office.
- *Demex International, Inc.* responsibilities as a contract employer include the following:
  - *Gary L. DeMarsh* will assure that each contract employee is trained in the work practices necessary to perform his/her job.
  - *Gary L. DeMarsh* will assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process and the applicable provisions of the Emergency Action Plan.
  - *Gary L. DeMarsh* will document that each employee has received and understood the required training. The contract employer will prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.

- *Demex International, Inc.* employees will abide by employers safety work practices during operations such as lockout/tagout, confined space entry, opening process equipment or piping and controls over entrance to facility.
- Prior to starting work, *Demex International, Inc.* or a designated alternative shall perform a job hazard assessment (JHA) of the worksite. Immediately upon completion of the hazard assessment, *Demex International, Inc.* shall make their customer, employer, or owner of the host facility / jobsite aware of any hazards identified and unique hazards presented by work being performed by *Demex International, Inc.*.
- *Demex International, Inc.* employees will not perform hot work until a hot work permit is obtained from *Demex International, Inc.*'s employer and/or the owner of the host facility / jobsite. The permit will document that provisions of §1910.252(a) have been met.
- *Demex International, Inc.* will respect the confidentiality of trade secret information when the process safety information is released to them.
- All hot work will be cleared by permit from the contractor. The contractor will be notified in a timely manner of any hot work required by employees of *Demex International, Inc.*.
- *Demex International, Inc.* has an accident/incident investigation program in place and all employees are instructed to immediately report any accidents, incidents, or near misses to *Gary L. DeMarsh*, who will initiate an accident investigation within 48 hours. Findings, resolutions, and corrective actions will be documented and maintained 5 years.
- All *Demex International, Inc.* employees are instructed in the confidentiality of trade secret information, and the disciplinary action which will be a consequence of violation of confidentiality.
- The highlighted areas of the following OSHA regulation are incorporated into the safety policy of *Demex International, Inc.*:

## **§1910.119 – Process Safety Management of Highly Hazardous Chemicals**

**Purpose.** This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.

**(a) Application.**

(1) This section applies to the following:

- (i) A process which involves a chemical at or above the specified threshold quantities listed in Appendix A to this section;
- (ii) A process which involves a flammable liquid or gas (as defined in 1910.1200(c) of this part) on site in one location, in a quantity of 10,000 pounds (4535.9 kg) or more except for:
  - (A) Hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not a part of a process containing another highly hazardous chemical covered by this standard;
  - (B) Flammable liquids stored in atmospheric tanks or transferred which are kept below their normal boiling point without benefit of chilling or refrigeration.

(2) This section does **not** apply to:

- (i) Retail facilities;
- (ii) Oil or gas well drilling or servicing operations; or,
- (iii) Normally unoccupied remote facilities.

**(d) Process safety information.** In accordance with the schedule set forth in paragraph (e)(1) of this section, the employer shall complete a compilation of written process safety information before conducting any process hazard analysis required by the standard. The compilation of written process safety information is to enable the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. This process safety information shall include information pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process.

(1) Information pertaining to the hazards of the highly hazardous chemicals in the process. This information shall consist of at least the following:

- (i) Toxicity information;
- (ii) Permissible exposure limits;
- (iii) Physical data;
- (iv) Reactivity data;
- (v) Corrosivity data;
- (vi) Thermal and chemical stability data; and
- (vii) Hazardous effects of inadvertent mixing of different materials that could foreseeably occur.

Note: Material Safety Data Sheets meeting the requirements of 29 CFR 1910.1200(g) may be used to comply with this requirement to the extent they contain the information required by this subparagraph.

(2) Information pertaining to the technology of the process.

(i) Information concerning the technology of the process shall include at least the following:

- (A) A block flow diagram or simplified process flow diagram (see Appendix B to this section);
- (B) Process chemistry;
- (C) Maximum intended inventory;
- (D) Safe upper and lower limits for such items as temperatures, pressures, flows or compositions; and,
- (E) An evaluation of the consequences of deviations, including those affecting the safety and health of employees.

(ii) Where the original technical information no longer exists, such information may be developed in conjunction with the process hazard analysis in sufficient detail to support the analysis.

**(3) Information pertaining to the equipment in the process.**

- (i) Information pertaining to the equipment in the process shall include:**
  - (A) Materials of construction;**
  - (B) Piping and instrument diagrams (P&ID's);**
  - (C) Electrical classification;**
  - (D) Relief system design and design basis;**
  - (E) Ventilation system design;**
  - (F) Design codes and standards employed;**
  - (G) Information pertaining to the equipment in the process shall include material and energy balances for processes built after May 26, 1992.**
  - (H) Safety systems (e.g. interlocks, detection or suppression systems).**
- (ii) The employer shall document that equipment complies with recognized and generally accepted good engineering practices.**
- (iii) For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, the employer shall determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner.**

**(e) Process hazard analysis.**

**(1)** The employer shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this standard. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. Employers shall determine and document the priority order for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. The process hazard analysis shall be conducted as soon as possible, but not later than the following schedule:

- (i)** No less than 25 percent of the initial process hazards analyses shall be completed by 05/24/94.
- (ii)** No less than 50 percent of the initial process hazards analyses shall be completed by 05/26/95.
- (iii)** No less than 75 percent of the initial process hazards analyses shall be completed by 05/26/96.
- (iv)** All initial process hazards analyses shall be completed by 05/26/97.
- (v)** Process hazards analyses completed after 05/26/87, which meet the requirements of this paragraph are acceptable as initial process hazards analyses. These process hazard analyses shall be updated and revalidated, based on their completion date, in accordance with paragraph (e)(6) of this section.

**(2)** The employer shall use one or more of the following methodologies that are appropriate to determine and evaluate the hazards of the process being analyzed.

- (i)** What-If;
- (ii)** Checklist;
- (iii)** What-If/Checklist;
- (iv)** Hazard and Operability Study (HAZOP);
- (v)** Failure Mode and Effects Analysis (FMEA);
- (vi)** Fault-Tree Analysis; or
- (vii)** An appropriate equivalent methodology.

**(3)** The process hazard analysis shall address:

- (i)** The hazards of the process;
- (ii)** The identification of any previous incident which had a likely potential for catastrophic consequences in the workplace;
- (iii)** Engineering and administrative controls applicable to the hazards and their inter-relationships such as appropriate application of detection methodologies to provide early warning of releases. (Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors.);
- (iv)** Consequences of failure of engineering and administrative controls;
- (v)** Facility siting;
- (vi)** Human factors; and
- (vii)** A qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace.

**(4)** The process hazard analysis shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has experience and knowledge specific to

the process being evaluated. Also, one member of the team must be knowledgeable in the specific process hazard analysis methodology being used.

(5) The employer shall establish a system to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

(6) At least every five (5) years after the completion of the initial process hazard analysis, the process hazard analysis shall be updated and revalidated by a team meeting the requirements in paragraph (e)(4) of this section, to assure that the process hazard analysis is consistent with the current process.

(7) Employers shall retain process hazards analyses and updates or revalidations for each process covered by this section, as well as the documented resolution of recommendations described in paragraph (e)(5) of this section for the life of the process.

**(f) Operating procedures.**

(1) The employer shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements.

**(i) Steps for each operating phase:**

(A) Initial startup;

(B) Normal operations;

(C) Temporary operations;

(D) Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner.

(E) Emergency operations;

(F) Normal shutdown; and,

(G) Startup following a turnaround, or after an emergency shutdown.

**(ii) Operating limits:**

(A) Consequences of deviation; and

(B) Steps required to correct or avoid deviation.

**(iii) Safety and health considerations:**

(A) Properties of, and hazards presented by, the chemicals used in the process;

(B) Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment;

(C) Control measures to be taken if physical contact or airborne exposure occurs;

(D) Quality control for raw materials and control of hazardous chemical inventory levels; and,

(E) Any special or unique hazards.

**(iv) Safety systems and their functions.**

(2) Operating procedures shall be readily accessible to employees who work in or maintain a process.

(3) The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities. The employer shall certify annually that these operating procedures are current and accurate.

(4) The employer shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

**(g) Training.**

**(1) Initial training.**

(i) Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the operating procedures as specified in paragraph (f) of this section. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

(ii) In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

**(2) Refresher training.** Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.

**(3) Training documentation.** The employer shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The employer shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

**(h) Contractors.**

**(1) Application.** This paragraph applies to contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply to contractors providing incidental services which do not influence process safety, such as janitorial work, food and drink services, laundry, delivery or other supply services.

**(2) Employer responsibilities.**

(i) The employer, when selecting a contractor, shall obtain and evaluate information regarding the contract employer's safety performance and programs.

(ii) The employer shall inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process.

(iii) The employer shall explain to contract employers the applicable provisions of the emergency action plan required by paragraph (n) of this section.

(iv) The employer shall develop and implement safe work practices consistent with paragraph (f)(4) of this section, to control the entrance, presence and exit of contract employers and contract employees in covered process areas.

(v) The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) of this section.

(vi) The employer shall maintain a contract employee injury and illness log related to the contractor's work in process areas.

**(3) Contract employer responsibilities.**

(i) The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job.

(ii) The contract employer shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.

(iii) The contract employer shall document that each contract employee has received and understood the training required by this paragraph. The contract employer shall prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.

(iv) The contract employer shall assure that each contract employee follows the safety rules of the facility including the safe work practices required by paragraph (f)(4) of this section.

(v) The contract employer shall advise the employer of any unique hazards presented by the contract employer's work, or of any hazards found by the contract employer's work.

**(i) Pre-startup safety review.**

- (1) The employer shall perform a pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information.
- (2) The pre-startup safety review shall confirm that prior to the introduction of highly hazardous chemicals to a process:
  - (i) Construction and equipment is in accordance with design specifications;
  - (ii) Safety, operating, maintenance, and emergency procedures are in place and are adequate;
  - (iii) For new facilities, a process hazard analysis has been performed and recommendations have been resolved or implemented before startup; and modified facilities meet the requirements contained in management of change, paragraph (l).
  - (iv) Training of each employee involved in operating a process has been completed.

**(j) Mechanical integrity.**

- (1) **Application.** Paragraphs (j)(2) through (j)(6) of this section apply to the following process equipment:

- (i) Pressure vessels and storage tanks;
- (ii) Piping systems (including piping components such as valves);
- (iii) Relief and vent systems and devices;
- (iv) Emergency shutdown systems;
- (v) Controls (including monitoring devices and sensors, alarms, and interlocks) and,
- (vi) Pumps.

- (2) **Written procedures.** The employer shall establish and implement written procedures to maintain the on-going integrity of process equipment.

- (3) **Training for process maintenance activities.** The employer shall train each employee involved in maintaining the on-going integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to assure that the employee can perform the job tasks in a safe manner.

**(4) Inspection and testing.**

- (i) Inspections and tests shall be performed on process equipment.
- (ii) Inspection and testing procedures shall follow recognized and generally accepted good engineering practices.
- (iii) The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.
- (iv) The employer shall document each inspection and test that has been performed on process equipment. The documentation shall identify the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection or test.

- (5) **Equipment deficiencies.** The employer shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in paragraph (d) of this section) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

**(6) Quality assurance.**

- (i) In the construction of new plants and equipment, the employer shall assure that equipment as it is fabricated is suitable for the process application for which they will be used.
- (ii) Appropriate checks and inspections shall be performed to assure that equipment is installed properly and consistent with design specifications and the manufacturer's instructions.
- (iii) The employer shall assure that maintenance materials, spare parts and equipment are suitable for the process application for which they will be used.

**(k) Hot work permit.**

- (1) The employer shall issue a hot work permit for hot work operations conducted on or near a covered process.
- (2) The permit shall document that the fire prevention and protection requirements in 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.

**(m) Incident investigation.**

- (1) The employer shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.
- (2) An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.
- (3) An incident investigation team shall be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.
- (4) A report shall be prepared at the conclusion of the investigation which includes at a minimum:
  - (i) Date of incident;
  - (ii) Date investigation began;
  - (iii) A description of the incident;
  - (iv) The factors that contributed to the incident; and,
  - (v) Any recommendations resulting from the investigation.
- (5) The employer shall establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented.
- (6) The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable.
- (7) Incident investigation reports shall be retained for five years.

**(n) Emergency planning and response.** The employer shall establish and implement an emergency action plan for the entire plant in accordance with the provisions of 29 CFR 1910.38(a). In addition, the emergency action plan shall include procedures for handling small releases. Employers covered under this standard may also be subject to the hazardous waste and emergency response provisions contained in 29 CFR 1910.120(a), (p) and (q).

**(p) Trade secrets.**

- (1) Employers shall make all information necessary to comply with the section available to those persons responsible for compiling the process safety information (required by paragraph (d) of this section), those assisting in the development of the process hazard analysis (required by paragraph (e) of this section), those responsible for developing the operating procedures (required by paragraph (f) of this section), and those involved in incident investigations (required by paragraph (m) of this section), emergency planning and response (paragraph (n) of this section) and compliance audits (paragraph (o) of this section) without regard to possible trade secret status of such information.
- (2) Nothing in this paragraph shall preclude the employer from requiring the persons to whom the information is made available under paragraph (p)(1) of this section to enter into confidentiality agreements not to disclose the information as set forth in 29 CFR 1910.1200.
- (3) Subject to the rules and procedures set forth in 29 CFR 1910.1200(i)(1) through 1910.1200(i)(12), employees and their designated representatives shall have access to trade secret information contained within the process hazard analysis and other documents required to be developed by this standard.

## **Definitions**

**Atmospheric tank** means a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g. (pounds per square inch gauge, 3.45 Kpa).

**Boiling point** means the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760 mm.). For the purposes of this section, where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, the 10 percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D-86-62, which is incorporated by reference as specified in §1910.6, may be used as the boiling point of the liquid.

**Catastrophic release** means a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemicals, that presents serious danger to employees in the workplace.

**Facility** means the buildings, containers or equipment which contain a process.

**Highly hazardous chemical** means a substance possessing toxic, reactive, flammable, or explosive properties and specified by paragraph (a)(1) of this section.

**Hot work** means work involving electric or gas welding, cutting, brazing, or similar flame or spark-producing operations.

**Normally unoccupied remote facility** means a facility which is operated, maintained or serviced by employees who visit the facility only periodically to check its operation and to perform necessary operating or maintenance tasks. No employees are permanently stationed at the facility. Facilities meeting this definition are not contiguous with, and must be geographically remote from all other buildings, processes or persons.

