HEALTH AND SAFETY PLAN

(January 2022)

EVO CORPORATION
1703 Vargrave Street
Winston-Salem, NC 27107

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Chapter 1 - Injury and Illness Prevention Program

Written Plan

Every employer should have a written Injury and Illness Prevention plan. This is our plan. Please read it carefully. While no plan can guarantee an accident free work place, following the safety procedures set forth in this manual will significantly reduce the risk of danger to you and your co-workers.

_____ _____

(Tony Disher, President) (Darren Poole, V.P. & Chief Safety Officer)

Introduction to Our Program

State and federal laws, as well as company policy, make the safety and health of our employees the first consideration in operating our business. Safety and health in our business must be a part of every operation, and every employee's responsibility at all levels. It is the intent of Evo Corporation to comply with all laws concerning the operation of the business and the health and safety of our employees and the public. To do this, we must constantly be aware of conditions in all work areas that can produce or lead to injuries. No employee is required to work at a job known to be unsafe or dangerous to their health. Your cooperation in detecting hazards, reporting dangerous conditions and controlling workplace hazards is a condition of employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct. Employees will not be disciplined or suffer any retaliation for reporting a safety violation in good faith.

Safety First Priority

The personal safety and health of each employee is of primary importance. Prevention of occupationally-induced injuries and illnesses is of such consequence that it will be given precedence over operating productivity. To the greatest degree possible, management will provide all mechanical and physical protection required for personal safety and health, but our employees must bear primary responsibility for working safely. A little common sense and caution can prevent most accidents from occurring.

Individual Cooperation Necessary

Evo Corporation maintains a safety and health program conforming to the best practices of our field. To be successful, such a program must embody proper attitudes towards injury and illness prevention on the part of supervisors and employees. It requires the cooperation in all safety and health matters, not only of the employer and employee, but between the employee and all co-workers. Only through such a cooperative effort can a safety program in the best interest of all be established and preserved. Safety is no accident; think safety and the job will be safer.

Safety Program Goals

The objective of Evo Corporation 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 similar operations by others. Our goal is zero accidents and injuries and these are communicated, tracked and reported annually by our OSHA 300 reports.

Safety Policy Statement

It is the policy of Evo Corporation that accident prevention shall be considered of primary importance in all phases of operation and administration. It is the intention of Evo Corporation's management to provide safe and healthy working conditions and to establish and insist upon safe practices at all times by all employees. The prevention of accidents is an objective affecting all levels of our company and its operations. It is, therefore, a basic requirement that each supervisor make the safety of all employees an integral part of his or her regular management function. It is equally the duty of each employee to accept and follow established safety regulations and procedures. Every effort will be made to provide adequate training to employees. However, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for assistance. Employees are expected to assist management in accident prevention activities. Unsafe conditions must be reported immediately. Fellow employees that need help should be assisted. Everyone is responsible for the housekeeping duties that pertain to their jobs. Every injury that occurs on the job, even a slight cut or strain, must be reported to management and/or the Responsible Safety Officer as soon as possible. Under no circumstances, except emergency trips to the hospital, should an employee leave the work site without reporting an injury. When you have an accident, everyone is hurt. Please work safely. Safety is everyone's business.

Safety Rules for All Employees

It is the policy of Evo Corporation that everything possible will be done to protect you from accidents, injuries and/or occupational disease while on the job. Safety is a cooperative undertaking requiring an ever-present safety consciousness on the part of every employee. If an employee is injured, positive action must be taken promptly to see that the employee receives adequate treatment. No one likes to see a fellow employee injured by an accident. Therefore, all operations must be planned to prevent accidents. To carry out this policy, the following rules will apply:

1. All employees shall follow the safe practices and rules contained in this manual and such other rules and practices communicated on the job. All employees shall report all unsafe conditions or practices to the proper authority, including the supervision on the project, and, if corrective action is not taken immediately, a governmental authority with proper jurisdiction.
2. The Safety Officer shall be responsible for implementing these policies by insisting that employees observe and obey all rules and regulations necessary to maintain a safe work place and safe work habits and practices.
3. Good housekeeping must be practiced at all times in the work area. Clean up all waste and eliminate any dangers in the work area.

4. Suitable clothing and footwear must be worn at all times. Personal protection equipment (hardhats, respirators, eye protection) will be worn whenever needed.
5. All employees will participate in safety meetings when held.
6. Anyone under the influence of intoxicating liquor or drugs, including prescription drugs which might impair motor skills and judgment, shall not be allowed on the job.
7. Horseplay, scuffling, and other acts which tend to have an adverse influence on safety or well-being of other employees are prohibited.
8. Work shall be well planned and supervised to avoid injuries in the handling of heavy materials and while using equipment.
9. No one shall be permitted to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might expose the employee or others to injury.
10. There will be no consumption of liquor or beer on the job.
11. Employees should be alert to see that all guards and other protective devices are in proper places and adjusted, and shall report deficiencies promptly to the Safety Officer.
12. Employees shall not handle or tamper with any electrical equipment, machinery, or air/water lines in a manner not within the scope of their duties, unless receiving specific instructions.
13. All injuries should be reported to the Safety Officer so that arrangements can be made for medical or first aid treatment.
14. When lifting heavy objects, use the large muscles of the leg instead of the smaller muscles of the back.
15. Do not throw things, especially material and equipment. Dispose of all waste properly and carefully. Bend all exposed nails so they do not hurt anyone removing the waste.
16. Do not wear shoes with thin or torn soles.

Responsible Safety Officer & Management Safety Duties

The identity of the person who is responsible for the Evo Corporation safety program is Darren Poole, VP/Chief Safety Officer. This person reports to and is a member of upper management and has sufficient authority related to recruiting/terminating employment, stop work & training to implement the program, including OSHA 10 & 30 hr. Construction Safety, Construction 500, general safe work practices, 40 hr. Hazwoper, & defensive driver instructor training. In addition to other titles, this person is called the Responsible Safety Officer. The CSO/RSO & management are committed to safety as a top priority, are evaluated annually on Evo safety goals, including accident rate as a performance key, and receive current safety training for all training subjects required of all employees. The CEO and President each review accident report history and monthly safety inspections. The VP coordinates accident investigations, conducts monthly site safety inspections and provides employee safety training. The VP/CSO/RSO's personal safety statement is: "providing a safe work environment, eliminating & preventing safety risks takes us to the next level". Management ensures that all jurisdictional regulatory compliance requirements will be met.

Agreement to Participate

Every employer is required to provide a safe and healthful workplace. Evo Corporation is committed to fulfilling this requirement. A safe and healthful workplace is one of the highest priorities of Evo Corporation. The information in this manual constitutes a written injury and illness prevention program. While Evo Corporation cannot anticipate every workplace hazard, the following general principals should guide your conduct. To be safe, you must never stop being safety conscious. Study the guidelines contained in this manual. Discuss the workplace situation with the Safety Officer. Attend all company sponsored training and safety meetings. Read all posters and warnings. Listen to instructions carefully. Follow the Code of Safe Work Place Practices contained herein. Participate in

accident investigations as requested. Accept responsibility for the safety of others. Maintain all required documentation. By signing the acknowledgement at the end of this handbook, each employee promises to read and implement this injury and illness prevention program. If you don't understand any policy, please ask your supervisor.

Training

Employee safety training is another requirement of an effective injury and illness prevention program. While Evo Corporation believes in skills training, we also want to emphasize safety training. All employees should start the safety training by reading this manual and discussing any problems or safety concerns with your direct supervisor. You may wish to make notes in the margins of this manual where it applies to your work.

Safety and Health Training

Training is one of the most important elements of any injury and illness prevention program. Such training is designed to enable employees to learn their jobs properly, bring new ideas to the workplace, reinforce existing safety policies and put the injury and illness prevention program into action. New hire and annual refresher safety training is required for both supervision and employees alike. The content of each training session will vary, but each session will attempt to teach the following: a) the success of Evo Corporation's injury and illness prevention program depends on the actions of individual employees as well as a commitment by the Company. b) each employee's immediate supervisor will review the safe work procedures unique to that employee's job, and how these safe work procedures protect against risk and danger. c) each employee will learn when personal protective equipment is required or necessary, and how to use and maintain the equipment in good condition. d) each employee will learn what to do in case of emergencies occurring in the workplace. Supervisors are also vested with special duties concerning the safety of employees. The supervisors are key figures in the establishment and success of Evo Corporation's injury and illness prevention program. They have primary responsibility for actually implementing the injury and illness prevention program, especially as it relates directly to the workplace. Supervisors are responsible for being familiar with safety and health hazards to which employees are exposed, how to recognize them, the potential effects of these hazards, and rules and procedures for maintaining a safe workplace. Supervisors shall convey this information to the employees at the workplace, and shall investigate accidents according to the accident investigation policies contained in this manual.

Employee Responsibility for Training

Teaching safety is a two-way street. Evo Corporation can preach safety, but only employees can practice safety. Safety education requires employee participation. Remember, the following general rules apply in all situations: a) no employee should undertake a job that appears to be unsafe. b) no employee is expected to undertake a job until he/she has received adequate safety instructions, and is trained/authorized to perform the task. c) no employee should use chemicals without fully understanding their toxic properties and without the knowledge required to work with these chemicals safely. d) mechanical safeguards must be kept in place. e) employees must report any unsafe conditions to the job site supervisor and the Responsible Safety Officer. f) any work-related injury or

illness must be reported to management at once. g) personal protective equipment must be used when and where required. All such equipment must be properly maintained.

Communication

Employers should communicate to employees their commitment to safety and to make sure that employees are familiar with the elements of the safety program. Evo Corporation communicates with its employees orally, in the form of directions and statements from your supervisor, written, in the form of directives and this manual, and by example. Employees, if you see a safety hazard or a supervisor or management do something unsafe; please report this to any member of management, including safety improvement suggestions. We sometimes forget actions speak louder than words.

Accident Prevention

Each employee has a personal responsibility to prevent accidents. You have a responsibility to your family, to your fellow workers and to the Company. You will be expected to observe safe practice rules and instructions relating to the efficient handling of your work. Your responsibilities include the following:

- Incorporate safety into every job procedure. No job is done efficiently unless it has been done safely. Know and obey safe practice rules.
- Know that disciplinary action may result from a violation of the safety rules.
- Report all injuries immediately, no matter how slight the injury may be.
- Caution fellow workers when they perform unsafe acts.
- Don't take chances.
- Ask questions when there is any doubt concerning safety.
- Don't tamper with anything you do not understand.
- Report all unsafe conditions or equipment to your supervisor immediately.

Accident Prevention Policy Posting

A copy of this manual will be posted in the work area. It is the policy of Evo Corporation to provide a safe and clean workplace and to maintain sound operating practices. Concentrated efforts shall produce safe working conditions and result in efficient, productive operations. Safeguarding the health and welfare of our employees cannot be stressed too strongly. Accident prevention is the responsibility of all of us. Supervisors at all levels shall be responsible for continuous efforts directed toward the prevention of accidents. Employees are responsible for performing their jobs in a safe manner. The observance of safe and clean work practices, coupled with ongoing compliance of all established safety standards and codes, will reduce accidents and make our Company a better place to work.

Hazard Identification & Abatement

This written safety and health plan sets out a system for identifying workplace hazards and correcting them in a timely fashion. Please review it carefully with your supervisor. Remember, safety is everyone's responsibility.

Safety Audits

The best method to establish a safer workplace is to study past accidents and worker compensation complaints. By focusing on past injuries, Evo Corporation hopes to avoid similar problems in the future. Therefore, whenever there is an accident, and in many cases upon review of past accidents, you may be requested to participate in a safety audit interview. During the interview, there will be questions about the nature of the investigation and the workplace safety related to the incident. Please answer these questions honestly and completely. Also, please volunteer any personal observations and/or suggestions for improved workplace safety. Based upon the study of past accidents and industry recommendations, a safety training program has been implemented. In addition to other preventative practices, there will be a group discussion of the cause of the accident and methods to avoid the type of accidents and injury situations experienced in the past. Work rules will be reviewed and modified based upon the study of these accidents. In addition to historical information, workplace safety depends on workplace observation. Your supervisor is responsible for inspecting your working area daily before and while you are working, but this does not mean you are no longer responsible for inspecting the workplace also. Each day, before you begin work, inspect the area for any dangerous conditions. Inform your supervisor of anything significant, so other employees and guests are advised. You may also be given written communications regarding unsafe conditions or serious concealed dangers. Review this communication carefully and adjust your workplace behavior to avoid any danger or hazards. If you are unclear or unsure of the significance of this written communication, contact your supervisor and review your planned actions before starting to work. It is better to wait and check, then to go ahead and possibly cause an injury to yourself and others. Managers must provide written notice to employees of any serious concealed dangers of which they have actual knowledge. In addition to providing written notice of all serious concealed dangers to employees managers are required to report serious concealed dangers to either OSHA or an appropriate administrative agency within fifteen days, or immediately if such danger would cause imminent harm, unless the danger is abated. Merely identifying the problem is not sufficient. The danger must be reported to the appropriate supervisor and the Responsible Safety Officer, who then will correct the problem. If the danger cannot be corrected, then all employees will be warned to take protective action so that the danger will not result in any injuries.

Workplace Inspections

In addition to the examination of records, work place safety inspections will occur monthly, when conditions change, or when a new process or procedure is implemented. During these inspections, there will be a review of the injury and illness prevention policy and Evo Corporation code of safe work practices along with behavior based reviews utilizing our Job Hazard Analysis (JHA) by task to identify job steps, hazards & required procedures/PPE prior to work implementation (*see Appendix A*). JHA’s are completed daily & prior to work activities beginning on a designated form and reviewed annually and when accidents occur. These inspections will all be conducted unannounced at off site job locations, including those at any given distance from our corporate office to ensure safety

compliance and readiness. These are conducted by and a written report will be prepared and circulated to all applicable supervisors & executive management by the C.S.O. This program includes monthly self inspections and documented corrective actions using the behavior based JHA worksheet as a self inspection form. How to conduct and prepare JHA's (*see Appendix A, pg. 204*) and inspection training is provided in new hire orientation, including manager inspector training. Inspection results & corrective actions are assigned & tracked to completion in a database maintained by the C.S.O. Weekly/daily job site safety inspections are conducted by the designated Project Supervisor documenting results for upper management to review & update training as necessary.

Accident Investigation

A primary tool used by Evo Corporation to identify the areas responsible for accidents is a thorough and properly completed accident investigation with which all employees are to be familiar. All incidents will be investigated by the trained site supervisor to the appropriate level given severity and reported to OSHA within 8 hrs when required and within 24 hrs to host facility. The results of each investigation will be reduced to writing and submitted for review by management and Evo Corporation's insurance risk management advisors, and, if the accident resulted in serious injury, to Company attorneys. If the accident resulted in serious injury, the procedure will be directed by the attorneys to provide the most reliable evidence or description legally permissible. All investigations pursuant to the directions of legal counsel will be protected by all applicable privileges, if any. The attorney will provide more detail on this topic during the investigation. Every job location will have on site equipment, including at least one camera, preferably either a video or a sixty second type, with enough film to take pictures immediately after any occurrence, then identify, assess, collect, preserve & secure all evidence. Some workplaces will have a video camera. A written report should be prepared from notes and diagrams made at the scene. All statements should include the time and date given, and the town or county where the statement was made. It the statement is intended to be used in court proceedings, a suitable jurat is required, otherwise, a simple statement that the description is sworn to be true under penalty of perjury with the date, place and time should be included. All pictures should be similarly identified. Also, make sure that the names and addresses and day and evening phone numbers of all eye witnesses are noted or recorded. If a formal police report or other official investigation is conducted by any government agency, get the name and badge number of the official, or a business card, and find out when a copy of the official report will be available to the public. If you are requested to make a statement, you have the right to have the Company lawyer attend your statement at no cost to you. The accident report should answer the following questions:

1. What happened? The investigation report should begin by describing the accident, the injury sustained, employee & eyewitness statements, the date, time and location of the incident and the date and time of the report. Remember: who, what, when, where and how are the questions that the report must answer (*see Appendix B, pg. 205*).
2. Why did the accident occur? The ultimate cause of the accident may not be known for several days after all the data are analyzed. However, if an obvious cause suggests itself, include your conclusions as a hypothesis at the time you give your information to the person in charge of the investigation to help institute prompt corrective measures.
3. What should be done? Once a report is investigated within 24 hrs. and is recorded in a database with a determination as to the cause of the accident, it should suggest a method for avoiding future accidents of a similar character. This is a decision by the Responsible Safety Officer and the supervisor on the project, and reported to all employees and top management. Once a solution has been adopted, it is everyone's responsibility to implement lesson learned.

4. What has been done? A follow up report will be issued after a reasonable amount of time to determine if the suggested solution was implemented, and if so, whether the likelihood of accident has been reduced.

Records & Return to Work/Light Duty

Evo Corporation maintains records of employee training, hazard identification and abatement, and accident investigation. Also, a light duty job description exists for those with limited duty and/or lifting/bending/range of motion restrictions (*see Appendix C, pg. 206*).

General Statement on Safety

Evo Corporation strives to eliminate hazards by using safety devices and adhering to continuous safety education, including proper use of PPE, general safe work practices, confined spaces, & more. Part of your job is to help prevent accidents. Unfortunately, we cannot give you an iron-clad set of rules applying to all situations. Familiarize yourself with the general safety rules that are listed below. Be sure to familiarize yourself with specific safety rules for your work area as posted on the bulletin board. In the course of your work, if you see a dangerous working practice or safety hazard, report it immediately. Eyes –Safety glasses or face shields must be worn. Housekeeping –Keep yourself and your work area clean. Dirty and disorderly conditions cause many accidents. Any time you see oil or grease on the floor, be sure to clean it up and report it to your supervisor immediately. Compressed Air -To safeguard yourself and others from the danger of flying chips, do not use compressed air to clean off machines; use a brush. Never direct an air hose toward another employee, blow chips from your hands, face or hair, or use it in any kind of horseplay. Lifting -Do not strain to lift or push objects that are too heavy for you. Ask for help. Be sure you lift the right way by bending your knees, keeping your body erect and then pushing yourself upward with your legs. Machines -Inspect your machine for defective or worn parts. Safety guards on your machine are installed for your protection. Do not remove safety guard. Horseplay -Serious accidents can result from running, throwing things, scuffling, or playing practical jokes. Do not indulge in horseplay during rest or lunch periods or during working hours. Clothing -Wear clothing suitable to your job. Shoes -Those handling material or heavy objects must wear proper shoes. Cloth tennis shoes, sandals and moccasins are not permitted. Running- Running on company property, particularly in aisles or on stairs, is dangerous and not allowed. Fires -Be careful with matches, cigars, and cigarettes. Be sure that they are extinguished before you dispose of them. Exits -Exits must always be kept clear of obstructions.

Safety Equipment & Equipment Purchases

Proper safety equipment is necessary for your protection and a safety budget is built into each bid for pre-job planning, evaluating unique safety issues, & equipment purchases 10 days prior to beginning work, including a review of new equipment safe operating procedures & training (*see Appendix H, pg.211*). Evo provides the best protective equipment it is possible to obtain. Use all safeguards, safety appliances or devices furnished for your protection and comply with all regulations that may affect your safety. Wear your gear properly, all snaps & straps fastened, cuffs not cut or rolled. Your supervisor will advise as to what PPE is required for your job. Certain jobs require standard safety apparel & appliances for the protection of the employee. Your supervisor is aware of the requirements and will furnish you with the necessary approved protective appliances. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Act. Safety goggles, glasses and face shields shall

correspond to the degree of hazard, i.e., chemical splashes, welding flashes, impact hazard, dust, etc. Do not alter or replace an approved appliance without permission from your supervisor. Rubber gloves and rubber aprons shall be worn when working with acids, caustics or other corrosive materials. Specified footwear must be worn. No jewelry shall be worn around power equipment. Hearing protection appliances (approved muffs or plugs) shall be worn by all employees working within any area identified as having excess noise levels. Your supervisor will instruct you in the proper use of PPE. Equipment & procedures, including potential exposures such as chemical, bio-hazard, confined spaces, electric, fall, tools, noise, etc. are evaluated during self inspection utilizing behavior based safety compliance and Employee Self Inspection Form (*see Appendix D, pg. 207*).

Housekeeping

Good housekeeping not only improves the appearance of the work place, it also helps prevent fires, accidents and personal injuries. Clean work benches, machines, lockers and floors also enable you to maintain a high standard of quality in your work. For your safety, do not leave tools, scrap, or materials piled on the floor where someone may stumble over them or overhead where there is danger of them falling, maintaining clear aisle ways, work areas and stairways. Containers for debris and hazardous waste disposal will be marked, stored and transported to a designated waste handler. When piling material, be careful not to exceed a safe height. Do not pile anything in front of or against fire fighting apparatus, electrical equipment or drinking fountains. If you are a machine operator, give your machine the best possible care and be alert for signs of wear or faulty operations. Handle tools carefully and store them so that they cannot cause accidents.

Emergencies

It is every employee's responsibility to know the locations of the first aid stations that have been placed in the facility and on project sites with the Project Managers. Instructions for use of first aid equipment are located at each station. In the event of an emergency, contact the Responsible Safety Officer or a supervisor who is trained in first aid.

Smoking & Fire Safety

Fire is one of the worst enemies of any facility. Learn the location of the fire extinguishers. Learn how to use them. You can help prevent fires by observing the smoking rules: Smoking is not allowed on the site, except in designated areas. If you’re not sure about where you may smoke, ask the supervisor.

Reporting

Written records for all fatalities, injuries & illnesses must be recorded and included in the OSHA 300 and 300A logs within 7 calendar days of occurence, and reported to OSHA. OSHA 300A will be signed by a company official & posted in a place visible to employees from Feb.1st to April 30th and records maintained for 5 years thereafter. In cases of hospitalization or death, a full investigation with copies to governmental authorities will be required. In less serious cases, the investigation report must be presented to the company for disclosure to its insurance carrier and for remedial action at work site.

Safety Policy Violations

Violations of safety policies will result in disciplinary action, up to and including retraining, warning or termination and will be carried out and documented by management and supervisors. These expectations are reviewed at new hire orientation.

Chapter 2 - General Code of Safe Work Practices

General Fire Safety

Our local fire department is well acquainted with our facility, its location and specific hazards. All fire doors and shutters must be maintained in good operating condition. Fire hydrants, fire doors and shutters should be unobstructed and protected against obstructions, including their counterweights. Fire door and shutter fusible links must be in place. All automatic sprinkler water control valves, if any, air and water pressures should be checked routinely. The maintenance of automatic sprinkler systems is assigned to the Responsible Safety Officer. Sprinkler heads should be protected by metal guards if they could possibly be exposed to damage. Proper clearance must be maintained below sprinkler heads. Portable fire extinguishers are provided in adequate number and type and are located throughout the facility and on jobs. Fire extinguishers are mounted in readily accessible locations. Fire extinguishers are recharged regularly, examined monthly and annual inspection noted on their tags. All employees are periodically instructed in the use of extinguishers and fire protection procedures. Notify the Responsible Safety Officer of any damage to fire protection equipment.

Welding, Cutting & Brazing

Only authorized and trained personnel are permitted to use welding, cutting or brazing equipment. All operators must have a copy of the appropriate operating instructions and are directed to follow them. Compressed gas cylinders should be regularly examined for obvious signs of defects, deep rusting, or leakage. Use care in handling and storing cylinders, safety valves, relief valves and the like, to prevent damage. Precaution must be taken to prevent mixture of air or oxygen with flammable gases, except at a burner or in a standard torch. Only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) may be used. Cylinders must be kept away from sources of heat. It is prohibited to use cylinders as rollers or supports. Empty cylinders must be appropriately marked, their valves closed and valve-protection caps on. Signs reading: DANGER-NO SMOKING, MATCHES, OR OPEN LIGHTS, or equivalent must be posted. Cylinders, cylinder valves, couplings, regulators, hoses and apparatus must be kept free of oily or greasy substances. Care must be taken not to drop or strike cylinders. Unless secured on special trucks, all regulators must be removed and valve-protection caps put in place before moving cylinders. All cylinders without fixed hand wheels must have keys, handles, or non-adjustable wrenches on stem valves when in service. Liquefied gases must be stored and shipped valve-end up with valve covers in place. Before a regulator is removed, the valve must be closed and gas released from the regulator. All employees are instructed never to crack a fuel-gas cylinder valve near sources of ignition. Red is used to signify the acetylene (and other fuel-gas) hose, green for oxygen hose, and black for inert gas and air hose. All pressure-reducing regulators must be used only for the gas and pressures for which they are intended. The open circuit (No Load) voltage of arc welding and cutting machines must be as low as possible and not in excess of the recommended limits. Under wet conditions, automatic controls for reducing no-load voltage must be used. Grounding of the machine frame and safety ground connections of portable machines must be checked periodically. Electrodes must be removed from the holders when not in use. All

electric power to the welder must be shut off when no one is in attendance. Suitable fire extinguishing equipment must be available for immediate use before starting to ignite the welding torch. The welder is strictly forbidden to coil or loop welding electrode cable around his/her body. All wet welding machines must be to roughly dried and tested before being used. All work and electrode lead cables must be frequently inspected for wear and damage, and replaced when needed. All connecting cable lengths must have adequate insulation. When the object to be welded cannot be moved and fire hazards cannot be removed, shields must be used to confine heat, sparks and slag. Fire watchers will be assigned when welding or cutting is performed in locations where a serious fire might develop. All combustible floors must be kept wet, covered by damp sand, or protected by fire-resistant shields. When floors are wet down, personnel should be protected from possible electrical shock. When welding is done on metal walls, precautions must be taken to protect combustibles on the other side. Before hot work is begun, used drums, barrels, tanks and other containers must be so thoroughly cleaned that no substances remain that could explode, ignite or produce toxic vapors. It is required that eye protection helmets, hand shields and goggles meet appropriate standards. Employees exposed to the hazards created by welding, cutting or brazing operations must be protected with personal protective equipment and clothing. Check for adequate ventilation where welding or cutting is performed. When working in confined spaces, environmental monitoring tests should be taken and means provided for quick removal of welders in case of emergency.

Confined Spaces

Before entry into a confined space, all impellers, agitators, or other moving equipment contained in the confined space must be locked-out. Ventilation must be either natural or mechanically provided into the confined space. All hazardous or corrosive substances that contain inert, toxic, flammable or corrosive materials must be valved off, blanked, disconnected and separated. Atmospheric tests should be performed to check for oxygen content, toxicity and explosive concentration. Atmospheric tests must be performed on a regular basis in a confined area where entry is required. The area must also be checked for decaying vegetation or animal matter that could produce methane. Adequate lighting must be provided within the space. If the confined area is located below the ground or near where motor vehicles are operating, care must be taken that vehicle exhaust or carbon monoxide does not enter the space. When personnel enter a confined area, assigned safety standby employees who are alert to the work being done, are able to sound an alarm if necessary and to render assistance, must be in the area. These standby employees must be trained to assist in handling lifelines, respiratory equipment, CPR, first aid, and be able to employ rescue equipment that will remove the individual from the confined area. Standby personnel should be in teams of two during such an operation or else within the vicinity if working separately. There must also be an effective communication system utilized while the operation is occurring. When equipment which utilizes oxygen, such as salamanders, torches or furnaces, is used in a confined space, adequate ventilation must be provided to guarantee oxygen content and combustion for the equipment. When this equipment is used, adequate measures must be taken to assure that exhaust gases are vented outside the enclosure. When gas welding or burning is used, hoses must be checked for leaks. Compressed bottled gas must be outside the area and torches must be lit outside the area also. The atmosphere must be tested each time before lighting a torch.

Environmental Controls

All employees must be aware of the hazards involved when working with chemicals and the remedies that need to be used when an accident does occur. A training program will give instructions on how to handle the chemical being used and first aid to be applied to victims of chemical exposure. First aid and caution signs will be conspicuously posted so as to alert individuals on a constant basis. Charts identifying the chemicals utilized in the workplace, their symptoms and effects must also be posted. The workers must know what the acceptable level of exposure to a chemical is and what safety systems must be in place when working with a chemical. Staff should also be aware of new chemical products which may be available that are less harmful, and they must ensure that facilities are adequately ventilated when using chemicals on the premises. If welding is done, the welder should be certified. In the area of operation where the welding is taking place, the welder must be aware of ventilation available, the type of respirator that can be used in the area, and if exposure time or other means will suffice as a safe and adequate measure when welding as to the fumes that will be emitted. Welders should also be supplied with protective clothing and a flash shield during welding operations. When forklifts and other vehicles are used in buildings or other enclosed areas, carbon monoxide levels must be kept below maximum acceptable concentration. Noise levels also present a potential hazard. Noise levels within a facility must be at acceptable levels and if not, steps must be taken to reduce the level using recommended engineering controls. When fibrous materials such as asbestos are being handled, the necessary precautions must be taken to protect the employee from the material. The material must be labeled, along with signs conspicuously posted that these materials are being used in the area. Employees should be aware of effective methods used to prevent emission of airborne asbestos fibers, silica dust and other similar hazardous materials. Some of the recommended methods of controlling the emission of these materials are by using water and vacuuming, rather than blowing and sweeping, the materials. Machinery such as grinders, saws and other tools that produce a fine airborne dust must be vented to an industrial collector or central exhaust system. In any ventilation system the system should be designed and operated at an airflow and volume necessary for proper application and effectiveness. In the design of the ventilation system the ducts and belts must be free of obstructions and slippage. As with all operations, there must be written standards on the procedures for the equipment, description of the job task, usage of the protective equipment provided, such as the selection and use of respirators, and when they are needed. All restrooms must be kept clean and sanitary. Employees should be screened before taking positions that may expose them to hazards they are not physically capable of handling. An employee who takes an assignment which requires physical labor must be trained to lift heavy loads properly so as not to damage themselves physically. If the work assignment involves dealing with equipment that produces ultra-violet radiation, the employee must be properly protected or given the correct protective clothing. An employee posted to an assignment on a roadway where there is heavy traffic must be given the designated protective clothing (bright colored traffic orange warning vest) and safety training regarding the hazards of this job.