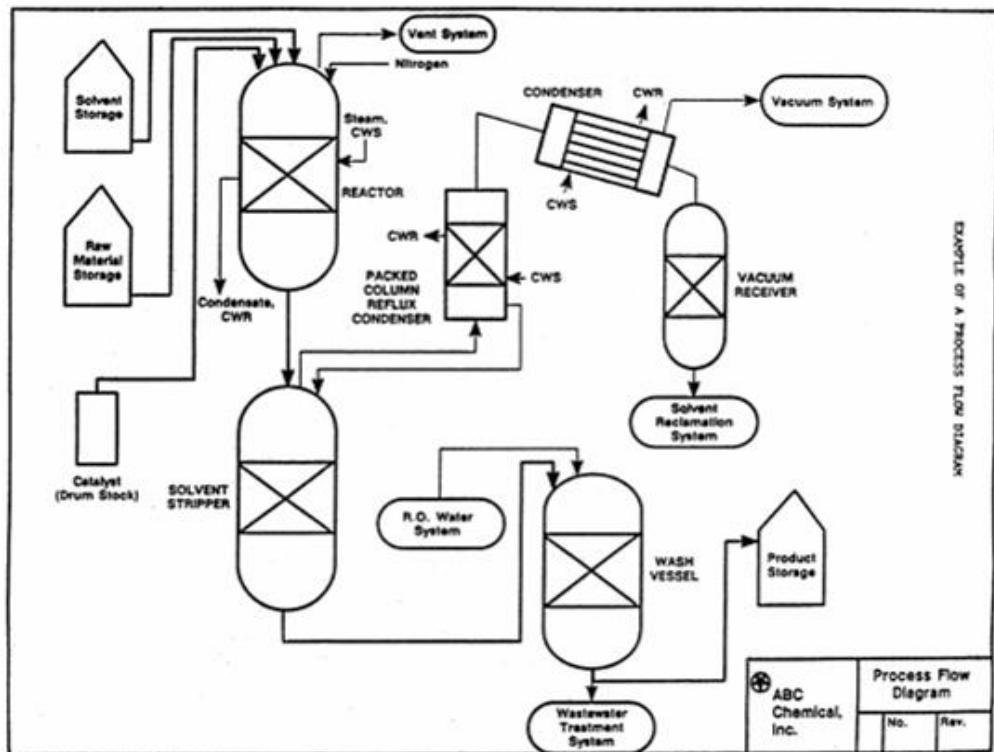
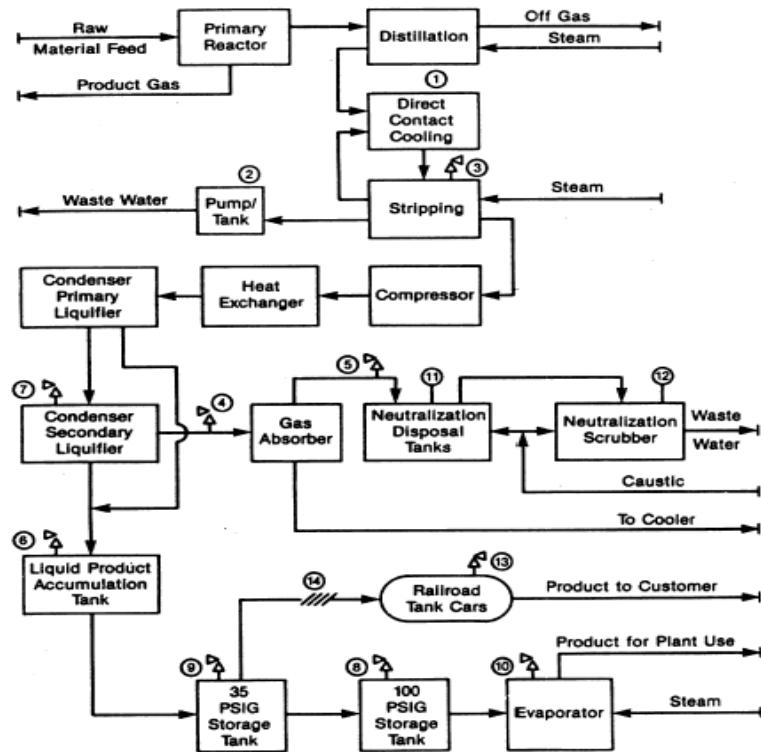
**Process** means any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any group of vessels which are interconnected and separate vessels which are located such that a highly hazardous chemical could be involved in a potential release shall be considered a single process.

**Replacement in kind** means a replacement which satisfies the design specification.

**Trade secret** means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D contained in §1910.1200 sets out the criteria to be used in evaluating trade secrets.

**APPENDIX B to §1910.119**  
**BLOCK FLOW DIAGRAM AND SIMPLIFIED PROCESS FLOW DIAGRAM**  
**(Non-mandatory)**

***Example of a Block Flow Diagram***



# **Chapter 26**

## ***Demex International, Inc.***

### **Policy for Rigging - Offshore**

**Demex International, Inc.** has adopted this program for the safety of employees when working on or around "Rigging Equipment for Material Handling" from the following regulations:

***Recommended Practice 2D – American Petroleum Institute (API) Operation and Maintenance of Offshore Cranes.***

This policy applies to rigging and slings used in conjunction with other material handling equipment for the movement of material by hoisting. **Gary L. DeMarsh** is designated by *Demex International, Inc.* as the Competent Person in authority over all rigging and hoisting operations. *Gary L. DeMarsh* will ensure that all safety measures and systems are in place, all safety procedures are adhered to, and ensure regular inspections of the operational site and rigging equipment are made. *Demex International, Inc.* has implemented and will enforce the following qualified rigger procedures and training requirements to assure that no employee will be exposed to hazards during rigging and hoisting operations:

#### **Qualified Rigger**

Demex International, Inc. requires that only qualified riggers can attach or detach lifting equipment loads or lifting loads.

A qualified rigger is an employee – including crane operators and inspectors - with training and experience who has completed a rigger training program.

#### **Qualified Rigger Training**

The training for Demex International, Inc.'s qualified riggers needs to include classroom and exams with hands-on training. The training program will include familiarization with rigging hardware, slings and the rigging basics, along with the procedures and precautions of lifting loads and lift planning safety.

Demex International, Inc. employees need to demonstrate proper inspection, use, selection and maintenance of loose gear like slings, shackles and hooks.

Rigging hardware includes: sheaves and blocks; hooks and latches; rings, links and swivels; shackles; turnbuckles; spreader and equalizer beams; cable drops; pad eyes, eyebolts and other points of attachment.

Sling training includes the sling configuration, angle and rated load. Types of slings like chain, wire rope, metal mesh, natural fiber rope, synthetic fiber rope, or synthetic web, synthetic, wire, chain,

Demex International, Inc. employees need to know the procedures and precautions of: load control and taglines; lift planning including load weight and center of gravity; sling inspection and criteria for rejecting damaged slings; unbinding loads; proper personnel transfer and of course sling handling and storage.

Basic rigging aspects like pinch points and body position, PPE, signals and communication and load stability are also part of the training.

## **Notes:**

# **Chapter 27**

## ***Demex International, Inc.***

### **Stop Work Authority**

#### **Policy Statement:**

***Demex International, Inc.*** has adopted this policy to inform employees of the Stop Work Authority. This ensures the safety and health of the employees.

**Gary L. DeMarsh** is responsible for ensuring that the following policy is enforced.

#### **Training**

It is the determination of ***Demex International, Inc.*** to ensure that employees will receive Stop Work Authority training before initial assignment. The training will be documented, including the employee name, the dates of training and subject.

#### **HSE Risk**

All contractors and employees have the authority and obligation to stop any task or operation where concerns or questions regarding the control of HSE risk exist.

It is the policy of ***Demex International, Inc.*** that no work will resume until all stop work issues and concerns have been adequately addressed.

#### **Stop Work Intervention**

***Demex International, Inc.*** ensures that employees will not be reprimanded for issuing a stop work intervention.

Any form of retribution or intimidation directed at any individual or company for exercising their right to issue a stop work authority will not be tolerated by ***Demex International, Inc.***.

#### **Roles and Responsibilities**

All employees of ***Demex International, Inc.*** are responsible to initiate a Stop Work Intervention when warranted and management is responsible to create a culture where Stop Work Authority is exercised freely.

#### **Stop Work Authority Steps**

The steps to a Stop Work Authority for ***Demex International, Inc.*** include,

1. stop,
2. notify,
3. correct, and
4. resume.

When an unsafe condition is identified the Stop Work Intervention will be initiated, coordinated through the supervisor, initiated in a positive manner, notify all affected personnel and supervision of the stop work issue, correct the issue ,and resume work when safe to do so.

## **Documentation**

It is the policy of *Demex International, Inc.* that all Stop Work Interventions will be documented for lessons learned and corrective measures to be put in place.

## **Stop Work Reports**

*Demex International, Inc.* ensures that Stop Work reports will be reviewed by supervision in order to,

- measure participation,
- determine quality of interventions and follow-up,
- trend common issues,
- identify opportunities for improvement, and
- facilitate sharing of learning's.

## **Follow-Up Importance**

It is of high importance of *Demex International, Inc.* to conduct a follow-up after a Stop Work Intervention has been initiated and closed.

It is the desired outcome of any Stop Work Intervention that the identified safety concern(s) have been addressed to the satisfaction of all involved persons prior to the resumption of work. Most issues can be resolved in a timely manner at the job site, occasionally additional investigation and corrective actions may be required to identify and address root causes.

## **RECORD of EMPLOYEE TRAINING**

Employees have been made aware of the procedure for Stop Work Intervention and have been trained in the appropriate actions as defined in the procedures of this program. The following is a list of employees who have received training on Stop Work Authority procedures.

## Topics in this training include:

- Identification
  - Stop authority
  - Resumption of work
  - Reports review
  - Roles & responsibilities
  - Stop work intervention steps
  - Documentation
  - Follow-up

## **Notes:**

# **Chapter 28**

## ***Demex International, Inc.***

### **Company Policy for Subcontractor Management Plans & Management of Change**

**Demex International, Inc.** has adopted this policy for Subcontractor Management Plans and Management of Change from industry standards and best practices.

**Gary L. DeMarsh** is the assigned Company Supervisor responsible for ensuring the following procedures, practices, and rules are implemented and enforced.

#### ***Subcontractor Safety Management Plan***

- **Prequalification** - *Gary L. DeMarsh* will ensure that all prospective subcontractors be pre-qualified through the review of their safety programs, safety training documents, and safety statistics. Proposed subcontractors will complete and submit a Contractors Prequalification Form from which a Subcontractor/Supplier Quality Rating Report will be completed. The Contractor's Prequalification Form must be complete and all requested attachments provided.
- **Selection** - *Gary L. DeMarsh* will utilize acceptable safety matrixes to be used as a criteria for selecting subcontractors and will be based upon several considerations including but not limited to:
  - Prior working relationships
  - Quality Rating Report scores such as:
    - TRIR, EMR, DART
  - Audits of current work in progress
  - Availability of contractors in the area
- The contractor that receives the best overall review will be forwarded to the Owner's representative for review and approval.
- **Pre-Job** - The selected subcontractor will provide a training matrix with individual employee names and the areas of completed training for employees. The subcontractor will also identify Competent Persons and the areas of their competency. The subcontractor will be included in pre-job meetings or kick-off meetings, and safety orientations.
- **On-Site** - The subcontractor will notify *Demex International, Inc.* Site Safety a minimum of 24 hours prior to the arrival of new employees on-site so that arrangements can be made to provide the required orientations. Employees must meet all of the requirements of the Site Safety Plan, including the training and orientation.
  - The Subcontractor will be required to meet all hazard analysis requirements and request the safe work permits as required by this plan. The subcontractor will be included in the audits and inspections on-site and are expected to immediately correct any "At Risk" behaviors or hazards identified that are within the subcontractor's scope of work and ability to correct. Employees of subcontractors have the right to refuse any work they deem to be hazardous.

- All subcontractors will be included in tailgate safety meetings, job safety analysis or hazard assessments, and on-the-job safety inspections.
- The subcontractor will be required to adjust their “Safe Work Practices” in order to prevent excessive Near Hits and/or Near Misses. If the subcontractor is unable to perform their scope of work without “At Risk” behavior or creating hazardous working conditions on the site, the subcontractor’s working element will be required to leave the site until an abatement plan can be prepared and agreed upon.
- ***Post-Contract*** – Upon completion of the work, a post-job subcontractor safety performance review and evaluation will be completed to determine the safety performance of the subcontractor and provide reference for future job consideration.

### **Management of Change**

- *Demex International, Inc.* will conduct a hazard assessment when a change occurs in the construction plan or external influences impact the manner in which the work will be conducted. This includes, but is not limited to:
  - Changes in policy or objectives.
  - Operating licenses and permits, legal, and regulatory requirements.
  - Changes in procedures, practices, and rules.
  - Changes to controlled documentation.
  - Work processes or methods.
  - Any change other than exact replacement in kind to equipment, processes, hardware, or software.
  - Changes to operating boundaries; e.g. operating envelopes.
  - Temporary changes that specify the period of time a change will be in effect.
- The management of change process covers all activities including the initial request, implementation, review, and closure of a change. Proposed changes will be managed by *Gary L. DeMarsh* and forwarded to the Owner’s management for approval or disapproval.

The following items will be included in the management of change proposal:

- Technical basis for the change.
- Impact of the change on the health and safety of personnel.
- Impact of change on the supplied tools and equipment.
- Necessary modifications to existing or new operating procedures.
- Methodology used to analyze the impact of the change.

# Open Letter to All Subcontractors

Date: \_\_\_\_\_

Greetings Prospective Subcontractor:

As part of **Demex International, Inc.**'s continuing commitment to safety, we are assessing our potential subcontractors' compliance with all applicable safety requirements. Enclosed are the materials you will need to complete this process, including a questionnaire that will assist us in assessing your safety programs. We are asking all subcontractors "Invited to Bid" to complete the attached questionnaire. The matrix included in this package is designed to assist you in determining which programs are applicable to your operations.

Please contact me \_\_\_\_\_

or \_\_\_\_\_ with any questions or concerns.

I am in and out of the office so please leave me a voice mail and I will get back to you when I return.

Please forward the completed forms and attach a copy of your safety manual by: \_\_\_\_\_

**TO:** *Company:* \_\_\_\_\_

**Attn:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City/State/Zip:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**FAX:** \_\_\_\_\_

**eMail:** \_\_\_\_\_

Regards,

---

Construction Manager

# SUBCONTRACTOR SAFETY & HEALTH QUESTIONNAIRE

Date: \_\_\_\_\_

Company Name: \_\_\_\_\_ Number of Employees: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, and Zip Code: \_\_\_\_\_

Company Contact: \_\_\_\_\_ Title: \_\_\_\_\_

Telephone #: (      ) \_\_\_\_\_ FAX #: (      ) \_\_\_\_\_

Form Completed By: \_\_\_\_\_

Officer Name & Signature: \_\_\_\_\_

Please describe the services that your Company provides:

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**1.)** Has your Company received any inspections from a regulatory agency in the last three (3) years?    yes    no

If yes, provide details:

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**2.)** Has your Company received any citations from a regulatory agency during the last three (3) years?    yes    no

**3.)** Does your Company have regularly scheduled, documented employee safety meetings? (Tailgate/Toolbox)    yes    no

If yes, how often? \_\_\_\_\_

What is covered at safety meetings? \_\_\_\_\_

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**4.)** Does your Company perform equipment checks on all equipment?    yes    no

If yes, are records maintained?    yes    no

**5.)** Does your Company perform Job Hazard Analysis (JHA)?    yes    no

**6.)** Does your Company provide & require employees to use the following PPE?

Personal Protective Equipment	Yes	No
Hard Hats		
Safety Shoes/Boots		
Eye & Face Protection		
Hand Protection		
Hearing Protection		
Fall Protection		
Respiratory Protection		

- 7.)** In addition to regulatory required Personal Protective Equipment, what other PPE is required or supplied? If any, please list:
- 

- 8.)** Indicate the circumstances in which your Company's employees may be subject to alcohol/drug screening:

Never       Reasonable Cause/Suspicion       Periodic  
 Random       Post Accident       Follow-Up  
 Return to Duty       Other: \_\_\_\_\_

Do you have a documented Substance Abuse Prevention Program available for review?  yes  no

- 9.)** Does your Company have a policy requiring written accident/incident reports (injuries, property damage, etc.)?  yes  no

- 10.)** Does your Company document, investigate, and discuss "Near Miss Incidents"?  
 yes  no

- 11.)** Please respond to all items below with YES, NO, or N/A (not applicable). Do not leave any items unanswered.

<b>OSHA Programs/Training</b>	<b>Program Written &amp; Documented? Yes/No/NA</b>	<b>Training Conducted By (In-House or Outsourced)</b>	<b>Frequency of Employee Training</b>	<b>Documented Individual Employee Training? Yes/No/NA</b>
OSHA Programs				
Confined Spaces				
Electrical Safety (qualified)				
Electrical Safety (non-qualified)				
Excavation & Shoring				
Fire Protection & Prevention				
Fall Protection				
First Aid/CPR				
HAZCOM				
Heat Stress Prevention				
Lifting/Mobile Equipment				
Lockout/Tagout				
Noise/Hearing Conservation				
Personal Protective Equipment				
Respiratory				
Scaffolds/Ladders				
Trenching/Shoring				
Welding, Cutting, & Hot Work				

- 12.)** Please provide any additional information on other industry-specific programs or training, including written procedures, which your Company provides to employees:

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- 13.)** Does your Company have a Safety & Health Program with clearly written safety policy that is endorsed & enforced by upper management?  yes  no

- 14.)** Does your Company perform documented safety audits/reviews?  yes  no

- 15.)** Who in your Company is responsible for coordinating your health, safety, and environmental program?

- 16.)** If your Company has more than ten (10) employees, please attach with this questionnaire your Company's OSHA 300 Log for the last three (3) years.

- 17.)** Does your Company use subcontractors?  yes  no

If yes, explain: \_\_\_\_\_

Are your Subcontractor's written safety programs and procedures available for review?  yes  no

- 18.)** Are all documents & records pertaining to this questionnaire available for audit?  yes  no

If no, please explain:

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- 19.)** Please attach your current/completed Health and Safety Program along with other written safety programs for review. A disk or CD-ROM is acceptable.

- 20.)** Comments:

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# SAFETY CONTRACT

**Following are Safety Requirements as stated in your subcontract agreement:**

**Subcontractor agrees** to comply with prevailing safety regulations, whether OSHA, Contractor Policies, Owner Policies, or otherwise imposed while working on the project.

**Subcontractor also agrees** to be bound by any rule or regulation needed during the course of the project. Subcontractor further agrees:

- To provide a safe work area to all his employees by providing, and requiring the use of, the required Personal Protective Equipment such as: hard hats, safety glasses, respirators, dust masks, face shields, etc.
- Subcontractor's employees shall wear long or short sleeve shirts, long pants, and sturdy work shoes, boots, or when required, steel-toed boots.
- To provide this Contractor with proper documentation on employee training for specific tools and equipment such as powder actuated tools, air guns (nail guns), forklifts, scaffolding, scissors lifts, boom lifts, and any safety plan applicable to their scope of work (i.e. Fall Protection, Respiratory, or Assured Equipment Grounding Conductor Program).
- Be responsible for implementing and administering their safety program and must provide a copy of said program to this Contractor including a Job Hazard Analysis (inspections) and documentation on weekly job site safety meetings with its employees.
- To implement daily hazard recognition for its employees by using a Pre-Task Planner form for their daily scope of work.
- To provide its employees with safe tools and equipment, etc. and to perform the work under this agreement in a safe manner with high regard for the safety of its employees and others.
- To provide a designated person to participate in a weekly contractor safety coordination meeting.

**Subcontractor shall:**

- Immediately report to this Contractor in writing and remedy any accidents/illness, near misses, or unsafe conditions brought to its attention or discovered by subcontractor employees, involving its work and/or posing a danger to persons or property.
- Not permit its employees at the project to use publicly audible radios or to wear head sets except as are used for job site communications.
- Prior to bringing on site a substance or material for which a Material Safety Data Sheet (MSDS) is required by federal, state, and local regulations, subcontractor shall provide said MSDS to Contractor.

This Contractor is a Drug-free Company & provides such a workplace for its employees.

**Subcontractor shall** provide this Contractor, prior to beginning scope of work, with current documentation of subcontractor's drug testing policy or program (i.e. pre-hire and random testing). The subcontractor will conduct random drug testing for all of their employees throughout the course of the project.

**All subcontractors' employees shall** attend a Project Safety Orientation on the first day of work on the job site.

**Subcontractor Name**

**Signature**

**Title**

**Date**

## **Notes:**

# **Chapter 29**

## ***Demex International, Inc.***

### **Water Survival & Offshore Orientation**

**Demex International, Inc.** has adopted this program for Water Survival and Offshore Orientation for the protection of employees in accordance with the following regulations:

American Petroleum Institute – (**API RP**) – **T1 3, 4.2.1, 4.2.2, 4.2.3.1, 4.2.3.2, 4.3.7**

Minerals Management Services – Notice to Lessees – (**NTL**) – **No. 2007-G03**

46CFR – U.S. Coast Guard – **Mobile Offshore Drilling Units – Subchapter I-A**

46CFR – U.S. Coast Guard – **Offshore Supply Vessels – Subchapter L**

**Gary L. DeMarsh** has been assigned as the supervisor in charge of the Water Survival and Offshore Orientation training program. The following guidelines, procedures, engineering controls, and work practices will be enforced to eliminate injuries or illness resulting from offshore operations.

- *Demex International, Inc.* will ensure that all affected employees are provided with appropriate instruction and training required by this section. Records will be maintained of such training and instruction and will be kept on file at the Company Main Office, or at a local location when required. Documentation of training will be furnished on those employees whose work location varies.
- Employees have been notified that firearms, alcoholic beverages, and illegal drugs or controlled substances, are strictly prohibited on helicopters, vessels, shore bases, and offshore jobsites.
- Required PPE is mandatory for *Demex International, Inc.* employees, to be worn anytime the employee is outside the quarters and/or clinic on location. Failure to wear required PPE will result in disciplinary action up to and including termination.
- *Demex International, Inc.* will provide all PPE except for prescription eye protection, steel-toed work boots, and regular work clothing and coats. Required PPE includes:
  - **Steel-toed Boots:** Boots are to be in good condition with no cuts, tears, or holes in the soles or leather. Boots must meet the requirements of OSHA standard §1910.136. It will be the responsibility of each employee to provide his own work boots.
  - **Hard Hat:** Hard hats are to be non-metallic and will meet the requirements of OSHA standard §1910.135.
  - **Safety Glasses:** Safety glasses or prescription safety eyeglasses must meet OSHA standard §1910.133. These safety glasses are to be worn at all times outside the quarters/office while on location. All glasses must include the use of side shields. If an employee is required to work around any type of worksite related fluids, a full-face shield will be utilized in addition to the safety glasses.
  - **Hearing Protection:** Ear plugs and/or earmuffs will be worn on any worksite location requiring hearing protection. This will include any areas around operating machinery. Hearing protection will meet OSHA standard §1910.95.

- **Work clothing:** Approved work clothing will be either coveralls or a work shirt and jeans. Coveralls and work shirts will have approved logos and a nametag or name patch. All clothing worn on any location outside of the quarters will be of 100% cotton construction. Blended fabrics are prohibited due to the inability of these types of materials to protect the employee against flash fires. On locations where the operator requires commercial fire retardant clothing (Nomex, etc.), this type of clothing will be provided.
- **Fall Protection:** When an employee is required to work in an unprotected area at an elevation higher than six (6) feet, a safety harness and safety line will be worn. The harness will meet OSHA standard §1926.502. A retrieval harness is required to be worn any time an employee is asked to enter a confined space. This harness will also meet OSHA standard §1926.502.
- **Floatation Gear:** All offshore employees will be provided U.S. Coast Guard approved floatation work vests. These vests will be required to be worn at all times when working over water, transferring to and from boats, when riding crew or workboats, and/or any other time that may warrant such use.

***Helicopter transportation operations safety and emergency procedures for employees include the following:***

- The pilot is responsible for and is in complete charge of the helicopter and passengers. Employees will follow the pilot's instructions at all times.
- Employees will inform the pilot if this is their first time on an aircraft (or if it is their first time on this particular aircraft model). The pilot will provide them with a complete briefing on helicopter safety and the use of the specific emergency equipment available on his aircraft.
- Employees will remain clear of the helicopter landing area while it is landing or taking off. On offshore locations, remain below the heliport grade during take-off and landing; on shore bases, remain in the designated or posted area.
- Employees will not approach a helicopter near the tail rotor; stay well clear of the tail rotor at all times.
- If so instructed, employees will provide the pilot with a passenger manifest before boarding the helicopter and will always declare any hazardous substances that they may be carrying on the helicopter.
- Do not approach the aircraft until making visual contact with the pilot and received his signal to approach. Approach or disembark from the helicopter towards the front of the craft in a crouched position well below the rotor tips (the rotors dip to their lowest level directly in front of the aircraft).
- Always walk to and from aircraft; DO NOT RUN!
- Be careful of unsecured objects being blown around by the rotors. Maintain a good grip on items that could be blown loose. If carrying any tall or lengthy articles, keep them horizontal so as not to engage the rotors.
- Use only the step provided for entering and exiting the aircraft. Take care not to damage the floats when boarding a helicopter designed for offshore use.
- Never board or disembark from a helicopter until it is solidly landed, the skids are firmly on the ground, and have received the pilot's approval.
- Store baggage in the appropriate compartments; if in doubt, check with the pilot. On most helicopter models it is forbidden to cross under the tail boom.

- Always check for emergency exits, location of the life rafts, survival kit, and fire extinguisher location upon entering the craft.
- Keep seat belts/harnesses fastened at all times until helicopter is firmly landed.
- Wear an inflatable life preserver whenever boarding a helicopter that will be flying over water.
- Hearing protection should be worn during all helicopter flights.
- Do not remain on board the aircraft during refueling operations.
- Do not distract the pilot with unnecessary conversation or actions while underway.
- Do not throw anything out of a helicopter as it could damage rotors.
- Smoking is prohibited in helicopters unless instructed otherwise by the pilot.
- When flying over very low temperature waters, survival suits must be worn. If unfamiliar with these suits, inform the pilot.
- In the event of an emergency landing:
  - Follow the pilot's instructions.
  - Remove all sharp objects (i.e., glasses, false teeth, etc.)
  - Don survival suit and fully zip the suit, if applicable.
  - Take note of the emergency exits nearest to you.
  - Bend forward with head on knees and brace yourself.
  - Do not inflate life vests or rafts until you have exited craft.
  - Do not actuate emergency exits unless instructed to do so.
- Do not abandon the aircraft until so instructed.

***Marine Vessels/Crew Boat transportation operations safety and emergency procedures for employees include the following:***

- Upon arrival at the dock facility, employees will notify the dispatcher of their presence, identification, and destination.
- Stay clear of the boat docking area while boats are embarking, docking, loading or unloading.
- Gain permission from the dispatcher or a member of the boat crew prior to boarding any vessel.
- Follow the instructions of the boat captain. He is in charge of the vessel and all passengers.
- Follow the instructions of the crane operator and the boat crew regarding loading, unloading and storage of gear.
- A type 1 personal flotation device (PFD) will be properly worn whenever boarding or debarking any marine vessel. When on board make sure of location of life jacket.
- Smoking is prohibited on all marine vessels unless otherwise instructed by the captain.
- Moving about on the vessel while underway is not recommended. Most operators do not allow passengers on deck while underway; unless otherwise instructed, remain inside and remain seated.

***Personnel Transfer with Personnel Baskets***

- If an employee is inexperienced with personnel baskets, inform the boat captain or boat crewmember and request assistance.

- A US Coast Guard approved personal flotation device (PFD) must be properly worn during any transfer via a personnel basket.
- Remain clear of the personnel basket while it is being lowered into position on the facility or onto the boat deck.
- Once the basket is on deck and stable, place gear in the bottom center of the basket.
- When boarding the personnel basket, place one foot on the outside rim and grasp the rope netting.
- Reach through the netting and secure a firm hold, pulling the netting close to chest.
- Maintain a firm footing with knees flexed to act as shock absorbers in the event of unexpected jerking motions – especially when the seas are rough.
- As the basket is lifted, step onto the outside rim with other foot, do not lean in or out, and retain an upright stance.
- Always maintain an awareness of orientation and position relative to the facility and the vessel in case the basket should fall.
- As the personnel basket is being lowered to the deck, flex knees slightly to absorb the possible shock of impact.
- Upon the settling of the personnel basket on deck, quickly step back off the basket and stand clear.

### ***Personnel Transfer with Swing Rope***

- When transferring by a swing rope, face in the direction of the platform. Keep both arms free and catch the knotted rope when the boat is at the top of a swell. Swing to the platform by pushing off from the boat with both feet. "Swing – Do not Step!" Do not allow the swing rope to get between legs as it could cause tripping. Always use both hands when swinging.
- When swinging to a landing from a vessel, be sure that your feet and legs are high enough to be clear of the platform landing.
- When swinging to a vessel from a landing, time the swells to determine when best to swing. Keep knees slightly bent to absorb the impact if the boat should rise sharply up against the soles of your feet.
- If inexperienced with using a swing rope, practice this maneuver before attempting it.
- Never attempt to carry any luggage while transferring by a swing rope.
- An approved US Coast Guard personal flotation device (PFD) must be worn during a transfer by swing rope.
- If anyone should fall into the water, sound the alarm by shouting ' Man Overboard' and maintain visual contact with the individual in the water.
- Assist in any rescue attempts as instructed by the boat captain.

### ***Survival Craft Procedures***

- Survival craft or capsules are provided on many platforms and all mobile drilling rigs. Certain personnel are trained in their use and maintenance and regular drills will be conducted.
- Upon employee arrival on any offshore facility, they will find out which survival craft or raft they will be assigned. This should occur during an initial safety orientation.

- When on an offshore facility, it is mandatory to you participate in all survival craft drills.
- Always don personal flotation device (PFD) prior to boarding the craft and at all times when on board the craft.
- Follow all instructions of the designated individual in charge of the craft.
- Do not operate the release mechanism until the craft has reached the water and instructions have been received from the individual in charge.
- Once inside the survival craft remain seated and keep your seat belt fastened.
- Do not allow the craft to be towed, unless it is equipped with an approved towing package.

### **Offshore Environmental Requirements**

- *Demex International, Inc.* will ensure that each manager, supervisor, or foreman is familiar with all of the significant regulatory guidelines and recommendations set forth by the Mineral Management Services (MMS), and the Environmental Protection Agency (EPA), as well as any other State or Federal regulations which effect Company operations on land or along the Outer Continental Shelf. It shall be the responsibility of these supervisory personnel to keep their subordinates and coworkers fully informed of the individual responsibilities for which they will be held accountable. *Gary L. DeMarsh* will ensure compliance with all regulations and standards issued by the aforementioned agencies.
- *Demex International, Inc.* personnel who work offshore will attend annual training on Marine Trash and Debris Awareness as per MMS NTL No. 2007-G03. Our certification and training process includes the following elements:
  - Viewing of either the video or the slide show by offshore personnel using one of the following methods:
    - Attendance at periodic meetings held for this purpose.
    - As part of several scheduled training components.
    - Web-based training with email notification.
    - Training by a third-party contractor.
  - Explanation from Company management that conveys the commitment of the Company to achieve the objectives of the trash and debris containment requirement.
  - Attendance measures (initial and annual).
  - Recordkeeping and availability of records for inspection by MMS.

**Procedures for Water Safety** – *Demex International, Inc.* will ensure training and instruction for employees that explains in detail the following procedures for water safety:

- Employees will be informed of the types of personal flotation devices they will be required to use: 1) Type 1: Best for most buoyancy. 2) Type V: Work Vest . Never jump into the water unless it is the only means of evacuation. When in the water, stay calm, stay in a group, conserve energy, conserve body heat, and await assistance.