Hazardous Chemical Exposures

In any company which utilizes chemical substances, a training program on the handling, hazards, storage, exposure risks, symptoms of chemical exposure, and first aid needs to be part of any new employees training. There must also be follow-up training sessions as to any new chemical or processes that may be initiated by the company. Follow-up training sessions act as a reinforcement of safety standards that need to be followed on a daily basis. In a training program, employees will learn acceptable levels of chemical exposure, proper storage and labeling of chemicals, and usage of protective clothing and equipment for handling chemicals. They will also learn about potential fire and toxicity hazards, when not to have a chemical in a confined area, or to store in closed containers, usage of eye wash fountains and safety showers, and the necessary posting of open, and dangerous areas. It is important that an employee recognize the Threshold Limit Values or Permissible Exposure Limits of airborne contaminants and physical agents in the workplace. A procedural manual or set of instructions must be part of the program, with periodic inspections that clearly indicate whether an employee may be mishandling a chemical or endangering himself or others. Part of the manual or procedures must establish a standard of when and how to deal with chemical spills, neutralizing, and disposing of spills or overflows. These procedures must also be posted in an area that is easily accessible for reference usage. First Aid training and equipment will be routine in any facility where chemicals are used. Employees must know how to handle equipment in emergency situations, what equipment needs to be used and whether the equipment is adequate for the situation. Respirators may be used either as protective safety equipment or for emergency usage. Therefore, the employee should recognize that respirators need to be stored in a clean, sanitary and convenient location and inspected on a regular basis. Also what respirators are approved by NIOSH for their particular applications. With a first aid program an employee will recognize when a problem may be occurring by exposure to a chemical ranging from headaches, nausea, dermatitis problems to other factors of discomfort when they use solvents or chemicals. In the design of a facility that transports chemicals from storage to vats, the content of pipes and storage containers must be clearly marked. Within that facility design there must be an emergency shut off system in case of accident. Each employee will be trained as to these emergency shut-off systems. Ventilation is another major factor in the design of any facility. Whether by natural means or mechanical, the system must be designed to control dust, fumes, solvents, gases, smoke or vapors which may be generated in the workplace. It is also important that a medical or biological monitoring system be in operation as part of the safety standards. If internal combustion engines are used in the facility, or if there is a chance of leakage or mixture with a chemical that could create a toxic gas, atmospheric gas levels must be monitored. If toxic chemicals are used and stored in the facility they should be located in an isolated area to guarantee safety.

Hazardous Substances Communication

When hazardous substances are used in the workplace, a hazard communication program dealing with Safety Data Sheets (SDS), labeling and employee training will be in operation. SDS materials will be readily available for each hazardous substance used. A training program plus regular question and answer sessions on dealing with hazardous materials will be given to keep employees informed. The program will include an explanation of what an SDS is and how to use and obtain one; SDS contents for each hazardous substance or class of substances; explanation of the "Right to Know"; identification of where employees can see the employer's written hazard communication program and

where hazardous substances are present in their work area; the health hazards of substances in the work area, how to detect their presence, and specific protective measures to be used; as well as informing them of hazards of non-routine tasks and unlabeled pipes.

Electrical

The workplace will be aware of the OSHA Electrical Safety Orders and will comply with the same. Employees will be required to report any hazard to life or property that is observed in connection with a job, electrical equipment or lines. Employees will be expected to make preliminary inspections or appropriate tests to determine conditions before starting work. When equipment or lines are to be serviced, maintained or adjusted, employees must be aware of open switches. Lockouts must be tagged whenever possible. Equipment such as electrical tools or appliance must be grounded or of the double insulated type. Extension cords being used must have a grounding conductor. The workplace supervisor must be aware if multiple plug adaptors are prohibited. If ground-fault circuit interrupters are installed on each temporary lS or 20 ampere, 120 volt AC circuit at locations where construction, demolition, modifications, alterations or excavations are being performed, temporary circuits must be protected by suitable disconnecting switches or plug connectors with permanent wiring at the junction. Electricians must be aware of the following: Exposed wiring and cords with frayed or deteriorated insulation must be repaired or replaced. Flexible cords and cables must be free of splices or taps. Clamps or other securing means must be provided on flexible cords or cables at plugs, receptacles, tools, equipment. The cord jacket must be held securely in place. All cord, cable and raceway connections must be intact and secure. In wet or damp locations, electrical tools and equipment must be appropriate for the use or location, or otherwise protected. The location of electrical power lines and cables (overhead, underground, under floor, other side of walls) must be determined before digging, drilling or similar work is begun. All metal measuring tapes, ropes, hand lines or similar devices with metallic thread woven into the fabric are prohibited for use where they could come in contact with energized parts of equipment or circuit conductors. The use of metal ladders is prohibited in areas where the ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures or conductors. All disconnecting switches and circuit breakers must be labeled to indicate their use or equipment served. A means for disconnecting equipment must always be opened before fuses are replaced. All interior wiring systems must include provisions for grounding metal parts or electrical raceways, equipment and enclosures. All electrical raceways and enclosures must be fastened securely in place. All energized parts of electrical circuits and equipment must be guarded against accidental contact by approved cabinets or enclosures. Sufficient access and working space will be provided and maintained around all electrical equipment to permit ready and safe operations and maintenance. All unused openings (including conduit knockouts) in electrical enclosures and fittings must be closed with appropriate covers, plugs or plates. Electrical enclosures such as switches, receptacles, and junction boxes must be provided with tight-fitting covers or plates. Disconnecting switches for electrical motors in excess of two horsepower must be capable of opening the circuit when the motor is in a stalled condition without exploding. (Switches must be horsepower rated equal to or in excess of the motor hp rating.) Low voltage protection must be provided in the control device of motor driven machines or equipment which could cause injury from inadvertent starting. A motor disconnecting switch or circuit breaker must be located within sight of the motor control device. Motors: a) must be located within sight of their controller; b) must have their controller disconnecting means capable of being locked in the open position; c) or must have separate disconnecting means installed in the circuit within sight of the

motor. A controller for a motor in excess of two horsepower must be rated equal to but not in excess of the motor it services. Employees who regularly work on or around energized electrical equipment or lines will be instructed in cardio-pulmonary resuscitation (CPR) and AED methods. Employees will be trained on how to work on energized lines or equipment over 600 volts.

Noise

Noise levels are measured using a sound level meter or an octave bank analyzer and records kept. Engineering controls will be used to reduce excessive noise levels. When engineering controls are not feasible, administrative controls (i.e., worker rotation) will be used to minimize individual employee exposure to noise. An ongoing preventive health program will be utilized to educate employees in safe levels of noise, exposure, effects of noise on their health, and use of personal protection. Approved hearing protective equipment (noise attenuating devices) will be available to every employee working in areas where continuous noise levels exceed 85 dB. To be effective, ear protectors must be properly fitted and employees will be instructed in their use and care.

Fueling

Where flammable liquids are used, employees will be trained to deal with spillage during fueling operations, how it is to be cleaned, the types and designs of fueling hoses and the specific types of fuel it can handle, whether fueling is being done with a nozzle that is a gravity flow system or self-closing, how to avoid spills and recognition that if a spill does occur, the safety of restarting an engine. Employees must be aware that an open flame or light near any fuel is prohibited when fueling or the transfer of fuel is occurring. "NO SMOKING" signs will be posted conspicuously.

Material Handling

In the handling of materials, employees must know the following: There must be safe clearance for equipment through aisles and doorways. Aisle ways must be designated, permanently marked, and kept clear to allow unhindered passage. Motorized vehicles and mechanized equipment will be inspected daily or prior to use. Vehicles must be shut off and brakes must be set prior to loading or unloading. Containers of combustibles or flammables, when stacked while being moved, must be separated by dunnage sufficient to provide stability. If dock boards bridge plates) are used when loading or unloading operations are taking place between vehicles and docks, precautions must be observed. Trucks and trailers will be secured from movement during loading and unloading operations. Dock plates and loading ramps will be constructed and maintained with sufficient strength to support imposed loading. Hand trucks must be maintained in safe operating condition. Chutes must be equipped with sideboards of sufficient height to prevent the handled materials from falling off. At the delivery end of rollers or chutes, provisions must be made to brake the movement of the handled materials. Pallets must be inspected before being loaded or moved. Hooks with safety latches or other arrangements will be used when hoisting materials, so that slings or load attachments won't accidentally slip off the hoist hooks. Securing chains, ropes, chockers or slings must be adequate for the job to be performed. When hoisting material or equipment, provisions must be made to assure no

one will be passing under the suspended loads. Material Safety Data Sheets will be available to employees handling hazardous substances.

Transporting Employees & Materials

When employees are transporting either employees or materials, they must have an operator's license for that classification of vehicle and be certified or trained in the operation of that vehicle & safe/distracted driving. For a safety program to be effective, they must also have knowledge of First Aid courses and safety equipment, as well as the vehicle and how it operates. As employees are transported by truck, provisions must be provided to prevent their falling from the vehicle. Vehicles should be in good working condition, inspected on a regular basis and must be equipped with lamps, brakes, horns, mirrors, windshields and turn signals in good working order. If the vehicle transports numerous individuals it must be equipped with handrails, steps, stirrups or similar devices, placed and arranged so that employees can safely mount or dismount. Safety measures to ensure passenger safety should be observed. When cutting tools with sharp edges are carried in the passenger compartment, they must be placed in closed boxes or secured containers. Carrying flares and 2 reflective type flares and fire extinguisher must be part of the standard emergency equipment carried in vehicle at all times.

Ergonomics, Fatigue Management, & Job Competency

With the introduction of computers, new areas of physical debilitation have been recognized. Analysis of work tasks is performed as well as training on fatigue management and limiting work hours and/or job rotation to control fatigue. These new potential hazards have required a redesigning of both the workplace and how employees work, including with ergonomically friendly equipment. A set of standards will be developed and practiced. Furniture will be adjustable, positioned and arranged to minimize strain on all parts of the body. Computer monitor glare will be minimized by a glare screen to prevent eye strain. Repetitive motions can harm, back, shoulders, neck, wrists & other body parts. Employees are not to perform a task when they are physically or mentally feeling impairment and take necessary rest breaks. Employees are to report fatigue/tiredness to their supervisor. Employees are not to chronically use over the counter medications, prescriptions or other products which may affect their ability to safely perform work. As for job roles, an organiztion chart with titles/roles and job descriptions are provided at orientation outlining job qualifications with form acknowledging receipt & receiving job training with competency verified before performing tasks independently.

Safety Posters

Evo Corporation is required to post certain employment related information. The required information is maintained on the warehouse/shop bulletin boards where employees can find the following required posters: Various state and federal orders regulating the Wages, Hours and Working Conditions in certain industries. Pay Day Notice Anti-Discrimination Poster Equal Employment Opportunity is the Law (EEOC form) OSHA Safety and Health Protection on the Job Notice of Workers Compensation Carrier Notice to Employees: Unemployment Insurance and Disability Insurance Notice: Employee Polygraph Protection Act (form WH 1462) Access to Medical Records. Safety Data Sheets for Evo Corporation' premises are available in the offices/shops. When employees are required to work on the premises of any other employer, such as a service call or installation situation, the job site will maintain a collection of Safety Data Sheets that describe any hazards unique to that site. Check with the other employer's job site coordinator or supervisor for the exact location of the SDS information. In addition to these required safety postings, emergency numbers are maintained on the offices and warehouse/shop bulletin boards. In most cases of real emergency call 911. State your name, the nature

of the emergency and exact location of the injury. Answer all questions completely. Do NOT use 911 for routine calls to police or fire departments.

Work Environment & Jobsite Security

Work sites must be clean and orderly. Work surfaces must be kept dry or appropriate means taken to assure the surfaces are slip-resistant. Spills must be cleaned up immediately. All combustible scrap, debris and waste must be stored safely and removed promptly. Combustible dust must be cleaned up with a vacuum system to prevent the dust from going into suspension. The accumulated combustible dust must be removed routinely. Metallic or conductive dust must be prevented from entering or accumulating on or around electrical enclosures or equipment. Oily and paint soaked rags are combustible and should be discarded in sealable metal containers only. All oil and gas fired devices should be equipped with flame failure controls that will prevent flow of fuel if pilots or main burners are not working. Ask your supervisor where these controls are located. Make sure all pits and floor openings are either covered or otherwise guarded. The Workplace Anti-Violence policy is observed per the separate company handbook and reviewed with employees at new hire/annual orientation. This policy addresses Evo's commitment to preventing jobsite security related incidents. A risk assessment, as part of the Job Hazard Analysis (JHA) is conducted to evaluate the risk of jobsite security incidents. Measures used to reduce such incidents include following the company Security Plan which identifies gated facilities, camera/alarm systems and utilizing the job site visitor's log. As covered in orientation, these procedures require all security incidents to be reported immediately using the Accident/Incident Report form followed by a security incident investigation by management.

Walkways

All aisles and passageways must be kept clear. Also, aisles and passageways should be clearly marked. Wet surfaces must be covered with non-slip material and all holes properly covered or marked with warning guards. All spills must be cleaned up immediately, and a caution sign placed on all wet or drying surfaces. In cases of passageways used by forklifts, trucks or other machinery, use a separate aisle for walking, if available. If no separately marked aisle is available, use extreme caution. Remember, walking in a passageway used by machinery is like walking in the middle of a street used by cars: You may have the right of way, but the heavier vehicle can't always see you and can't always stop in time. The key to moving around in such circumstances is to stop, look and listen and then to move when there is no danger. Make eye contact with the drivers of moving vehicles so that you know that they know you are there. Equipment must be properly stored so that sharp edges do not protrude into walkways. Changes in elevations must be clearly marked, as must passageways near dangerous operations like welding, machinery operation or painting. If there is a low ceiling, a warning sign must be posted. If the walkway or stairway is more than thirty inches above the floor or ground, it must have a guardrail. If an employee is aware of any breach of these standards, please inform the workplace supervisor.

Floor and Wall Openings

Be careful when working near floor and wall openings. All floor openings (holes) should be guarded by a cover, guardrail or equivalent barrier on all sides except at the entrance to stairways and ladders. Toe boards must be installed around the edges of a permanent floor opening. Skylights must be able to withstand at least 200 pounds pressure. Glass used in windows, doors, and walls (including glass block) must be able to withstand a human impact, and if required by code, be shatterproof "safety glass." Before beginning work at a new location, inspect it to insure that all floor openings which must

remain open, such as floor drains, are covered with grates or similar covers. In roadways and driveways, covers with capacity to carry a truck rear axle load of at least 20,000 pounds must protect all manholes and trenches. In office buildings, fire resistive construction requires that the doors and hallway closures be properly rated and be equipped with self-closing features. Be sure that there are at least two fire emergency exits accessible from your location at all times.

Work Area

Fire extinguishers must remain accessible at all times. Means of egress should be kept unblocked, well-lighted and unlocked during work hours. Excessive combustibles (paper) may not be stored in work areas. Aisles and hallways must be kept clear at all times. Designated employees have been trained to respond to a fire or other emergency. Workplaces are to be kept free of debris, floor storage and electrical cords. Adequate aisle space is to be maintained. File cabinet drawers should be opened one at a time and closed when work is finished. Proper lifting techniques are to be used by employees to avoid over exertion and strain when carrying loads. No alcohol or any intoxicating substance may be consumed prior to or during work.

Driving

Drive safely. If vehicles are used during the work day, seat belts and shoulder harnesses are to be worn at all times. Do not exceed the speed limit. Vehicles must be parked in legal spaces and must not obstruct traffic. Defensive driving must be practiced, avoiding distractions such as texting and extended durations of fatigued driving by all DOT & Non-DOT employees. Lock vehicles when unattended and park vehicles in well-lighted areas at/or near entrances to avoid criminal misconduct.

Tool Maintenance

Faulty or improperly used hand tools are a safety hazard. All employees shall be responsible for ensuring that tools and equipment (both company and employee-owned) used by them or other employees at their workplace are in good condition. Hand tools such as chisels, punches, etc., which develop mushroom heads during use, must be reconditioned or replaced as necessary. Broken or fractured handles on hammers, axes and similar equipment must be replaced promptly. Worn or bent wrenches should be replaced regularly. Appropriate handles must be used on files and similar tools. Appropriate safety glasses, face shields, etc., must be worn while using hand tools or equipment which might produce flying materials or be subject to breakage. Eye and face protection must be worn when driving in tempered spuds or nails. Check your tools often for wear or defect. Jacks must be checked periodically to assure they are in good operating condition. Tool handles must be wedged tightly into the heads of tools. Tool cutting edges should be kept sharp enough so the tool will move smoothly without binding or skipping. When not in use, tools should be stored in a dry, secure location. Guarding shall be in place when in use. Guards shall be in place and operable at all times while the tool is in use.

Ladders

Check ladders each and every time before you climb. Ladders should be maintained in good condition: joints between steps and side rails should be tight; hardware and fittings securely attached; and movable parts operating freely without binding or undue play. Non-slip safety feet are provided on each ladder. Ladder rungs and steps should be free of grease and oil. Employees are prohibited from using ladders that are broken, missing steps, rungs, or cleats, or that have broken side rails or other faulty equipment. It is prohibited to place a ladder in front of doors opening toward the ladder except when the door is blocked open, locked or guarded. It is prohibited to place ladders on boxes, barrels, or other unstable bases to obtain additional height. Face the ladder when ascending or descending. Be careful when you climb a ladder. Do not use the top step of ordinary stepladders as a step. When portable rung ladders are used to gain access to elevated platforms, roofs, etc., the ladder must always extend at least 3 feet above the elevated surface. It is required that when portable rung or cleat type ladders are used, the base must be so placed that slipping will not occur, unless it is lashed or otherwise held in place. All portable metal ladders must be legibly marked with signs reading "CAUTION" -"Do Not Use around Electrical Equipment." Employees are prohibited from using ladders as guys, braces, skids, gin poles, or for other than their intended purposes. Only adjust extension ladders while standing at a base (not while standing on the ladder or from a position above the ladder} .Metal ladders should be inspected for tears and signs of corrosion. Rungs of ladders should be uniformly spaced at 12 inches, center to center.

Portable Power Tools

Portable power tools pose a special danger to employees because they are deceptively small and light, yet they can do great bodily harm if used improperly or poorly maintained. These rules apply to all power tools, but are especially important when handling portable saws, drills and power screw drivers. Check your equipment before you use it. All grinders, saws and similar equipment should be equipped with appropriate safety guards. Power tools should not be used without the correct shield, guard, or attachment, recommended by the manufacturer. Portable circular saws must be equipped with guards above and below the base shoe. Circular saw guards should be checked periodically and before each use to assure they are not wedged up, thus leaving the lower portion of the blade unguarded. All rotating or moving parts of equipment should be guarded to prevent physical contact. All cord-connected, electrically-operated tools and equipment should be effectively grounded or of the approved double insulated type. Effective guards must be in place over belts, pulleys, chains, sprockets, on equipment such as concrete mixers, air compressors, etc. If portable fans are provided, they must be equipped with full guards or screens having openings 1/2 inch or less. Do not attempt to lift heavy objects without proper equipment. Hoisting equipment will be made available for lifting heavy objects, with hoist ratings and characteristics appropriate for the task. Power tools are either battery operated or wired. If battery operated, don't under-estimate their power. A small electric drill or power screw driver can cause a severe injury if it lands in the wrong place. While not usually a shock hazard, the battery pack contains toxic chemicals and does emit a low voltage electric current. Don't drop or incinerate the battery pack, or a tool with a self-contained power source. Hard wired equipment can be portable or fixed. Typically used with extension cords, the more powerful hard wired equipment presents a double safety problem: the actual equipment plus its electrical power source. Ground-fault circuit interrupters must be provided on all temporary electrical 15 and 20

ampere circuits used during periods of construction. Pneumatic and hydraulic hoses on power-operated tools should be checked regularly for deterioration or damage.

Abrasive Wheel Equipment (Grinders)

The work rest used should be kept adjusted to within 1/8 inch of the wheel. The adjustable tongue on the top side of the grinder should be kept adjusted to within 1/4 inch of the wheel. The side guards should cover the spindle, nut and flange and 75 percent of the wheel diameter. Bench and pedestal grinders should be permanently mounted. Goggles or face shields should always be worn when grinding. The maximum RPM rating of each abrasive wheel should be compatible with the RPM rating of the grinder motor. Fixed or permanently mounted grinders must be connected to their electrical supply system with metallic conduit or by other permanent wiring method. Each grinder should have an individual on and off control switch. The switch should be easily accessible anytime you operate the machine. Each electrically operated grinder is effectively grounded. Do not defeat the grounding mechanism, especially by using non-three prong plug adapters. Note the method by which new abrasive wheels are mounted. Visually inspect and ring test new abrasive wheels. The dust collectors and powered exhausts provided on grinders must be used in operations that produce large amounts of dust. The splash guards mounted on grinders that use a coolant should be mounted so that no one is ever splashed with the coolant. The work area around a grinder must be kept clean at all times. It is your responsibility as operator of any machine to ensure the necessary safety precautions are taken before using the machine.

Combustible Materials

All combustible scrap, debris and waste materials (oily rags, etc.) must be stored in covered metal receptacles and removed from the work site promptly. Proper storage to minimize the risk of fire, including spontaneous combustion must be practiced. Only approved containers and tanks are to be used for the storage and handling of flammable and combustible liquids. All connections on drums and combustible liquid piping, vapor and liquid must be kept tight. All flammable liquids should be kept in closed containers when not in use (e.g., parts-cleaning tanks, pans, etc.) .Bulk drums of flammable liquids must be grounded and bonded to containers during dispensing. Storage rooms for flammable and combustible liquids must have explosion-proof lights. Storage rooms for flammable and combustible liquids should have mechanical or gravity ventilation. Liquefied petroleum gas must be stored, handled, and used in accordance with safe practices and standards. No smoking signs must be posted on liquefied petroleum gas tanks. Liquefied petroleum storage tanks should be guarded to prevent damage from vehicles. All solvent wastes and flammable liquids should be kept in fire-resistant, covered containers until they are removed from the work site. Vacuuming should be used whenever possible rather than blowing or sweeping combustible dust. Fire separators should be placed between containers of combustibles or flammables when stacked one upon another to assure their support and stability. Fuel gas cylinders and oxygen cylinders must be separated by distance, fire resistant barriers, etc., while in storage. Fire extinguishers are selected for the types of materials and placed in areas where they are to be used. These fire extinguishers are classified as follows: Class A-Ordinary combustible materials fires. Class B -Flammable liquid, gas or grease fires. Class C -Energized-electrical equipment fires. Appropriate fire extinguishers must be mounted within 75 ft. of outside areas containing flammable liquids, and within 10 ft. of any inside storage area for such

materials. All extinguishers must be serviced, maintained and tagged at intervals not to exceed one year. Extinguishers should be placed free from obstructions or blockage. All extinguishers must be fully charged and in their designated places unless in use. Where sprinkler systems are permanently installed, are the nozzle heads arranged so that water will not be sprayed into operating electrical switch boards and equipment? Check to see that heads have not been bent or twisted from their original position. "NO SMOKING" rules will be enforced in areas involving storage and use of hazardous materials. "NO SMOKING" signs have been posted where appropriate in areas where flammable or combustible materials are used and/or stored. Safety cans must be used for dispensing flammable or combustible liquids at point of use. All spills of flammable or combustible liquids must be cleaned up promptly. Storage tanks should be adequately vented to prevent the development of excessive vacuum or pressure as a result of filling, emptying, or atmosphere temperature changes. Storage tanks are equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure.

First Aid Kits & Automated External Defibrillator (AED)

First-aid kits and required contents are maintained in a serviceable condition. Unit-type kits have all items in the first-aid kit individually wrapped, sealed, and packaged in comparable sized packages. The commercial or cabinet-type kits do not require all items to be individually wrapped and sealed, but only those which must be kept sterile. Items such as scissors, tweezers, tubes of ointments with caps, or rolls of adhesive tape, need not be individually wrapped, sealed, or disposed of after a single use or application. Individual packaging and sealing shall be required only for those items which must be kept sterile in a first-aid kit. Where the eyes or body of any person may be exposed to injurious chemicals and/or materials, suitable facilities for quick drenching or flushing of the eyes and body are provided, within the work area, for immediate emergency use. A poster shall be fastened and maintained either on or in the cover of each first- aid kit and at or near all phones plainly stating, the phone numbers of available doctors, hospitals, and ambulance services within the district of the work site. In addition, automated external defibrillators (AED’s) should be maintained at work and on job sites, with personnel trained on proper use.

Chapter 3 - Employee Health Services

Occupational Health Monitoring

Pre-placement, periodic, special, annual and termination examinations are conducted and emergency services are provided. Potential occupational exposures to hazardous situations or agents are investigated on a continuing basis in cooperation with the Responsible Safety Officer. Diagnosis and treatment of non-occupational illness or injury are limited to minor first aid, emergencies, and special situations for which treatment is in the best interest of Evo Corporation and the patient. The Company offers confidential counseling for employees to aid in resolving work-related or personal problems. Screening also includes annual respirator fit testing for those trained and approved for use of this PPE.

Physical Examinations

Employees are offered physical examinations every year. Notification is initiated by an appointment card to employees, and an attempt is made to schedule a time convenient for the employee. Upon termination of employment, adjustments are made regarding the procedures to be carried out, depending upon how recently an individual may have had a periodic examination. This policy also applies to reemployment. Upon return to work following non-occupational illness or injury as follows: An employee who has been ill and absent from work for three or more consecutive working days should report to their Supervisor before returning to duty. The employee's private physician will determine whether the employee is medically ready to return to work. In most instances a release to return to work from an employee's private physician will be required.

Medical Records

Complete medical records are maintained for each employee from the time of the first examination. These records are protected as confidential information and remain in the custody and control of the Responsible Safety Officer. Information from an employee's health record may be disclosed only with the employee's written consent, or as required by law. These records are retained indefinitely.

Pregnancy & Workplace Hazards

As soon as an employee learns that she is pregnant, she must inform the Responsible Safety Officer of the expected date of childbirth. A physician or nurse will discuss her work environment with her and will determine whether any change in the environment should be made to ensure her good health and that of her baby.

Substance Abuse Program

Pre-employment, annual, random, post-accident, return to duty and reasonable cause drug & alcohol testing is performed & documented. All supervisors have received reasonable suspicion drug & alcohol awareness training. An employee assistance program is also available for those requiring treatment for abuse. Violations include positive results, alcohol .04 or >, & refusal to test. Consequences of positive results include SAP with MRO chain of custody, all certified SAMHSA per DOT, OSHA & CCS.

Occupational Injury/Illness

Treatment is coordinated with outside specialists in accordance with the provisions and requirements of Workers' Compensation laws. Every injury sustained while performing Evo Corporation assigned tasks, no matter how minor, must be reported to the employee's supervisor and to the Responsible Safety Officer (RSO). It is the employee's responsibility to notify the RSO and his/her supervisor of the injury or illness and an Accident/Incident Report form must be completed by the responsible supervisor/manager notified at the time. An occupational injury or illness is one which results from a work accident or from an exposure involving an incident in the work environment. In most cases, the employee will be referred to the company designated physician/clinic. Standard procedures for ingestion of poisons, eye injuries, burns, cardiac arrest, coma, etc., are followed. In the event that a patient cannot be moved from the site of the injury, primary aid will be rendered by Evo contacted physicians, nurses, firefighters, or ambulance personnel. A physician should be notified of any major accident that occurs at any time at the workplace. When the company physician has been notified, he/she will take the responsibility for appropriate notification of family and relatives. In the event of an occupational injury or illness that requires care by a specialist, the patient is referred to his/her personal physician or a physician selected from a panel of locally practicing specialists. Diagnosis and treatment such as suturing, splinting, dressing, and analgesia are given routinely when appropriate by the physicians and registered nurses at the company designated clinic. Patients who present themselves with more severe or chronic health problems are consulted with and referred to their personal physician or transported, if necessary by ambulance, to nearby hospitals for emergency care. No injured or ill persons, regardless of employment status, are denied first aid or referral to medical resources in the community. All accident/incident reports require employee to have a post accident drug test (*see Appendix B, pg.205).*

Step by Step Instructions on what to do for a work related injury/illness incident;

1) ***All fatalities must be reported within 8 hrs & hospitalization, amputation & eye loss within 24 hrs to OSHA 1-800-321-6742.***

2) Assess whether the injury appears to require more than first aid. First aid is not an OSHA recordable incident and means any of the following;

a) Non-prescription drugs at non-prescription strength.
b) Tetanus immunization
c) Cleaning, flushing, or soaking wounds on the surface of the skin
d) Band-aids, bandages or butterfly strips
e) Heat or cold therapy
f) Non-rigid means of support such as elastic bandages and wraps
g) Temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back board)
h) Drilling a fingernail/toenail to relieve pressure & draining fluid from blister
i) Eye patches
j) Removing foreign bodies from the eye using only irrigation or a cotton swab
k) Removing splinters or foreign materials outside the eye by using irrigation, tweezers, cotton swabs or other simple means
l) Finger guards
m) Massages
n) Relieving heat stress by drinking fluids

3) If injury/illness is treated as first aid, document on the Accident/Incident Report

4) If injury/illness is beyond first aid or drug test needed, send/take employee in NC to WFUBMC-1188 Yadkinville Rd., Mocksville, NC (336-753-1555) or WFUBMC-East, 2295 14th St.NE, Ste.300, Winston-Salem, NC 27105 (336-713-4642) and in FL to CareNow, 4888 Town Center Pkwy, Ste. 107, Jacksonville, FL 32246 (904-880-1735), or if after office hours, send/take individual to nearest healthcare facility.

5) If injury/illness appears to be life threatening or require immediate attention, call 911

(Counseling, observation & diagnostic procedures (e.g. x-rays, blood tests) by a healthcare professional do not qualify as medical treatment)(Employee may not return to duties without a release from the physician)

Chapter 4 - Chemical Safety

Introduction

The objective of this chapter is to provide guidance to all Evo Corporation employees and participating guests who use hazardous materials so that they may perform their work safely. Some of these materials may be specifically explosive, corrosive, flammable, or toxic; they may have properties that combine these hazards. Many chemicals are relatively non-hazardous by themselves but become dangerous when they interact with other substances, either in planned experiments or by accidental contact. To avoid injury and/or property damage, persons who handle chemicals in any area of the-company must understand the hazardous properties of the chemicals with which they will be working. Before using a specific chemical, safe handling methods must always be reviewed. Supervisors are responsible for ensuring that the equipment needed to work safely with chemicals is provided. The cost of this equipment is borne by the Company.

Hazcom Plan

On May 25, 1986 the Occupational Safety and Health Administration (OSHA) placed in effect the requirements of a new standard called Hazard Communication (29 CFR 1910.1200) .This standard establishes requirements to ensure that chemical hazards in the workplace are identified and that this information, along with information on protective measures, is transmitted to all affected employees. Global Harmonization System training for new labeling elements and SDS format was effective December 1, 2013. This section describes how Evo Corporation employees are trained and informed of the potential chemical hazards in their work area so they can avoid harmful exposures and safeguard their health. Components of this program include labeling, preparing a Safety Data Sheet (SDS), and training. With regard to SDS, Evo Corporation has limited coverage under the OSHA Hazard Communication Standard. The Company is required to maintain only those sheets that are received with incoming shipments and purchases for the following reasons: the Company commonly uses small quantities of many different hazardous materials for short periods of time; that the hazards change, often unpredictably; many materials are of unknown composition and most workers have been trained. Responsibilities of the RSO and Management administer and train employees to identify hazards for respective work areas. Ensure hazards are properly labeled. Obtain/maintain copies of Safety Data Sheets, as required, of each hazardous material used in the work area and make them accessible to employees during each work shift, located in the Vargrave back hallway, Styers Ferry break room, & FL shops and project supervisor service vehicles. Have the written Hazard Communication Program available to all employees in the same locations as the SDS directories, including job sites. Provide hazard-specific training for employees. Employees must: Attend safety training meetings. Perform operations in safe manner. Notify management immediately of any safety hazards or injuries. When ordering materials, request SDS's and forward copies to the Responsible Safety Officer to update all SDS directories, on and off/site. The Responsible Safety Officer must: Develop a written Hazard Communication Program. Maintain a central file of Safety Data Sheets. Review and update Evo Corporation safety labels. Provide generic training programs. Assist supervisors in developing hazard-specific training programs. Oversee the Hazard Communication Standard written policy and implementation plans. Alert on-site contractors to hazardous materials in

work areas. Alert on-site contractors that they must provide to their employees information on hazardous materials they bring to the work site. The number of hazardous chemicals and the number of reactions between them is so large that prior knowledge of all potential hazards cannot be assumed. Therefore, when the chemical properties of a material are not fully known, it should be assumed hazardous and used in as small quantities as possible to minimize exposure and thus reduce the magnitude of unexpected events. The following general safety precautions should be observed when working with chemicals: Follow exposure assessment in HazCom policy. Keep the work area clean & orderly. Use the necessary safety equipment. Carefully label every container with the identity of its contents and appropriate hazard warnings. Store incompatible chemicals in separate areas. Substitute less toxic materials whenever possible. Limit the volume of volatile or flammable material to the minimum needed for short operation periods. Provide means of containing the material if equipment or containers should break or spill their contents. Follow the requirements of this manual, if systems that can generate pressure or are operated under pressure are involved. Provide a back-up method of shutting off power to a heat source if any hazard is involved. Obtain and read the Safety Data Sheets.