***Training and instruction includes the types of all lifesaving appliances carried on the unit and proper methods of using them, including:***

- The correct procedure and method of donning and wearing a life jacket, an immersion suit, and anti-exposure suits carried on board.
- Jumping into the water from a height while wearing a lifejacket and, if provided, an immersion suit.
- How to board survival craft from the unit and from the water.
- Operation and use of the unit's inflatable life rafts.
- Special instructions necessary for use of the unit's lifesaving appliances in severe weather and severe sea conditions.
- Swimming while wearing a lifejacket.
- Keeping afloat without a lifejacket.
- Where appropriate, how to survive in the water:
  - In the presence of fire or oil on the water.
  - In cold conditions.
  - If sharks may be present.
- Problems of hypothermia, first aid treatment for hypothermia, and other appropriate first aid procedures.
- The need to adhere to the principles of survival.
- The basic methods of boarding helicopters: The methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), and unit's line throwing apparatus.
- Training and instruction will explain in detail:
  - The procedure for mustering at the assigned stations.
  - The procedure for boarding, launching, and clearing the survival craft and rescue boats.
  - The method of launching from within the survival craft.
  - The procedure for releasing from launching appliances.
  - The method and use of water spray systems in launching areas when required for the protection of aluminum survival craft or launching appliances.
  - Illumination in launching area.
  - The use of all survival equipment, including all detection equipment for the location of survivors or survival craft.
  - With illustrations, the use of radio lifesaving appliances.
  - The use of engine and accessories and the use of sea anchors.
  - The hazards of exposure and the need for warm clothing.
  - The best use of the survival craft for survival.
  - The instructions for emergency repair of the lifesaving appliances.
  - The recovery of survival craft and rescue boats, including stowage and securing.

# **Chapter 30**

## ***Demex International, Inc.***

### **OSHA Inspections, Log 300, & Posting Requirements**

This information is provided so that ALL employees of ***Demex International, Inc.*** will know and understand their rights, responsibilities, and roles in maintaining safe and healthful working conditions.

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### ***Introduction — Who is OSHA?***

More than three decades ago, the Occupational Safety and Health Act of 1970 created the Occupational Safety and Health Administration to help employers and employees reduce injuries, illnesses, and deaths on the job in America. Since then, workplace fatalities have been cut by 62 percent and occupational injury and illness rates have declined 40 percent. At the same time, U.S. employment has doubled and now includes nearly 115 million workers at 7 million sites. OSHA provides national leadership in occupational safety and health. The agency seeks to find and share the most effective ways to get results—to save lives and prevent injuries and illnesses. The message is simple—Safety and health add value: To your business. To your workplace. To your life.

For business, protecting workers' safety and health is the right thing to do. It saves money and adds value to the organization. When workers stay whole and healthy, businesses experience lower Workers' Compensation insurance costs, reduced medical expenditures, decreased payout for return-to-work programs, fewer faulty products, and lower costs for job accommodations for injured workers. There are also indirect benefits such as increased productivity, lower costs for training replacement workers, and decreased costs for overtime.

Every workplace is a community. Safety and health add value to workplaces by increasing morale, improving productivity, and reducing turnover. The best companies

build a reputation that is synonymous not only with an excellent product, but also an outstanding work environment where safety and health is a core value.

Every employee benefits when safety and health is a priority at the workplace. Every worker wants to make a contribution through his or her job, yet the primary purpose of work is to make a living. Safety and health add value to the lives of workers by enabling them to maintain their incomes and provide for their families. Getting hurt or sick is not just physically painful. On-the-job injuries and illnesses can significantly reduce income, increase stress, and hinder a full family life.

Establishing a safe and healthful working environment requires every employer and every worker to make safety and health a top priority. The entire workforce – from the CEO to recent hires – must recognize the value of safety and health and acknowledge that this is central to the mission and key to the corporate vision and identity.

OSHA provides leadership and encouragement to employers and workers to help them recognize and realize the value of safety and health on the job. The agency's ultimate goal will always be to reduce injuries, illnesses, and deaths to zero.

### ***OSHA's Establishment – Purpose & History***

OSHA stands for the Occupational Safety and Health Administration, an agency of the U.S. Department of Labor. The U.S. Congress, led by U.S. Senator Harrison A. Williams Jr. and U.S. Representative William A. Steiger, passed the Occupational Safety and Health Act of 1970 (the OSH Act) "...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources."

The legislation, signed into law by President Richard M. Nixon on Dec. 29, 1970, established OSHA and its sole responsibility to provide worker safety and health protection.

### ***Who OSHA Affects***

Nearly everyone in America works or has someone in the immediate family who does. Whether you are an employer, employee, or have a family member who works, you need to know about OSHA. The more you know about OSHA, the better you can protect yourself, your coworkers, or your employees and contribute to safe and healthful working conditions for all Americans.

### ***Why OSHA is Necessary***

Until 1970, no uniform or comprehensive provisions existed to protect against workplace safety and health hazards. At that time:

- Job-related accidents accounted for more than 14,000 worker deaths,
- Nearly 2.5 million workers were disabled by workplace accidents and injuries,
- Ten times as many workdays were lost from job-related disabilities as from labor strikes
- The estimated new cases of occupational diseases totaled 300,000.

In terms of lost productivity and wages, medical expenses, and disability compensation, the burden on the nation's commerce was staggering. The human cost was beyond calculation. Today, OSHA helps to safeguard the right to a safe and healthful work environment for nearly 115 million workers—America's most valuable national resource.

### ***OSHA's Impact***

Since OSHA's creation in 1970, the nation has made substantial progress in occupational safety and health. OSHA and its many partners in the public and private sectors have:

- Cut the work-related fatality rate by 62 percent.
- Reduced overall injury and illness rates by 42 percent.
- Virtually eliminated brown lung disease in the textile industry.
- Reduced trenching and excavation fatalities by 35 percent.

### ***OSHA's Role***

Despite these important successes, significant hazards and unsafe conditions still exist in U.S. workplaces. Each year:

- Almost 6,000 Americans die from workplace injuries.
- Perhaps as many as 50,000 workers die from illnesses in which workplace exposures were a contributing factor.
- Nearly 6 million people suffer non-fatal workplace injuries.
- The cost of occupational injuries and illnesses totals more than \$170 billion.

### ***What OSHA Does***

OSHA uses three basic strategies, authorized by the *Occupational Safety and Health Act*, to help employers and employees reduce injuries, illnesses, and deaths on the job:

- Strong, fair, and effective enforcement.
- Outreach, education, and compliance assistance.
- Partnerships and other cooperative programs.

Based on these strategies, OSHA conducts a wide range of programs and activities to promote workplace safety and health. The agency:

- Encourages employers and employees to reduce workplace hazards and to implement new safety and health management systems or improve existing programs.
- Develops mandatory job safety and health standards and enforces them through worksite inspections, employer assistance, and, sometimes, by imposing citations, penalties, or both.
- Promotes safe and healthful work environments through cooperative programs, partnerships, and alliances.
- Establishes responsibilities and rights for employers and employees to achieve better safety and health conditions.
- Supports the development of innovative ways of dealing with workplace hazards.
- Maintains a reporting and recordkeeping system to monitor job-related injuries and illnesses.
- Establishes training programs to increase the competence of occupational safety and health personnel.
- Provides technical and compliance assistance and training and education to help employers reduce worker accidents and injuries.
- Works in partnership with states that operate their own occupational safety and health programs.
- Supports the Consultation Service.

## **The "OSH Act" – OSHA Coverage**

### **Who the OSH Act Covers**

The *OSH Act* covers all private-sector employers and their employees in the 50 states and all territories and jurisdictions under federal authority. Those jurisdictions include the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Johnston Island, and the Outer Continental Shelf Lands as defined in the *Outer Continental Shelf Lands Act*.

OSHA coverage includes:

- Employers and employees in varied fields that include but are not limited to manufacturing, construction, long-shoring, shipbuilding, ship breaking, ship repair, agriculture, law, medicine, charity and disaster relief, organized labor, and private education.
- Religious groups to the extent that they employ workers for secular purposes. The *OSH Act* covers employers and employees either directly through federal OSHA or through an OSHA-approved state program.

### **Who is Not Covered**

The *OSH Act* does not cover:

- The self-employed.
- Immediate members of farming families on farms that do not employ outside workers.
- Employees whose working conditions are regulated by other federal agencies under other federal statutes. These include mine workers, certain truckers and transportation workers, and atomic energy workers.
- Public employees in state and local governments; some states have their own occupational safety and health plans that cover these workers.

## **Rights and Responsibilities under the "OSH Act"**

### **Employer Responsibilities**

If you are an employer, you **must**:

- Meet your general duty/responsibility to provide a workplace free from recognized hazards.
- Keep workers informed about OSHA and safety and health matters with which they are involved.
- Comply, in a responsible manner, with standards, rules, and regulations issued under the *OSH Act*.
- Be familiar with mandatory OSHA standards.
- Make copies of standards available to employees for review upon request.
- Evaluate workplace conditions.
- Minimize or eliminate potential hazards.
- Provide employees safe, properly maintained tools and equipment, including appropriate personal protective equipment, and ensure that they use it.
- Warn employees of potential hazards.
- Establish or update operating procedures and communicate them to employees.
- Provide medical examinations when required.
- Provide training required by OSHA standards.

- Report within eight hours any accident that results in a fatality or the hospitalization of three or more employees.
- Keep OSHA-required records of work-related injuries and illnesses.
- Post a copy of OSHA 300A, Summary of Work-Related Injuries and Illnesses, for the previous year from February 1 to April 30.
- Post, at a prominent location within the workplace, the OSHA "It's The Law" poster (OSHA 3165) informing employees of their rights and responsibilities.
- Provide employees, former employees, and their representatives' access to the Log of Work-Related Occupational Injuries and Illnesses (OSHA 300) at a reasonable time and in a reasonable manner.
- Provide access to employee medical records and exposure records to the employee and others as required by law.
- Cooperate with OSHA compliance officers.
- Not discriminate against employees who properly exercise their rights under the *OSH Act*.
- Post OSHA citations and abatement verification notices at or near the worksite involved.
- Abate cited violations within the prescribed period.

### ***Employer Rights***

If you are an employer, you have the right to:

- Seek free advice and on-site consultation from OSHA.
- Be involved in job safety and health through your industry association.
- Request and receive proper identification of OSHA compliance officers.
- Be advised by the compliance officer of the reason for an inspection.
- Have an opening and closing conference with the compliance officer.
- Accompany the compliance officer on the inspection.
- File a notice of contest to dispute inspection results.
- Request an informal settlement agreement process after an inspection.
- Apply for a variance from a standard's requirements when technical expertise and materials are unavailable and other means have been provided to protect employees.
- Take an active role in developing safety and health programs.
- Be assured of the confidentiality of any trade secrets.
- Submit a written request to the National Institute for Occupational Safety and Health (NIOSH) for information on whether any substance in your workplace has potentially toxic effects in the concentrations being used.
- Submit information or comments to OSHA on the issuance, modification, or revocation of OSHA standards and request a public hearing.

## **Employee Responsibilities**

Employees are expected to comply with all applicable standards, rules, regulations, and orders issued under the *OSH Act*.

If you are an employee, you **should**:

- Read the OSHA "It's The Law" poster (OSHA 3165) at the jobsite.
- Comply with all applicable OSHA standards.
- Follow all employer safety and health rules and regulations, and wear or use prescribed protective equipment while engaged in work.
- Report hazardous conditions to the supervisor.
- Report any job-related injury or illness to *Demex International, Inc.*, and promptly seek medical treatment.
- Cooperate with the OSHA compliance officer conducting an inspection.
- Exercise your rights under the *OSH Act* in a responsible manner.

## **Employee Rights**

If you are an employee, you have the right to:

- Review copies of appropriate OSHA standards, rules, regulations, and requirements that *Demex International, Inc.* should have available at the workplace.
- Request information from your employer on safety and health hazards, precautions, and emergency procedures.
- Receive adequate training and information.
- Request that OSHA investigate if you believe hazardous conditions or violations of standards exist in your workplace.
- Have your name withheld from your employer if you file a complaint.
- Be advised of OSHA actions regarding your complaint and have an informal review of any decision not to inspect or to issue a citation.
- Have your authorized employee representative accompany the OSHA compliance officer during an inspection.
- Respond to questions from the OSHA compliance officer.
- Observe any monitoring or measuring of hazardous materials and see any related monitoring or medical records.
- Review the Log and Summary of Work-Related Injuries and Illnesses (OSHA 300 and 300A) at a reasonable time and in a reasonable manner.
- Request a closing discussion following an inspection.
- Submit a written request to the National Institute for Occupational Safety and Health for information on whether any substance in your workplace has potentially toxic effects in the concentrations being used and have your name withheld from your employer.
- Object to the abatement period set in a citation issued to your employer.
- Participate in hearings conducted by the Occupational Safety and Health Review Commission.
- Be notified by your employer if he or she applies for a variance, and testify at a variance hearing and appeal the final decision.
- Submit information or comments to OSHA on the issuance, modification, or revocation of OSHA standards and request a public hearing.

# If Employees feel their Workplace is Unsafe or Unhealthful...

## To File a Complaint...

If employees feel their workplace has unsafe or unhealthy working conditions, often the best and fastest way to get it corrected is to notify a supervisor or employer. Employees also may file a complaint by phone, mail, e-mail, or fax with the nearest OSHA office and request an inspection. Employees may request that OSHA not reveal their name. To file a complaint, call (800) 321-OSHA (6742) or contact the nearest OSHA regional, area, state plan, or consultation office listed at [www.osha.gov](http://www.osha.gov). The teletypewriter (TTY) number is (877) 889-5627. Employees can also file a complaint online. Most online complaints are addressed by OSHA's phone/fax system. That means they may be resolved informally over the phone with the employer. Written, signed complaints submitted to OSHA area or state-plan offices are more likely to result in on-site OSHA inspections. Complaints from workers in OSHA-approved state-plan states will be forwarded to the appropriate state plan for response. If employees are concerned about confidentiality, they may prefer to file a complaint from their home computer or a computer in the local library. Download the OSHA complaint form, complete it and then fax or mail it to the local OSHA office or they may simply contact the local OSHA office to receive a copy of the complaint form. Be sure to include name, address, and telephone number so that OSHA is able to get in touch.

## To Refuse Unsafe Work...

Refusing to do a job because of potentially unsafe workplace conditions is not ordinarily an employee right under the law and may result in disciplinary action by an employer. However, if employees have reasonable grounds to believe that they are exposed to an imminent danger on the job, they do have the right to refuse to do a job. Employees should remain at the jobsite until the problem can be resolved because OSHA will not be able to protect them if they walk off the job.

## Legal Protections

### Additional Employee Protections

A number of different laws provide employees legal protections for getting involved in safety and health matters. The *OSH Act*, for example, provides employees the right to seek safe and healthful conditions on the job without fear of punishment. Under Section 11(c) of the act, employees may exercise such rights as:

- Voicing concerns to an employer, union, OSHA, any other government agency, or others about job safety or health hazards.
- Filing safety or health grievances
- Participating in a workplace safety and health committee or in union activities concerning job safety and health.
- Participating in OSHA inspections, conferences, or hearings.
- Refusing to work when a dangerous situation threatens death or serious injury where there is insufficient time to contact OSHA and where the employee has sought from his or her employer and been unable to obtain a correction of the dangerous conditions.

### Protections against Employer Retaliation

An employer may not retaliate if an employee exercises these or any other rights under the *OSH Act*. This means that an employer make not take these actions against any worker who expresses concern or files a complaint about safety and health conditions or participates in job safety-related activities:

- Termination of employment
- Demotion
- Threaten or harass the worker
- Transfer to an undesirable job or shift
- Take away seniority or other earned benefits

## **Whistleblower Protections**

Since passage of the *OSH Act* in 1970, Congress has expanded OSHA's whistleblower protection authority to protect workers from discrimination under 14 federal statutes.

These statutes, and the number of days employees have to file a complaint, are:

- ***Occupational Safety and Health Act of 1970 (30 days)***

Provides discrimination protection for employees who exercise rights guaranteed under the act, such as filing a safety and health complaint with OSHA and participating in an inspection.

- ***Surface Transportation Assistance Act (180 days)***

Provides discrimination protections for truck drivers and other employees relating to the safety of commercial motor vehicles. Coverage includes all buses for hire and freight trucks with a gross vehicle weight greater than 10,001 pounds.

- ***Asbestos Hazard Emergency Response Act (90 days)***

Provides discrimination protection for individuals who report violations of environmental laws relating to asbestos in elementary and secondary school systems.

- ***International Safety Container Act (60 days)***

Provides discrimination protection for employees who report violations of the act, which regulates shipping containers.

- ***Energy Reorganization Act (180 days)***

Provides discrimination protection for employees of operators and subcontractors of nuclear power plants licensed by the Nuclear Regulatory Commission and for employees of contractors working under contract with the Department of Energy.

- ***Clean Air Act (30 days)***

Provides discrimination protection for employees who report violations of the act, which provides for the development and enforcement of standards regarding air quality and air pollution.

- ***Safe Drinking Water Act (30 days)***

Provides discrimination protection for employees who report violations of the act, which requires that all drinking water systems in public buildings and in new construction be lead free.

- ***Federal Water Pollution Control Act (30 days)***

Provides discrimination protection for employees who report hazardous pollution of waters that provide a natural habitat for living things. Also called the Clean Water Act.

- ***Toxic Substances Control Act (30 days)***

Provides discrimination protection for employees who report violations of regulations involving the manufacture, distribution, and use of certain toxic substances

- ***Solid Waste Disposal Act (30 days)***

Provides discrimination protection for employees who exercise certain rights under the act, which provides assistance for the development of facilities for the recovery of energy and other resources from discarded materials and regulates hazardous waste management. Also called the Resource Conservation and Recovery Act.

- **Comprehensive Environmental Response, Compensation, and Liability Act (30 days)**

Provides discrimination protection for employees who exercise rights under the act, which provides liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and for the cleanup of inactive hazardous waste disposal sites.

- **Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (90 days)**

Provides discrimination protection for employees of air carriers, contractors, or subcontractors of air carriers who raise safety concerns.

- **Corporate and Criminal Fraud Accountability Act of 2002 (90 days)**

Provides discrimination protection for employees or contractors of publicly traded companies or brokerage firms who report mail, wire, bank, or securities fraud or violations of laws related to stockholder fraud. Also called the Sarbanes-Oxley Act.

- **Pipeline Safety Improvement Act of 2002 (180 days)**

Provides discrimination protection for employees who report violations of the federal law regarding pipeline safety and security or who refuse to violate such provisions.

## **Public-Sector Employees**

### **Federal Worker Coverage**

Section 19 of the OSH Act makes federal agency heads responsible for providing safe and healthful working conditions for their employees. OSHA conducts federal workplace inspections in response to employee reports of hazards. The OSH Act also requires agencies to comply with standards consistent with those for private-sector employers. Under a 1998 amendment to the act, it covers the U.S. Postal Service the same as any private-sector employer.

### **OSHA's Federal Sector Authority**

In its federal sector authority, OSHA:

- Can not propose monetary penalties against another federal agency for failure to comply with OSHA standards.
- Does not have authority to protect federal employee "whistleblowers." The *Whistleblower Protection Act of 1989* allows present and former federal employees (except for corporations and certain intelligence agencies) to file their reports of reprisal with the Office of Special Counsel – U.S. Merit Systems Protection Board.

### **State and Local Government Worker Coverage**

OSHA provisions cover the private sector only. However, some states have their own OSHA-approved occupational safety and health programs. These state programs must cover state and local workers and must be at least as effective as federal OSHA requirements.

### **Advisory Groups**

OSHA has several standing or ad hoc advisory committees that advise the agency on safety and health issues. These committees include representatives of management, labor, and state agencies as well as one or more designees of the Secretary of Health and Human Services (HHS). Members also may include representatives of occupational safety and health professions and the general public.

**The two standing (or statutory) advisory committees are:**

- The National Advisory Committee on Occupational Safety and Health (NACOSH), which advises, consults with, and makes recommendations to the Secretaries of Labor and HHS on matters regarding administration of the *OSH Act*.
- The Advisory Committee on Construction Safety and Health (ACCSH), which advises the Secretary of Labor on construction safety and health standards and other regulations.

**Other continuing advisory committees include:**

- The Federal Safety and Health Advisory Committee (FACOSH), which advises the Secretary of Labor on all aspects of federal agency safety and health.
- The Maritime Advisory Committee for Occupational Safety and Health (MACOSH), which advises the Secretary of Labor on workplace safety and health programs, policies, and standards in the maritime industry.
- The National Advisory Committee on Ergonomics, which advises OSHA on initiatives to reduce ergonomic-related injuries and illnesses in the workplace. OSHA may occasionally form short-term advisory committees to advise the agency on specific issues.

**State Plans – State Safety & Health Programs**

State plans are OSHA-approved job safety and health programs operated by individual states instead of federal OSHA. The *OSH Act* encourages states to develop and operate their own job safety and health plans and precludes state enforcement of OSHA standards unless the state has an approved plan. OSHA approves and monitors all state plans.

Once a state plan is approved under Section 18(b) of the *OSH Act*, OSHA funds up to 50 percent of the program's operating costs. State plans must provide standards and enforcement programs as well as voluntary compliance activities that are at least as effective as the federal program.

State plans covering the private sector also must cover state and local government employees. OSHA rules also permit states to develop plans that cover only public sector (state and local government) employees. In these cases, private sector employment remains under federal OSHA jurisdiction.

Twenty-three states operate complete plans and three cover only the public sector. These states are listed on the OSHA website at [www.osha.gov](http://www.osha.gov).

**State Program Coverage**

States with approved plans cover most private sector employees as well as state and local government workers in the state. Federal OSHA continues to cover federal employees and certain other employees specifically excluded by a state plan—for example, those who work in maritime industries and on military bases.

**State Workplace Inspections**

States with approved state plans respond to accidents and workplace complaints and conduct random unannounced inspections, just like federal OSHA. The states issue citations and proposed penalties under state law and adjudicate disputes through a state review board or other procedure.

## **Federal Monitoring of State Plans**

Federal OSHA closely monitors state programs. Anyone finding inadequacies or other problems in the administration of a state program may file a Complaint About State Program Administration (CASPA) with the appropriate OSHA regional administrator. OSHA investigates all these complaints and, where they are found to be valid, requires appropriate corrective action.

## **Employer Rights and Responsibilities**

State plans must guarantee the same employer and employee rights as OSHA. Employer and employee responsibilities in states with their own occupational safety and health programs are generally the same as in states under federal OSHA.

## **State Safety and Health Standards**

State safety and health standards under approved plans must be identical to or at least as effective as federal OSHA standards and must keep pace with federal standards. State plans must adopt standards comparable to federal standards within six months after a federal standard takes effect. Most state plan standards are very similar to federal standards, but states with approved plans may have different and independent standards.

## **Standards and Guidance**

### **Requirements**

In general, standards require that employers:

- Maintain conditions or adopt practices reasonably necessary and appropriate to protect workers on the job.
- Be familiar with and comply with standards applicable to their establishments.
- Ensure that employees have and use personal protective equipment when required for safety and health.

### **Hazards Addressed**

OSHA issues standards for a wide variety of workplace hazards, including:

- Toxic substances
- Harmful physical agents
- Electrical hazards
- Fall hazards
- Trenching hazards
- Hazardous waste
- Infectious diseases
- Fire and explosion hazards
- Dangerous atmospheres
- Machine hazards

In addition, where there are no specific OSHA standards, employers must comply with the *OSH Act's "General Duty Clause"*. The general duty clause, Section 5(a)(1) requires that each employer "furnish ... a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to employees."

## **The Standards-Setting Process**

### **Deciding to Develop a Standard**

OSHA can begin standards-setting procedures on its own initiative or in response to petitions from other parties, including:

- The Secretary of Health and Human Services (HHS).
- The National Institute for Occupational Safety and Health (NIOSH).
- State and local governments.

- Nationally recognized standards producing organizations and employer or labor representatives.
- Any other interested parties.

### **How OSHA Develops Standards**

OSHA publishes its intention to propose, amend, or revoke a standard in the *Federal Register*, either as:

- A Request for Information or an Advance Notice of Proposed Rulemaking or announcement of a meeting to solicit information to be used in drafting a proposal.
- A Notice of Proposed Rulemaking, which sets out the proposed new rule's requirements and provides a specific time for the public to respond.

Interested parties may submit written information and evidence. OSHA also may schedule a public hearing to consider various points of view. After reviewing public comments, evidence, and testimony, OSHA publishes:

- The full text of any standard amended or adopted and the date it becomes effective, along with an explanation of the standard and the reasons for implementing it.
- A determination that no standard or amendment is necessary.

### **Input from Other Government Agencies**

Other government agencies, such as NIOSH, can recommend standards to OSHA. The *OSH Act* established the National Institute for Occupational Safety and Health under the Department of HHS as the research agency for occupational safety and health. NIOSH conducts research on various safety and health problems, provides technical assistance to OSHA, and recommends standards for OSHA's adoption. (For more information, call (800) 35-NIOSH or visit the agency's website at [www.cdc.gov/niosh](http://www.cdc.gov/niosh).)

### **Emergency Temporary Standards**

Under certain limited conditions, OSHA can set emergency temporary standards that take effect immediately and remain in effect until superseded by a permanent standard.

To take such an action, OSHA must determine that:

- Workers are in grave danger due to exposure to substances or agents determined to be toxic or physically harmful or to new hazards.
- An emergency standard is necessary to protect them.

OSHA then publishes the emergency temporary standard in the *Federal Register*, where it also serves as a proposed permanent standard. The usual procedures for adopting a permanent standard apply, except that a final ruling should be made within six months.

### **Congressional Jurisdiction over OSHA Standards**

OSHA submits all final rules to Congress and the General Accounting Office for review. Congress has the authority to repeal a standard by passing a joint resolution under an expedited procedure established by the *Small Business Regulatory Enforcement and Fairness Act*, or SBREFA, but has done so only once. For the repeal to take effect, the joint resolution must be signed by the President.

### **Employer Recourse**

An employer who is unable to comply with new requirements or anyone who disagrees with a new standard can:

- Petition a court for judicial review.

- Request a permanent, temporary, or experimental variance from a standard or regulation.
- Apply for an interim order to continue working under existing conditions while OSHA considers a variance request.

### **Petitions to Modify or Withdraw Standards or Requirements**

Employers or employees may petition OSHA to modify or revoke standards just as they may petition the agency to develop standards. OSHA continually reviews its standards to keep pace with developing and changing industrial technology.

#### **Filing a Petition for Judicial Review**

Anyone who may be adversely affected by a final or emergency standard may file a petition for judicial review. The objecting party must file the petition within 60 days of the rule's publication with the U.S. Court of Appeals for the circuit in which the petitioner lives or has his or her primary place of business. Filing an appeals petition will not delay enforcement of a standard, unless the Court of Appeals specifically orders it.

OSHA issues permanent standards only after careful consideration of the arguments and data received from the public in written submissions and at hearings.

#### **Guidelines versus Standards**

A guideline is a tool to assist employers in recognizing and controlling hazards. It is voluntary and not enforceable under the *OSH Act*. Failure to implement a guideline is not itself a violation of the *OSH Act*'s general duty clause. Guidelines are more flexible than standards. They can be developed quickly and can be changed easily as new information becomes available with scientific advances. Guidelines make it easier for employers to adopt innovative programs to suit their workplaces, rather than inflexible, one-size-fits-all solutions to issues that may be unique to an industry or facility.

### **Variances**

A variance grants an employer formal permission to deviate from a standard's requirements or time frame.

#### **Employer Requests for Variances**

Employers may ask OSHA for a variance from:

- A newly promulgated standard or regulation if they cannot fully comply by the effective date due to shortage of materials, equipment, or professional or technical personnel.
- Requirements of a standard or regulation if they can demonstrate that their alternative or alternatives provide employees with protection as effective as that provided by the standard or regulation.

#### **Types of Variances**

An employer applies for a **temporary variance** if he or she cannot comply with a standard or regulation by its effective date because professional or technical personnel, material, or equipment are not available, or because the necessary construction or alteration of facilities cannot be completed in time. While operating under a temporary variance, an employer generally must meet specific conditions specified by OSHA.

An employer who can prove that working conditions, practices, means, methods, operations, or processes at his or her worksite are as safe and healthful as they would be if the employer complied with the standard may apply for a **permanent variance**. Pending OSHA approval to grant a permanent variance, an employer must comply with the OSHA standard.

An employer may apply for an ***experimental variance*** if he or she is participating in an effort to demonstrate or validate new job safety and health techniques, and either the Secretary of Labor or the Secretary of HHS has approved that experiment.

### ***Impact of Variance Applications on Citations***

Variances are not retroactive. An employer who has been cited for violating a standard may not seek relief from that citation by applying for a variance. The fact that a citation is outstanding does not prevent an employer from filing a variance application.

However, if the citation is being contested by *Demex International, Inc.*, the OSHA Administrator has the option to decline to accept the variance application for the provision(s) under contest.

### ***For more Information about Variances***

For further information and help in applying for a variance, contact the nearest OSHA office listed on the agency website at [www.osha.gov](http://www.osha.gov) or by calling (800) 321-OSHA.

## ***OSHA's Reporting & Recordkeeping Requirements***

### ***All employers must report to OSHA within eight hours of learning about:***

- The death of any employee from a work-related incident, and
- The in-patient hospitalization of three or more employees as a result of a work-related incident.

In addition, employers must report all fatal heart attacks. Deaths from motor vehicle accidents on public streets (except those in a construction work zone) and in accidents on commercial airplanes, trains, subways or buses do not need to be reported. These reports may be made by telephone or in person to the nearest OSHA area office listed at [www.osha.gov](http://www.osha.gov) or by calling OSHA's toll-free number, (800) 321-OSHA (6742).

Employers may be subject to other requirements in other OSHA standards as well.

### ***Recordkeeping Benefits***

OSHA's recordkeeping requirements, as set out in the *OSH Act*, established an effective, centralized, nationwide system for monitoring occupational safety and health problems—a vital requirement for gauging problems and solving them. Keeping records allows OSHA to compile survey material, helps identify high-hazard industries, and informs employees about their employers' workplace safety record. These records also help employers identify potential sources of injuries and illnesses at their worksites.

### ***Employer Requirements***

OSHA's reporting and recordkeeping regulations require employers to:

- Maintain records in each establishment of occupational injuries and illnesses as they occur and make those records accessible to employees.
- Keep injury and illness records and post from February 1 through April 30 an annual summary of occupational injuries and illnesses for each establishment. A company executive must certify the accuracy of the summary.
- Record any fatality regardless of length of time between the injury and death.
- Provide, upon request, pertinent injury and illness records for inspection and copying by any representative of the Secretaries of Labor or HHS, or the state during any investigation, research, or statistical compilation.
- Comply with any additional recordkeeping and reporting requirements in specific OSHA standards.