Labels

All containers (including glassware, safety cans, and plastic squeeze bottles) must have labels that identify their chemical contents. Labels should also contain information on the hazards associated with the use of the chemical, per Global Harmonization System (GHS). Precautionary labels are available from local vendors for most of the common chemicals as well as prepared in house for all new/missing worksite labeling requirements, per GHS.

Emergencies

In case of an emergency, consider any of the following actions if appropriate and review the Emergency Action Plan in Chapter 19: Evacuate people from the area. Isolate the area. If the material is flammable, turn off ignition and heat sources. Call the Fire Department or 911 for assistance. Wear appropriate personal protective equipment. Pour Sorb-all or appropriate neutralizing agent on spill. Clean up; place waste in plastic bag for disposal. Chemical spill cleanup materials are available from stores as listed below: Flammable solvent spill kit, Flammable solvent absorbent, Acid spill kit, Acid spill absorbent, Caustic (base) spill kit, Caustic (base) absorbent, Safety equipment kit (contains scoops, sponge, safety glasses, disposal bags, etc.), Blood borne Pathogen clean up kit, bio-hazard disposal/sharps container and rack to hold kits.

Disposal of Chemicals

All Evo Corporation employees, participating guests, and visitors using hazardous chemicals are responsible for disposing of these chemicals safely. Federal and state regulations mandate strict disposal procedures for chemicals. To comply with these regulations all persons using Company facilities must observe these procedures. Routine disposal of chemicals--In general the disposal of hazardous chemicals to the sanitary sewer is not permitted. The Responsible Safety Officer will advise on the proper disposal of chemical wastes. In using chemical waste storage containers, certain procedures must be observed, as listed below: Incompatible chemicals must not be mixed in the same

container (e.g., acids should not be mixed with bases; organic liquids should not be mixed with strong oxidizing agents) .Waste oils must be collected in 55-gallon drums. Disposal solids and explosive materials must be stored in separate containers. The following requirements must be met as a condition for pickup and disposal of chemicals by the Responsible Safety Officer: Chemicals must be separated into compatible groups. Leaking containers of any sort will not be accepted. Dry materials (gloves, wipes, pipettes, etc.) must be securely contained in plastic bags and over packed in a cardboard box. Packages that are wet or have sharp protruding objects will not be accepted for pick up. Unknown chemicals will require special handling. The responsible department must make every effort to identify the material that is to be disposed. If all the user's attempts to identify the waste chemicals have failed, the Responsible Safety Officer will accept the waste and analyze the material. For more information call the Responsible Safety Officer. Each breakable container must be properly boxed. Place all bottles in plastic bags, then place in a sturdy container and use an absorbent cushioning material that is compatible with the chemicals. Each primary container must be labeled with content, amount, physical state, and the percentage breakdown of a mixture. Each box must have a complete list of contents or description written on an official Responsible Safety Officer hazardous materials packing list. Blank packing lists are available from the Responsible Safety Officer. For safety purposes, boxes must be of a size and weight so that one person can handle them. Boxes that exceed 45 pounds or 18 inches on a side cannot be safely handled by one person and will not be acceptable for pick up. General Housekeeping Rules: Maintain the smallest possible inventory of chemicals to meet your immediate needs. Periodically review your stock of chemicals on hand. Ensure that storage areas, or equipment containing large quantities of chemicals, are secure from accidental spills. Rinse emptied bottles that contain acids or inflammable solvents before disposal. Recycle unused laboratory chemicals wherever possible. DO NOT: Place hazardous chemicals in salvage or garbage receptacles. Pour chemicals onto the ground. Dispose of chemicals through the storm drain system. Dispose of highly toxic, malodorous, or lachrymatory chemicals down sinks or sewer drains.

Chapter 5 - Confined Spaces

Definitions

A confined space is defined as any structure that must be entered and that has or may contain dangerous concentrations of hazardous gases or vapors or an oxygen deficient atmosphere. Entry to these spaces must be rigorously controlled to prevent serious injury or death.

Hazardous Conditions

Hazardous conditions include, but are not limited, to the following: An atmosphere containing less than 19.5% oxygen (normal air contains 20.9% oxygen). This is usually the result of oxygen displacement by inert gases such as nitrogen, argon, helium, or sulfur hexafluoride. Flammable gases and vapors (e.g., methane, ethane, propane, gasoline, methyl-ethyl ketone, alcohol). Toxic gases and vapors (e.g., hydrogen sulfide, nitrogen dioxide, 1, 1, 1 trichloroethane, perchloroethane, methylene chloride).

Hazard Prevention

The primary objective is to prevent oxygen deficiency or other hazardous condition. This must be accomplished by accepted engineering control measures, such as general and local ventilation and substitution of materials. Only when such controls are not possible should respiratory protection be used. Written operating procedures governing the identification, testing, and entry into a confined space with a potential for oxygen deficiency must be established by the operating personnel and approved by the Responsible Safety Officer. Monitoring devices, audible alarms, warning lights, and instructional signs should be installed where there is a potentially oxygen-deficient atmosphere. These installations must be-approved by the Responsible Safety Officer. Before entering a confined space, the steps below must be followed: An entry permit must be issued to the worker by the responsible supervisor and reviewed by the Responsible Safety Officer as well as shared/coordinated/communicated with controlling contractor or other employers/contractors present or being serviced. Air quality must be tested to determine the level of oxygen and toxic or flammable air contaminants. Air purging and ventilation must be provided whenever possible. The confined space must be isolated from supply lines capable of creating hazardous conditions. Lock-out procedures must be used to secure electrical systems, pressure systems, piping, machinery, or moving equipment. If a person must enter a confined space containing hazardous gases, the procedures below must be followed: Protective equipment must be worn, including air supply respirator plus harness and lifeline. At least one person must be stationed outside the confined space, with suitable respirator. Communication with personnel in the confined space must always be maintained.

Training

All Evo Corporation employees required to make confined space entries (CSE's) in the course of their work have received training required by OSHA and in compliance with 29 CFR 1910.146 Permit Required Confined Space.

Confined Spaces Entry Procedure

The following procedure shall be followed for all Evo Corporation confined space entries:

- All mechanical equipment, feed lines, steam lines, industrial gas lines or anything else that may fall, strike or alter the atmosphere and that poses a risk to cause injury to the entrant shall be locked out by each affected employee by placing his/her personal lock(s) on the appropriate controls designated by the client to isolate the energy source.
    - All equipment locked out shall be "tried" prior to entering a confined space
- Ventilation shall be either natural or mechanically provided into the confined space to maintain a safe atmosphere
- All hazardous substances that contain inert, toxic, flammable or corrosive materials must be valved off, blanked, disconnected and/or separated
- Prior to performing atmospheric testing, testing equipment shall be calibrated using the built in calibration feature
- After the equipment has been locked out the atmosphere shall be checked for the following:
    - Oxygen content (between 19.5% and 23.5%)
    - Lower explosive limit (10% or lower of the known LEL of the contaminant)
    - Carbon monoxide (concentration less than 25 ppm)
    - Hydrogen sulfide (concentration less than 10 ppm)
- All atmospheric testing shall be done with an LEL meter in accordance with 29 CFR 1910.146
- Atmospheric testing shall be performed on a continuous basis in a confined space throughout the duration of the confined space entry
- Prior to making a confined space entry, an approved rescue plan shall be in place and include the following:

  - Rescue procedure
  - Emergency contact information and phone numbers
    - Many rural fire departments do not have confined space rescue programs. Be sure that rescue assistance is available prior to performing a confined space entry

- The area shall be checked for decaying organic matter that may produce methane and/or hydrogen sulfide gas

- Proper personal protective equipment (PPE) shall be used at all times to protect against known hazards

- The use of entrant retrieval/fall restraint equipment shall be employed on all confined space entries unless it is determined to be a more substantial risk to the entrant

  - Entrant shall wear a full body harness or ankle harness
  - All vertical confined space entries shall require the use of a retrieval/fall restraint system
  - All horizontal access confined space entries shall require a full body harness and life line

- Adequate lighting shall be provided within the space

  - All lighting used in a confined space shall be Class 1 Division 1, low voltage and explosion proof

- If the confined space is located below the ground or near where motor vehicles are operating, care shall be taken that vehicle exhaust or carbon monoxide does not enter the space

- Attendant & Rescue personnel shall be in place prior to the entrant entering a confined space

  - Attendants/Rescuers shall be trained/certified to assist with lifelines, respiratory equipment, CPR, first aid, hazard recognition and able to employ rescue equipment to remove the individual from the confined area and prohibit unauthorized entry by others
  - Under no circumstances may attendant enter a confined space. Entrant trained on CSE

- During all confined space entry procedures a designated competent person will be trained to supervise and an effective communication system shall be utilized, coordinated w/ contractor.

- When equipment which utilizes oxygen and produces an ignition source, such as torches or welding equipment, are used in a confined space, a hot work permit shall be issued

  - When this equipment is used, adequate measures must be taken to assure that exhaust gases are vented outside the confined space
  - When gas welding or burning is used, hoses must be checked for leaks
  - Compressed bottled gas shall be outside the confined space and torches must be lit

outside the confined space
  - Continuous atmospheric monitoring shall be in place

- When the use of electrically powered tools is required

  - All tools shall be equipped with a GFCI
  - All tools shall be inspected prior to use
  - Continuous atmospheric monitoring shall be in place

- Prior to terminating a confined space permit, the entrant shall verify that all tools and equipment have been removed from the confined space

- Confined space permits shall be issued for a period not to exceed eight (8) hours and shall be terminated at the conclusion of work or at the end of 8 hours which ever comes first

- Confined space permits are considered terminated in the event that an evacuation is ordered, there is a change in the scope of work, a plant emergency occurs or the space is left unattended for more than thirty (30) minutes.

- Entry documentation is maintained on file for a minimum of one (1) year.

- An early warning system will be utilized for continuous monitoring of non-isolated engulfment hazards.

Evo Corporation Confined Space Entry Permit

Date and Time Issued: _____ _____ Date and Time Expires: _____ _____

Job Site/Space I.D.: _____ Job Supervisor: _____

Equipment to be worked on: _____ Work to be performed: _____

Stand-by personnel: _____ _____ _____

1. Atmospheric Checks: Time _____
   Oxygen _____%
   Explosive _____% L.E.L.
   H_2S _____PPM
   CO _____PPM

NOTES

2. Tester's signature: _____

3. Source isolation (No Entry):	N/A	Yes	No
Pumps or lines blinded,	( )	( )	( )
Disconnected, or blocked ( )	( )	( )	

4. Ventilation Modification:	N/A	Yes	No
Mechanical	( )	( )	( )
Natural Ventilation only	( )	( )	( )

5. Atmospheric check after isolation and Ventilation:
   Oxygen _____% > 19.5 %
   Explosive _____% LEL< 10 %
   Toxic _____PPM < 10 PPM H_2S, _____PPM<25 CO
   Time _____
   Tester's signature: _____

6. Communication procedures: _____

_____

7. Rescue procedures/contact numbers: _____

_____

8. Entry, standby, and back up persons:	Yes	No
Successfully completed required training?	( )	( )
Is it current?	( )	( )

9. Equipment:		N/A	Yes	No
Direct reading gas monitor – tested	( )	( )	( )	
Safety harnesses and lifelines for entry and standby persons	( )	( )	( )	
Hoisting equipment		( )	( )	( )
Powered communications		( )	( )	( )
Scab's for entry and standby persons		( )	( )	( )
Protective Clothing/Equipment		( )	( )	( )
All electric equipment listed Class I, Division I, Group D & Non-sparking tools		( )	( )	( )

10. Periodic atmospheric tests:

Oxygen	____%	Time _____	Oxygen	____%	Time _____	Oxygen	____%	Time _____
Explosive	____%	Time _____	Explosive	____%	Time _____	Explosive	____%	Time _____
H_2S	____PPM	Time _____	H_2S	____PPM	Time _____	H_2S	____PPM	Time _____
CO	____PPM	Time _____	CO	____PPM	Time _____	CO	____PPM	Time _____

Oxygen	____%	Time _____	Oxygen	____%	Time _____	Oxygen	____%	Time _____
Explosive	____%	Time _____	Explosive	____%	Time _____	Explosive	____%	Time _____
H_2S	____PPM	Time _____	H_2S	____PPM	Time _____	H_2S	____PPM	Time _____
CO	____PPM	Time _____	CO	____PPM	Time _____	CO	____PPM	Time _____

We have reviewed the work authorized by this permit and the information contained here-in. written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By: (Job Supervisor/Contractor) _____

Approved By: (Entry Supervisor) _____

Reviewed By (Operations Personnel/Entrants):

_____ _____

_____ _____

(Printed name) (Signature)

This permit is to be kept at job site. Return job site copy to the Human Resources/Safety Office following job completion.

Sec. 1910.146 Permit-required confined spaces.

Entry supervisor means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

Note: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

(c) General requirements.

(1) The employer shall evaluate the workplace to determine if any spaces are permit- required confined spaces.

(2) If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

Note: A sign reading ``DANGER--PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER'' or using other similar language would satisfy the requirement for a sign.

Suggested General Criteria

Definitions:

``Competent'' means possessing the skills, knowledge, experience, and judgment to perform assigned tasks or activities satisfactorily as determined by the employer.

(8) When an employer (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer shall:

(i) Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section;

(ii) Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space;

(iii) Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working;

(iv) Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by paragraph (d)(11) of this section; and

(v) Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

(9) In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit space entry operations shall:

(I) obtain any available information regarding permit space hazards and entry operations from the host employer;

(ii) Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by paragraph (d)(11) of this section; and

(iii) Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry

Chapter 6 - Electrical Safety

Policy

It is the policy of Evo Corporation to take every reasonable precaution in the performance of work to protect the health and safety of employees and the public and to minimize the probability of damage to property. The electrical safety requirements contained in this chapter are regulations set forth by Evo Corporation. General electrical safety training is provided for all employees.

Employee Responsibility

All Evo Corporation personnel are responsible for all aspects of safety within their own groups. The Responsible Safety Officer is responsible for providing information, instruction, and assistance, as appropriate, concerning Evo Corporation electrical safety requirements and procedures. Individual employees are responsible for their own and their co-workers' safety. This means: Become acquainted with all potential hazards in the area in which they work. Learn and follow the appropriate standards, procedures, and hazard-control methods. Never undertake a potentially hazardous operation without consulting with appropriate supervision. Stop any operation you believe to be hazardous. Notify a supervisor of any condition or behavior that poses a potential hazard. Wear and use appropriate protective equipment. Immediately report any occupational injury or illness to the Responsible Safety Officer and the appropriate supervisor. Each employee acting in a supervisory capacity has specific safety responsibilities. These include: Developing an attitude and awareness of safety in the people supervised and seeing that individual safety responsibilities are fully carried out. Maintaining a safe work environment and taking corrective action on any potentially hazardous operation or condition. Ensuring that the personnel he/she directs are knowledgeable and trained in the tasks they are asked to perform. Ensuring that safe conditions prevail in the area and that everyone is properly informed of the area's safety regulations and procedures. Ensuring that contract personnel are properly protected by means of instructions, signs, barriers, or other appropriate resources. Ensuring that no employee assigned to potentially hazardous work appears to be fatigued, ill, emotionally disturbed, or under the influence of alcohol or drugs (prescription, over the counter medicinal or otherwise). Management at every level has the responsibility for maintaining the work environment at a minimal level of risk throughout all areas of control. Each manager: Is responsible for being aware of all potentially hazardous activities within the area of responsibility. May assign responsibility or delegate authority for performance of any function, but -Remains accountable to higher management for any oversight or error that leads to injury, illness, or damage to property.

Procedures

It is the policy of Evo Corporation to follow the fundamental principles of safety, which are described below. A clear understanding of these principles will improve the safety of working with or around electrical equipment. Practice proper housekeeping and cleanliness. Poor housekeeping is a major

factor in many accidents. A cluttered area is likely to be both unsafe and inefficient. Every employee is responsible for keeping a clean area and every supervisor is responsible for ensuring that his or her areas of responsibility remain clean. Identify hazards and anticipate problems. Think through what might go wrong and what the consequences would be. Do not hesitate to discuss any situation or question with your supervisor and coworkers. Resist "hurry-up" pressure. Program pressures should not cause you to bypass thoughtful consideration and planned procedures. Design for safety. Consider safety to be an integral part of the design process. Protective devices, warning signs, and administrative procedures are supplements to good design but can never fully compensate for its absence. Completed designs should include provisions for safe maintenance. Maintain for safety. Good maintenance is essential to safe operations. Maintenance procedures and schedules for servicing and maintaining equipment and facilities, including documentation of repairs, removals, replacements, and disposals, should be established. Document your work. An up-to-date set of documentation adequate for operation, maintenance, testing, and safety should be available to anyone working on potentially hazardous equipment. Keep drawings and prints up to date. Dispose of obsolete drawings and be certain that active file drawings have the latest corrections. Have designs reviewed. All systems and modifications to systems performing a safety function or controlling a potentially hazardous operation must be reviewed and approved at the level of project engineer or above. Have designs and operation verified. All systems performing safety functions or controlling a potentially hazardous operation must be periodically validated by actual test procedures at least once a year, and both the procedures and actual tests must be documented. Test equipment safety. Tests should be made when the electrical equipment is de-energized, or, at most, energized with reduced hazard. Know emergency procedures. All persons working in areas of high hazard (with high-voltage power supplies, capacitor banks, etc.) must be trained in emergency response procedures, including cardiopulmonary resuscitation (CPR) certification.

Working with Energized Equipment

This section contains safety requirements that must be met in constructing electrical equipment and in working on energized electrical equipment. Special emphasis is placed on problems associated with personnel working on hazardous electrical equipment in an energized condition. Such work is permissible, but only after extensive effort to perform the necessary tasks with the equipment in a securely de-energized condition has proven unsuccessful, or if the equipment is so enclosed and protected that contact with hazardous voltages is essentially impossible. Definitions: The following definitions are used in this discussion of electrical safety. Authorized Person: An individual recognized by management as having the responsibility for and expertise to perform electrical procedures in the course of normal duties. Such individuals are normally members of electronic or electrical groups. Backup Protection: A secondary, redundant, protective system provided to de-energize a device, system, or facility to permit safe physical contact by assigned personnel. A backup protective system must be totally independent of the first-line protection and must be capable of functioning in the event of total failure of the first-line protective system. Companion: A co-worker who is cognizant of potential danger and occasionally checks the other worker. Electrical Hazard: A potential source of personnel injury involving, either directly or indirectly, the use of electricity. Direct Electrical Hazard: A potential source of personnel injury resulting from the flow of electrical energy through a person (electrical shocks and burns). Indirect Electrical Hazard: A potential source of personnel injury resulting from electrical energy that is transformed into other forms of energy (e.g., radiant energy, such as light, heat, or energetic particles; magnetic fields; chemical reactions,

such as fire, explosions, the production of noxious gases and compounds; and involuntary muscular reactions). First Line Protection: The primary protective system and/or operational procedure provided to prevent physical contact with energized equipment. General Supervision: The condition that exists when an individual works under a supervisor's direction but not necessarily in the continuous presence of the supervisor. Grounding Point: The most direct connection to the source of a potential electrical hazard such as the terminals of a capacitor. Such a point must be indicated by a yellow circular marker. Grounds, Electrical: Any designated point with adequate capacity to carry any potential currents to earth. Designated points may be building columns or specially designed ground-network cabling, rack, or chassis ground. Cold water pipes, wire ways, and conduits must not be considered electrical grounds. Grounds, Massive: Large areas of metal, concrete, or wet ground that make electrical isolation difficult or impossible. Implied Approval: Approval is implied when a supervisor, knowing the qualifications of an individual, assigns that individual a task, or responsibility for, a device, system, or project. Qualified Person: An individual recognized by management as having sufficient understanding of a device, system, or facility to be able to positively control any hazards it may present. Must, Should, and May: Must indicates a mandatory requirement. Should indicates a recommended action. May indicates an optional or permissive action, not a requirement or recommendation. Safety Watch: An individual whose sole task is to observe the operator and to quickly de-energize the equipment, using a crash button or circuit breaker control in case of an emergency, and to alert emergency personnel. This person should have basic CPR training.

Type of Hazards

The degree of hazard associated with electrical shock is a function of the duration, magnitude, and frequency of the current passed by the portion of the body incorporated in the circuit. The current that can flow through the human body with contacts at the extremities, such as between the hand or head and one or both feet, depends largely on the voltage. Body circuit resistance, even with liquid contacts (barring broken skin) will probably be not less than 500 ohms. The current flow at this resistance at 120 volts is 240 milliamperes. Recognition of the hazards associated with various types of electrical equipment is of paramount importance in developing and applying safety guidelines for working on energized equipment. Three classes (in order of increasing severity) of electrical hazards have evolved.

Class A Hazard

Class A electrical hazard exists when all the following conditions prevail: The primary AC potential does not exceed 130 volts rms. The available primary AC current is limited to 30 amperes rms. The stored energy available in a capacitor or inductor is less than 5 joules (J=CV2/2=LI2/2). The DC or secondary AC potentials are less than 50 volts line-to-line and/or to ground or the DC or secondary AC power is 150 volt-amperes (V-A) or less. Although the voltages and currents may be considered nominal, a "Class A" electrical hazard is potentially lethal. This class is particularly dangerous because of everyday familiarity with such sources, an assumed ability to cope with them, and their common occurrence in less guarded exposures.

Class B Hazard

A Class B electrical hazard has the same conditions as a Class A hazard except that the primary AC potential is greater than 130 volts rms, but does not exceed 300 volts rms.

Class C Hazard

Class C electrical hazard classifications prevail for all situations when one or more of the limitations set in Class B is exceeded.

Employee Attitude

The attitudes and habits of personnel and the precautions they routinely take when working on energized equipment are extremely important. There are three modes of working on electrical equipment.

Mode 1: Turn off the Power

All operations are to be conducted with the equipment in a positively de-energized state. All external sources of electrical energy must be disconnected by some positive action (e.g., locked-out breaker) and with all internal energy sources rendered safe. "Mode 1" is a minimum hazard situation.

Mode 2: Latent Danger

All manipulative operations (such as making connections or alterations to or near normally energized components) are to be conducted with the equipment in the positively de-energized state. Measurements and observations of equipment functions may then be conducted with the equipment energized and with normal protective barriers removed. “Mode 2” is a moderate-to-severe hazard situation, depending on the operating voltages and energy capabilities of the equipment.

Mode 3: Hot Wiring

“Mode 3” exists when manipulative, measurement, and observational operations are to be conducted with the equipment fully energized and with the normal protective barriers removed. “Mode 3” is a severe hazard situation that should be permitted only when fully justified and should be conducted under the closest supervision and control. One knowledgeable person should be involved in addition to the worker(s) .Written permission may be required. Work on Class B or Class C energized circuitry must only be done when it is absolutely necessary.

Safety Glasses

Either safety glasses or a face shield must be worn when working on electrical equipment.

Personal Protective Devices

For work on any energized circuitry with a Class B or Class C hazard, the use of personal protective devices (e.g., face' shields, blast jackets, gloves, and insulated floor mats) is encouraged, even if not required. Flexible cords and ground fault circuit interupters (GFCI) are utilized.

Elevated Locations

Any person working on electrical equipment on a crane or other elevated location must take necessary precautions to prevent a fall from reaction to electrical shock or other causes. A second person, knowledgeable as a safety watch, must assume the best possible position to assist the worker in case of an accident.

Electrical Lock-out/Tag-out Procedures

When you have to do maintenance work on a machine, take these four steps to protect yourself and your co-workers from injury: 1. De-energize the machine if possible. Positively disconnect the machine from the power source. If there is more than one source of power, then disconnect them all. 2. If possible, lock out all disconnect switches. You must be given a lock and a key for each disconnect before you begin working on the machine. 3. Tag all disconnect switches. Use the yellow or Red safety tags which state in large letters --"Danger...Do Not Operate," or "Danger. ..Do Not Energize" and which give the name of the individual who locked out the equipment, date and time. The tag must also state "DO NOT REMOVE THIS TAG". (The person who placed the tag may remove it only after the machinery maintenance has been completed.) 4. Test the equipment to insure it is de-energized before working on it. First, attempt to operate the equipment by turning it on normally. Next, check all electrical lines and exposed areas with test equipment or a "lamp". Finally, short to ground any exposed connections using insulated grounding sticks. This test must be done even if the electrical connection is physically broken, such as pulling out a plug, because of the chance of discharging components. A TAG OUT ONLY PROCEDURE MAY BE USED IF THE MACHINE CANNOT BE LOCKED OUT. IF THE MACHINE IS SUPPLIED ELECTRICAL POWER FROM A SINGLE SOURCE, WHICH IS UNDER THE EXCLUSIVE CONTROL OF A TRAINED AND QUALIFIED REPAIR PERSON AT ALL TIMES AND THERE ARE NOT ANY OTHER PERSONS IN THE REPAIR AREA WHO COULD BE HARMED BY THE ACCIDENTAL ENERGIZING OF THE MACHINERY, THEN TAG OUT MAY BE USED INSTEAD OF LOCK-OUT/TAG OUT. Be aware that many accidents occur at the moment of re-energizing. If the machinery is to be re-energized, all persons must be kept at a safe distance away from the machinery. The re-energization can be performed only by a person who either performed the lock-out/tag out, a person acting under the immediate and direct commands of the original lock-out/tag out person, or in the event of a shift change, or other unavailability of the original person, then the original shall, before leaving, appoint a surrogate original person and show him or her all steps taken to lock-out/tag out the equipment.

Chapter 7 - Fire Safety

Introduction

Policy and planning for fire safety at Evo Corporation takes into account the special fire hazards for specific operating areas, the protection of high-value property, and the safety of employees. These ends are met by: * Non-combustible or fire-rated materials and construction practices suitable to the assigned uses of buildings and facilities. * Alarm systems and automatic extinguishing systems. * Availability of suitable hand extinguishers and local hose lines for use before firefighters arrive. * Access to professional fire department, always staffed and trained in the control of emergencies that could occur at the Company. (The Fire Department makes the initial response to all requests for emergency aid received on the emergency telephone number, 911.) This chapter covers the fire safety responsibilities of employees and supervisors and sets forth the fire safety rules and procedures.

Fire Department

The Community Fire Department is responsible for protecting people and property from fires, explosions, and other hazards through prevention and expeditious control of such events. In addition, the Fire Department provides first-response rescue and transportation services in medical emergencies. The Fire Department's inspection staff is responsible for ensuring company-wide compliance with fire safety and protection requirements and for reviewing all plans and procedures for compliance with these requirements; for inspecting and testing automatic fire protection and alarm systems and ensuring their maintenance and repair; for conducting fire safety and protection inspections; and for providing fire prevention recommendations. Other responsibilities include training employees in fire safety equipment, practices, and procedures. All these fire protection and response functions are performed in conformance with OSHA regulations, State law, Evo Corporation policies, and nationally recognized standards and guidelines for fire and life safety. The Fire Chief and the Fire Marshall have the authority to enforce applicable requirements of the Uniform Building Code; the Uniform Fire Code; National Fire Protection Association Codes (including the Life Safety Code), Standards, and Recommended Practices; and the fire protection provisions of OSHA Orders. All employees must immediately report fires, smoke, or potential fire hazards to the Fire Department (dial 911) .All employees must conduct their operations in such a way as to minimize the possibility of fire. This means applying rules such as keeping combustibles separated from ignition sources, being careful about smoking, and avoiding needless accumulations of combustible materials. Supervisors are responsible for keeping their operating areas safe from fire. The Responsible Safety Officer and the Fire Department will provide guidance and construction criteria with respect to fire and life safety as well as inspections. The provision and maintenance of fire detection systems and both automatic and manual fire extinguishing equipment is the responsibility of the Responsible Safety Officer. But the supervisor, who best knows the day-to-day nature of his/her operations, is responsible for notifying the Responsible Safety Officer of operations that change the degree of fire risk and will therefore require a change in the planned fire protection provisions.

Class A Combustibles

Class A combustibles are common materials such as wood, paper, cloth, rubber, plastics, etc. Fires in any of these fuels can be extinguished with water as well as other agents specified for Class A fires. They are the most common fuels to be found in non-specialized operating areas of the work place such as offices. Safe handling of Class A combustibles means: Disposing of waste daily. Keeping work area clean and free of fuel paths, which can spread a fire, once started. Keeping combustibles away from accidental ignition sources such as hot plates, soldering irons, or other heat or spark-producing devices. Keeping all rubbish, trash, or other waste in metal or metal-lined receptacles with tight-fitting covers when in or adjacent to buildings. (Exception: wastebaskets of metal or of other material and design approved for such use, which are emptied each day, need not be covered.) Using safe ash trays for disposal of smoking materials and making sure that the contents are extinguished and cold to the touch before emptying them into a safe receptacle. Planning the use of combustibles in any operation so that excessive amounts need not be stored. Storing paper stock in metal cabinets and rags in metal bins with automatically closing lids. Making frequent inspections and checks for noncompliance with these rules in order to catch fires in the potential stage.