## **Exempt Employers**

Employers with 10 or fewer employees are exempt from maintaining the OSHA log of injuries and illnesses unless the Bureau of Labor Statistics (BLS) or OSHA notifies them that they have been selected to participate in a mandatory data collection.

OSHA also exempts employers in certain low-hazard industries such as real estate agencies and clothing stores, as defined in the recordkeeping standard. Exempt employers must still comply with requirements to display an OSHA "It's The Law" poster (OSHA 3165) and report to OSHA within eight hours any accident that results in one or more fatalities or the hospitalization of three or more employees. A few exempt employers will have to maintain records if OSHA or BLS selects them to participate in a mandatory data collection. The agency will notify those employers in advance and supply them the necessary forms and instructions.

## **Exceptions to the Recording Requirements**

To be considered work-related, there must be a significant degree of aggravation to a preexisting injury or illness. In addition, cases arising from eating food and drinking beverages, blood donations, and exercise programs do not need to be recorded. Common cold and flu cases also do not need to be recorded. There are specific criteria for determining when mental illnesses are considered work-related and when cases should be recorded if employees are traveling or working at home.

## **Maintaining Recordkeeping Forms**

Employers must log injuries and illnesses on recordkeeping forms, keep the logs current and retain them for five years at each establishment. Logs must be available for inspection by representatives of OSHA, HHS, BLS, or the designated state agency within four hours of the request. Employers are required to update logs to reflect any changes that occur.

**DO NOT** send any recordkeeping forms to OSHA or any other agency. *Demex International, Inc.* maintains forms and posts the annual summary in the workplace. If OSHA inspects the workplace, *Demex International, Inc.* will be required to produce the forms.

## **Summary for Reporting and Recordkeeping Requirements**

OSHA recordkeeping regulations require most employers to maintain records of workplace injuries, illness, and deaths. Employers must:

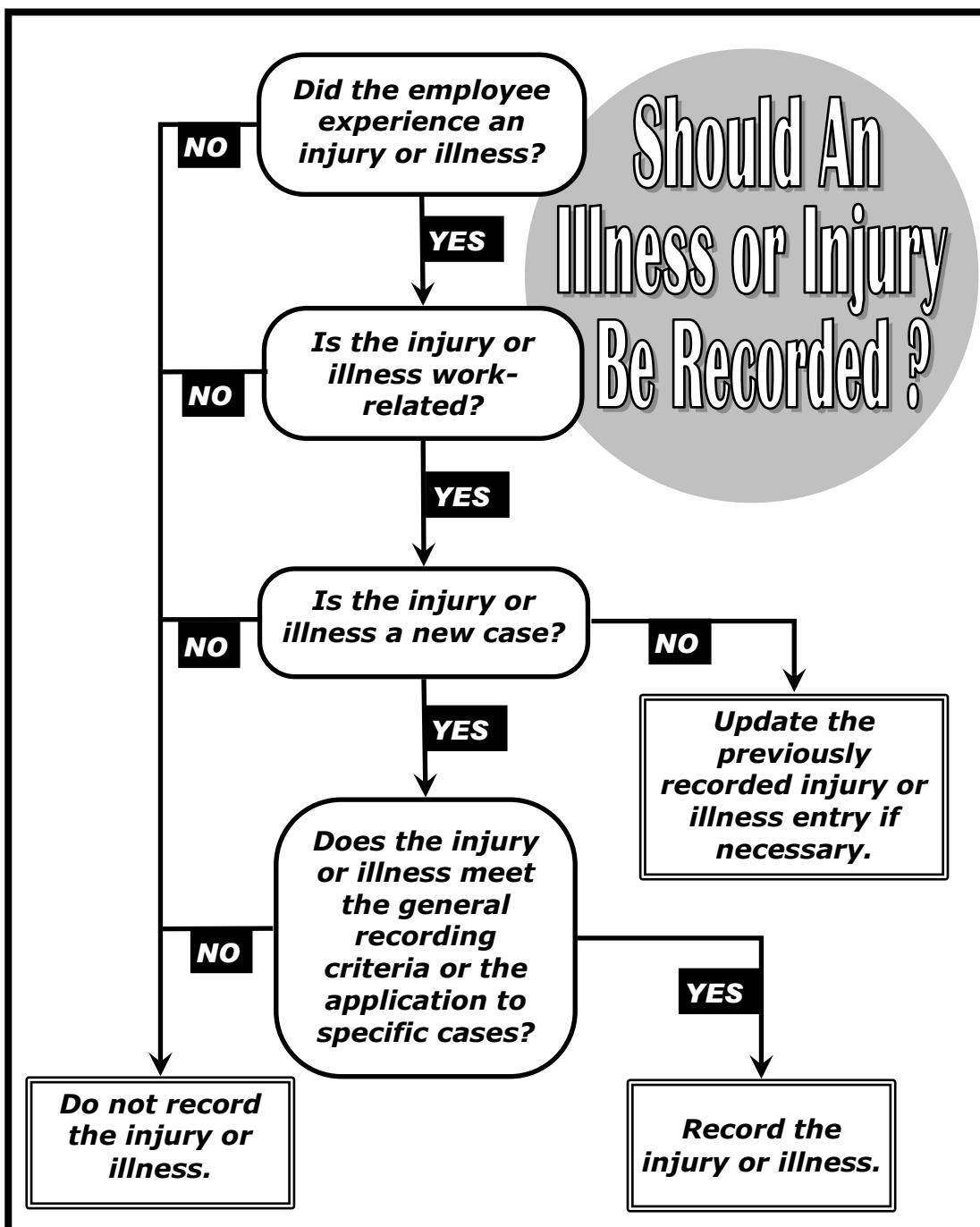
- ★ *Maintain injury and illness records.*
- ★ *Report all fatalities.*
- ★ *Report each accident that hospitalizes three or more employees.*
- ★ *Make records accessible to employees.*
- ★ *Allow OSHA access to records.*
- ★ *Post an annual summary of injuries and illnesses.*

## **Determining if an Injury or Illness is Work-Related**

An employer must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a preexisting injury or illness. Most injuries and illnesses resulting from events or exposures in the work environment are presumed to be work-related.

## **What Cases to Record**

To determine which work-related injuries and illnesses must be recorded, consult the following chart.



## **Employers with Multiple Worksites**

Employers must keep injury and illness records for each establishment. OSHA defines an establishment as a "single physical location where business is conducted or where services are performed." An employer whose employees work in dispersed locations must keep records at the place where the employees report for work. In some situations, employees do not report to work at the same place each day. In that case, records must be kept at the place from which they are paid or at the base from which they operate.

## **Recordkeeping Forms**

**Three forms are needed for recordkeeping:**

- **OSHA 300 – Log of Work-Related Injuries and Illnesses.**

Employers must log each recordable occupational injury and illness on this form within six working days from the time *Demex International, Inc.* learns of it. A complete copy current to within 45 calendar days must be present at all times in the establishment if *Demex International, Inc.* prepares the log at a central location using automatic data processing equipment. A substitute for the OSHA 300 is acceptable if it is as detailed, readable, and understandable as the OSHA 300.

- **OSHA 301 – Injury and Illness Incident Report.**

Each employer must complete the OSHA 301 form within seven calendar days from the time *Demex International, Inc.* learns of the work-related injury or illness. This form includes more data about how the injury or illness occurred. Employees and former employees are guaranteed access to their individual OSHA 301 forms. Employee representatives will be provided access to the "information about the case" section of the OSHA 301 form in establishments where they represent employees.

- **OSHA Form 300A – Summary of Work-Related Injuries and Illnesses.**

This form was created to make it easier to post and calculate incident rates. Employers must post copies of the previous year's records no later than February 1 and keep them in place through April 30. A company executive must certify that he or she has examined the OSHA 300 Log and that he or she reasonably believes, based on his or her knowledge of the process by which the information was recorded, that the annual summary is correct and complete.

**NOTE:** It is required to save the OSHA 300 Log, the privacy list (if one exists), the annual summary, and the OSHA 301 Incident report forms for five (5) years following the end of the calendar year that these records cover.

### **Recording Zero Injuries or Illnesses**

If there were no injuries or illnesses during the year, employers must enter "zero" on the totals line of the form and post it. The form must be signed and certified by a company executive.

### **Employee Privacy**

Employers must withhold the names of individuals with sensitive injuries such as sexual assaults, HIV infections, and mental illness.

## **OSHA's Annual Survey**

Each year, OSHA collects injury and illness information from employers through the OSHA Data Initiative to better direct agency resources and improve worker protections. All employers in construction and manufacturing with 40 or more employees are eligible to be included in the initiative. In addition, employers from 67 other industries in other industrial sectors are selected, generally if they are in industries rated as "high hazard" or with high injury and illness rates. Establishments are selected for inclusion in the annual survey based on previous reported injury and illness rates, an OSHA intervention, or the periodic revisiting of former participants in the annual survey.

OSHA asks employers selected for participation to send information already collected on the 300A summary form, required by the OSHA occupational injury and illness recordkeeping regulation.

## **Summary of Information Employers must Post**

Employers must display at each establishment, wherever they normally post notices to employees, the following:

- *A copy of the totals from the previous year's summary of occupational injuries and illnesses, OSHA 300A (February through April).*
- *OSHA "It's The Law" poster (OSHA 3156), or the state equivalent, informing employees of their rights and responsibilities under the OSH Act.*
- *Summaries of petitions for variances from standards of recordkeeping procedures.*
- *Copies of all OSHA citations for violations of standards. These must remain posted at or near the location of alleged violations for three days, or until the violations are corrected, whichever is longer.*

## **OSHA Enforcement**

### **Compliance Officer Authority**

The OSH Act authorizes OSHA compliance officers – at reasonable times, in a reasonable manner, and within reasonable time limits – to:

- Enter any factory, plant, establishment, construction site, or other areas of the workplace or environment where work is being performed.
- Inspect and investigate during regular working hours any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials.
- Inspect and investigate at other times any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials.
- Question privately any employer, owner, operator, agent or employee during an inspection or investigation.

## **Compliance Officer Qualifications**

OSHA compliance officers have specialized knowledge and experience in the occupational safety and health field, including industrial hygiene, safety engineering, toxicology, and occupational medicine. They receive vigorous training on OSHA standards and how to recognize safety and health hazards. Many OSHA staff members have specialized credentials such as certified industrial hygienist (CIH) or certified safety professional (CSP) certifications.

## **Advance Notice of Inspections**

OSHA generally conducts inspections without advance notice. In fact, anyone who alerts an employer in advance of an OSHA inspection can receive a criminal fine of up to \$1,000 or a six-month jail term or both.

However, under special circumstances, OSHA may give the employer advance notice of an inspection – but no more than 24 hours. These special circumstances include:

- Imminent danger situations, which require correction immediately.
- Inspections that must take place after regular business hours or require special preparation.
- Cases where OSHA must provide advance notice to assure that the employer and employee representative or other personnel will be present.
- Situations in which OSHA determines that advance notice would produce a more thorough or effective inspection.

Employers receiving advance notice of an inspection must inform their employees' representative or arrange for OSHA to do so.

## **Search Warrants**

An employer has the right to require the compliance officer to obtain an inspection warrant before entering the worksite. OSHA may inspect after acquiring a judicially authorized search warrant based on administrative probable cause or evidence of a violation.

OSHA may take appropriate steps, including legal action, if an employer still refuses to admit a compliance officer, or if an employer attempts to interfere with an inspection.

## **Inspection Priorities**

OSHA cannot inspect all 7 million workplaces covered by the *OSH Act* each year. The most hazardous workplaces need primary attention. OSHA, therefore, has established a system of inspection priorities in order to make the most positive impact on occupational safety and health. The agency inspects under the following conditions:

- **Imminent danger** – or any condition where there is reasonable certainty that a danger exists that can be expected to cause death or serious physical harm immediately or before the danger can be eliminated through normal enforcement procedures. OSHA gives top priority to imminent danger.
- **Catastrophes and fatal accidents** – resulting in the death of any employee or the hospitalization of three or more employees.
- **Employee complaints** – involving imminent danger or an employer violation that threatens death or serious physical harm.
- **Referrals** – from other individuals, agencies, organizations, or the media.
- **Planned or programmed** – inspections in industries with a high number of hazards and associated injuries.
- **Follow-ups** – to previous inspections.

## **The Inspection Process – Off-site Investigations**

### **"Phone/FAX" Investigations**

There are two ways that OSHA can respond to a complaint. OSHA can either perform an on-site inspection or an off-site investigation, also known as a "phone/fax investigation."

Although every worker has a right to receive an on-site inspection if certain conditions are met, there are times when a phone/fax (or letter) investigation may be a better alternative. OSHA responds more quickly to lower-priority hazards using a phone/fax approach. This enables the agency to concentrate resources on the most serious workplace hazards.

The OSH Act authorizes OSHA to conduct workplace inspections to enforce its standards. Every establishment covered by the OSH Act is subject to inspection by OSHA compliance safety and health officers.

Employees who request a phone/fax investigation do not give up the right to request an on-site inspection of potential violations and hazards if they are not satisfied with the investigation. Workers should call their nearest OSHA area office to discuss their options.

If an off-site investigation is appropriate, the agency telephones the employer, describes the alleged hazards, and then follows up with a fax or letter. The employer must respond in writing within five days, identifying any problems found and noting corrective actions taken or planned. If the response is adequate, OSHA generally will not conduct an inspection. The employee or employee representative who filed the original complaint will receive a copy of the employer's response and, if still not satisfied, may then request an on-site inspection.

If the employee or employee representative files a written complaint that meets certain conditions, then OSHA may conduct an on-site inspection. Those conditions include claims of serious physical harm that have already resulted in disabling injuries or illnesses or claims of imminent danger situations; written, signed complaints requesting inspections; and situations where the employer provided an inadequate response to a phone/fax investigation.

## **The Inspection Process – On-site Inspections**

### **What to Expect**

A typical OSHA inspection includes four stages:

- 1.** Presentation of inspector credentials
- 2.** Opening conference
- 3.** Inspection walkaround
- 4.** Closing conference

### **How an Inspection Begins**

When arriving at a worksite, the OSHA compliance officer displays official credentials and asks to meet an appropriate employer representative. Employers should always insist on seeing the compliance officer's credentials.

An OSHA compliance officer carries U.S. Department of Labor credentials bearing his or her photograph and a serial number that an employer can verify by phoning the nearest OSHA office. Posing as a compliance officer is a violation of law; suspected imposters should be promptly reported to local law enforcement agencies.

### **Opening Conference**

In the opening conference, the compliance officer:

- Explains why OSHA selected the establishment for inspection.
- Obtains information about the establishment.

- Explains the purpose of the visit, the scope of the inspection, walk-around procedures, employee representation, employee interviews, and the closing conference.
- Determines whether an OSHA funded consultation is in progress or whether the facility has received an inspection exemption.

If so, the compliance officer usually terminates the inspection. The compliance officer asks the employer to select an employer representative to accompany him or her during the inspection. OSHA welcomes, but does not require, an employee representative to accompany the inspector.

Under no circumstances may the employer select the employee representative for the walkaround. OSHA encourages employers and employees to meet together.

## Selecting Employee Representatives

*If ... Then ...*

- |  |   |
|--|---|
| <input type="checkbox"/> The employees are represented by a recognized bargaining representative,              | <span style="color: #00008B;">★</span> The union usually will designate the employee rep to accompany the compliance officer.   |
| <input type="checkbox"/> There is a plant safety committee and no recognized bargaining representative,        | <span style="color: #00008B;">★</span> The employee members of that committee or the employees at large will designate the employee rep.  |
| <input type="checkbox"/> There is neither a recognized bargaining representative nor a plant safety committee, | <span style="color: #00008B;">★</span> The employees themselves may select the employee rep, or the compliance officer will determine if any other employees would suitably represent the interests of employees. |
| <input type="checkbox"/> There is no authorized employee representative.                                       | <span style="color: #00008B;">★</span> The compliance officer must consult with a reasonable number of employees concerning safety and health matters in the workplace. Such consultations may be held privately. |

### ***Inspection Walkaround***

After the opening conference, the compliance officer and accompanying representatives proceed through the establishment, inspecting work areas for potentially hazardous working conditions. The compliance officer will discuss possible corrective actions with the employer. OSHA may consult, at times privately, with employees during the inspection walkaround. An inspection walkaround may cover only part of an establishment, particularly if the inspection resulted from a specific complaint, fatality, or catastrophe or is part of a local or national emphasis program. Other inspections may cover the entire facility, "wall to wall."

Trade secrets observed by the compliance officers are kept confidential. Federal employees who release confidential information without authorization are subject to a \$1,000 fine, one year in jail, or both, and removal from office or employment.

### ***Records Reviews***

The compliance officer checks posting and recordkeeping practices, including whether the employer has:

- Maintained records of deaths, injuries, and illnesses.
- Posted OSHA's Summary of Work-Related Injuries and Illnesses (OSHA 300A) from February 1 to April 30.
- Prominently displayed the OSHA "It's The Law" poster (OSHA 3165).

The compliance officer also examines records, where required, of employee exposure to toxic substances and harmful physical agents.

### ***On-the-Spot Corrections***

Some apparent violations detected by the compliance officer can be corrected immediately. The compliance officer records such corrections to help evaluate the employer's good faith for compliance. Apparent violations that have been corrected may still serve as the basis for a citation or notice of proposed penalty or both.

### ***After the Walkaround***

After the inspection walkaround, the compliance officer holds a closing conference with the employer and the employee representatives, either jointly or separately.

During the closing conference, the compliance officer:

- Discusses with the employer all unsafe or unhealthful conditions observed on the inspection and indicates all apparent violations for which a citation may be recommended.
- Tells the employer of his or her appeal rights, anti-discrimination rights under 11(c) of the *OSH Act*, and procedures for contesting citations within 15 working days after receiving the citation.
- Informs the employer of his or her obligations regarding any citations that may be issued.

The compliance officer will hold a separate closing conference with the employees or their representative, if requested, to discuss matters of direct interest to employees and to inform them of their rights after an inspection.

### ***Information in an OSHA Citation***

Citations inform the employer and employees of:

- Regulations and standards the employer allegedly violated.
- Any hazardous working conditions covered by the *OSH Act*'s general duty clause.
- The proposed length of time set for abatement of hazards.
- Any proposed penalties.

### ***Additional Information Provided***

The compliance officer:

- Informs employers of their rights under the *Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA)*. SBREFA requires that all federal agencies have in place a policy to reduce or, under appropriate circumstances, waive penalties for violations of standards by small businesses.
- Informs employers that Regional Small Business Regulatory Fairness Boards created under SBREFA exist to hear cases if employers are not satisfied with agency resolutions of enforcement matters.
- Explains that OSHA area offices offer assistance and can answer questions about programs and activities.

## **Disclosures of Penalties**

Only the OSHA area director has the authority to tell the employer what penalties the agency will propose.

OSHA has up to six months following an inspection to issue a final report. After reviewing the full inspection report, the OSHA area director will:

- Issue citations without penalties.
- Issue citations with proposed penalties.
- Determine that neither is warranted.

## **Violations and Penalties**

### **Types of Penalties**

Under the *OSH Act*, OSHA may cite the following violations and propose the following penalties:

**Other-than-Serious:** A violation that has a direct relationship to job safety and health, but probably would not cause death or serious physical harm. OSHA may propose a penalty of up to \$7,000 for each other-than-serious violation.

**Serious:** A violation where there is substantial probability that death or serious physical harm could result and that the employer knew, or should have known, of the hazard. OSHA may propose a mandatory penalty of up to \$7,000 for each serious violation.

**Willful:** A violation that the employer intentionally and knowingly commits or a violation that the employer commits with plain indifference to the law. The employer either knows that what he or she is doing constitutes a violation, or is aware that a hazardous condition existed and made no reasonable effort to eliminate it. OSHA may propose penalties of up to \$70,000 for each willful violation, with a minimum penalty of \$5,000 for each willful violation.

In addition to OSHA citations and penalties, the U.S. Department of Justice may bring a criminal action against an employer whose willful violation of a standard results in the death of an employee.

If a court convicts such an employer, the offense is punishable by a court-imposed fine or by imprisonment for up to six months, or both. The court may impose a fine for a criminal conviction of up to \$250,000 for an individual or \$500,000 for a corporation.

**Repeated:** A violation of any standard, regulation, rule, or order where OSHA finds a substantially similar violation during a re-inspection. OSHA may propose penalties of up to \$70,000 for each repeated violation. To be the basis of a repeat citation, the original citation must be final. A citation under contest may not serve as the basis for a subsequent repeat citation.

# Violation Categories & Possible Penalties

Type of Violation	Minimum Penalty Per Violation	Maximum Penalty Per Violation
Other-than-serious		\$7,000
Serious	\$100*	\$7,000
Posting		\$7,000
Willful	\$5,000	\$70,000
Willful, with fatality, first conviction		\$250,000/\$500,000 or six months in prison or both **
Willful, with fatality, second conviction		\$250,000/\$500,000 or one year in prison or both **
Repeated	\$5,000	\$70,000
Failure to abate		\$7,000 per day

\* Set as OSHA policy in the Field Inspection Reference Manual (FIRM).  
\*\* The monetary criminal fine is set by Title 18 of the U.S. Code (Crimes and Criminal Procedure), Section 3571, which states that individuals found guilty of an offense may not be fined more than \$250,000, and organizations not more than \$500,000.

**Failure to Abate:** OSHA may propose an additional penalty of up to \$7,000 for each day an employer fails to correct a previously cited violation beyond the prescribed abatement date.

## **Penalties for Other Violations**

Employers may be assessed penalties for:

- Violating posting requirements can bring a civil penalty of up to \$7,000. (OSHA does not fine for failing to post the "It's The Law" poster (OSHA 3165).)
- Falsifying records, reports, or applications, upon conviction in a court, can bring a criminal fine of \$10,000 or up to six months in jail, or both.
- Assaulting a compliance officer or otherwise resisting, opposing, intimidating or interfering with a compliance officer in the performance of his or her duties is a criminal offense. Anyone convicted of such an action is subject to a criminal fine of not more than \$5,000 and imprisonment for not more than three years.

## **Adjustments to Proposed Penalty Amounts**

The agency may adjust a penalty downward depending on the employer's good faith (demonstrated efforts to comply with the OSH Act), history of previous violations, and size of business. When the adjusted penalty amounts to less than \$100, OSHA does not propose any penalty. For serious violations, OSHA may also reduce the proposed penalty based on the gravity of the alleged violation. No good faith adjustment will be made for alleged willful violations.

## **Criminal Penalties**

An employer who is convicted in a criminal proceeding of a willful violation of a standard that has resulted in the death of an employee may be fined up to \$250,000 (or \$500,000 if the employer is a corporation) or imprisoned up to six months, or both. A second conviction doubles the possible term of imprisonment.

## **Contesting Inspection Results**

### **Employee Questions Regarding Inspection Results**

Employees may request an informal conference with OSHA to discuss any issues raised by an inspection, citation, notice of proposed penalty, or employer's notice of intent to contest.

OSHA must conduct an informal conference within the 15 working day contest period. In addition, if OSHA initiated an inspection due to an employee complaint, the employee or authorized employee representative may request an informal review of any decision not to issue a citation.

Employees may contest:

- The time specified in the citation for abatement of a hazardous condition.
- An employer's petition for modification of abatement (PMA) requesting an extension of the abatement period. Employees must contest the PMA within 10 working days of its posting or within 10 working days after an authorized employee representative has received a copy.

Employees, however, may not contest citations, penalties, or lack of penalties.

### **Employer Appeals of Inspection Results**

When issued a citation or notice of a proposed penalty, an employer may request an informal conference with OSHA's area director to discuss the case. OSHA authorizes its area directors to reach settlement agreements with employers that adjust citations and penalties to avoid prolonged legal disputes. As with informal conferences requested by employees, OSHA must conduct an informal conference requested by an employer within the 15-working-day contest period.

### **Petitions for Modification of Abatement**

If an employer who has been cited for violations cannot meet the abatement dates as issued or amended at the informal conference, the employer must submit a request for an extension of time. This is called a "Petition for Modification of Abatement", or PMA. A PMA must be filed in writing with the area director who issued the citation no later than the close of the next working day following the date the director originally set for abatement.

### **Notices of Contest**

If an employer decides to contest the citation, the time set for abatement, and/or the proposed penalty, he or she has 15 working days after receiving the citation and notice of proposed penalty to notify the OSHA area director in writing. An oral disagreement is not sufficient. This written notification is called a notice of contest.

Any employer, employee, or employee representative also may request an informal conference within the 15 working day contest period to discuss inspection results. Based on information and evidence presented at the informal conference, OSHA may enter into an informal settlement agreement with the employer, which could involve changes to citations, penalties, or abatement dates.

There is no specific format for the notice of contest. It must, however, clearly identify the employer's basis for filing a contest of the citation, notice of proposed penalty, abatement period, or notification of failure to correct the violation.

### ***Reviews of Notices of Contest***

If the written notice of contest has been filed within the required 15 working days, the OSHA area director forwards it to the Occupational Safety and Health Review Commission (OSHRC).

The commission is an independent federal agency created by the *OSH Act* to decide contested OSHA citations and penalties. It is not associated with OSHA or the Department of Labor.

The commission will assign an administrative law judge to hear the case. The administrative law judge may:

- Find the contest legally invalid and disallow it.
- Set a hearing for a public place near the employer's workplace.

***The employer and the employees have the right to participate in the hearing.***

### ***Employer Appeals of Administrative Judge Rulings***

Once the administrative law judge has ruled, any party to the case may request a further review by the commission.

Any of the three OSHRC commissioners also may, at his or her own motion, bring a case before the commission for review. Employers and OSHA may appeal commission rulings to the appropriate U.S. Court of Appeals.

# Recordkeeping Forms

***Following are the three forms needed for recordkeeping:***

- ***OSHA Form 300 – Log of Work-Related Injuries and Illnesses.***
- ***OSHA Form 301 – Injury and Illness Incident Report.***
- ***OSHA Form 300A – Summary of Work-Related Injuries & Illnesses.***

These are official Federal OSHA forms with accompanying instructions and worksheets. Make copies of the blank forms for future use.



## **Posting Requirements (Federal)**

Federal law requires that employers conspicuously display the following posters where they can be read by their employees:

- 1. Federal Minimum Wage** — This posting explains the Federal Minimum Wage; Overtime Pay; Child Labor; and Enforcement.
- 2. Equal Employment Opportunity is the Law** — Reasons for Taking Leave; Advance Notice & Medical Certification; Jobs Benefit & Protection.
- 3. Notice Employee Polygraph Protection Act** — Prohibitions; Exemptions; Examinee Rights; Enforcement; Additional Information.
- 4. You Have A Right to a Safe & Healthful Workplace** — "IT'S THE LAW"— Employers Holding Federal Contracts or Subcontracts; Private Employment State & Local Government Educational Institutions; Programs or Activities Receiving Federal Financial Assistance.
- 5. Your Rights Family & Medical Leave ACT** — Reasons for Taking Leave; Advance Notice & Medical Leave; Jobs Benefit & Protection.
- 6. Your rights under USERRA** — THE UNIFORMED SERVICES EMPLOYMENT AND REEMPLOYMENT RIGHTS ACT. **USERRA** protects the job rights of individuals who voluntarily or involuntarily leave employment positions to undertake military service. **USERRA** also prohibits employers from discriminating against past and present members of the uniformed services, and applicants to the uniformed services.

**NOTE:** Some states require the use of their own posters. Check with your State Labor Department for poster requirements.

## **§1903.2**

### ***Posting of notice; availability of the Act, regulations and applicable standards***

**(a) (1)** Each employer shall post and keep posted a notice or notices, to be furnished by the Occupational Safety and Health Administration, U.S. Department of Labor, informing employees of the protections and obligations provided for in the Act, and that for assistance and information, including copies of the Act and of specific safety and health standards, employees should contact the employer or the nearest office of the Department of Labor. Such notice or notices shall be posted by the employer in each establishment in a conspicuous place or places where notices to employees are customarily posted. Each employer shall take steps to ensure that such notices are not altered, defaced, or covered by other material.

**(2)** Where a State has an approved poster informing employees of their protections and obligations as defined in 1952.10 of this chapter, such poster, when posted by employers covered by the State plan, shall constitute compliance with the posting requirements of section 8(c)(1) of the Act. Employers whose operations are not within the issues covered by the State plan must comply with paragraph (a)(1) of this section.

**(3) Reproductions or facsimiles of such Federal or State posters shall constitute compliance with the posting requirements of section 8(c)(1) of the Act where such reproductions or facsimiles are at least 8 1/2 inches by 14 inches, and the printing size is at least 10 pt. Whenever the size of the poster increases, the size of the print shall also increase accordingly. The caption or heading on the poster shall be in large type, generally not less than 36 pt.**

**(b)** Establishment means a single physical location where business is conducted or where services or industrial operations are performed. (For example: A factory, mill, store, hotel, restaurant, movie theatre, farm, ranch, bank, sales office, warehouse, or central administrative office.) Where distinctly separate activities are performed at a single physical location (such as contract construction activities from the same physical location as a lumber yard), each activity shall be treated as a separate physical establishment, and a separate notice or notices shall be posted in each such establishment, to the extent that such notices have been furnished by the Occupational Safety and Health Administration, U.S. Department of Labor. Where employers are engaged in activities which are physically dispersed, such as agriculture, construction, transportation, communications, and electric, gas and sanitary services, the notice or notices required by this section shall be posted at the location to which employees report each day. Where employees do not usually work at, or report to, a single establishment, such as longshoremen, traveling salesmen, technicians, engineers, etc., such notice or notices shall be posted at the location from which the employees operate to carry out their activities. In all cases, such notice or notices shall be posted in accordance with the requirements of paragraph (a) of this section.

**(c)** Copies of the Act, all regulations published in this chapter and all applicable standards will be available at all Area Offices of the Occupational Safety and Health Administration, U.S. Department of Labor. If an employer has obtained copies of these materials, he shall make them available upon request to any employee or his authorized representative for review in the establishment where the employee is employed on the same day the request is made or at the earliest time mutually convenient to the employee or his authorized representative and the employer.

**(d)** Any employer failing to comply with the provisions of this section shall be subject to citation and penalty in accordance with the provisions of section 17 of the act.

**Chapter 31**

***Demex International, Inc.***

**Safety Training Minutes**

**and Other Safety Training Documents**

This section is designated to hold all Company Safety Training Documents. Any paperwork related to Company Safety Training should be 3-ring hole-punched and stored in this section.