Class B Combustibles

Class B combustibles are flammable and combustible liquids (including oils, greases, tars, oil-base paints, lacquers) and flammable gases. Flammable aerosols (spray cans) are treated here. Cryogenic and pressurized flammable gases are treated elsewhere in this manual. The use of water to extinguish Class B fires (by other than trained firefighters) can cause the burning liquid to spread carrying the fire with it. Flammable-liquid fires are usually best extinguished by excluding the air around the burning liquid. Generally, this is accomplished by using one of several approved types of fire-extinguishing agents, such as the following: Carbon dioxide ABC multipurpose dry chemical Halon 1301 (used in built-in, total-flood systems) Halon 1211 (used in portable extinguishers) Fires involving flammable gases are usually controlled by eliminating the source of fuel, i.e., closing a valve. Technically, flammable and combustible liquids do not burn. However, under appropriate conditions, they generate sufficient quantities of vapors to form ignitable vapor-air mixtures. As a general rule, the lower the flash point of a liquid, the greater the fire and explosion hazard. It should be noted that many flammable and combustible liquids also pose health hazards. NOTE: The flash point of a liquid is the minimum temperature at which it gives off sufficient vapor to form an ignitable mixture with the air near the surface of the liquid or within the vessel used. It is the responsibility of the user to ensure that all Class B combustibles are properly identified, labeled, handled, and stored. If assistance is required, contact the Responsible Safety Office. Safe handling of Class B combustibles means: Using only approved containers, tanks, equipment, and apparatus for the storage, handling, and use of Class B combustibles. Making sure that all containers are conspicuously and accurately labeled as to their contents. Dispensing liquids from tanks, drums, barrels, or similar containers only through approved pumps taking suction from the top or through approved self-closing valves or faucets. Storing, handling, and using Class B combustibles only in approved locations, where vapors cannot reach any source of ignition, including heating equipment, electrical equipment, oven flame, mechanical or electrical sparks, etc. Never cleaning with flammable liquids within a building except in a closed machine approved for the purpose. Never storing, handling, or using Class B combustibles in or near exists, stairways, or other areas normally used for egress. In rooms or buildings, storing

flammable liquids in excess of 10 gallons in approved storage cabinets or special rooms approved for the purpose. Knowing the locations of the nearest portable fire extinguishers rated for Class B fires and how to use them. Never smoking, welding, cutting, grinding, using an open flame or unsafe electrical appliances or equipment, or otherwise creating heat that could ignite vapors near any Class B combustibles.

Electrical Fires

There are many combustible materials, including electrical equipment, oxidizing chemicals, fast-reacting or explosive compounds, and flammable metals, which present specialized fire safety and extinguishing problems. Refer to other appropriate chapters of this manual for safe handling advice. If in doubt, request advice from the Responsible Safety Officer.

Portable Heaters

The use of these devices, whether privately or company owned, is allowed only where there is no chance of causing injury to personnel or of creating a fire hazard. This provision obviously requires common sense in safely locating such devices and ensuring that they do not operate when they are unattended. These devices may not be used in locations where: Flammable or explosive vapors or dusts may be present. Smoking, eating, or drinking are prohibited because toxic or radioactive materials may be present. The area has been designated as unsafe for such devices. The following practices should be carried out when operating portable heating appliances: Do not place the appliance on unstable or readily combustible materials. Maintain a clearance of at least 12 inches between the appliance and combustible materials. Ensure that the appliance is approved by either Underwriters Laboratories, Inc., or Factory Mutual Research Corporation. Connect the appliance directly to a proper electrical outlet using only the cord with which it was originally equipped. Do not use extension cords in lieu of permanent wiring. Do not operate appliances during off hours if they are unattended unless they are controlled by a timer installed by a certified electrician. The timer will automatically de-energize the appliance during off hours and energize it not more than 30 minutes before the arrival of personnel. If 24 hour operation is desirable, the proposed operation and arrangement must be reviewed by the local Fire Department and a permit obtained. This permit must be posted near the operating appliance for the information of off-shift personnel who may be checking the area.

Fire Fighting Equipment

This section describes the fixed and portable equipment that is provided in working areas for fire protection. The fixed equipment includes automatic sprinklers, detectors and alarms, fire doors, etc. The portable equipment consists of fire extinguishers and hoses to be operated by employees before the arrival of the local Fire Department.

Sprinkler Systems

Many buildings are provided with automatic sprinkler systems. The sprinkler heads contain a fusible element (most commonly fused at 212 degrees F) which, on melting, opens the head and starts a spray of water. The resulting flow of water in the piping activates an alarm at the fire station, and firefighters are dispatched. Automatic sprinkler heads can be damaged if they are subjected to mechanical abuse. A protective cage should be installed where such damage is possible. Heat inadvertently applied to the sprinkler head can also activate the sprinkler when no actual fire is present. Normal heat sources should therefore be kept away from sprinkler heads. To avoid decreasing the flow or spread of water or altering the spray pattern, do not allow material or furniture to be located too near the sprinkler head. Allow at least 18 inches of clearance around sprinkler heads. Sprinkler system control valves must be kept accessible for Fire Department use. Allow at least 3 feet of clearance (enough for a man to pass through easily) such valves.

Fire Hydrants

Fire hydrants are maintained for emergency use by the Fire Department. They must be kept accessible and in good working condition. Certain temporary uses may be authorized in writing by the Chief or Assistant Chief of the Fire Department. An example of such temporary use may be connection by construction contractors. When temporary connections are authorized, the following practices must be observed: Use only valved outlets. Use only a hydrant spanner provided by the Fire Department. (Other types of wrench can damage the wrench flats on the valve stem.) Do not leave connections in place unattended, except at construction sites. Close a hydrant valve 1/8th turn after fully opening it. (This is done so that a person mistakenly turning the valve the wrong way will not cause damage by forcing it.) When replacing the outlet caps after using a hydrant, screw them on only hand-tight.

Life Safety Code

The Life Safety Code of the National Fire Protection Association, NFPA 101, requires that emergency lighting be provided for means of egress in certain areas. The Code states emergency lighting is required in exit corridors in any office-type building where the building is two or more stories in height above the level of exit discharge. In industrial occupancies such as laboratories and shops, the Code requires emergency lighting in all exit aisles, corridors, and passageways. Emergency lighting may be installed in areas where not required by the Code when such areas present an egress hazard during a power failure. Although elevators are not considered a means of egress within the jurisdiction of the Life Safety Code, they do require emergency lighting. (Titles 8 and 24 require that emergency lighting be maintained in an elevator for a period of at least four hours.) Several types of emergency lights that satisfy the specifications of the Life Safety Code are: Battery Type -Only rechargeable batteries may be used. The rating of the battery must be such that it provides power for illumination for one and one-half hours in the event of a failure of normal lighting. Generator Type -When emergency lighting is provided by an electric generator, a delay of not more than 10 seconds is permitted. Exit sign lights, when burned out, should be reported to Maintenance for service.

Exit Corridors

Exit corridors must not be used for storage. The Life Safety Code, NFPA 101, requires that buildings designed for human occupancy must have continuous and unobstructed exits to permit prompt evacuation of the occupants and allow necessary access for responding emergency personnel. The intent of the Code is to keep exits free from obstructions and clear of combustible materials. Attention to housekeeping, therefore, is very important. "Temporary" storage of furniture, equipment, supplies, or anything else is not permitted in exit ways. Combustibles, including recyclable waste paper, are not permitted in exit ways. Metal lockers with ends and tops ferried to the walls and that do not interfere with minimum exit width requirements may be installed in exit corridors when approved by the Fire Department and the Responsible Safety Officer. The following requirements must be met for storage locker/cabinets: Cabinets will be permitted on one side of the corridor only. Cabinets must end at least 6 ft from the corridor exit door. Cabinet ends must be at least 12 in. from the edge of the doorway on the latch side and from the edge of the door leaf when fully opened into the corridor. The cabinets must not be more than 20 in. deep by 37 in. wide by 72-3/4 in. high. The cabinets must be all metal construction with positive latches to prevent spillage of contents in the event of an earthquake. All doors must return automatically to the closed position when not held open manually. A 45 degree-angle fairing must be provided from the wall to the corridor corner of the cabinet. Fairing must be provided at both ends of cabinet or bank of cabinets. A 45 degree-angle fairing must be provided at the top of the cabinets from the outside corridor edge of cabinet to the wall. All cabinets must be anchored to the wall firmly enough to withstand 0.5g of lateral acceleration (or a lateral load equal to 1/2 the total dead weight of the cabinet and its contents) in the event of an earthquake. Liquids and chemicals are not to be stored in corridor lockers. All cabinets must be kept locked, with one key being retained by the Building Manager. All cabinets must be labeled with the contents and the name, address, and telephone number of the assigned user. Any deviation from the above requirements must be approved by Responsible Safety Officer.

No Smoking

Smoking is forbidden in all Evo buildings and certain areas for fire safety reasons. Such areas include the following: Where flammable gases or liquids are stored, handled, or used. Where significant quantities of combustible materials, such as paper, wood, cardboard, or plastics are stored, handled, or used. Where liquid- or gaseous-oxygen is stored, handled, or used. Within 20 ft of a smoke detector. In tape and record storage vaults and computer equipment areas. Areas that are designated "No Smoking" areas for fire safety reasons are indicated by large rectangular signs stating "NO SMOKING."

Pre-Job Planning

All pre-job planning includes a review of any possible fire hazards.

Chapter 8 - Materials Handling

Introduction

Evo Corporation requires that safety planning and practices for commonplace tasks be as thorough as for operations with unusual hazards. Commonplace tasks make up the greater part of the daily activities of most employees and, not unexpectedly, offer more potential sources of accidents with injuries and property damage. Every operation or work assignment begins and ends with handling of materials. Whether the material is a sheet of paper (paper cuts are painful) or a cylinder of toxic gas, accident risks can be reduced with thorough planning. Identifying obvious and hidden hazards should be the first step in planning work methods and job practices. Thorough planning should include all the steps associated with good management from job conception through crew and equipment decommissioning. Most of the material presented in this chapter is related to the commonplace and obvious. Nevertheless, a majority of the incidents leading to injury, occupational illness, and property damage stem from failure to observe the principles associated with safe materials handling and storage. A less obvious hazard is potential failure of used or excessive motorized handling or lifting equipment. The Responsible Safety Officer must be notified whenever it is desired to acquire a crane, forklift truck, or other motorized handling or lifting equipment from accessed sources.

Lifting and Moving

Lifting and moving of objects must be done by mechanical devices rather than by manual effort whenever this is practical. The equipment used must be appropriate for the lifting or moving task. Lifting and moving devices must be operated only by personnel trained and authorized to operate them. Employees must not be required to lift heavy or bulky objects that overtax their physical condition or capability.

Manual Lifting Rules

Manual lifting and handling of material must be done by methods that ensure the safety of both the employee and the material. It is Evo Corporation policy that employees whose work assignments require heavy lifting be properly trained and physically qualified, by medical examination if deemed necessary. The following are rules for manual lifting: Inspect the load to be lifted for sharp edges, slivers, and wet or greasy spots. Wear gloves when lifting or handling objects with sharp or splintered edges. These gloves must be free of oil, grease, or other agents that may cause a poor grip. Inspect the route over which the load is to be carried. It should be in plain view and free of obstructions or spillage that could cause tripping or slipping. Consider the distance the load is to be carried. Recognize the fact your gripping power may weaken over long distances. Size up the load and make a preliminary "heft" to be sure the load is easily within your lifting capacity. If it is not, get help. If team lifting is required, personnel should be similar in size and physique. One person should act as leader and give the commands to lift, lower, etc. Two persons carrying a long piece of pipe or lumber should

carry it on the same shoulder and walk in step. Shoulder pads should be used to prevent cutting shoulders and help reduce fatigue. To lift an object off the ground, the following are manual lifting steps: Make sure of good footing and set your feet about 10 to 15 inches apart. It may help to set one foot forward of the other. Assume a knee-bend or squatting position, keeping your back straight and upright. Get a firm grip and lift the object by straightening your knees -not your back. Carry the load close to your body (not on extended arms) .To turn or change your position, shift your feet -don't twist your back. The steps for setting an object on the ground are the same as above, but in reverse.

Mechanical Lifting

Mechanical devices must be used for lifting and moving objects that are too heavy or bulky for safe manual handling by employees. Employees who have not been trained must not operate power-driven mechanical devices to lift or move objects of any weight. Heavy objects that require special handling or rigging must be moved only by riggers or under the guidance of employees specifically trained and certified to move heavy objects.

Inspections

Each mechanical lifting or moving device must be inspected periodically. Each lifting device must also be inspected before lifting a load near its rated capacity. Defective equipment must be repaired before it is used. The rated load capacity of lifting equipment must not be exceeded. Material moving equipment must be driven forward going up a ramp and driven backward going down a ramp. Traffic must not be allowed to pass under a raised load. The floor-loading limit must be checked before mobile lifting equipment enters an area. Passengers must not be carried on lifting equipment unless it is specifically equipped to carry passengers.

Load Path Safety

Loads moved with any material handling equipment must not pass over any personnel. The load path must be selected and controlled to eliminate the possibility of injury to employees should the material handling equipment fail. Equipment worked on while supported by material handling equipment must have a redundant supporting system capable of supporting all loads that could be imposed by failure of the mechanical handling equipment. A suspended load must never be left unattended but must be lowered to the working surface and the material handling equipment secured before leaving the load unattended.

Truck Loading

All objects loaded on trucks must be secured to the truck to prevent any shifting of the load in transit. The wheels of trucks being loaded or unloaded at a loading dock must be chocked to prevent movement.

Clean Work Areas

All areas controlled by Evo Corporation must be kept in orderly and clean condition and used only for activities or operations for which they have been approved. The following specific rules must also be followed: Keep stairs, corridors, and aisles clear. Traffic lanes and loading areas must be kept clear and marked appropriately. Store materials in work rooms or designated storage areas only. Do not use hallways, fan lofts, or boiler and equipment rooms as storage areas. Do not allow exits, passageways, or access to equipment to become obstructed by either stored materials or materials and equipment that is being used. Arrange stored materials safely to prevent tipping, falling, collapsing, rolling, or spreading -that is, any undesired and unsafe motion. Do not exceed the rated floor capacity of stored material for the area. The load limit and the maximum height to which material may be stacked must be posted. Place materials such as cartons, boxes, drums, lumber, pipe, and bar stock in racks or in stable piles as appropriate for the type of material. Store materials that are radioactive, fissile, flammable, explosive, oxidizing, corrosive, or pyrophoric only under conditions approved for the specific use by the Responsible Safety Officer. Segregate and store incompatible materials in separate locations. Remove items that will not be required for extended periods from work areas and put them in warehouse storage. Call for assistance. Temporary equipment required for special projects or support activities must be installed so that it will not constitute a hazard. A minimum clearance of 36 inches must be maintained around electrical power panels. Wiring and cables must be installed in a safe and orderly manner, preferably in cable trays. Machinery and possible contact points with electrical power must have appropriate guarding. The controls for temporary equipment must be located to prevent inadvertent actuation or awkward manipulation. When heat-producing equipment must be installed, avoid accidental ignition of combustible materials or touching of surfaces above 60 degrees C (140 F). Every work location must be provided with illumination that meets OSHA requirements. Evaluation of illumination quality and requirements is made by the Responsible Safety Officer, but the supervisor of an area is responsible for obtaining and maintaining suitable illumination. Areas without natural lighting and areas where hazardous operations are conducted must be provided with enough automatically activated emergency lighting to permit exit or entry of personnel if the primary lighting fails.

Chapter 9 – Excavation and Trenching

Introduction

Excavation and trenching are among the most hazardous construction operations. The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulation (CFR), Part 1926.650, covers requirements for excavation and trenching operations. This policy highlights key elements of the standard, shows ways to protect employees against cave-ins, and describes safe work practices for employees. CFR 1926.23 defines a "Competent person" as one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. New hire & annual refresher training & testing will be conducted to certify workers' roles in excavation and trenching safety, including tools, protective systems, inspecting trenches, unsafe egress for Competent Person, local rules for safe digging, tolerance zones, ground markings, & other to prevent striking a pipe, etc.

The difference between an excavation and a trench

OSHA defines an excavation as any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal. This can include excavations for anything from cellars to highways.

A trench is defined as a narrow underground excavation that is deeper than it is wide, and no wider than 15 feet (4.5 meters).

The dangers of trenching and excavation operations

Trenching and excavation work presents serious hazards to all workers involved. Cave-ins pose the greatest risk and are much more likely than other excavation-related accidents. Other potential hazards include falls, falling loads, hazardous atmospheres, and incidents involving mobile equipment. Fall protection will include lanyards, barricades erected & trench crossover guardrails.

OSHA's Excavation and Trenching Standard

The OSHA standard covers and offers protections

The rule applies to all open excavations made in the earth's surface, including trenches. Strict compliance with all sections of the standard will prevent or greatly reduce the risk of cave-ins as well as other excavation-related accidents.

Excavations and trenches which are not covered

The standard does not apply to house foundation/ basement excavations, including those that become trenches by definition when constructing formwork, foundations, or walls. For this exemption to apply, all the following conditions must exist:

• The excavation is less than 7-1/2 feet (2.5 meters) deep or is benched for at least 2 feet (.61 meters) horizontally for every 5 feet (1.52 meters) or less of vertical height;

• The bottom of the excavation, from the excavation face to the formwork or wall, is at least 2 feet (.61 meters) wide and wider if possible;

• No water, surface tension cracks, or other environmental conditions reduce the excavation stability;
• No heavy equipment is vibrating the excavation while employees are in it;
• Soil, equipment, and material surcharge loads are no closer to the top edge of the excavation than the excavation is deep. When you use front-end loaders to dig the excavations, place the soil surcharge load as far back from the edge of the excavation as possible, but never closer than 2 feet (.61 meters);
• The fewest crew members possible are performing the work; and
• Workers spend the minimum time possible in the excavation.
This exemption does not apply to utility excavations or trenches, which are covered by 29 CFR 1926.652.

Preplanning

Preplan excavation work

No matter how many trenching, shoring, and backfilling jobs you have done in the past, it is important to approach each new job with the utmost care and preparation. Many on-the-job accidents result directly from inadequate initial planning. Waiting until after the work has started to correct mistakes in shoring or sloping slows down the operation, adds to the cost, and increases the possibility of a cave-in or other excavation failure. A Site Specific HASP & JHA will be prepared for each project performed with all workers acknowledging their accountability by taking ownership of their role and responsibilities in preventing excavation incidents. The JHA defines each role and responsibilities and must be signed by each to confirm this acknowledgment including use of stop work authority if unsafe activities are present, protecting anyone from punitive measures with a follow up on cause to address.

Safety factors to be considered

Before preparing for a job, you will want to know as much as possible about following any applicable state and local laws related to excavations the jobsite and the materials you will need to have on hand to perform the work safely and in compliance with OSHA standards. A safety checklist may prove helpful when you consider specific site conditions such as the following:
• Traffic,
• Proximity and physical conditions of nearby structures,
• Soil,
• Surface and ground water,
• Location of the water table,
• Overhead and underground utilities, and
• Weather.
You can determine these and other conditions through jobsite studies, observations, test borings for soil type or conditions, and consultations with local officials and utility companies. This information will help you determine the amount, kind, and cost of safety equipment you will need to perform the work in the safest manner possible. All incidents require Accident/Incident Report investigation which is thorough, identifying events that contributed to the cause, parties involved, extent of damage that occurred, & other relevant information, reflect a corrective action plan with root cause analysis to implement preventive solutions based on actions/causes identified, & notifying appropriate agencies of damage to buried infrastructure in required timeframes, including all levels of Evo management.

Avoiding underground utility lines and pipes during excavation work

Before starting work, the OSHA standard requires you to do the following:
• Determine the approximate location of utility installations—sewer, telephone, fuel, electric, and water lines; or any other underground installations;

• Contact the utility companies or owners involved to inform them of the proposed work within established or customary local response times; by "calling before you dig" and
• Ask the utility companies or owners to find the exact location of underground installations. If they cannot respond within 24 hours (unless the period required by state or local law is longer) or cannot find the exact location of the utility installations, you may proceed with caution. If your excavation work exposes underground installations, OSHA regulations require you to protect, properly support, or remove them.

What workers should know before they start the project

Employees are expected to play a critical role in keeping the jobsite safe. Some specific rules include requirements that workers:
• Remove or minimize all surface obstacles at the worksite that may create a hazard,
• Wear warning vests or other reflective or high-visibility garments that you provide when they are exposed to vehicular traffic,
• Wear or use prescribed protective gear and equipment correctly,
• Operate equipment only if they have been trained properly in its use and alerted to its potential hazards, and
• Follow safe work practices.

It also is important to establish and maintain a safety and health management system for the worksite that provides adequate systematic policies, procedures, and practices to protect employees from, and allow them to recognize, job-related safety and health hazards. For more information about establishing such a system, see page 18 "Environmental Controls".

Protective Systems

Prevent cave-ins

OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by:
• Sloping or benching the sides of the excavation,
• Supporting the sides of the excavation, or
• Placing a shield between the side of the excavation and the work area.

Choosing the most appropriate protective system design

Designing a protective system can be complex because you must consider many factors: soil classification by visual/manual testing, depth of cut, water content of soil, changes due to weather and climate, or other operations in the vicinity. You are free to choose the most practical design approach for any particular circumstance. Once you have selected an approach, however, the system must meet the required performance criteria. The OSHA standard describes methods and approaches for designing protective systems such as the following:

Method 1 — Slope the sides to an angle not steeper than 1-1/2:1; for example, for every foot of depth, the trench must be excavated back 1-1/2 feet. All simple slope excavations 20 feet (6.11 meters) or less deep should have a maximum allowable slope of 1-1/2:1. These slopes must be excavated to form

configurations similar to those for Type C soil, as described in Appendix B of the standard. A slope of this gradation or less is safe for any type of soil.

Method 2 — Use tabulated data such as tables and charts approved by a registered professional engineer to design the excavation. These data must be in writing and must include enough explanatory information, including the criteria for making a selection and the limits on the use of the data, for the user to make a selection. At least one copy of the data, including the identity of the registered professional engineer who approved it, must be kept at the worksite during construction of the protective system. After the system is completed, the data may be stored away from the jobsite, but a copy must be provided upon request to the Assistant Secretary of Labor for OSHA.

Method 3 — Use a trench box or shield designed or approved by a registered professional engineer or based on tabulated data prepared or approved by a registered professional engineer. Timber, aluminum, or other suitable materials may also be used. OSHA standards permit the use of a trench shield (also known as a welder's hut) if it provides the same level of protection or more than the appropriate shoring system.

Employers can choose the most practical method for the particular circumstance, but that system must meet the required performance criteria. The standard does not require a protective system when an excavation is made entirely in stable rock or is less than 5 feet (1.52 meters) deep, if a competent person has examined the ground and found no indication of a potential cave-in.

Other required safety precautions

The standard requires support systems such as shoring, bracing, or underpinning to ensure that adjacent structures such as buildings, walls, sidewalks, or pavements remain stable. The standard also prohibits excavation below the base or footing of any foundation or retaining wall unless:
• A support system is established such as underpinning,
• The excavation is in stable rock, or
• A registered professional engineer determines that the structure is far enough away from the excavation and that excavation will not pose a hazard to employees.

Excavations under sidewalks and pavements are prohibited unless an appropriately designed support system or another effective means of support is established.

Safe installation and removal of protective systems

The standard requires the following steps to protect workers when installing support systems:
• Connect members of support systems securely,
• Install support systems safely,
• Avoid overloading members of support systems, and
• Install other structural members to carry loads imposed on the support system when you need to remove individual members temporarily.

In addition, the standard permits excavation of 2 feet (.61 meters) or less below the bottom of the members of a support or shield system of a trench if the system is designed to resist the forces calculated for the full depth of the trench. In addition, there must be no indications, while the trench is

open, of a possible cave-in below the bottom of the support system. Also, you must coordinate the installation of support systems closely with the excavation work. As soon as work is completed, you are required to backfill the excavation when you dismantle the protective system. After the excavation is cleared, remove the protective system from the bottom up, taking care to release members slowly.

Proper maintenance of materials and equipment used for protective systems

You are responsible for maintaining materials and equipment used for protective systems. Defective and damaged materials and equipment can cause failure of a protective system and other excavation hazards. To avoid possible failure of a protective system, you must ensure that:
• Materials and equipment are free from damage or defects;
• Manufactured materials and equipment are used and maintained consistent with the manufacturer's recommendations, so as to prevent exposure to hazards; and while in operation,
• A competent person examines any damaged materials and equipment. You must remove unsafe materials and equipment from service until a registered professional engineer evaluates and approves them for use.

Additional Hazards and Protections

Other excavation hazards requiring protection

In addition to cave-ins and related hazards, workers involved in excavation work also are exposed to hazards involving falls, falling loads, and mobile equipment. To protect yourself from these hazards, OSHA requires you to take the following precautions:
• Keep materials or equipment that might fall or roll into an excavation at least 2 feet (.61 meters) from the edge of excavations, or use retaining devices, or both.
• Establish adequate barrier protection and warning systems such as mobile equipment, barricades, hand or mechanical signals, or stop logs to alert operators and other traffic to the edge of remotely located excavations. If possible, keep the grade away from the excavation.
• Scale to remove loose rock or soil, or install protective barricades and other equivalent protection to protect against falling rock, soil, or materials.
• Do not work on faces of sloped or benched excavations at levels above other employees unless employees at the lower levels have adequate protection from the hazard of falling, rolling, or sliding material or equipment.
• Do not stand or work under loads being handled by lifting or digging equipment. Stand away from vehicles being loaded or unloaded to protect from being struck by any spillage or falling materials. Operators may remain inside cabs of vehicles if they provide adequate protection from falling loads during loading and unloading operations.

Effect of water accumulation on excavation safety

Among the additional hazards stemming from water in an excavation are undermining the sides and making it more difficult to get out of the excavation. The OSHA standard prohibits employees from working without adequate protection in excavations where water has accumulated or is accumulating. If you use water removal equipment to control or prevent water accumulation, you must ensure that a competent person monitors the equipment and its operation to ensure proper use. OSHA standards

also require the use of diversion ditches, dikes, or other suitable means to prevent surface water from entering an excavation and to provide adequate drainage of the adjacent area. In addition, a competent person must inspect excavations subject to runoffs from heavy rains.

Protection against hazardous atmospheres inside excavations

A competent person must test any excavation deeper than 4 feet (1.22 meters) or where an oxygen deficiency or a hazardous atmosphere is present or could reasonably be expected, such as a landfill or where hazardous substances are stored nearby, before an employee enters it. If there are any hazardous conditions, the employee must use appropriate controls such as proper respiratory protection or ventilation. In addition, regular testing of all controls used to reduce atmospheric contaminants to acceptable levels is required. If unhealthful atmospheric conditions exist or develop in an excavation, emergency rescue equipment such as a breathing apparatus, safety harness and line, and basket stretcher must be readily available. This equipment must be attended when in use.

Required means of access and egress

OSHA requires a means of safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper. These devices must be located in the excavation within 25 feet (7.62 meters) of all workers. Any structural ramps you use in your operation must be designed by a competent person if they are used for employee access or egress, or by a competent person qualified in structural design if they are used for vehicles. Also, structural members used for ramps or runways must be uniform in thickness and joined in a manner to prevent tripping or displacement.

Required protective equipment used in pier holes and confined footing excavations

An employee who enters a bell-bottom pier hole or similar deep and confined footing excavation must wear a harness with a lifeline. The lifeline must be attached securely to the harness and must be separate from any line used to handle materials. Also, while the employee wearing the lifeline is in the excavation, an observer must be on hand to ensure that the lifeline is working properly and maintain communication with the employee.

Conducting a site inspection

The standard requires that a competent person complete an excavation inspection log for areas around it daily for possible cave-ins, failures of protective systems and equipment, hazardous atmospheres, or other hazardous conditions. Inspections also are required after natural events such as heavy rains or manmade events such as blasting that may increase the potential for hazards. If the inspector finds any unsafe conditions during an inspection, you must clear employees from the hazardous area until you take safety precautions. The standard also requires that a competent person inspect excavations and the adjacent areas daily for possible cave-ins, failures of protective systems and equipment, hazardous atmospheres, and other hazardous conditions. If the competent person finds these conditions, all exposed employees must leave the hazardous area until necessary safety precautions are taken. Larger and more complex operations should have a full-time safety official who makes recommendations to improve implementation of the safety plan. In a smaller operation, the safety

official may be part-time and usually will be a supervisor. Supervisors are the contractor's representatives on the job. Supervisors should conduct inspections, investigate accidents, and anticipate hazards. They should ensure that employees receive on-the-job safety and health training. They also should review and strengthen overall safety and health precautions to guard against potential hazards, get the necessary worker cooperation in safety matters, and make frequent reports to the contractor. The below inspection form must be completed daily.

DAILY TRENCHING/EXCAVATION INSPECTION

COMPANY NAME: Evo Corporation

This inspection form must be completed every day before the start of every shift and after any rain event.

Reason for Inspection: Beginning of AM Shift: _____ Beginning of PM Sh

If other, please give details: _____

WEATHER: _____ PROJECT: _____

1 Have all Utility Lines been located: YES: _____ NO: _____
NO WORK IS TO BE PERFORMED UNTIL ALL UTILITY LINES HAVE BEEN LOCATED

2 Measurements of Trench/Excavation: Depth: _____ Length: _____ Width: _____

3 Is Trench/Excavation equal or greater than 5 FT in depth? YES: _____ NO: _____ If YES, **PROTECTIVE SYSTEM MUST BE N PLACE.** IF NO, **COMPETENT PERSON MUST EXAMINE THE GROUND AND DETERMINE THERE IS NO INDICATION OF A POTENTIAL CAVE IN.**

4 If Trench/Excavation is equal or greater than 20 FT in depth, **REGISTERED PROFESSIONAL ENGINEER MUST APPROVE THE PROTECTIVE SYSTEM TO BE UTILIZED.**

5 What Protective System is being utilized? Trench Shield (Box): _____ Wood Shoring: _____ Sloping: _____ Other: _____

6 If provided, Do SHIELDS extend at least 18 inches above the trench? YES: _____ NO: _____
If NO, **PROPER TRENCH SHIELD MUST BE OBTAINED BEFORE PROCEEDING.**

7 Is there a Ladder within 25 Feet of all workers in the Trench/Excavation? YES: _____ NO: _____
If NO, Work must be discontinued. **A LADDER OR RAMP MUST BE PRESENT WITHIN 25 FEET OF ALL WORKERS FOR TRENCH 4 FEET AND GREATER IN DEPTH.**

8 Purpose of Trenching? Drainage: _____ Water: _____ Sewer: _____ Gas: _____ Other: _____

9 Have Soil Classification Test been made? YES: _____ NO: _____
If YES, What type of test? _____ Type of Soil: Stable Rock: _____ Type A: _____ Type B: _____ Type C: _____

10 Are there any SURFACE ENCUMBRANCES/ HAZARDS? YES: _____ NO: _____
If YES, What Type? _____
SURFACE HAZARDS MUST BE ELIMINATED BEFORE PROCEEDING

11 Is there a Trenching/Excavation Competent Person on site at all times? YES: _____ NO: _____
If NO, Work Must be Discontinued. **A PROPERLY TRAINED COMPETENT PERSON MUST BE ASSIGNED TO THE JOB.**

12 Is there Water Accumulation in Trench/Excavation? YES: _____ NO: _____
If YES, What means of Ground Water Removal are being used:? Well Point: _____ Open Pump: _____ Other: _____
IF WATER IS PRESENT, TRENCH/EXCAVATION MUST BE CONSIDERED UNSTABLE AND PROTECTIVE SYSTEM MUST BE IN PLACE IF DEEPER THAN 4 FEET INDEPENDENTLY OF SOIL TYPE.

13 Does Hazardous Atmosphere exist? YES: _____ NO: _____
If YES, **CONFINED SPACE ENTRY PROCEDURES POLICY MUST BE IN PLACE** (Confined Space Entry Permit, Monitoring for Toxic Gases, Oxygen Concentration, and Combustible Gases Concentration)

14 Is there Exposure to Vehicular Traffic? YES: _____ NO: _____ If YES, **PROPER M.O.T CONTROL MUST BE IN PLACE.**

15 Is Trench/excavation exposed to Exhaust Emission? YES: _____ NO: _____
If YES, **CONFINED SPACE ENTRY PROCEDURES POLICY MUST BE IN PLACE** (Confined Space Entry Permit, Monitoring for Toxic Gases, Oxygen Concentration, and Combustible Gases Concentration)

16 Is Excavated Material stored 2 feet or more from the edge of excavation? YES: _____ NO: _____
If NO, **WORK MUST BE DISCONTINUED UNTIL ALL EXCAVATED MATERIAL IS MOVED AT LEAST 2 FT AWAY FROM EDGE OF EXCAVATION.**

17 Are all employees wearing the required Personal Protective Equipment? YES: _____ NO: _____
(Examples such as: Hard Hats, Safety Vests, Safety Glasses, Gloves, Work Boots, Long Pants, Respirators, etc..)

18 Is all Equipment operating around the excavation equipped with back up alarms? YES: _____ NO: _____

19 Are other utilities such as Water, Sewer, Gas, or other structures Protected? YES: _____ NO: _____

20 Are Sewer or Natural Gas lines exposed? YES: _____ NO: _____
If YES, **CONFINED SPACE ENTRY PROCEDURES POLICY MUST BE IN PLACE** (Confined Space Entry Permit, Monitoring for Toxic Gases, Oxygen Concentration, and Combustible Gases Concentration)

21 Are required surfaces crossing the trench/excavation the proper width and equipped with Guard Rails? YES: _____ NO: _____

22 Have all employees working in or around trench/excavation received training in trenching/excavation safety? YES: _____ NO: _____

23 Have all slings, fastenings, and all attachments been inspected for damages or defects by a competent person? YES: _____ NO: _____
DAMAGED OR DEFECTIVE SLINGS MUST BE IMMEDIATELY REMOVED FROM SERVICE.

24 Is there documentation of Daily Trenching Inspections on site? YES: _____ NO: _____

Inspection Conducted By: _____

Signature of Competent Person: _____

Date: _____

Chapter 10 – Noise

Introduction

This chapter contains information on the effects, evaluation, and control of noise. For assistance in evaluating a noise problem, contact the Responsible Safety Officer who administers this program.

Danger of Noise

Exposing the ear to high levels of noise may cause hearing loss. This loss can be temporary or permanent. Temporary hearing loss or auditory fatigue occurs after a few minutes exposure to an intense noise but is recoverable following a period of time away from the noise. If the noise exposure is repeated, there may be only a partial hearing recovery and the loss becomes permanent. Typically, significant hearing losses occur first in the frequency range of 3,000 to 6,000 hertz (Hz) .Losses in this frequency range are not critical to speech perception, and the individual usually is completely unaware of this initial symptom. With longer exposures, the hearing loss spreads to lower frequencies, which will affect speech perception. Workers' Compensation laws regard hearing losses in the speech frequency range of 500 to 3,000 Hz as being compensable. The evaluation of hearing loss due to noise is complicated by the fact that hearing acuity normally decreases with increasing age. Further, the losses associated with age are quite similar to those caused by excessive noise since the hearing for high frequency sounds is most affected in both instances. Hearing impairment may also result from infections, tumors, and degenerative diseases.

ACGIH Standards

OSHA has prescribed the limits established by the American Conference of Governmental Industrial Hygienists as a standard for occupational noise exposure. Both the sound pressure level of the noise and the total duration of the noise exposure are considered to determine if these limits are exceeded. The sound pressure levels are expressed as dBA or decibels A-weighted. A-weighting filters are used when measuring sound levels to more accurately predict the response of the human ear to different frequencies. When the daily noise exposure is composed of two or more periods of noise of different levels, their combined effect must be considered rather than the individual effect of each. Exposure to continuous noise above 115 dBA is not permitted without ear protection. Personnel must not be exposed to impact noises exceeding 140 dBA. Impact noises occur at intervals of greater than one per second. One example, the noise made by a metal shear.

Reducing Noise Exposure

Noise exposure will be reduced by using engineering controls, administrative procedures, or personal protective devices, including use of ear plugs, engineering controls and other procedures/measures. Engineering Controls involve reevaluation of noise levels with standard decible testing for new equipment purchases or set up changes. Reduction of noise production at the source: Proper design of new machines. Modification of present machines. Proper repair and upkeep of equipment Use of

appropriate mufflers. Use of vibration dampeners on machines. Reduction of noise transmission: Increase distance between noise and personnel exposed. Construction of barriers between noise source and personnel. Sound treatment of ceilings and walls. Administrative Procedures: Job schedule changes. Personnel rotation. Personnel Protective Devices: Ear plugs, Earmuffs. Federal and state occupational safety and health regulations require that whenever employees are exposed to excessive noise levels, feasible engineering or administrative controls must be used to reduce these levels. When these control measures cannot be completely accomplished and/or while such controls are being initiated, personnel must be protected from the effects of excessive noise levels. Such protection can, in most cases, be provided by wearing suitable protective hearing devices. Employees will be notified by their supervisor if sound levels are above the action level. The appropriate medical services provider and/or the supervisor of the Department will supply ear plugs for employees, contractors & visitors upon request or before going into a high noise area. There is a need for medical supervision when ear plugs are used because their effectiveness depends on proper fitting. Only approved plugs should be used. Ear plugs should be cleaned daily to prevent ear infections. Protection greater than that provided by a single device can be obtained by wearing ear plugs under an earmuff. While the reduction provided by wearing both devices simultaneously is considerably less than the sum of the individual attenuations, it is still greater than when either device is worn separately.

Measurement

The measurement of hearing is called audiometry. Audiometric tests are used to determine whether or not the hearing of workers is adversely affected by noise. The appropriate licensed/certified medical services provider will give a pre-employment audiometric test to every employee who will regularly work in a high noise area. Thereafter, an audiometric test is given to all such employees at the time of their periodic physical examination. In addition, all employees whose noise exposures equal or exceed an eight-hour, time-weighted average of 85 dBA will be given training and an initial baseline audiometric test within 6 months that must be preceded by at least 14 hours without exposure to workplace noise. Thereafter, the test & training will be repeated annually. To reduce unwanted noise, the audiometric test is administered by placing each individual in a sound insulated booth. Earphones are placed on the individual's head and a microprocessor audiometer presents a series of fixed frequency pure tones between 500 and 8000 Hz in each ear. These frequencies include the most useful range of hearing, as well as those frequencies most likely to show changes as a result of exposure to damaging levels of noise. By comparing tests taken at successive intervals, it can be determined how an employee's hearing ability is affected by a noisy environment. Test results are made available to the employee and maintained on file with the employee’s health file permanently.

Other Noises

Nuisance noises are noises that are not intense enough to cause hearing loss but that do disturb or interfere with normal activities, such as: Speech communication Telephone communication Listening to TV or radio broadcasts Concentration during mental activities Relaxation Sleep The amount of interference is dependent upon the intensity of the noise and its characteristics, such as steady versus intermittent noise, high or low pitch. The amount of interference may also depend upon the person's personality, attitude toward the source, familiarity with the noise, and the intrusiveness of the noise. What is music to one ear may be noise to another!

Chapter 11 - Protective Equipment

Introduction

Evo Corporation will provide suitable equipment to protect employees from hazards in the workplace. The Responsible Safety Officer will advise on what protective equipment is required for the task, but the supervisor of the operation must obtain this equipment and see that it is used. Protective clothing is not a substitute for adequate engineering controls. All employees are required to wear and maintain all necessary Personal Protective Equipment (PPE). Training on proper use is provided at new hire orientation and refreshers. An annual program audit and Job Hazard Analysis (JHA) is performed to ensure proper PPE assignment and use prior to work starting, with feedback solicited from employees.

Protection Issued

PPE & protective clothing will be issued to employees who work with hazardous material for the purpose of protecting their health and safety. The Responsible Safety Officer is available for consultation as needed. Evo will provide safety glasses, vests, gloves, hard hat, ear plugs & uniforms.

Protective Shoes

Evo requires the wearing of safety shoes and these are the responsibility of the individual employee to obtain. For certain types of work the wearing of safety shoes is required by Company policy or by federal regulations. Examples are when employees are exposed to foot injuries from hot, corrosive, or poisonous substances; in shops, in equipment handling, or in construction jobs where there is a danger of falling objects; or in abnormally wet locations.

Protective Gloves

Evo Corporation provides proper hand protection to employees exposed to known hand hazards. The supervisor must obtain the suitable hand protection and ensure that it is used. Assistance in selecting the proper hand protection may be obtained by consulting the Responsible Safety Officer.

Head Protection

Evo Corporation provides appropriate head protection devices for employees to protect them from head or other injuries that could result from their working environment. Some head protection devices are available from stock. The supervisor must also maintain sufficient supply of head protection devices for visitors in the area.

Eye Protection

Evo Corporation provides appropriate eye protection devices for employees assigned to tasks in which an eye-injury hazard exists. The supervisor of the operation is responsible for determining the need for suitable eye-protection devices and for ensuring that the employees use them. The Responsible Safety Officer and appropriate Medical Services agency will assist the supervisor in defining eye-hazard operations and in selecting appropriate eye protection. An optometrist is available to issue, repair, adjust, and fit personal safety glasses and also for consultation regarding occupational eye protection. The standard sign: CAUTION, EYE HAZARD AREA, DO NOT ENTER WITHOUT EYE PROTECTION, must be posted in every area where eye protection is mandatory. All employees who work in such an area must wear the eye protection issued to them. Every visitor to the area must also be provided with suitable eye protection.

Respiratory Protection

Any operation that generates harmful airborne levels of dusts, silica, fumes, sprays, mists, fogs, smokes, vapors, or gases or that may involve oxygen-deficient atmospheres requires the use of effective safety controls. This must be accomplished, as much as feasible, by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials) .When effective engineering controls are not feasible, or while they are being instituted, appropriate respiratory protection must be used in accordance with Evo Corporation requirements as prescribed by OSHA in ANSI 288.2-1980, Standard Practices for Respiratory Protection and administered by the Responsible Safety Officer.

Responsibilities

To ensure that the respiratory protection program is conducted in accordance with ANSI 288.2-1980, certain responsibilities are required of each employee, supervisor, and Responsible Safety Officer. Affected employees receive new hire and refresher training in use, storage, cleaning and inspection of respirators. Employees are responsible for: Wearing the respirator in accordance with the instructions and training received. Maintaining and storing the respirator in good condition. Returning the respirator at the end of the required use for overhaul, cleaning, and disinfection. Supervisors are responsible for: Identifying those employees who may need to use respiratory protection (Responsible Safety Officer will provide assistance upon request in this determination). Ensuring that their employees have been properly trained and fitted. Ensuring that their employees use the respirators as required. The Responsible Safety Officer is responsible for: Administering and evaluating the program annually. Sourcing and providing respiratory equipment. Maintaining the equipment in good condition. Overseeing fitting employees with proper respirators and training for their use. Evaluating employee exposures and work conditions, including inspection of respirator use. The medical services provider is responsible for: Granting medical approval for each respirator user.

Respiratory Equipment

The Responsible Safety Officer has selected the types of respiratory protective equipment to be used at Evo Corporation. Any changes to protective equipment, its application, or the substitution of alternative protective equipment must be approved by the Responsible Safety Officer before its use. Each respirator has certain capabilities and limitations that are taken into account when issued. The types of respiratory protective devices are described below. Disposable dust masks are approved for protection against low (non-hazardous) levels of nuisance dusts & voluntary use. They provide no protection against vapors or gases, and they cannot be used in oxygen-deficient areas. There are no applicable training or fitting restrictions. Air-purifying, half- and full-face masks are approved for protection against low concentration of silica, toxic particulates, organic vapors, acid gases, and ammonia. Specific cartridges must be selected for protection against each material. They must never be used in atmospheres deficient in oxygen, when carbon monoxide or oxides of nitrogen are suspected, or when conditions prevent a good face seal. Such conditions may be a growth of beard, sideburns, a skullcap that projects under the face piece or temple pieces on eyeglasses. Users must be trained, fitted, & medically approved before they can be issued a respirator & annual quantitative/qualitative testing thereafter by respirator fit test & questionnaire. Supplied-air, half- and full-face masks may be used in atmospheres unsuitable for air-purifying respirators but cannot be used in areas which are immediately dangerous to life or health. Compressors are normally used to supply breathing air, but compressed air cylinders may also be used. The user must be medically approved, trained, and fitted before using this equipment. Personnel will not be fitted or issued a respirator if there is any condition that may prevent a good face seal, such as a beard, sideburns, skullcap, or temple pieces on eyeglasses. Supplied-air hoods are approved for respiratory protection in any atmosphere not immediately dangerous to life or health, & from which the wearer can escape without the aid of a respirator. The user must be medically approved & trained in its proper use. The presence of a beard, sideburns, skullcap, or eyeglasses will not affect the performance of this type of respirator.

Chapter 12 - Ladders and Scaffolds

Ladders

General Work Practices

Ladders must be in good condition, made of suitable material, of proper length, and of the correct type for the use intended. Damaged ladders must never be used; they should be repaired or destroyed. Ladders used near electrical equipment must be made of a non-conducting material. Stored ladders must be easily accessible for inspection and service, kept out of the weather and away from excessive heat, and well supported when stored horizontally. The following are the correct types of ladders for various jobs: A portable ladder must not be used in a horizontal position as a platform or runway or by more than one person at a time. A portable ladder must not be placed in front of doors that open toward the ladder or on boxes, barrels, or other unstable bases. Ladders must not be used as guys, braces, or skids. The height of a stepladder should be sufficient to reach the work station without using the top or next to the top steps. Bracing on the back legs of stepladders must not be used for climbing. The proper angle (75-1/2 degrees) for a portable straight ladder can be obtained by placing the base of the ladder a distance from the vertical wall equal to one quarter of the vertical distance from base to top of ladder's resting point. Ladders must be ascended or descended facing the ladder with both hands free to grasp the ladder. Tools must be carried in a tool belt or raised with a hand line attached to the top of the ladder. Extension ladders should be tied in place to prevent side slip.

Scaffolds

General Work Practices

All scaffolds, whether fabricated on site, purchased, or rented must conform with the specifications found in ANSI A10.8, Safety Requirements for Scaffolding for use by employees working at elevated heights. Per 29 CFR 1926, a “competent person” will be required on Evo projects and trained, along with other affected employees, to oversee use, erection, dismantling and inspection of all scaffolding, including an annual refresher. Rolling scaffolds must maintain a 3:1 height to base ratio (use smaller dimension of base). The platform footing & construction for a scaffold must be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks must not be used to support scaffolds or planks. No scaffold may be erected, moved, dismantled, or altered unless supervised by competent persons and with proper fall protection. Scaffolds must be tagged for use or removal following inspection by a competent person. Scaffolds and their components must be capable of supporting at least four times the maximum intended load without failure. Guard rails and toe boards must be installed on all open sides and ends of scaffolds and platforms more than 10 ft above the ground or floor. Scaffolds 4 feet to 10 feet in height having a minimum horizontal dimension in either direction of less than 45 inches must have standard installed on all open sides and ends of the platform. Wire, synthetic, or fiber rope used for suspended scaffolds must be capable of supporting at least 6 times the rated load. No riveting, welding, burning, or open flame work may be performed on any staging suspended by means of fiber or synthetic rope. Treated fiber or approved synthetic ropes must be used for or near any work involving the use of corrosive substances. All scaffolds, bosun's chairs, and other work access platforms must conform with the requirements set forth in the Federal Occupational Safety and Health Regulations for Construction, 29 CFR 1926.451, except where the specifications in ANSI A10.8 are more rigorous.

Floors

Workroom floors must be in a clean and, as much as possible, dry condition. Drainage mats, platforms, or false floors should be used where wet processes are performed. Floors must be free from protruding nails, splinters, holes, and loose boards or tiles. Permanent aisles or passageways must be marked. Floor holes must be protected by covers that leave no openings more than one inch wide. Floor openings into which persons can accidentally walk must be guarded by standard railings and toe boards. Open-sided floors, platforms, and runways higher than four feet must be guarded by standard railings. Toe boards must be used wherever people can pass below or hazardous equipment or materials are below.

Fall Arrester Systems Required

When workers are required to work from surfaces that are in excess of 6 ft above an adjacent safe work place (4 ft general industry), or at any height on surface mine/quarry property regulated by MSHA and are unprotected by railings, the following procedures and guidelines must be applied: Before selecting personnel for work at elevated work stations, supervisors must consider the workers' physical condition, such as medical problems, fear of heights, and coordination. The medical services provider should be contacted for information in this regard. Approved fall-arrester systems are required for all work at heights of 6 or more feet or at any height on surface mine/quarry property. Recommended fall protection will include guardrails, nets, including for dropped/falling objects, or personal fall-arrester system consisting of a full body-harness, a lanyard consisting of l/2inch nylon rope or equivalent with a breaking strength of 5400 lb and a maximum length to provide for a fall no greater than 6 feet, Sala-type fall-arrester block (optional), and an anchored hook-up location. Alternate equipment must be approved by the Responsible Safety Officer. Fall-arrester systems are recommended for light work at heights between 6 and 10 feet. Fall-arrester systems are not required when work is being done while standing on a ladder. Ladders should be tied off. For rescue, use of a controlled descent device is not necessary unless it is impossible to reach a stranded person by another means, including self retractrable lanyard. The Responsible Safety Officer will advise, on request, regarding usage and procedures. It is the responsibility of the supervisor to plan the intended work sufficiently to ensure that job planning and proper precautions have been taken. The Responsible Safety Officer is available for consultation.

Inspections, training & safety

Inspection of all equipment and materials used for fall protection and documented employee training is required before use, including identifying fall hazards, ladder use with proper construction, use & maximum load limits. Annual preventive maintenance inspections by the trained and designated maintenance supervisor will verify performance criteria of equipment based on application(s). Initial, refresher and additional awareness level retraining with use of existing or new ladders, scaffolds and fall protection equipment may also be required. Site specific fall protection plans will be included in the Site Specific HASP when required.

Chapter 13 - Safety Training

New Hire & Refresher Safety Training in General

Evo Corporation policy and federal law require that Evo Corporation staff, participating guests, and visitors receive appropriate health and safety training. Managers are responsible for ensuring that employees and guests under their supervision receive this training so they are fully informed about possible occupational health hazards and know how to work safely. Training must include Evo Safety Orientation for new employees (*see Appendix F, pg. 209*) plus any additional training specific to the nature of hazards on the job; employees must complete this training prior to conducting work. All new employees must attend new hire safety orientation within the first month of employment in which presentation and giving & receiving feedback is conducted with video and in person training, testing and certification. OSHA and other federal regulations spell out several specific health and safety training requirements for special hazards. These include, but are not limited to, disciplinary procedures, incident/accident reporting, substance abuse, emergency action plan, blood borne pathogens, hazard communication/identification for exposure to hazardous substances, electrical safety, respirator use, hearing conservation, lifting safety, fall protection, confined space hazards, and certification for using material in moving equipment such as industrial trucks/forklifts and overhead cranes or hydro/dry ice blasting and industrial vacuuming. Annual refresher training is conducted on these and other topics as well. Employees who do hazardous work, such as working with high-voltage power supplies, or who are members of building emergency teams are required to have CPR and First Aid certification. Managers should identify training needs for the job classifications for which they are responsible. Please refer to specific chapters in this manual for further information on training requirements. Consult with the Responsible Safety Officer about other training needs and requirements. Training not provided by the Responsible Safety Officer, such as on-the-job training, is the responsibility of line management. This includes information on procedural changes or system modifications that impact safety. The Responsible Safety Officer provides several health and safety training courses, technical assistance on training needs, and resources to help supervisors fulfill their training responsibilities. ALL health and safety training is documented. Training documents will note the participants' name, topics discussed, instructor(s), and date. The Responsible Safety Officer maintains training records. A copy of this information will be included in each employee's training file & Evo's training data base.A condensed, written HASP is avaialable to be given to each employee.

Site Specific & Tool Box Safety Training

A site specific health and safety plan review is given by trained site supervisors and covers all pertinent written company policies, including a site specific Emergency Action Plan identifying how site communications will be conducted, such as company cell phones, air horn, etc. Toolbox talks are conducted with all employees daily, weekly & monthly covering identified site specific concerns & hazards along with written policies pertaining to site activity & the site specific HASP. The training is documented on a Job Safety Briefing form, reflecting topics reviewed & those in attendance.

Management Safety Training

The President/VP, Managers and Project Supervisors will receive project & safety supervision training, including OSHA 10-Hour construction training, with refreshers within 5 year periods where applicable. Project Managers, Job Superintendents & Foreman will have Safety Trained Supervisor Construction (STSC) certification where applicable.

Chapter 14 – Tools

Company Provided Tools

Evo Corporation provides hand and powered portable tools that meet accepted safety standards. Employees must review work area in which tool is to be used and make a hazard assessment based on the environment. Tools are to be inspected prior to each use to verify that proper guards, double insulation and grounding are in tact. A damaged or malfunctioning tool must not be used; it must be turned in and tagged with a Repair Request Form for servicing by maintenance, with the Repair Completion noted prior to returning to service (*see Appendix G, pg.210*) and a tool in good condition obtained to complete the job. Employees must use the correct tool for the work to be performed; if they are unfamiliar with the operation of the tool, they must request instruction from their supervisor before starting the job. Supervisors are responsible for ensuring that their subordinates are properly trained in the operation of any tool that they are expected to operate. An employee is not permitted to use a powder-actuated tool unless instructed and licensed by the manufacturer.

Grounding

Tools that are not double-insulated must be effectively grounded and tested. Testing must be accomplished before initial issue, after repairs, and after any incident that could cause damage, such as dropping or exposure to a wet environment. Grounded tools must always be used with an effectively grounded circuit. Any extension cord used with a grounded tool must be a three-wire, grounded type. Electric-powered hand tools used on construction sites, on temporary wired circuits, or in wet environments will be used in conjunction with an approved ground fault circuit interrupter (GFCI). The responsibility for implementing and maintaining this program rests with the individual supervisors involved. Tools maintained in a tool crib and tested prior to issue are exempted from this requirement. Repairs of defective tools will only be made by qualified electrical personnel, initialling tag that the repair has been made once complete.

Chapter 15 - Traffic and Transportation

Official Vehicle Use

Evo Corporation requires operators hold a valid driver's license for the class of vehicle that he/she is authorized to operate.

Responsibility

Each Supervisor is responsible for restricting the use of Company-furnished vehicles to official Company business only. They are also responsible for limiting use of such vehicles to properly authorized personnel. Use of an official vehicle for an employee's personal convenience or benefit constitutes misuse and is prohibited. Employees who misuse Company vehicles are subject to disciplinary action and financial responsibility for any accident. All drivers of Company vehicles are responsible for reporting accident damage or deficiency to their Supervisor. Repairs, adjustments, and maintenance can only be accomplished if the driver adequately documents and reports these items. Failure to report unsafe vehicle conditions can result in an accident. Mobile phone & 2-way radio use & operating under the influence of drugs or alcohol is prohibited while driving. New hire/annual background checks/MVR's are reviewed for all commercial drivers and defensive driver/road test, fatigue management, cargo securement, vehicle pre/post trip inspection, daily hours of service (HOS) and maintenance records documentation training is provided. Records are maintained/inspected routinely to insure compliance with inspections, HOS log audits, MVR's, daily haul tickets/bills of lading and repairs/maintenance requests. Dispatch communicates with all drivers by mobile phones.

Safety Belts

Employees operating or riding in company-furnished vehicles, or personal vehicles on official company business, are required to wear safety belts at all times. The driver should instruct the passengers to fasten their safety belts before operating the vehicle.

Accidents

Any accident involving Company vehicles (included private, rented, or leased vehicles used on official Company business) must be reported to the driver's supervisor. If the driver is unable to make a report, another employee who knows the details of the accident must make the report. It is Evo Corporation' policy that employees should not admit to responsibility for vehicle accidents occurring while on official business. It is important that such admissions, when appropriate, be reserved for the company and its insurance carrier. The law requires that each driver involved in a vehicle accident must show his/her license on request by the other party. Be sure to obtain adequate information on the drivers involved as well as on the owner of the vehicles. Names, addresses, driver's license numbers, vehicle descriptions, and registration information are essential. In addition, a description of damages is needed for completion of accident reports. If the accident is investigated by off-site police agencies, request that a copy of the police report be sent to Evo Corporation, or obtain the name and department of the investigating officer. In case of collision with an unattended vehicle (or other property), the driver of the moving vehicle is required by law to notify the other party and to exchange information pertaining to the collision. If unable to locate the other party, leave a note in, or attached to, the vehicle (or other property) giving the driver's name, address, and vehicle license number. The Responsible Safety Officer will prepare any required OSHA reports.

Chapter 16 - Hazard Warning

Introduction

Every reasonable method to warn employees of hazards and dangers and to inform them of the actions required must be utilized. Signs, characteristic lights, and audible alarms as additional safeguards for built-in mechanical and physical protection must be used. To ensure uniform response by personnel, the warning signs and devices must be of the same type for similar hazards. Obtaining and installing the warning systems is the responsibility of the group needing them.

Contents and Configuration

Signs must conform to the colors, symbols, lettering size, and proportions as specified by Evo Corporation, except that radiation signs must conform to the requirements stated in 10 CFR 20. Every warning sign must include the following components: An approved heading that indicates the relative hazard A statement of the type of hazard A statement of what to do or not to do in the area.

Danger Signs

Danger signs are used only where injury or damage is certain to occur if approved operating instructions and procedures are not followed. Personnel must be warned of the serious consequences of ignoring the message. The top of this sign says DANGER in white letters on a red oval that is edged by a rectangular black border. The body of the sign is white with the message printed in black.

Caution Signs

Caution signs are used where injury or damage is possible and employees must be on their guard. The top of this sign says CAUTION in yellow letters on a black rectangle. The body of the sign is yellow with the message printed in black.

Informational Signs

Informational signs are used where instructions are needed. The heading says NOTICE in white letters on a green rectangle when the message relates to safety and on a blue rectangle for other messages. The body of the sign is white with the message printed in black.

Directional Signs

Directional signs are used to indicate exits, fire escapes, evacuation routes, stairways, location of first aid, etc. The direction symbol appears near the top in white on a green rectangle. The body of the sign must have a color contrasting with the general background.

Sign Selection

The sign portfolio maintained by the Responsible Safety Officer may be used to help in selecting suitable signs. The Responsible Safety Officer will also advise regarding the types needed and their sources of supply. Special signs are custom made or purchased outside.

Chapter 17 – Blood borne Pathogens

Introduction

The following Exposure Control Plan includes all elements required by the OSHA blood borne pathogens standard (29 CFR 1910.1030).

Exposure Control Plan

Evo Corporation is committed to providing a safe and healthful work environment for our entire staff. In pursuit of this goal, the following exposure control plan (ECP) is provided to eliminate or minimize occupational exposure to blood borne pathogens in accordance with OSHA standard 29 *CFR* 1910.1030, "Occupational Exposure to Blood borne Pathogens." The ECP is a key document to assist our organization in implementing and ensuring compliance with the standard, thereby protecting our employees.

This ECP includes:

- Determination of employee exposure
- Implementation of various methods of exposure control, including:
  - Universal precautions
  - Engineering and work practice controls
  - Personal protective equipment (PPE)
  - Housekeeping
- Hepatitis B vaccination
- Post-exposure evaluation and follow-up
- Communication of hazards to employees and training
- Recordkeeping
- Procedures for evaluating circumstances surrounding exposure incidents

Implementation methods for these elements of the standard are discussed in the subsequent pages of this ECP.

Program Administration

- The Chief Safety Officer is responsible for implementation of the ECP. The Chief Safety Officer will maintain, review, and update the ECP whenever necessary to include new or modified tasks and procedures. Contact location/phone number: Evo/ (336) 725-5844.
- Those employees who are determined to have occupational exposure to blood or other potentially infectious materials (OPIM) must comply with the procedures and work practices outlined in this ECP.
- The Chief Safety Officer and/or responsible Supervisor will provide and maintain all necessary personal protective equipment (PPE), engineering controls (e.g., sharps containers), labels and spill cleanup kits as required by the standard. The Chief Safety Officer and/or

responsible Supervisor will ensure that adequate supplies of the aforementioned equipment are available. Contact location/phone number: Evo/ (336) 725-5844.
- The Chief Safety Officer and/or responsible Supervisor will be responsible for ensuring that all medical actions required by the standard are performed and that appropriate employee health and OSHA records are maintained. Contact location/phone number: Evo/ (336) 725-5844.
- The Chief Safety Officer will be responsible for training, documentation of training, and making the written ECP available to employees, OSHA, and NIOSH representatives. Contact location/phone number: Evo/ (336) 725-5844.

Employee Exposure Determination

The following is a list of all job classifications at our establishment in which employees have occupational exposure:

Job Title Department/Location
•None

The following is a list of job classifications in which some employees at our establishment have potential exposure. Included is a list of tasks and procedures, or groups of closely related tasks and procedures, in which exposure may occur for these individuals:

Job Title Department/Location Task/Procedure
•Any employee rendering first aid or other exposures related to injuries/accidents.

NOTE: Part-time, temporary, contract and per diem employees are covered by the blood borne pathogens standard.

Methods of Implementation and Control

Universal Precautions

All employees will utilize universal precautions.

Exposure Control Plan

Employees covered by the blood borne pathogens standard receive an explanation of this ECP during New Hire and Annual Orientation, updated annually. All employees can review this plan at any time during their work shifts by obtaining the posted copy of the Health and Safety Plan located at the hallway entrance to the Warehouse at Vargrave, break room at Styers Ferry and FL shops, in project supervisor trucks, or by contacting the Chief Safety Officer. If requested, we will provide an employee with a copy of the ECP free of charge. The Chief Safety Officer is responsible for reviewing and updating the ECP as necessary to reflect any new or modified tasks and procedures that affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

Engineering Controls and Work Practices

Engineering controls and work practice controls will be used to prevent or minimize exposure to blood borne pathogens. The specific engineering controls and work practice controls used for all job

sites are listed below:
- All personal protective equipment (PPE) provided such as gloves, safety glasses, etc...
- Spill clean-up kits/bloodborne pathogen kits
- Sharps/bio-hazard containers and disposal kits

Sharps disposal containers are inspected and maintained or replaced by the Chief Safety Officer whenever necessary to prevent overfilling. This facility identifies the need for changes in engineering controls and work practices through review of OSHA records, Incident/Accident Reports, and insurance evaluations. We evaluate new procedures and new products regularly by considering safety equipment needs and suppliers, trade and industry requirements, etc…

Both front-line workers and management officials are involved in this process in the following manner: Supervisor requests and employee suggestions with the company Suggestion Box. The Chief Safety Officer is responsible for ensuring that these recommendations are implemented where appropriate.

Personal Protective Equipment (PPE)

PPE is provided to our employees at no cost to them. Training in the use of the appropriate PPE for specific tasks or procedures is provided by their supervisor. The types of PPE available to employees are as follows: hard hat, gloves, eye protection, hearing protection etc.)