# DAILY JOB LOG

Today's Date	Day of Week	Job Name:		
<input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> S				
Job Location:		Job #:		
Weather Conditions		Approx Temp	Site Conditions	
		AM _____ °F   PM _____ °F		
Crew Forman/Supervisor:				
Company Competent Person(s):				
Crew Members:		Start	Finish	Total
<i>Expected Problems/Delays Today?</i>				
<b>Special Safety Training/Equipment Required:</b>				
<b>Special Work Requests/Assignments (Describe)</b>				
<b>Work Performed Today:</b>				
<b>Change Orders Issued? (Describe)</b>		<i>Authorized By:</i>		
<b>Special Tools/Equipment Rented Today</b>		<i>Rented From</i>	<i>Rate/hr</i>	<i>Total Cost</i>
<b>Material Purchases</b>		<i>Cost</i>	<i>Special Planning Required for Tomorrow</i>	
<b>Accidents/Incidents/Near Misses? (Describe)</b>				
<b>Other:</b>				
<b>Supervisor's Signature:</b>				

# **Chapter 32**

## ***Demex International, Inc.***

### **Behavior-Based Safety Program (BBS)**

*Demex International, Inc.* has adopted this Behavior-based Safety program for the safety of our employees and help prevent occupational injuries and illness.

The elements of our program consist of:

- **Common Goals**-Employee and Managerial commitment to the process.
- **Creating** a systematic, ongoing process that defines a set of behaviors that reduce the risk of work-related injury, derived from safety assessments.
- **Training** personnel in the Observation Process.
- **Observation and data collection** on the frequency of critical safety practices.
- **Feedback** and reinforcement to encourage and support positive safety practices.
- **Action Plan**-Team meetings to decide on how to proceed, based on the data.
- **Review**-monitoring the progress of the Action Plan on a regular basis.

#### ***Observation***

A critical element in our Behavior-based Safety (BBS) program depends on site observation. Site observation includes direct and open communication with the employees involved. The observer will:

- Meet with the worker at the site and introduce himself and the job being done.
- Observe and monitor the worker, noting his safe behaviors.
- Monitor the At-risk behaviors the worker is putting himself in.

#### ***Observation Process Training***

Training in the Observation Process will be established and implemented to the proper personnel. These individuals will be experienced employees of the Company. Training will consist of either classroom or on the job training.

#### **Elements of the Training Program include:**

- Who is to be trained.
- Ensuring employees know the basic elements of the Behavior-based Program.
- Ensuring that all employees involved in the process are trained in the classroom or on the job.

#### **The types of training that will be provided are:**

- **Management training**- to ensure the common goals and process of the program are being met.
- **New employee training**- effectively communicating the program to all employees.
- **Refresher training**- to be done as needed or when changes are made to the policy or procedure of the program.

## **This training will include:**

- Program objectives and incident report reviews
- How to conduct the site observations
- The observer's knowledge of the job procedures they observe.
- Knowledge of the correct work and safety procedures involved.
- How to complete the observation form
- How to determine and analyze At-risk behaviors
- Feedback training and role play (mentoring and coaching)- Employees should be aware they may be observed at any time

This training process will be documented in order to keep on record those qualified to observe on site behaviors and effectively implement the program's elements.

## **Feedback**

Communication is a crucial element in a successful Behavior-based Safety Program. To effectively accomplish this, feedback is of key importance.

The observer will start by commending the safe behavior the worker was doing during his work. You then want to explain, one by one, the At-risk behaviors the worker was doing. Then the observer asks the worker why he was putting himself at risk. For example, if the worker is welding a piece of metal and the sparks are flying in the workers direction. The observer would then ask the worker why he was not wearing protective clothing, like flame-retardant apron.

At this time the observer and worker will discuss the at-risk behaviors until the worker agrees to try the suggested recommendation made by the observer. The worker might be aware of his at-risk behavior or maybe not. The worker may be doing the at-risk behavior for long time without hurting himself.

The Observer's job here is to highlight this behavior, then explain the associated negative consequences with this behavior. The above discussion and agreement is the individual feedback which helps the worker to change his behavior. This feedback is considered as a form of reward since:

- The worker got commendable comments on his safe behavior.
- The worker understood his at-risk behavior without being reprimanded at site or reported to his superiors for further penalties.

## **Key elements for the observer to remember during the feedback process are:**

- Reviewing the observation with the employee
- Start with positive comments on behavior and procedure
- Reinforce these behaviors
- Describe and discuss the unsafe portions observed
- Determine the reasons for the unsafe actions with open-ended questions to the worker.
- Re-emphasize that there are no negative consequences at this stage, so long as the observer and worker agree on the change of behavior.

## **Data Collection**

At the end of the observation, the Observer will:

- Fill out an Observation Form with the safe and at-risk behaviors he noticed.
- Record the date, time and location of the observations.
- Note the workers comments and reasons for the at-risk behavior.
- Record recommended safe behavior

**NOTE: The worker's name or identification number are not noted in the Observation Form.**

- These Company forms will be used by *Demex International, Inc.* to summarize the observation process. Recording this interaction is important for later detailed analysis by the committee in charge of the program.
- Data gathering and the Observation Form will be gathered and entered into an electronic database. Reports will be generated for the committee to analyze and recommend practical solutions. These reports highlight trends of at-risk behaviors and in which location they are taking place.
- Data collection and trend analysis allow our company to compile the information taken from the observation and feedback phase of the program and transfer it to useful data, which will be implemented in the Action Plan.

## **Elements of the Action Plan**

In order to address unsafe behaviors *Demex International, Inc.* will construct its Action Plan based on Observation Reports, trend analysis and recommendations from the Observers and employees. Gary L. DeMarsh is responsible for the procedures of the Action Plan.

Action planning will include:

- Holding regularly scheduled meetings to discuss and analyze Behavior-based report findings.
- Evaluating unsafe behaviors
- Designating responsible parties and time frames to complete the Action Plan
- Ensuring support of management

The committee will:

- Produce a set of recommendations to correct workers' behavior.

Recommendations may be as simple as providing Personal Protective Equipment (PPE) to workers in certain location, or increase work force in another location.

- Some of the recommendations require site modification or costly machinery. Such recommendations are sent to top management for necessary approvals.

The committee's responsibility is to ensure that:

- The recommendations will change the at-risk behaviors at the targeted location.
- The recommendations will eliminate hazards and risks caused by hardware or wrong design.

## ***Follow-Up***

Any Action Plans set out by *Demex International, Inc.* at the direction of Gary L. DeMarsh will be completed in a time frame agreed upon by the entire committee.

Regularly scheduled meetings will be held to:

- Assign responsibility for the completion of the Action Plan
- Ensure that the guidelines of the Action Plan are being carried out
- To document the Action Plan and its progress

## ***Summary***

*Demex International, Inc.* is committed to the safety of its employees. Behavior-based safety is an approach that instills not only correct job safety procedures but a safety conscious attitude and behaviors that positively impact the entire Company and those we work with.

# Training Form

I, \_\_\_\_\_, understand that my training in the above listed jobs qualifies me to observe employees while doing their job(s), conduct feedback with employee(s) and implement the established goals of the Behavior-based Safety Program. I have also displayed the required knowledge in the following areas:

- Knowing the BBS Program objectives
  - How to conduct observations
  - Knowledge of the jobs being observed
  - The correct safety procedures of these jobs
  - Filling out the Observation Form
  - How to identify At-risk behaviors

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Observation Form

<b>Observer Name:</b>		<b>Date:</b>
<b>Job being observed:</b>		
<b>Job Step</b>	<b>Procedure Comments</b>	
	<b>Positive Behaviors:</b>	<b>At-risk Behaviors</b>
<b>1</b>		
<b>Recommendations:</b>		
	<b>Positive Behaviors:</b>	<b>At-risk Behaviors</b>
<b>2</b>		
<b>Recommendations:</b>		
	<b>Positive Behaviors:</b>	<b>At-risk Behaviors</b>
<b>3</b>		
<b>Recommendations:</b>		
	<b>Positive Behaviors:</b>	<b>At-risk Behaviors</b>
<b>4</b>		
<b>Recommendations:</b>		
<b>Employee Comments:</b>		

Observer's Signature \_\_\_\_\_ Date: \_\_\_\_\_

## **Employee Training Form**

I, \_\_\_\_\_, have read or been informed of the Behavior-based Safety Program and its elements.

- I am aware of the companies Safe Work procedures including the Company Code of Safe Practices.
- I understand I may be observed in my job performance or assigned task by a designated Observer and this person will inform me that I am being observed.
- I understand that the Observer will communicate to me the positive and At-risk behaviors I may display on completion of his/her observation.
- I agree to do my utmost to implement any of the Observers' recommendations they make in order to improve my performance and safety.
- I understand my cooperation and communication is key to the success of the Behavior-based program.
- I understand that the Observations of my job performance will not include my name or identifying mark and is used only for statistical information in the program.
- I agree to follow the procedures of any Action Plan as set out by the Company.

Employee Signature:\_\_\_\_\_

Date:\_\_\_\_\_

## **Notes:**

# **Chapter 33**

## ***Demex International, Inc.***

### **Short Service Employee (SSE) Policy**

**Demex International, Inc.** has adopted the following program to ensure that short service employees are identified, appropriately supervised, trained, mentored, and managed. This program is adopted in order to prevent accidents such as personal injury, injury to others, environmental damage, and/or property damage by the short service employee.

#### ***Definition***

**Demex International, Inc.** defines a short service employee (SSE) as any person or personnel with less than six (6) months experience in his/her current position or with one's current employer. A person or persons can also be classified as an SSE if they change jobs within the company they are working for or as a new hire for the same type of position for another company.

#### ***Work crew assignments and restrictions***

- A single employee as his own crew is not considered a SSE.
- When crew/group sizes of less than five (5) are assembled, no more than one (1) SSE per group/crew is allowed.
- When working with crew/group sizes larger than five (5) members, the SSE's will not exceed 20% of the crew/group make up. When the crew/groups exceed the twenty percent (20%) make up of SSE's, this will only be permitted with a written variance form, which will serve as the mitigation plan; approved by the Supervisor and/or Manager in charge of the project.

#### ***Communication and Notification***

The processes for the proposed crew/group, when using an SSE, are outlined in the Short Service Employee Form. Prior to beginning the job assignment the Supervisor/Manager in charge will submit to the projects coordinator, on-site supervisor, or contractor; the completed SSE form for all the jobs that will contain SSE personnel. The work owner or supervisor/person in charge will decide SSE approval status and will keep the original completed form in the project files.

#### ***Identification***

All SSE personnel will be visibly identified. This will be done by employing one of the following methods:

- Wearing a high-visibility Hard Hat or,
- Wearing a high-visibility Vest.
- Any method which clearly identifies the employee as an SSE to anyone onsite.

## **Monitoring SSE's**

The supervisor will monitor their employees, which includes the SSE personnel for Health, Environment and Safety (HES) awareness.

The identifier marking the SSE may be removed from the SSE Program at the discretion of the supervisor at the end of the required six-month period if he/she has:

- Worked safely.
- Adhered to all HES policies and,
- Had no recordable incidents attributed to him/her.

The supervisor shall require the employee that fails to complete the six-month period free of recordable incidents, to get the operator to approve in writing prior to allowing the person to return to the operator's property.

## **Mentoring Process**

This will be done by assigning all SSE's a mentor for the first six (6) months of employment. A mentor's responsibility is to provide guidance and develop the SSE personnel. A mentor may only be assigned one (1) SSE per crew/group. The mentor must be onsite with the SSE to monitor the SSE at all times.

The mentor must meet the following requirements:

- Be familiar with the SSE's job, have the oversight responsibilities required, and all hazards accompanied with the job.
- Have up to date orientation training.
- Be familiar with all site policies, procedures, and any required specialized actions with the work to be done.
- Show the ability to recognize any hazards and/or unsafe acts.
- Are able and willing to challenge their personnel on the job if they do not meet site procedures, policies, or other requirements and will see that the stop work authority is enforced.
- Participate actively in the behavior-based safety process.

**Note:** A mentor must keep a helpful eye on new hire's in your crew. Take time to describe the layout of the project, the best method to access the work, or how to work a tool they have never used before.

## **Sub-Contractor Management**

Sub-Contractors working on site will have assigned mentors that monitor their employees only. Mentoring of outside employees will be done on an individual basis, and as required. They will also be managed following this policy.

## **High Hazard Areas**

SSE's may in certain situations be prohibited from entering into and working in high hazard areas, these may include:

- Naturally occurring radioactive material (NORM).
- H<sub>2</sub>S areas
- Confined spaces
- High Voltage environments, etc.

## **Procedures**

*Demex International, Inc.* has set forth these procedures to verify all work is being carried out under the guidelines of this chapter by having:

- The supervisors communicate the SSE policy and procedure at all pre-job meetings.
- The supervisor submits the crew/group makeup and all SSE form(s) to the on-site representative of the work owner for approval.
- The supervisor will have the on-site representative validate the crew/group makeup and experience level.
- The supervisor will see that the on-site representative approves the SSE variance form.
- The supervisor will make sure the on-site representative posts the forms to the appropriate database, if required.

## **Program Review**

*Demex International, Inc.*'s Short Service Employee Program will ensure the following practices are kept up to date on a regular basis when using and working with SSE's:

- Continuous monitoring of the SSE.
- Ensuring all changes/updates to the forms are submitted prior to beginning work and whenever a change may occur thereafter.

## **Contractor Short-Service Employee Form & Variance**

Supervisor must complete and submit this form to work owner supervision for approval prior to arrival on location. The work owner supervision must approve the individual SSE before he/she arrives on location.

<b>SSE Information</b>			
Contractor Company name:			
Request Date:			
SSE Name:			
Date of Employment:		Current Job Title:	
Years Related Experience:	Experience in Current Position:	Yrs	Months
Is this employee in compliance with your Substance Abuse Policy?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have site owner, contractor and HES policies (including Stop Work Authority) been reviewed with SSE?		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Who has been assigned as the SSE's mentor?			
Mentor's Experience:	Yrs	Months	
List all training provided to the SSE:		List any previous special training:	
SSE(s) identified by: <input type="checkbox"/> <b>Hard Hat</b> -High Visibility <input type="checkbox"/> <b>Vest</b> -High Visibility			
<input type="checkbox"/> Other: _____		Color: _____	

**II. SSE Crew Composition Requirements**

Choose one of the crew types below. If any of the stated limitations are exceeded, proceed to the variance form on next page.

Single person crew-cannot be an SSE (Variance Required)

2-4 person crew-no more than one SSE

5 or more person crew-no more than 20% SSE(s) per crew

Exceeding 20% SSE per crew (Variance Required)

**III. SSE Review and Approval**

Contractor Supervising Manager: Date:

CPL Work Location Supervisor: Date:

Work Owner: Date:

**IV. Contractor SSE Form Repository**

CSM Data Base: Date:

CPL Work location Date:

Work Owner file: Date:

This form is to be filled out whenever the conditions on this form or any other element of the Short Service Employee Policy cannot be met.

<b>IV. Variance Information</b>	
<b>Variance Justification</b> (What are the current circumstances and what will be done to ensure an acceptable level of risk?)	
<b>Alternatives to Variance</b> (If the variance is denied, what are the alternatives to completing the scope of the work? Briefly detail the cost and operational impact of the alternatives.)	

List the steps to be taken to manage/mitigate the SSE risk to an acceptable level:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

## **V. Variance Review and Approvals**

Variance Expiration Date:

Contractor Manager/Supervisor

Approves       Denies

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Owner's on-site representative

Approves       Denies

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Note: For large jobs, please use a separate sheet to list all SSEs on the crew by name and job title.