PPE is located in the safety supply cabinet in the File Retention/Supply room and may be obtained from the Chief Safety Officer. This equipment is issued at the time of post offer/pre-placement New Hire Orientation training conducted by the Chief Safety Officer. All employees using PPE must observe the following precautions:

- Wash hands immediately or as soon as feasible after removing gloves or other PPE.
- Remove PPE after it becomes contaminated and before leaving the work area.
- Used PPE may be disposed of in properly labeled bio-hazard waste bags.
- 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.
- Utility gloves may be decontaminated for reuse if their integrity is not compromised; discard utility gloves if they show signs of cracking, peeling, tearing, puncturing, or deterioration.
- Never wash or decontaminate disposable gloves for reuse.
- 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.

The procedure for handling used PPE is as follows:
 disposable gloves, masks, etc... to be discarded in sharps/bio-hazard container.
 eye wear, gloves, etc…which can be reused, if not compromised, should be sanitized.

Housekeeping

Regulated waste is placed in containers which are closable, constructed to contain all contents and prevent leakage, appropriately labeled or color-coded (see the following section "Labels"), and closed prior to removal to prevent spillage or protrusion of contents during handling.

The procedure for handling sharps disposal containers is:
 Container is securely mounted, labeled, and disposed of when full by regulated means.

The procedure for handling other regulated waste is:
 Discard in mounted, labeled container that is disposed of when full by regulated means.

Contaminated sharps are discarded immediately or as soon as possible in containers that are closable, puncture-resistant, leak proof on sides and bottoms, and appropriately labeled or color coded. Sharps/bio-hazard disposal containers are available are located in the employee break room/shop. Bins and pails (e.g., wash or emesis basins) are cleaned and decontaminated as soon as feasible after visible contamination. Broken glassware that may be contaminated is only picked up using mechanical means, such as a brush and dustpan.

Laundry

The following contaminated articles will be laundered by this company:
•Uniforms

Laundering will be performed by our uniform rental contractor.
The following laundering requirements must be met:
- handle contaminated laundry as little as possible, with minimal agitation
- place wet contaminated laundry in leak-proof, labeled or color coded containers before transport. Use bio-hazard labeled bags for this purpose.
- wear appropriate PPE when handling and/or sorting contaminated laundry.

Labels

The following labeling methods are used in this facility:
Equipment to be Labeled Label Type (size, color)
•Sharps/bio-hazard container, contaminated laundry, etc. (red container, bio-hazard bag)

Supervisors are responsible for ensuring that warning labels are affixed or red bags are used as required if regulated waste or contaminated equipment is brought into the facility. Employees are to notify the Chief Safety Officer if they discover regulated waste containers, refrigerators containing blood or OPIM, contaminated equipment, etc., without proper labels.

Hepatitis B Vaccination

The Chief Safety Officer will provide training to employees on hepatitis B vaccinations, addressing safety, benefits, efficacy, methods of administration, and availability. The hepatitis B vaccination

series is covered within the employee group health plan after 90 days of employment for all employees identified in the exposure determination section of this plan. Vaccination is encouraged unless: 1) documentation exists that the employee has previously received the series; 2) antibody testing reveals that the employee is immune; or 3) medical evaluation shows that vaccination is contraindicated. However, if an employee declines the vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination at a later date at no cost. Documentation of refusal of the vaccination is kept in the employee personnel file. Vaccination may be provided by the healthcare professional of the employee's selection. Following the medical evaluation, a copy of the health care professional's written opinion should be provided to the employee. It should indicate whether the employee requires the hepatitis vaccine and whether the vaccine was administered.

Post-Exposure Evaluation and Follow-up

Should an exposure incident occur, contact the Chief Safety Officer.
An immediately available confidential medical evaluation and follow-up will be conducted by the company designated primary care provider/clinic. Following initial first aid (clean the wound, flush eyes or other mucous membrane, etc.), the following activities will be performed:

- Document the routes of exposure and how the exposure occurred.
- Identify and document the source individual (unless the employer can establish that identification is infeasible or prohibited by state or local law).
- Obtain consent and make arrangements to have the source individual tested as soon as possible to determine HIV, HCV, and HBV infectivity; document that the source individual's test results were conveyed to the employee's health care provider.
- If the source individual is already known to be HIV, HCV and/or HBV positive, new testing need not be performed.
- Assure that the exposed employee is provided with the source individual's test results and with information about applicable disclosure laws and regulations concerning the identity and infectious status of the source individual (e.g., laws protecting confidentiality).
- After obtaining consent, collect exposed employee's blood as soon as feasible after exposure incident, and test blood for HBV and HIV serological status
- if the employee does not give consent for HIV serological testing during collection of blood for baseline testing, preserve the baseline blood sample for at least 90 days; if the exposed employee elects to have the baseline sample tested during this waiting period, perform testing as soon as feasible.

Administration of Post-exposure Evaluation and Follow-up

The Chief Safety Officer ensures that health care professional(s) responsible for employee's post-exposure evaluation and follow-up are given a copy of OSHA's blood borne pathogens standard. The Chief Safety Officer ensures that the health care professional evaluating an employee after an exposure incident receives the following:

- a description of the employee's job duties relevant to the exposure incident
- route(s) of exposure
- circumstances of exposure

- if possible, results of the source individual's blood test
- relevant employee medical records, including vaccination status.

The Chief Safety Officer provides the employee with a copy of the evaluating health care professional's written opinion after completion of the evaluation.

Procedures for Evaluating the Circumstances Surrounding an Exposure Incident

The Chief Safety Officer will review the circumstances of all exposure incidents to determine:

- engineering controls in use at the time
- work practices followed
- a description of the device being used (including type and brand)
- protective equipment or clothing that was used at the time of the exposure incident (gloves, eye shields, etc.)
- location of the incident (office, warehouse, project site, etc.)
- procedure being performed when the incident occurred
- employee's training

The Chief Safety Officer will record all percutaneous injuries from contaminated sharps in a Sharps Injury Log.

If revisions to this ECP are necessary the Chief Safety Officer will ensure that appropriate changes are made. (Changes may include an evaluation of safer devices, adding employees to the exposure determination list, etc.)

Employee Training

All employees who have occupational exposure to blood borne pathogens receive initial and annual training conducted by the Chief Safety Officer. All employees who have occupational exposure to blood borne pathogens receive training on the epidemiology, symptoms, and transmission of blood borne pathogen diseases. In addition, the training program covers, at a minimum, the following elements:

- a copy and explanation of the OSHA blood borne pathogen standard
- an explanation of our ECP and how to obtain a copy
- an explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident
- an explanation of the use and limitations of engineering controls, work practices, and PPE
- an explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE
- an explanation of the basis for PPE selection
- information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, and the benefits of being vaccinated.
- information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM
- an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available
- information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident

- an explanation of the signs and labels and/or color coding required by the standard and used at this facility
- an opportunity for interactive questions and answers with the person conducting the training session. Training materials for this facility are available from the Chief Safety Officer.

Recordkeeping

Training Records

Training records are completed for each employee upon completion of training. These documents will be kept for at least three years in the personnel files.
The training records include:
- the dates of the training sessions
- the contents or a summary of the training sessions
- the names of persons conducting the training
- the names of all persons attending the training sessions

Employee training records are provided upon request to the employee or the employee's authorized representative. Such requests should be addressed to the Chief Safety Officer.

Medical Records

Medical records are maintained for each employee with occupational exposure in accordance with 29 *CFR* 1910.1020, "Access to Employee Exposure and Medical Records." The Chief Safety Officer is responsible for maintenance of the required medical records. These confidential records are kept in the File Retention/Supply room for at least the duration of employment. Employee medical records are provided upon request of the employee or to anyone having written consent of the employee. Such requests should be sent to the Chief Safety Officer.

OSHA Recordkeeping

An exposure incident is evaluated to determine if the case meets OSHA's Recordkeeping Requirements (29 CFR 1904) as well as for bloodborne pathogen exposure. This determination and the recording activities are done by the Chief Safety Officer.

Sharps Injury Log

In addition to the 1904 Recordkeeping Requirements, all percutaneous injuries from contaminated sharps are also recorded in a Sharps Injury Log.
All incidences must include at least:
- date of the injury
- type and brand of the device involved (syringe, suture needle)
- department or work area where the incident occurred
- explanation of how the incident occurred.

This log is reviewed as part of the annual program evaluation and maintained for at least five years

following the end of the calendar year covered. If a copy is requested by anyone, it must have any personal identifiers removed from the report.

Hepatitis B Vaccine Declination

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 informed about the hepatitis B vaccine. 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 should obtain the vaccination series.

Signed: (Employee Name) _____ Date: _____

Chapter 18 – Lockout/Tagout

Introduction

This procedure covers the necessary safety precautions and procedures for servicing and maintenance of machines and equipment in which the unexpected energization or start up, or release of stored energy could cause injury to employees. This procedure outlines the minimum requirements for lockout and/or tagout of energy isolating devices to protect employees from hazardous energy including electrical, mechanical hydraulic, pneumatic, or other energy. It will be used as a facility wide general procedure for isolating all potentially hazardous energy (lockout/tagout) before employees perform any servicing and maintenance activities where unexpected energizations, start up or release of stored energy could cause injury. This procedure, when used in conjunction with the specific information recorded on the attached pages of this procedure, provides the necessary information for lockout/tagout. An annual review of this procedure and its application will be conducted by the Responsible Safety Officer. Employee new hire, refresher and retraining as well as authorized and affected employees' training, including for new jobs/equipment/process,is documented on the safety orientation checklist maintained in each employee's file (*see Appendix F, pg. 209*).

Procedure

Specific written lockout/tagout procedures for each piece of equipment will include:
-Only trained, authorized employees can lockout/tagout.
-All affected and other employees working in or entering work areas where lockout/tagout is performed must be trained.
-Determine all energy isolating devices requiring lockout/tagout to ensure effective control of hazardous energy.
-Determine the type and magnitude of the energy and required controls.
-Notify all affected employees of the plans to lockout/tagout.
-Shutdown the equipment/process by normal procedures.
-Locate the necessary energy isolating device(s) to equipment/process and operate them to isolate energy sources and affix lockout/tagout devices.
-Relieve all stored or residual energy and take appropriate measures to ensure it does not reaccumulate. Affix lockout/tagout device as necessary.
-Verify energy isolation and relief of stored energy after ensuring employees are not exposed and before beginning work. After start buttons are activated, press the stop button.
-Perform the servicing and maintenance.
-To safely restore machines, equipment or process to normal production operations, replace all guards and safety devices, remove all personnel, and remove all tools and equipment.
-Notify affected employees.
-Remove lockout/tagout devices (by authorized employee installing lockout/tagout devices).

Lockout/Tagout Device Removal by Employer

When it becomes necessary to remove the lockout/tagout devices of an employee who is unavailable at the facility, it can be done only by the employer.

Group Lockout/Tagout

When a lockout/tagout job involves numerous lockout/tagout devices and many employees, a group lockout/tagout procedure may be used. A separate, special written procedure or permit is required.

Contractors

All contractors must comply with the lockout/tagout procedures specified by the site employer and employees of the employer must not violate the contactors lockout/tagout.

Chapter 19 - Emergency Action Plan

A location and job specific Emergency Action Plan is provided for all employees to review and with the below equipment and procedures outlined (*see Appendix E*). New hire orientation, refresher and pre-job training for employees and supervisors, including a checklist, are conducted along with an annual review and semi-annual mock drills to be conducted. Plan is communicated orally when there are 10 employees or less. In the event of emergency, employees are alerted by:

• public address system announcement.

• verbal announcement.

• An announcement and statement will be made that due to an emergency an evacuation is required and to proceed to the nearest exit.

• Local area fire & medical emergency responders and police are to be contacted by calling 911.

• In the event of fire or other emergency, ALL employees shall evacuate immediately.

• In the event of an emergency, employees shall evacuate: Back hallway offices, file retention and break room/shop area should exit down warehouse stairwell through front warehouse door. Conference room and reception area should exit through main office building door. Offices and kitchen located on street side of the building should exit through the center office or kitchen doors. Warehouse should exit through front, side or bay doors depending on proximity at the time of an evacuation. Styers Ferry office and Terminal and Jacksonville, FL offices should exit through front or rear entrances nearest at the time of the alert.

• Portable fire extinguishers are provided in the workplace for employee use. In the event of fire, any employee may use extinguishers to attempt to extinguish the fire before evacuating.

• Critical operations shutdown procedures are not required, because no employees are authorized to delay evacuation for this purpose.

• No employees are assigned to perform medical or rescue duties during emergency evacuation situations. First responders trained in CPR & First Aid are to be contacted by calling 911.

• After an emergency evacuation, employees are to gather in the following location(s): To one side of the Main Gate or Warehouse Gate entrances to property at Vargrave, main gate only at Styers Ferry and front parking in Jacksonville, FL.

• After an emergency evacuation, the procedure for accounting for all employees is: Management/Supervisors should account for all employees reporting to them and notify one of the contacts listed below or other designated representative.

• For further assistance with emergency evacuation procedures & duties the following individuals may be contacted: Darren Poole, Vice President & Chief Safety Officer/HR-Safety
Tom Hammett, Chief Executive Officer/Administration
Tony Disher, President/Operations

Chapter 20 – Hydroblasting Safety

The purpose of this chapter is to familiarize you with all facets of hydroblasting. We will cover many individual topics that when combined equal our entire hydroblasting program. Since hydroblasting is inherently dangerous, safety is an important part of our service line no matter what we do.

Introduction

What is hydroblasting? Hydroblasting is sometimes referred to as water blasting or jetting and is the use of high pressure/high velocity water to remove unwanted deposits from industrial manufacturing equipment. Many of these deposits are as hard as rock. The mechanics of hydroblasting is like using a hose to remove unwanted material, however at much higher pressures, 2,000 psi to 40,000 psi instead.

Hydroblasting is an extremely dangerous business if you do not follow the correct safety procedures. One thing to remember about a hydroblast pump is that no matter what, it has the potential to over pressure and cause serious damage and/or injury. These pumps are referred to as positive displacement pumps which means that if flow is stopped for any reason while the pump is engaged the pump will continue to build pressure until something breaks. Remember this pressure can be anywhere from 10,000 psi to 60,000 psi. That is a lot of energy to release in a split second. Second is the cutting action of high-pressure water. We use high pressure water to cut through material hard as rock and even to cut steel. Think about it, if high pressure water can cut through rock, what it could do to you. Every year there are debilitating injuries and fatalities caused by hydroblasting. Over the last 20 years hydroblasting has become much safer due to the use of proactive safety devices and proper training. Techniques that were used 20 years ago are now completely banned due to their danger and non-use of proactive safety devices. It is when we go back to old methods, bypass safety devices and become complacent that often someone gets hurt or equipment can be damaged. The goal is not to scare you but to make you aware of how important safety is in hydroblasting. Just remember this, these safety standards where not written by OSHA, MSHA, WJTA, or any other organization, they were literally written in blood from the dangerous actions of many individuals. Following sections of this introduction to hydroblasting will cover specific topics designed to give you a better understanding of policies and procedures for safely performing hydroblast work.

Training & Pre-Job Safety Meetings/Hrydroblast Permits

Training is required prior to performing hydro-blasting work, including demonstration of cutting action from water & penetration injuries from contaminated water. The Pre-Job Safety Meeting & Hydroblast Permit is completed to identify specific hazards in the work area, to remind us of the inherent dangers involved with hydroblasting, and to communicate these dangers to the crew members, customer personnel and others working in the area who could be affected by our work. Safety meetings shall be conducted at the beginning of each shift prior to starting any work, anytime the scope of the job changes, if a plant emergency arises which causes a lengthy period of inactivity, or if the project supervisor believes it is necessary. Crew participation is required with customers & other effected personnel encouraged to attend these meetings. The following form shall be used to document all hydroblasting permits and safety meetings and remain with all job-related paperwork.

This is an example of the first page of our Pre-Job Safety Meeting & Hydroblast Permit.

SOIL SOLUTIONS, INC. — HYDROBLASTING

PRE - JOB TAILGATE SAFETY MEETING

CUSTOMER/PLANT UNIT	JOB REFERENCE NUMBER	DATE

EQUIPMENT TO BE SERVICED	SERVICE APPLICATION

JOB SETUP/PROCEDURE FORM COMPLETED BY:

ITEM	SAFETY ITEMS TO BE REVIEWED	YES	NO	N/A
1	HAS A PERMIT BEEN OBTAINED AND REVIEWED WITH THE CREW ?			
2	IS A VESSEL ENTRY REQUIRED?			
3	IF A VESSEL ENTRY IS REQUIRED, CHECK AND NOTE THE FOLLOWING			
	OXYGEN %_____, (LEL) LOWER EXPLOSIVE LIMIT_____, (UEL) UPPER EXPLOSIVE LIMIT_____			
	PPM OF CHEMICALS TOXICITY_____			
	MONITORING OF ATMOSPHERE CONDUCTED BY WHOM?_____			
4	ARE THE FOLLOWING SAFETY ITEMS AVAILABLE? ☐ EYE WASH STATION ☐ SAFETY SHOWER ☐ FIRE EXTINGUISHERS ☐ EMERGENCY NOTIFICATION SYSTEM ☐ FIRST AID STATION			
5	HAVE THE FOLLOWING FACILITIES BEEN IDENTIFIED FOR THE CREW? ☐ PERSONAL PROTECTIVE EQUIPMENT DECONTAMINATION AREA/FACILITY ☐ HAND WASHING ☐ BREAK/EATING/AREA ☐ SMOKING AREA			
6	HAVE YOU REVIEWED THE CUSTOMER AND UNIT SPECIFIC EMERGENCY PROCEDURES WITH THE CREW? PLANT EMERGENCY NUMBER_____, EVACUATION CHECK POINT_____			
7	HAVE YOU REVIEWED THE REQUIRED PERSONAL PROTECTIVE EQUIPMENT WITH THE CREW ? ☐ SAFETY GLASSES ☐ MONOGOGGLES ☐ FACE SHIELD ☐ STEEL TOED RUBBER BOOTS ☐ CHEMICAL RESISTANT GLOVES ☐ HARD HAT ☐ HEARING PROTECTION ☐ RESPIRATORS ☐ CHEMICAL SUIT AND/OR HOOD ☐ FULL BODY HARNESS ☐ OTHER_____			
8	HAVE YOU MET THE HAZCOM POLICY BY DISCUSSING THE KNOWN CHEMICALS/TOXIC GASES THAT			
	OUR CREW MAY COME IN CONTACT WITH? WAS A MSDS USED?			
	IF SO LIST THE CHEMICALS/TOXIC GASES THAT MIGHT BE POTENTIAL EXPOSURE:_____			
9	HAVE THE FOLLOWING ITEMS BEEN REVIEWED WITH THE CREW?			
	1. JOB PROCEDURES			
	2. INDIVIDUAL JOB ASSIGNMENTS			
	3. REVIEW HAZARDS OF HYDROBLASTING SUCH AS: CUTTING ACTION, UNBALANCED THRUST, FOOTING, ACT.?			
10	HAVE THE FOLLOWING SAFETY STANDARDS BEEN REVIEWED WITH THE CREW and CUSTOMER?			
	1. TO PROTECT OTHERS WORKING IN THE AREA BARRICADES SHALL BE ERECTED AT IN AT LEAST A 15 FOOT			
	RADIUS OF ALL SSI EQUIPMENT AND CUSTOMER UNITS WHERE HYDROBLASTING IS IN PROGRESS.			
	2. THE CREW LEADER SHALL USE A MSDS TO DETERMINE PROPOER PPE			
	3. ALL SET UPS SHALL INCLUDE A DUMP VALVE (EXCEPTION AUTOMATED TANK CLEANING TOOLS)			
	4. ALL HAND OR FOOT VALVES SHALL HAVE GUARDS IN PLACE AND THE WORKER CLOSEST TO THE NOZZLE			
	SHALL HAVE CONTROL OF THE DUMP VALVE			
11	HAVE YOU DETERMINED THE PROPER SAFE GUARDS TO USE FOR THIS JOB?			
	☐ LANCE INDEXER ☐ LANCE PROTECTOR ☐ LINE MOLE ANTI WITHDRAWL DEVICE ☐ OTHER_____			
	HAS THE APPICATION BEEN REVIEWED WITH THE CREW?			
	ALWAYS DISENGAGE THE PUMP BEFORE REMOVING ANY ANTI-WITHDRAWL DEVICE OR WHEN WORKING WITH			
	HOSES OR NOZZLES!			
10	DO ALL HIGH-PRESSURE HOSES AND SAFETY DEVICES MEET THE REQUIRED QUARTERLY TESTING POICY WITH THE CORRECT COLOR CODE?			
	ARE ALL SAFETY DEVICES IN PLACE AND WORKING CORRECTLY?			
	IS ALL EQUIPMENT FUNTIONING PROPERLY AND ARE ALL FITTINGS OF THE CORRECT PRESSURE RATING?			

Since manual hydroblasting requires the use of heavy PPE, heat stress illness shall be addressed during all pre-job safety meetings with established work/rest periods stated on the safety sheet. Use the 30/10/10 rule, 30 minutes work/10 minutes rest/10 ounces of water. Safety meetings/permits are critical to safety & performed on every job, shift or any time deemed necessary to prevent accidents.

Different Methods of Hydroblasting & Equipment

There are many different pieces of auxiliary equipment used to complete many different types of hydroblasting work. In the following discussion we will identify the different tools used to perform different types of hydroblasting work and the inherent dangers of each and the safety devices used to minimize or eliminate these dangers. A hydro-blasting team will consist of a minimum of a pump operator and a nozzle operator. All hydroblast systems shall be inspected prior to use & flushed with water prior to installing nozzles. This is done to flush any small debris form the system that may plug nozzles causing an off-balance situation. Blast cleaning nozzles shall be equipped with an operating valve which must be held open manually and objects to be cleaned shall never be held manually. All hydro-blasting must be completed from a stable work surface and ladders, step stools, benches, etc., shall not be used when operating hydro-blasting equipment. Hydro-blasting systems shall not be operated above the lowest working pressure of any of its components. Systems will be depressurized & shutdown when not in use, breach of exclusion zone, repairs needed or violation of safety practices.

Hand Gunning (often referred to as shot gunning)

Hand gunning is work performed for surface cleaning. The handgun is a device that is handheld and operated. Usually at pressures around 5000 psi but can be as high as 40,000 psi. All hand gunning operations performed by Evo require a double dump gun be used, not less than 2 feet in length. Only straight-ahead nozzle shall be installed on a handgun. Never install a 90-degree nozzle on a handgun. It will cause the operator to have little or no control of the handgun. The double dump guns came into existence because of failures in a single dump guns which left operators in extreme danger. The worst hazard associated with hand gunning is back thrust. Back thrust of the gun causes the gun to be extremely hard to control. Because of this hazard, proper footing and body positioning are critical. Two things contribute to back thrust, one is pressure and the other is volume. A great example of this is a 2 ½" fire hose compared to a ¾" garden hose. Both have 150 psi pressure on them. Which one is harder to hold onto? Of course, the fire hose is. The higher the volume of water is pumped, the harder it is to hold onto. Usually in a 10k operation hand gunning will be performed around 5K, anything much over this, because of the volume being pumped would be too difficult to control. If the pressure needs to be increased to perform the work, then the rate will have to be decreased to maintain a safe work environment. You will learn that the higher-pressure jobs are at a much lower rate. For example, most 40k handgun jobs are at 3 to 6 gpm, where as a 10k handgun job can be as high as 20 gpm, 3 to 6 times more flow causing that much more rear thrust.

Rigid Lancing (also known as stiff lancing)

This is the safest and most efficient way to clean heat exchangers and straight runs of pipe. The rigid lance uses a tip with straight ahead and 90-degree nozzles. This poses some hazards for rigid lancing. First is rear thrust. Like a handgun which uses a straight-ahead nozzle a rigid lance has back pressure. Since a rigid lance is rigid or stiff the operator has something to hold onto when the lance is pushing backwards giving the operator a great deal of control. A flex lance does not have this option and will continue to come back at you until the pressure is released. Second is the amount of physical work involved in walking rigid lances. This can be very critical when the ambient temperature is high, and operators are suited up in PPE. Heat stress illness comes into play and shall be addressed in the Pre-Job Safety meeting with established work/rest periods stated on the Pre-Job Safety/Hyrdroblast Permit. Even though flex lancing is less strenuous, precautions for heat stress shall still be taken.

Flex Lancing

Flex lances are used to clean heat exchanger tubes where space limitations prohibit the use of stiff lances, and small-bore piping usually three inch in diameter or less. This method for cleaning heat exchanger tubes is less efficient than using a stiff lance. Flex lancing has several inherent dangers. First the proper type of nozzle needs to be in place on the flex lance. For any flex lance job, the nozzle must have more rear facing nozzles than forward facing nozzles. This is done to create forward thrust instead of rearward thrust. If a flex lance is pushing backwards it becomes uncontrollable which may result in a serious injury or death. Secondly if the flex lance comes out of the equipment being cleaned while under pressure and the operator does not have complete control the flex lance tends to have a mind of its own and will go anywhere and through anything it wants to. Therefore, we use anti withdrawal devices to avoid this situation. Remember that if this happens the lance is traveling at such a high speed that injuries can occur before the operator has time to release the foot dump. Thirdly all flex lances being used for tube cleaning or cleaning straight runs of pipe shall have a minimum 24-inch stinger or a stinger with a minimum length of one time the diameter of the pipe for line moling pipe with a flex lance. This will give the operator something rigid to hold onto when starting a tube or pipe. Remember on any line mole job an anti-withdrawal device shall be in place and end identification markings will be reflected on lance and moling devices.

Line Moling

Line moling is defined as using ½ inch to 1-inch-high pressure hose to clean piping of 3 inch or larger diameter. There are automated tools such as hose real machines to use for long runs of pipe. Line moling is one of the most dangerous forms of hydroblasting and safety practices shall be followed. No deviation will ever be granted for line moling without a stinger or without an anti withdrawal device. There are many inherent dangers to line moling. To begin with a line mole can turn in a pipe and come back at you without any warning. To prevent this, a line mole must have a stinger on it with a minimum length equal to the diameter of the pipe. If there is a tee in the line, then the minimum length of the stinger must be 3 times the diameter of the pipe. This measure will prevent the line mole from reversing in the pipe. Second is the practice of pulling the line mole back under pressure. This is a common practice done to remove debris from the pipe. To safely do this an anti-withdrawal device shall be in place to prevent pulling the line mole out of the pipe. A line mole shall never be used to clean the first several feet of a pipe. This is to be done with a handgun eliminating the danger of pulling a line mole all the way back to the opening of the pipe. The line mole shall be marked 36 inches back from the nozzle to indicate to the operator that the line mole has been pulled back and to release the pressure. Never attempt to line mole any pipe without an anti-withdrawal device in place. Third line moles are the same as flex lances and require a tip with more rear facing nozzles than forward facing nozzles to create a pulling action. Fourth line moling large bore pipe requires a great deal of physical exertion on the body. Care shall always be taken to minimize physical exertion. Fifth is if a line is too long, over 50 feet in length, a hose real machine must be used. After about 50 feet it is nearly impossible for an operator to pull a line mole back due to the weight of the hose. These rules also apply to line moling small bore pipe with a flex lance.

Tee Bar and other Large Rigid lances

A tee bar is a long piece of pipe with a tee fixed to on end with opposing nozzles of the exact same size for balance. Tee bars are used for interior cleaning of small tanks and vessels where a 3D tool would not be practical. Since the jets are opposed at 90 degrees to the operator there is minimal back thrust. Any work requiring a tee bar shall have a foot dump installed and the operator working the tee bar shall have control of the foot dump. There are several inherent dangers associated with the use of tee bars. First is if a system is not flushed prior to install nozzles, debris could plug one nozzle causing a severe whipping action in the tee bar. This could cause the operator to lose control or injure the operator. Second a tee bar shall never be pulled close to the operator while under pressure. This could cause serious injury to the operator. When using a large bore rigid lance for jobs such as an online clinker shoot. There are several inherent dangers to be aware of. First since the furnace is online water must be always running through the lance. When inserting the lance into the furnace use the lowest amount of flow possible without causing heat damage to the lance. Second, since a lance of this type uses a single straight-ahead nozzle, the problem of back pressure exists. Once the lance is in place, the lance shall be anchored to a large stationary object to prevent back thrust. At this point the lance can be brought up to the desired pressure. Third is a foot dump shall be installed in this hook up. One operator shall always remain on the foot dump. When the job is complete the pressure shall be dropped to the minimal amount and the lance removed from the furnace while still under pressure. A great deal of care shall be taken when removing the lance due to the high temperature of the furnace.

Automated Tools

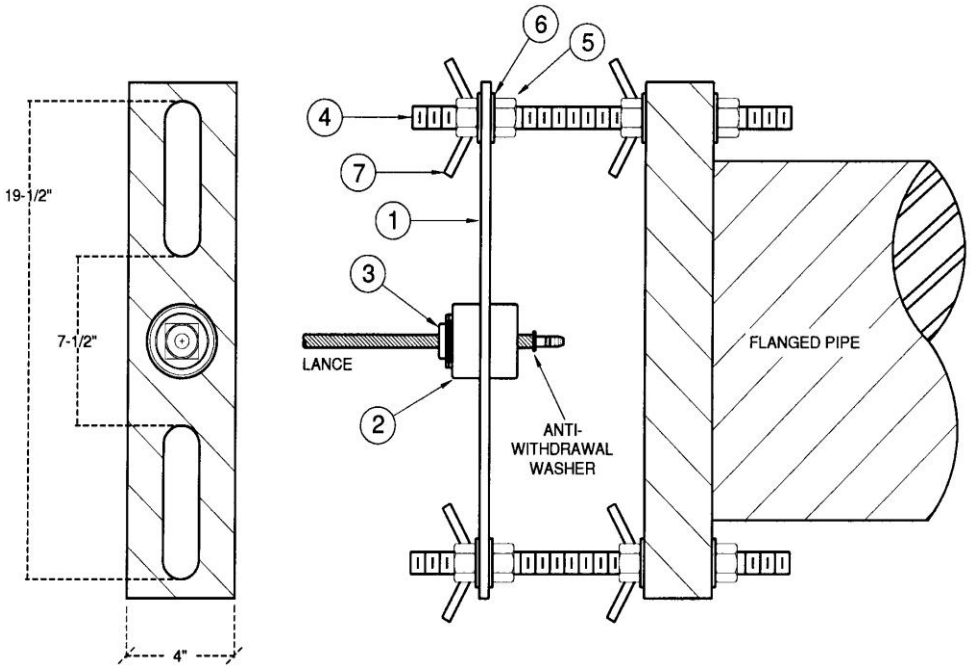
There is a wide verity of automated tools for use in hydroblasting. There are specific tools designed for tank cleaning, tube cleaning and line moling. Often these tools have restrictions due to limited space. These tools should be used in any application where space is permitted. For example, the 3-dimensional (3D tool) tank cleaning tool allows a tank or vessel to be cleaned effectively without having to perform a confined space entry. By using this tooling, the hazards of confined space entry have been eliminated and the prep work that the customer must do for a confined space entry has been eliminated. Both these items save time and create a much safer working environment. Automated tube lancing machines allow for the use of rigid lances, which are more efficient than flex lances, without having the inherent danger of heat stress illness, chemical exposure, and handling equipment under high pressure. Automated hose reel machines allow for line moling large bore pipes for long distances and eliminate the hazards of handling high pressure equipment and operator fatigue. By eliminating many of these hazards' productivity is greatly increased. However, using automated tools does not eliminate the need for proactive safety devices. For example, line moling with a hose reel machine still requires the use of an anti-withdrawal device. The 3D tank cleaning tool is a heavy tool that operates at high pressure and high flow rates. These tools have accessories that are required for proper mounting and positioning within a tank or vessel. Extreme care must be taken when setting up a tank cleaning job to ensure that the tool is properly mounted and positioned. One danger of using this tool is the weight. Care must be taken to prevent injuries when placing this type of tool into a tank. Always use help when lifting a heavy object.

PPE & Safety Devices

Proper PPE required for hydro blasting includes Rain Suits, safety glasses/goggles with face shields, hard hat, non-permeable gloves, and metatarsal boots. Barricades and signs will be used to identify the exclusion zone when performing hydro-blasting work. The use of this PPE, barricades, hydroblast safety meetings/permits and the following devices shall be mandatory. If a job requires the elimination of a safety device a deviation from must be filled out prior to the start of the job by the Project Supervisor. A deviation requires review from the Industrial Services Project Supervisor. Failure to file a deviation form and eliminating use of a safety device can and will result in termination of employment with Evo. Remember these devices were born out of accidents that resulted in debilitating injuries and/or fatalities. The following are examples of the safety devices that shall be used.

All anti-withdrawal/anti-reversal devices are properly sized and adjusted on hydro blasting equipment prior to use based on the below instructions. These first sets of devices are for line moling operations.

Flanged Pipe Anti Withdrawal Device

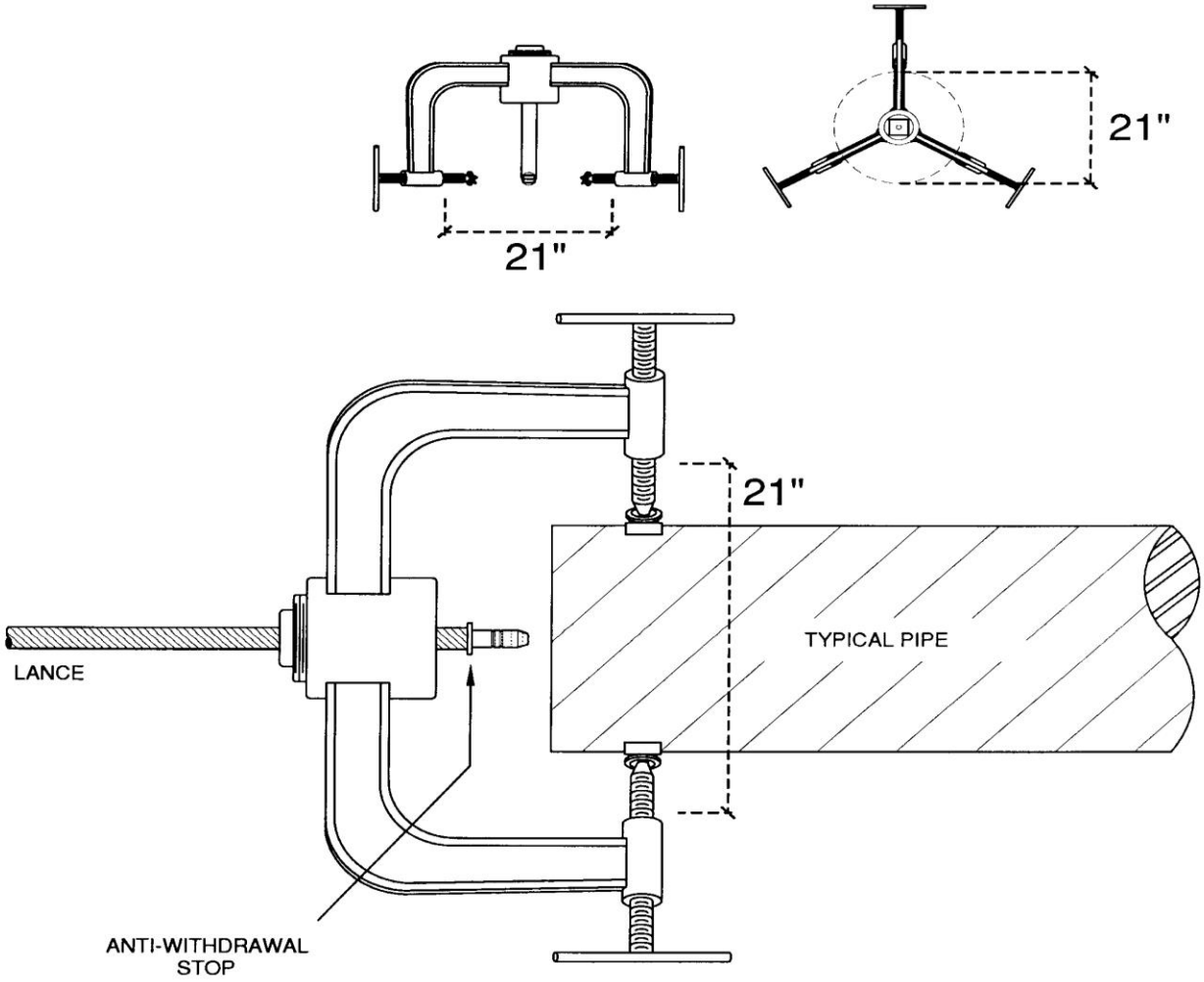


Item	Description	Qty
1.	Flange connector plate	1
2.	2” NPT pipe collar	1
3.	bushing that fits the lance securely and used to house lance stops	2
4.	¾” all thread 10 UNC by 12” long	2
5.	¾” nut 10 UNC	4
6.	¾” flat washer	8
7.	¾” wing nut 10-UNC	4

Mounting Instructions

1. Attach anchor bolts (#4) to flanged pipe as close to opposite each as possible with nuts & washers front & back (#'s 5 & 6).
2. Install back-up nuts on anchor bolts approximately 2 - 6" from the flange (depending on hose size).
3. Install flat washers & put slots in flange connector plate (#1) over anchor bolts.
4. Install flat washers & wing nuts on anchor bolts (loosely).
5. Center coupling (#2) on the pipe & tighten wing nuts.
6. Insert hose with stinger 1 and ½ times the diameter of the pipe, through coupling approximately 1 foot.
7. Slip appropriate stop (#3) over the hose & tighten into coupling (at least ½ turn with wrench after hand tight).
8. Install safety wire through stop & attach to flange connector plate.
9. Make sure the hose stop works & your connections are solid before start up.

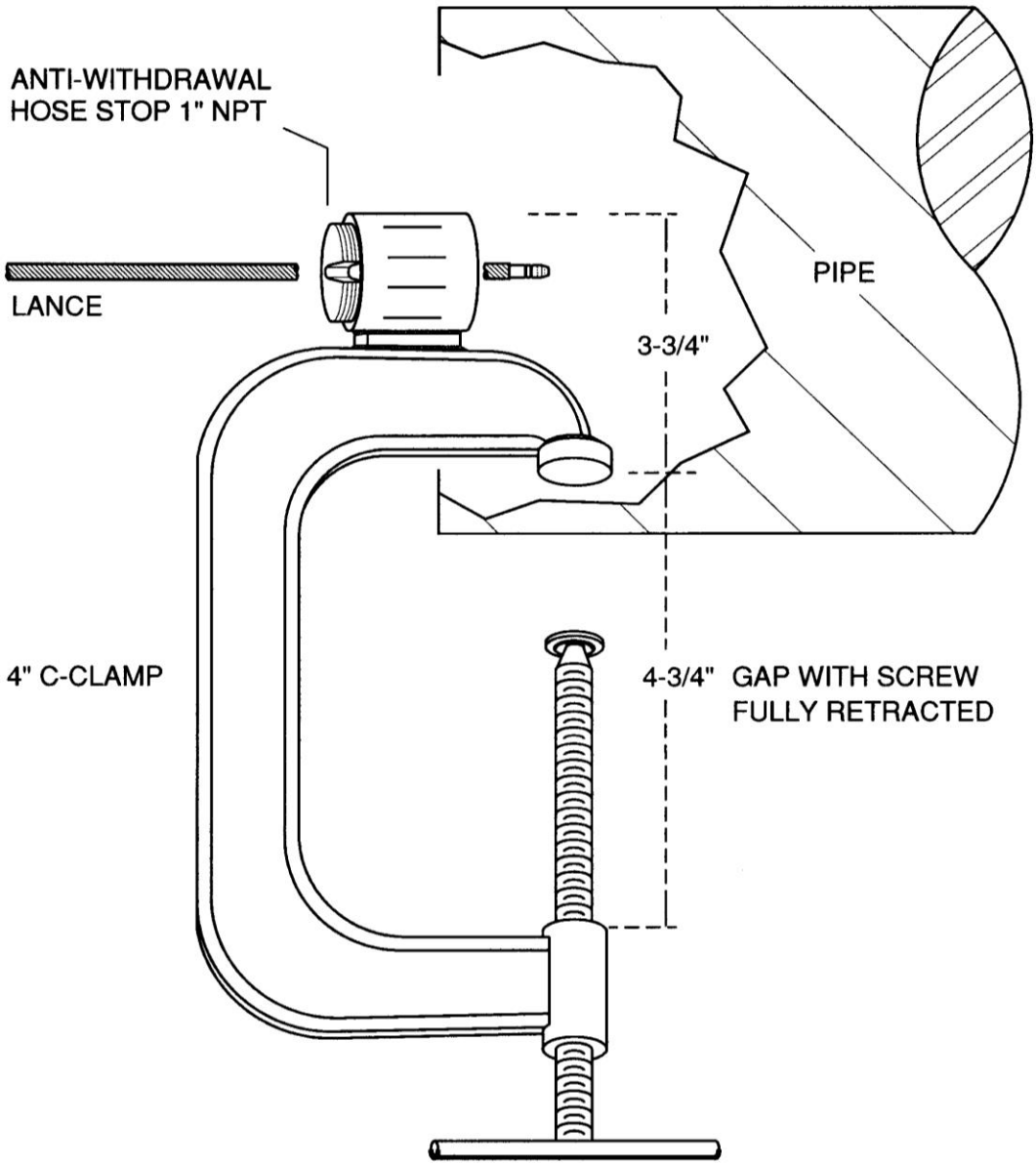
Anti-Withdrawal Device for Non-Flanged Pipe



Mounting Instructions

1. Open C-clamps as to allow installation on pipe.
2. Center coupling on the pipe & tighten C-Clamps (evenly).
3. Insert hose with stinger 1 and ½ times the diameter of the pipe, through the coupling approximately 1 foot.
4. Slip appropriate stop (#3) over the hose & tighten into coupling (at least ½ turn with wrench after hand tight).
5. Install safety wire through stop & attach to lance catcher.
6. Make sure the hose stop works & your connections are solid before start up.

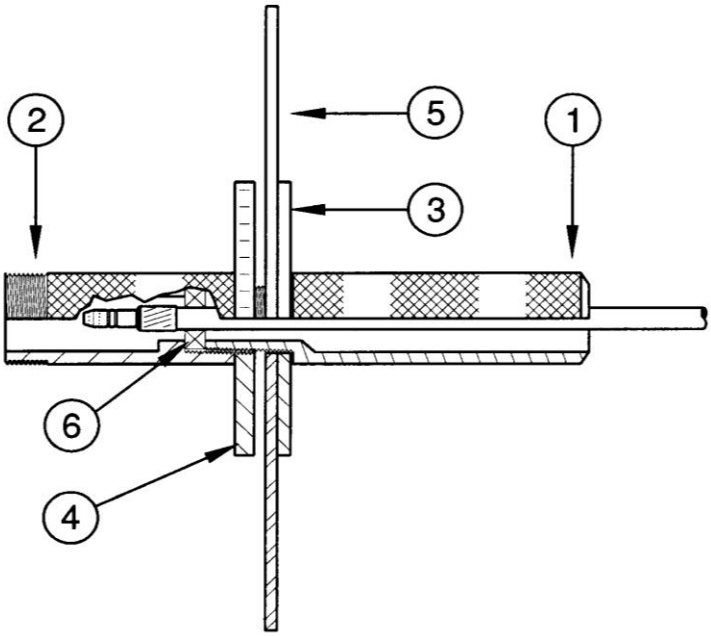
Pipe Wall Anti Withdrawal Device

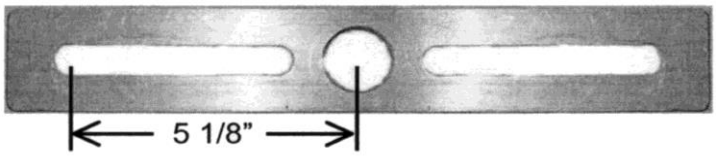


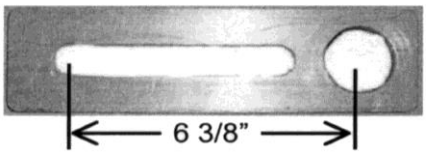
Mounting Instructions

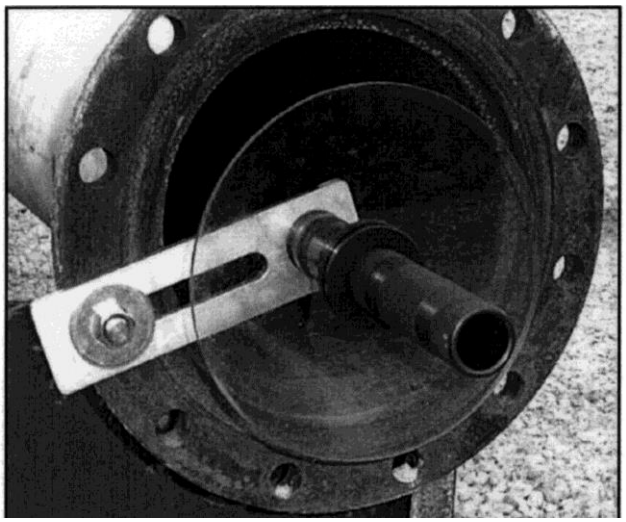
1. C-clamp will need to be opened wide enough to fit over pipe wall or flange.
2. The c-clamp should be positioned to the top or either side of the pipe. Positioning the device on the bottom of the pipe may restrict waste from exiting the pipe.
3. After the device has been secured hand tight use a wrench to tighten at least on more turn.
4. Place lance or line mole one foot into pipe and install proper size stops in the collar.
5. Prior to pressurizing the system verify that the lance stop works and is secure to the pipe.
6. Always begin line moling pipe at least one foot in from the opening.

Lance Hand Protector





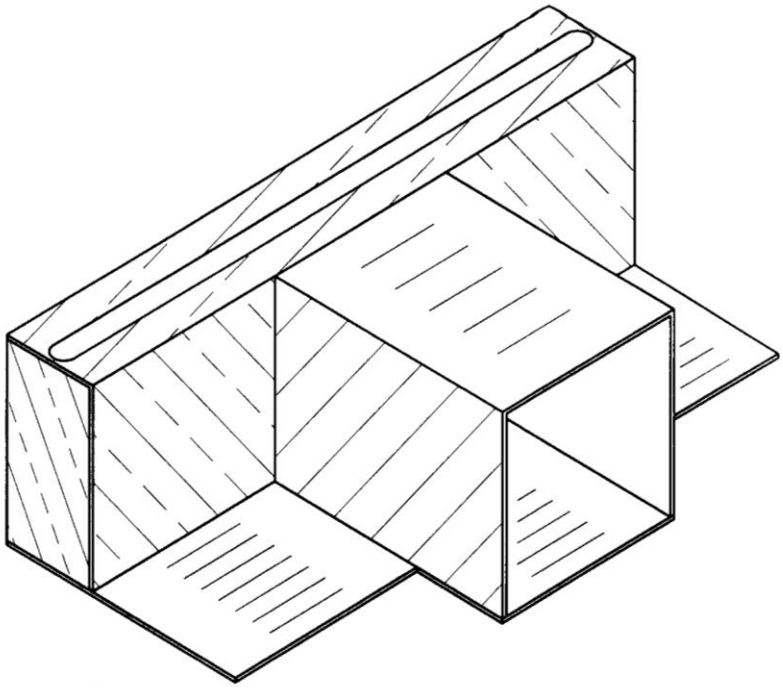




Mounting Instructions

1. Bolt the plate to the top or the side of the flange, with the threaded port centered on the pipe.
2. Select the appropriate hose stop for the flex lance being used. Leave off splash shield if installing on small pipe or restricted access.
3. Screw lance hand guard into threaded port 2-3 complete turns.
4. Make sure the hose stop works & your connections are solid before start up.

Foot Guard

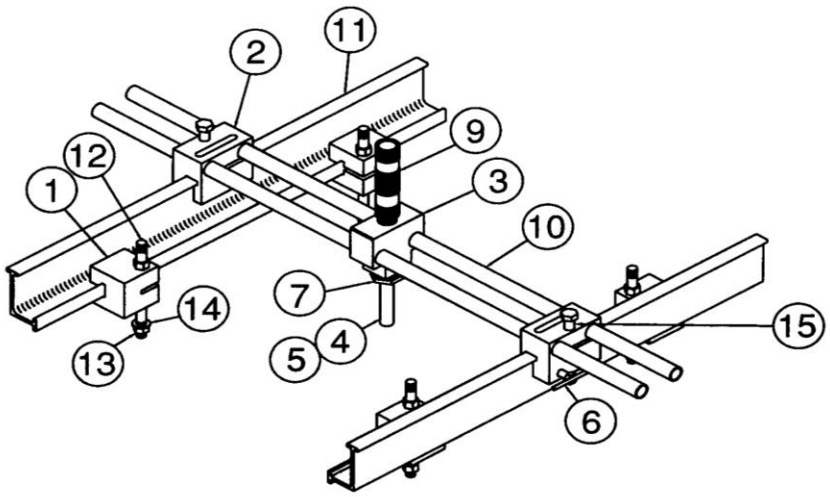


Foot guard is used for tube lancing operations where the operator is standing on the tube sheet. The design is used to protect the feet while allowing the operator access to the tubes to be cleaned.

Use Instructions

1. Try to clear as many trip hazards as possible from the tube sheet.
2. Arrange the foot guard & foot gun so as not to interfere with each other.
3. After flushing the lance, insert it through the lance guide on the foot guard enough to install the nozzle.
4. Slip the hose stop (usually a flat washer) over the lance & install the nozzle.
5. Put your foot in the guard & attempt to pull the nozzle through the lance guide.
6. As you work across the tube sheet it is possible to clean several tubes before moving the guard. When you get ready to move the guard, leave the lance in the last tube cleaned & slide the guard in the direction you are cleaning then continue as before.

Tube Bundle Indexing Device

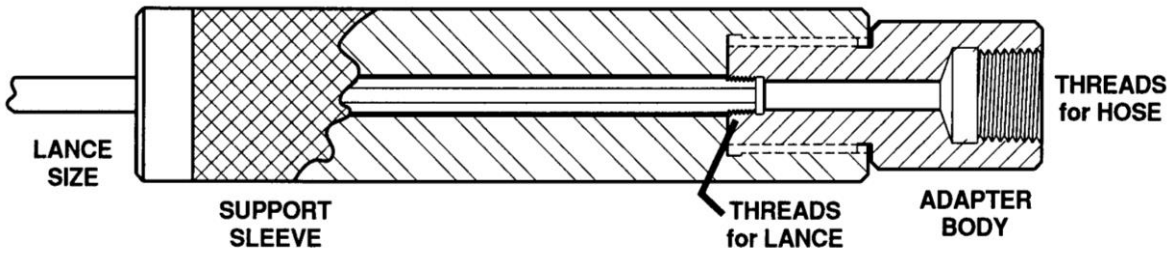


Item	Description	Quantity Needed
1.	Upper & lower Positioning block	4
2.	Vertical indexing guide rod blocks	2
3.	Horizontal lance indexing safety block	1
4.	Lance nozzle protection tube	Variable Sizes
5.	Lance nozzle protection tube	Variable Sizes
6.	Wing head locking bolts 5/8”-13 UNC	2
7.	Lance stop holder	Variable Sizes
8.	Carrying case (not shown)	
9.	Lance hand protector	1
10.	Indexing guide rods	2
11.	Vertical mounting anchors bars	2
12.	½” anchor studs (all thread)	4
13.	½” wing nuts	4
14.	½” fender washers	8
15.	½” bolt by 2”	2

Mounting Instructions

1. Bolt the upper and lower mounting blocks to the heat exchanger head flange in a fashion that will allow the vertical mounting anchor bars to be securely fastened to each anchor block.
2. Secure the vertical mounting anchor bars to the mounting blocks.
3. Attach the vertical indexing guide rod blocks to the vertical mounting anchor bars.
4. Slide on end of the indexing guide rods through one of the vertical indexing guide rod blocks.
5. Place the horizontal lance indexing safety block onto the indexing guide rods.
6. Place the other end of the indexing guide rods into the other vertical indexing guide rod block.
7. Secure the indexing guide rods by tightening the bolts in the vertical indexing guide rod blocks.
8. Verify that the indexing components will freely move.
9. Install lance and lance stop block.
10. Verify that lance stop block is working correctly.
11. If everything is functioning properly you may begin to lance the tubes.
12. Care must be taken to keep the indexing guide rods clean to prevent the horizontal lance indexing safety block from becoming stuck in place.

Rigid Lance HP Connection Support Device

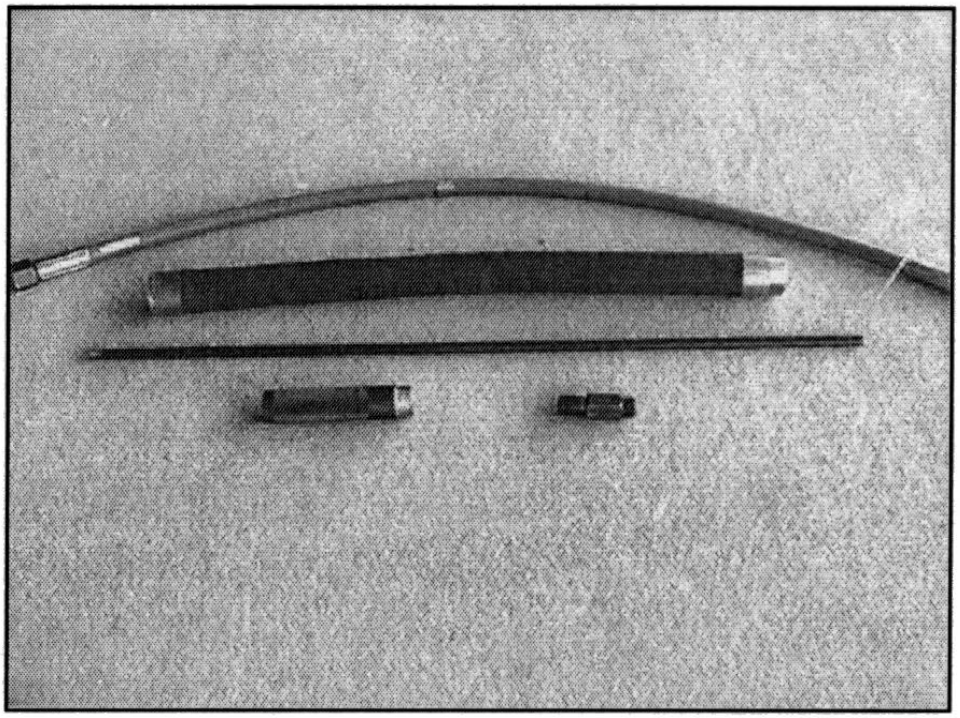


This safety device is designed to strengthen the threaded connections on rigid lances and to provide adequate protection for the operator if a threaded connection fails. This device shall be used for all rigid lance assemblies.

Required parts for complete assembly.

1. 10k or 20k HP hose
2. Protective shroud
3. 10k or 20k rigid lance material
4. Proper size rigid lance support

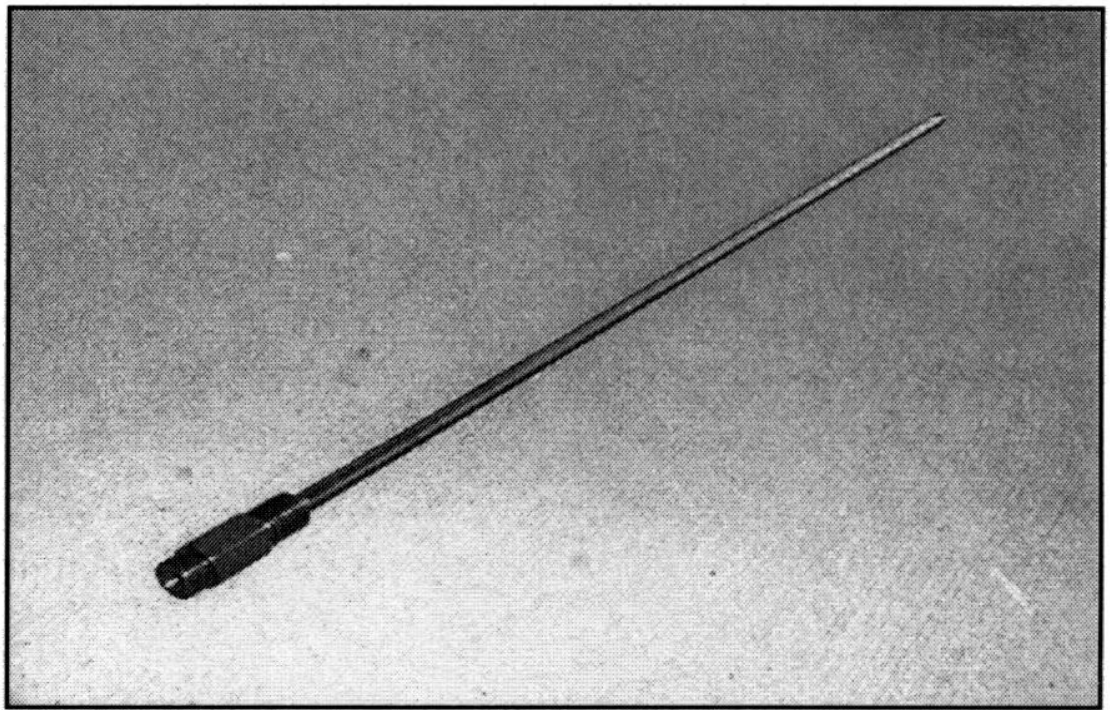
Note: all fittings used in any connection shall be of the proper pressure rating. 10k or 20k.



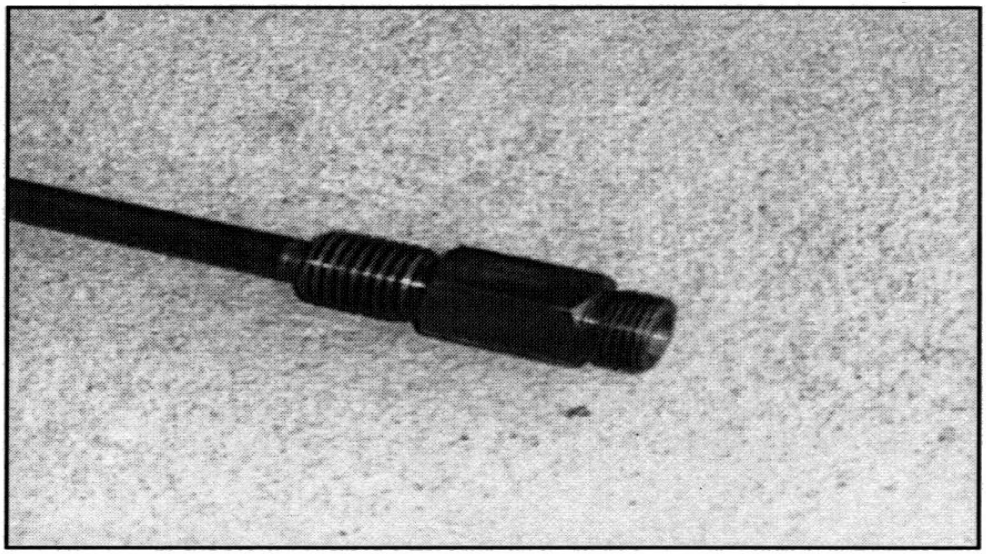
Assembly Procedure for Rigid Lance HP Connection Support Device

Step 1

1. Verify that all threads are clean and in undamaged condition.
2. Wire brush all thread connections prior to assembly.
3. Use Teflon tape on all threaded connection to eliminate leaking.
4. Using proper tools screw the lance into connection support block.
5. Slide the outer support sleeve over the lance and secure to the connection support block.



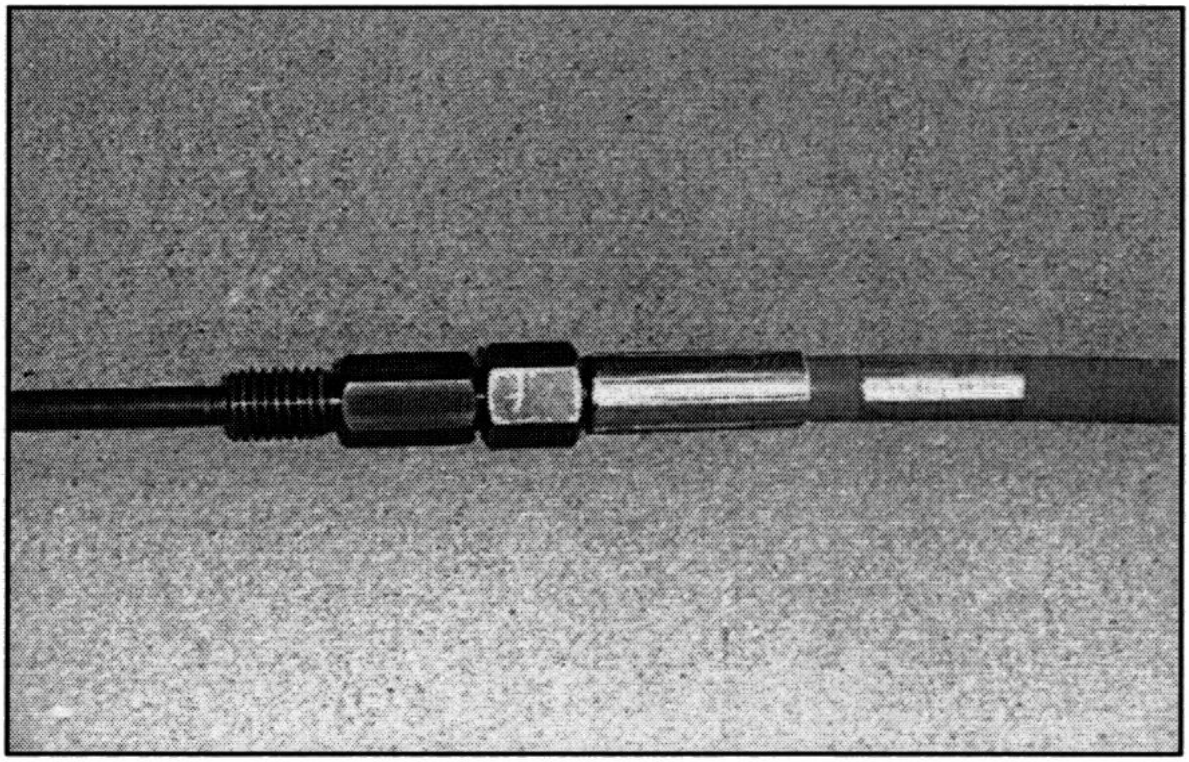
If the lance connection support device is properly assembled, it should look like the following picture with little or no threads showing between the connection support block and the lance itself.



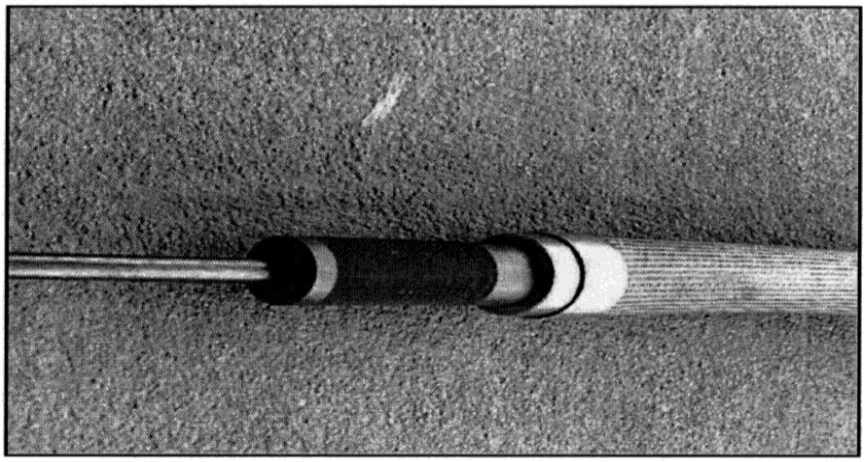
Step 2

1. Use the proper wrenches to secure the proper HP hose to the rigid lance assembly.
2. Flush the system with water prior to installing nozzle to remove debris and check for leaks.
3. Repair any noticeable leaks prior to installing protective shroud.
4. Install shroud over HP fittings and secure to connection support device.
5. Install correct tip on lance for work to be done.
6. All 10k assemblies shall have a whip hose installed on the lance so that there is not a hammer union in place under the protective shroud.

Note: always disengage high pressure pump prior to doing any work on lance assembly. Never attempt to tighten or adjust any fittings while the system is pressurized.

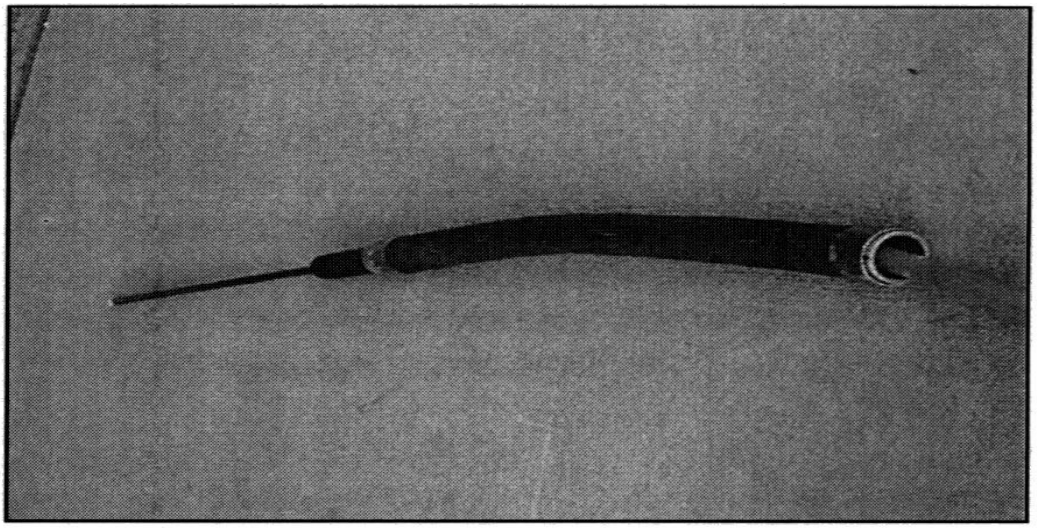


This is a typical 20k rigid lance connection. Once properly assembled the protective shroud will fit over the hose/lance connections providing additional protection for the technician in the event a failure occurs.



This is how a properly assembled rigid lance should look. If any leaks develop during the course of operation, the system

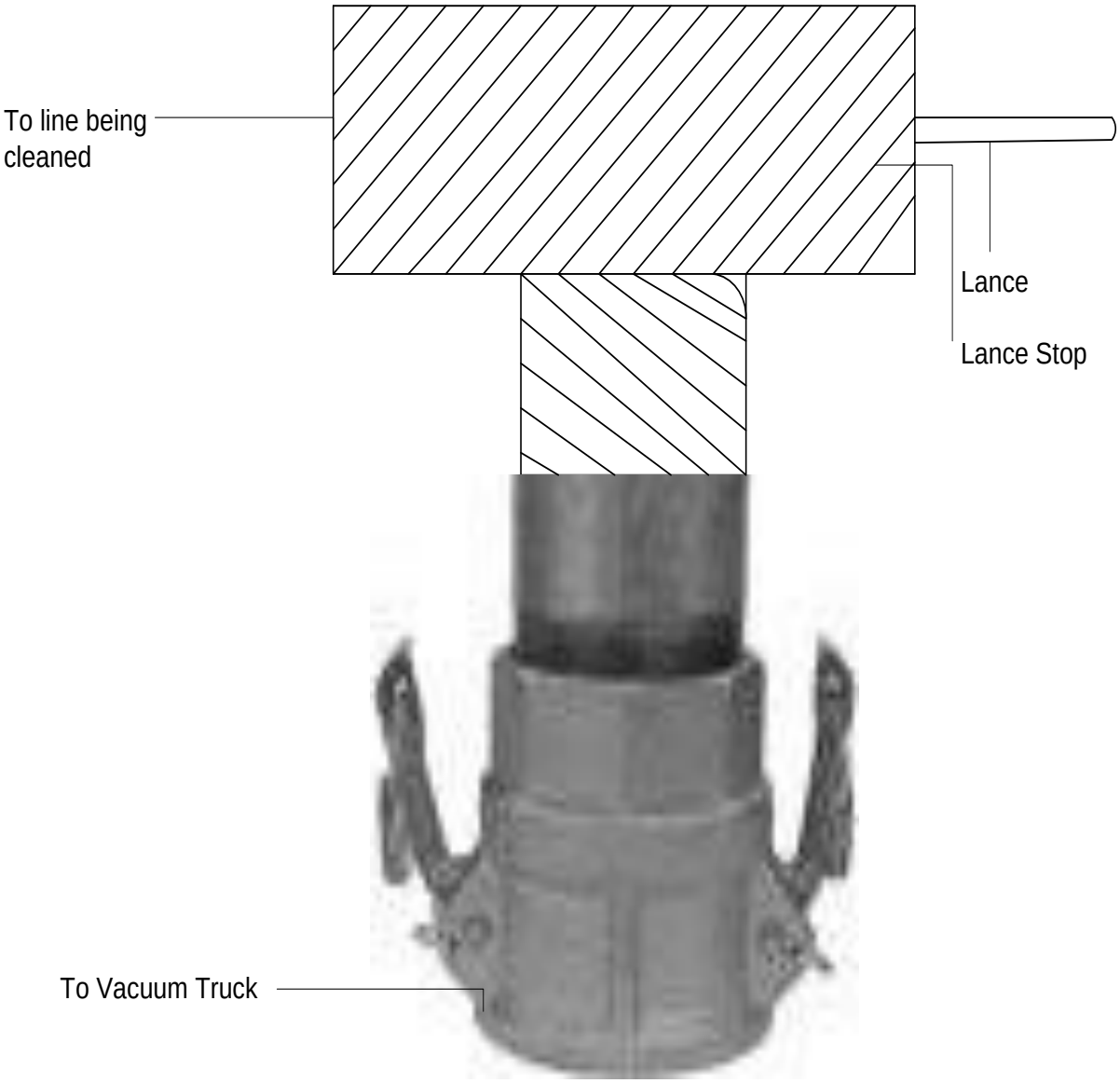
shall be shut down, the high-pressure pump disengaged, and the rigid lance assemble taken apart and reassemble with detail being given to conditions of all threaded connections. All threads shall be visually inspected. Any component with worn threads it shall be replaced, and the old piece properly disposed of.



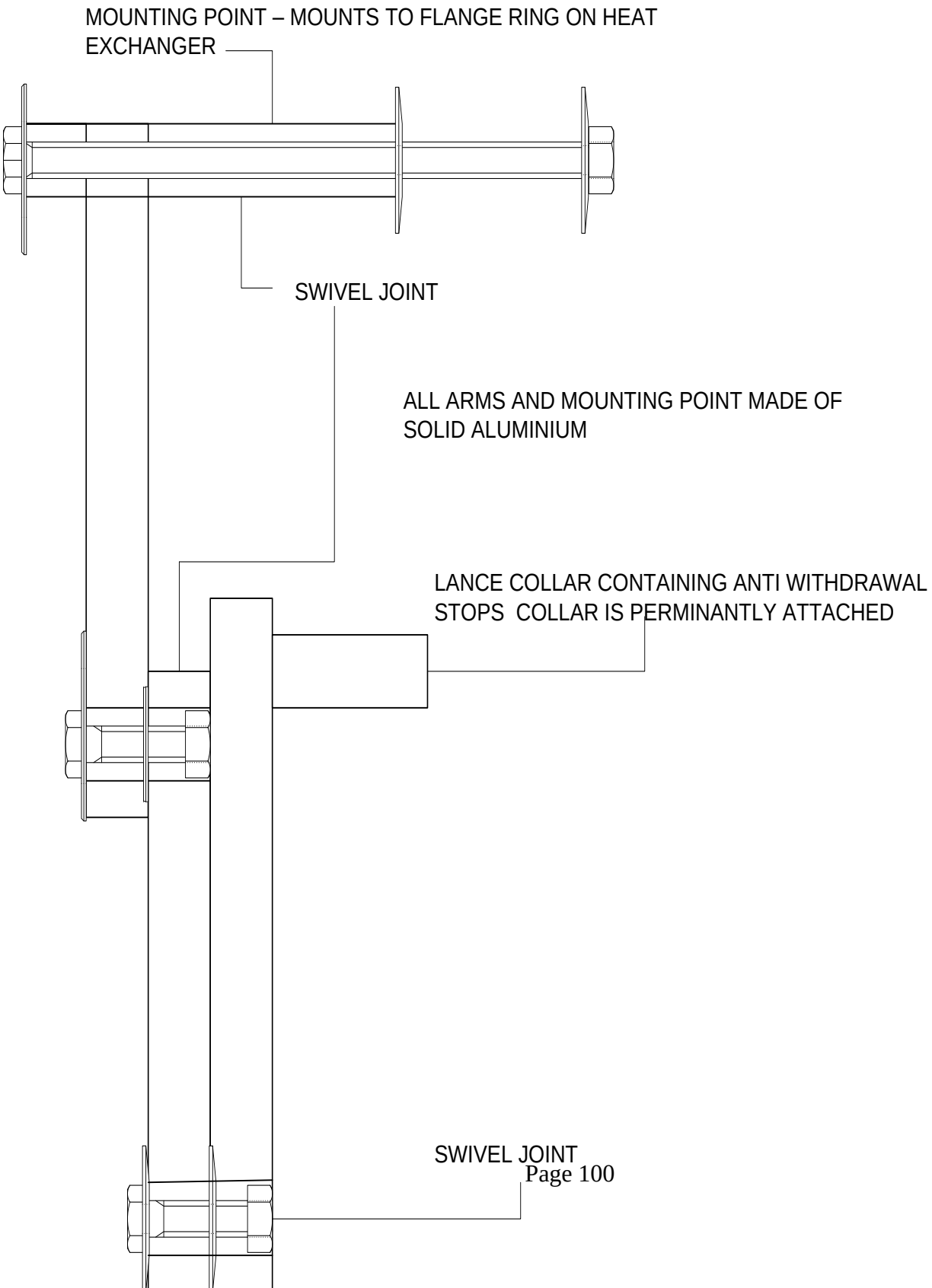
Vacuum Hydroblasting Tee

This device is used when a customer requires that material being hydroblasted be caputured in a vacuum truck. If need be the device may be configured in larger sizes for larger lines. This device is normally constructed out of 2" light weight carbon steel tee and a stainless steel 2" female cam lock fitting on the bottom side. One side of the tee is constructed in a fashion to support the lance stop and functions as an anti withdrawal device. The other end may be adapted using a flange, swedge nipple, or any other solid means to secure the device to the line that is being hydroblasted.

Materials of Construction
2" carbon steel tee
Carbon steel busings
2" Stainless Steel Female Cam Lock



ARTICULATING ANTI WITHDRAWAL DEVICE



Mounting Instructions

1. The device is to be bolted securely in place on the center line on either right or left side of heat exchanger.

.

2. Once the device is in place verify that there is enough articulation in the arms to reach all tubes. If need be a heat exchanger can be done in sections moving the arm from side to side in order to have access to tubes.

3. Place the lance through the lance guide collar and insert the proper stop size.

4. Verify that the stop is working properly buy pulling the lance back firmly against it.

5. You may now begin hydroblasting.

Deviation Process

There will be times that a safety device will appear to be impossible to use. Since hydroblasting is inherently dangerous deviations to remove a safety device or to use an unapproved procedure must be thoroughly reviewed. If a situation arises, it is the responsibility of the project manager to file a deviation form that shall be reviewed by the Industrial Services Manager, Chief Safety Officer, and one corporate officer prior to beginning the procedure without the use of the prescribed safety device. Failure to do so can and will result in termination of employment with Evo. The following is a copy of the form to be used for all deviation requests.

REQUEST FOR DEVIATION

FROM EVO'S SAFETY STANDARDS/POLICIES

The completed form must remain at jobsite until job completion.
Name & Position of Person Making Request_____
Today's Date_____ Date Work is to be preformed_____
Customer _____Customer's City & State_____
Area/Unit _____ Job Description_____
What deviation(s) from EVO safety standards are you proposing? Check all that apply.

☐ shorten shotgun ☐ less than 2-foot stinger on flex lance
☐ no anti-withdrawal device ☐ worker closest to nozzle not in control of dump valve
☐ non-standard PPE ☐ removal of failsafe valve (i.e., single trigger)
☐ other ***Explain:***

Why is the deviation necessary? ***Explain:*** _____
_____
_____
_____

What preventative safety measures will you take to minimize any risks of the deviation?
Explain:_____
_____
_____

Note: Only EVO employees (not workers from temporary labor agencies) with at least 6 months applicable experience and have completed all hydroblasting training can be involved in the deviation.
Comments:_____
_____
_____

Attach additional documentation as appropriate.

DEVIATION DECISION (to be made by Industrial Services Manager, Safety Director, and one corporate officer.

☐ Deviation Request(s) Denied
☐ Deviation Request(s) Granted as Proposed
☐ Deviation Request(s) Granted ***WITH THESE ADDITIONAL REQUIREMENTS.***

EXPLAIN:_____
_____
_____

Are the crew members aware of the deviations and have they been briefed as to what additional safety precautions must be taken to perform this work in a safe manner?

Signature of crew:

_____

_____

_____

Signature of Safety Representative:

_____

Signature of Project Supervisor:

_____

Signature of Industrial Services Manager:

_____

Signature of corporate officer:

_____

Chapter 21 - Vacuum Services

Vacuum services comprise a large portion of the industrial services field. There are specific types of vacuum trucks for specific task. Due to the different types of materials that we vacuum, there are many different and specific dangers to be addressed. The following sections will address general hazards and procedures followed by specific hazards.

General Safety Overview

1. Any Time a vacuum truck is in use the truck shall be grounded. This is done to prevent the buildup of static electricity.

2. Vacuum is measured in inches of mercury. Wet trucks usually pull around 18 inches of vacuum while air movers can pull as much as 27 inches through an 8-inch hose.

3. As well as with hydroblasting a Vacuum Services Pre-Job Safety Meeting form shall be filled out prior to any work beginning. During the safety meeting the following items shall be addressed, where the material being vacuumed is to be disposed of, where the vacuum truck can be decontaminated at, what PPE is required for the material being vacuumed, and is the material being vacuumed flammable.

4. After use and prior to leaving a customer facility needs to be decontaminated on the customer's site. This should be addressed in the pre job safety meeting.

5. The vacuum truck should always be placed on level ground. This prevents oil in the engine and in the compressor to accumulate to one side and not allow for proper lubrication. Also, with the high center of gravity of vacuum trucks the truck may become unstable tip over.

6. Prior to disconnecting hoses, the operator needs to release all pressure from the truck and verify that transfer hoses are empty.

7. Because of the dangerous nature of vacuum jobs, the area should be barricaded to warn people of the hazards. Some of the hazards associated with vacuum trucks are tripping, falling, exposure to hazardous material, being caught in a vacuum, and potential for fire with flammable material.

8. Always verify that hoses are clear and depressurized prior to disconnecting. Failure to do so can result in exposure to hazardous material and unnecessary spills.

9. All operators shall know the materials of construction of their vacuum truck and what materials are and are not compatible with their truck. This is extremely important because serious damage may occur if the material being vacuumed is not compatible with the materials of construction of the vacuum truck.

10. No employee shall ever enter a tank or debris box on any vacuum truck without following EVO confined space procedure. It is not worth taking the risk to speed up cleaning out a truck.

11. Any time that it is required to be on top of a vacuum truck for filter change or to wash out the operator must wear proper fall protection since the height of the vacuum truck tank is over 6 feet.

12. When running pipe or hose up the side of a building or structure the hose shall be tied off every 20 feet. We must realize that the hose, especially if we are vacuuming liquids can become 5 to 6 times heavier than when empty.

13. When the debris box or tank on a vacuum truck is raised the vacuum truck becomes very tall. Never move a vacuum truck with the box or tank raised. Even with the box or tank lowered vacuum trucks can still pose a clearance problem when maneuvering on a customer's site. The use of land observers when maneuvering near overhead power lines, pipes and other obstructions shall be standard procedure. When backing a Vacuum Truck on site and especially dumping or rinsing out a Vacuum Truck on a site, a Safety Observer/2nd person is always required as to safely maneuver for additional observation for hazards, with no exceptions.

14. Since we have already addressed hazardous material in regard to materials of construction with our vacuum trucks now we will address PPE. It is always extremely important to know what we are vacuuming. Some material we encounter can have extreme exposure risk for operators. Exposure risk can be in the form of skin contact or inhalation. This item shall also be addressed during the pre-job safety meeting.

15. By properly operating our EVO vacuum trucks we will be able to avoid damage to our equipment and possible environmental damage. Abusing the equipment never shortens job duration. Often because of abuse and using improper procedure the job duration is lengthened. So, since we know the limitations of our equipment, we shall never exceed them.

By following these basic guidelines, we can avoid potentially catastrophic incidents and provide our customers with top notch service. Remember attitude and top-notch service is what customer's desires are. If we do not have these, all the nice shinny equipment in the world does not help us.

In the following sections we will address in more detail specific issues with air mover trucks, liquid vacuum trucks and handling flammable materials.

This is an example of the vacuum services pre job safety meeting forms (first page).

SOIL SOLUTIONS, INC.

VACUUM SERVICE
PRE - JOB SAFETY MEETING

CUSTOMER/PLANT UNIT	JOB REFERENCE NUMBER	DATE

EQUIPMENT TO BE SERVICED	SERVICE APPLICATION

JOB SETUP/PROCEDURE COMPLETED BY:

ITEM	SAFETY ITEMS TO BE REVIEWED	YES	NO	N/A
1	WAS A PERMIT BEEN OBTAINED AND REVIEWED WITH THE CREW ?			
2	IS A VESSEL ENTRY REQUIRED?			
3	IF A VESSEL ENTRY IS REQUIRED, CHECK AND NOTE THE FOLLOWING			
	OXYGEN %____, (LEL) LOWER EXPLOSIVE LIMIT____, (UEL) UPPER EXPLOSIVE LIMIT_____			
	PPM OF CHEMICALS TOXICITY_____			
	MONITORING OF ATMOSPHERE CONDUCTED BY WHOM?_____			
4	ARE THE FOLLOWING SAFETY ITEMS AVAILABLE?			
	EYE WASH STATION SAFETY SHOWER FIRE EXTINGUISHERS			
	EMERGENCY NOTIFICATION SYSTEM FIRST AID STATION			
5	HAVE THE FOLLOWING FACILITIES BEEN IDENTIFIED FOR THE CREW?			
	PERSONAL PROTECTIVE EQUIPMENT DECONTAMINATION AREA/FACILITY			
	HAND WASHING BREAK/LUNCH AREA SMOKING AREA			
6	HAVE YOU REVIEWED THE CUSTOMER AND UNIT SPECIFIC EMERGENCY PROCEDURES WITH THE CREW ?			
	PLANT EMERGENCY NUMBER_____; EVACUATION CHECK POINT_____			
7	HAVE YOU REVIEWED THE REQUIRED PERSONAL PROTECTIVE EQUIPMENT WITH THE CREW ?			
	SAFETY GLASSES MONOGOGGLES FACE SHIELD STEEL TOED RUBBER BOOTS			
	CHEMICAL RESISTANT GLOVES HARD HAT HEARING PROTECTION RESPIRATORS			
	CHEMICAL SUIT AND/OR BOOS FULL BODY HARNESS OTHER_____			
8	HAVE YOU MET THE HAZCOM POLICY BY DISCUSSING THE KNOWN CHEMICAL/TOXIC GASES THAT			
	OUR CREW MAY COME IN CONTACT WITH? WAS A MSDS USED?			
	IF SO LIST THE CHEMICAL/TOXIC GASES THAT MIGHT BE POTENTIAL EXPOSURE:_____			
9	HAVE THE FOLLOWING ITEMS BEEN REVIEWED WITH THE CREW ?			
	1. JOB PROCEDURES			
	2. INDIVIDUAL JOB ASSIGNMENTS			
	3. HAS THE VACUUM TRUCK BEEN GROUNDED?			
10	IS THE FLASH POINT OF THE MATERIAL BEING VACUUMED LESS THAN 140 DEGREES F?			
11	IS THE MATERIAL TO BE VACUUMED A FLAMMABLE DUST?			
12	IF ITEMS 9 & 10 WERE ANSWERED YES, SPECIAL APPROVAL TO VACUUM THE MATERIAL IS REQUIRED BY THE			
	ENVIRONMENTAL SERVICES MANAGER, SAFETY MANAGER, CORPORATE OFFICER, AND THE CUSTOMER.			
	IF HOW HAS NOTIFIED AND APPROVED THE VACUUM OPERATION?			
	ESS APPROVAL#:_____			
	_____			
	_____			
	CUSTOMER APPROVAL:_____			
13	WAS A SHAKE TEST BEEN RUN ON THE MATERIAL?_____ %LEL (MUST BE < 20% TO HANDLE)			
14	IS THE TEMPERATURE OF THE MATERIAL BEING VACUUMED LESS THAN 140 THE HOSES ARE RATED FOR?			
15	IS THE MATERIAL BEING VACUUMED COMPATIBLE WITH THE CONSTRUCTION MATERIALS OF OUR HOSES, PIPING ,			
	AND THE METALLURGY OF OUR VACUUM TRUCK?			
16	HAVE ARRANGEMENTS BEEN MADE FOR PROPER DISPOSAL OF THE MATERIAL BEING VACUUMED?			

Air Mover Trucks

Air mover trucks air specifically designed for vacuuming dry material. These trucks can create large vacuums in large hoses. For example, the largest trucks on the market can create and pull 27 inches of vacuum through an eight-inch hose. This is enough vacuum to cause very serious injury if you were to get a foot, leg or arm stuck in the hose and causing serious injury. In the following discussion we will discuss the safety hazards of air mover type vacuum trucks.

1. Since there is such a great potential for arms, legs, and feet to become caught in the vacuum these trucks are capable of producing we shall never use feet or hands to dislodge large items stuck in the hose. In the event a large object becomes lodge in the hose, we need to shut down the truck prior to attempting to dislodge the object.

2. To prevent serious injury from being caught in the vacuum, a vacuum break device shall be installed as close to the end as possible where the work is being preformed. This device is often referred to as a safety tee. This device has a cover that fits over a tee and allows vacuum to be pulled from the end of the hose. In the unlikely event that some one does get caught in the vacuum this can be pulled off and all vacuum is diverted through the tee releasing vacuum at the end of the hose. The person operating the hose should have control of the vacuum safety tee or a person that has the sole responsibility of observing the person doing the vacuuming. A similar job to a whole watch for a confined space entry.

3. As mentioned before care shall always be taken when maneuvering an air mover truck near overhead obstructions or backing. Always use a land observer and remain in visual and voice contact with them until the truck has come to a complete stop and the brakes are set. Also always watch for overhead obstructions when raising the debris box.

4. If the air mover truck is equipped with a boom, care shall be taken when maneuvering the boom. Always watch overhead for power lines and other obstructions.

5. An air mover truck employs a rotary vane type blower to create vacuum. These blowers are designed to run in a certain RPM range, which is lower than what the truck can turn the blower at. Never exceed the RPM range of the blower. This can cause serious damage to the blower and they do cost a lot of money to replace.

6. Vacuuming flammable dry material is just as hazardous as vacuuming flammable liquids. Later in this training program we will cover a section completely dedicated to flammable materials, hazards of vacuuming flammable materials and safety measures to be taken when vacuuming flammable materials.

7. Vacuuming fine dust such as grain dust, coal dust and other fine types of dust pose an explosion hazard. Static electricity discharge is usually the ignition source. It is critical that we bond and ground all equipment when working with these materials to safely discharge the buildup of static electricity harmlessly. If you have ever seen a grain explosion, they can be very violent causing serious injury and/or death. So, following the safety precautions when vacuuming explosive type dust is critical.

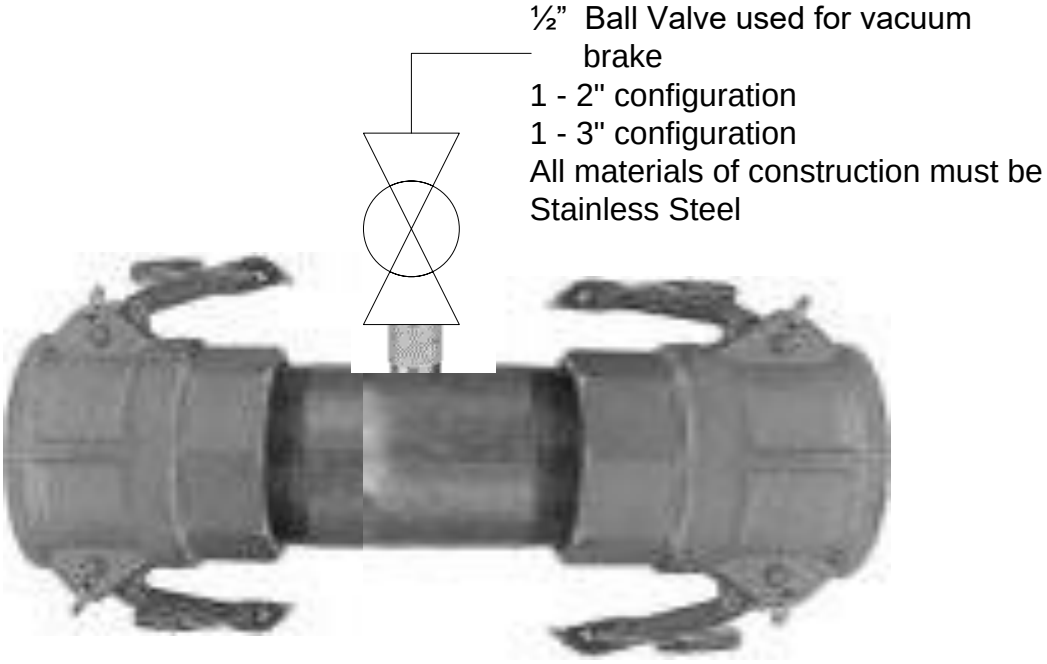
Liquid Vacuum Trucks

As we have learned so far there are different types of vacuum trucks made for vacuuming different materials. It is always critical to use the proper equipment for the job at hand. Liquid vacuum trucks are for that, liquids only. The problem with vacuuming dry material with a liquid vacuum truck is that the liquid vacuum truck is not equipped with any means of filtering fine particular material that can destroy the vacuum pump and become air borne creating an inhalation hazard. Now we will discuss some of the particular procedures and safety hazards associated with liquid vacuum trucks.

1. As mentioned previously we will discuss flammable materials in a later section. How ever for now you need to know that vacuuming flammable liquids is dangerous. It may de slightly difficult to ignite a flammable liquid, but the vapors coming off the vacuum pump exhaust may be easily ignited. Safety procedures for handling flammable liquids shall be discussed in detail in the section on flammable material.

2. When vacuuming from an enclosed tank or vessel we must verify that the tank or vessel has adequate venting. This can be in the from of a vent line that must be opened by hand or a permanently installed vacuum brake. No matter what there must be some kind of venting on the tank or vessel. Even if a tank has a high pressure rating it may not have a vey high vacuum rating and could be imploded if not properly vented.

3. When vacuuming from a tank we will need to install a temporary vacuum brake device between the tank valve and the end of our hose. See the picture on the next page. Since a vacuum cannot be dead headed, once the tank valve is closed our hose will remain full of material. By opening the vent on our temporary vacuum brake we will be able to clear our hoses prior to disconnecting them. This eliminates the hazard of exposure to hazardous material and unwanted spills. Even though we have done all this to clear the hoses we still need to wear the proper PPE when disconnecting the hoses.



4. When we pressure off load a liquid vacuum truck into a tank or vessel we need to verify that the tank or vessel has proper venting prior to off loading the vacuum truck. If our discharge hose is hooked directly to the tank or vessel we should install the temporary vacuum brake some where in our discharge line this will allow us to bleed any pressure off the hose after the tank valves have been secured and prior to disconnecting. By doing this we have eliminated the hazard of breaking a connection under pressure and having an exposure to hazardous material or an unwanted spill. As before any time we are breaking connections proper PPE shall be worn.

5. As mentioned before prior to starting a vacuum job we must hold a pre job safety meeting. During this safety meeting we shall discuss where the material is to be disposed of, where the vacuum truck shall be decontaminated at, and what the proper PPE for the job will be.

Vacuuming Flammable Material

In the course of our industrial service work we often run across the need to vacuum flammable material. How we accomplish this is extremely critical. In this section we will discuss the hazards and how to properly handle flammable material to avoid a major incident.

First of all we need to know how a material is classified as flammable or combustible as defined by The Department of Transportation.

- Flammable material is defined as any material with a flash point of 140 degrees Fahrenheit or less.
- Combustible material is defined as any material with a flash point between 141 degrees Fahrenheit and 200 degrees Fahrenheit.

Since we are discussing flammable material, should we be concerned with handling flammable material? Yes we should. Improper handling of flammable and combustible material can lead to fire and explosion resulting in property damage, serious injury and death. So we must be extremely cautious in handling flammable and combustible material.

Many times the material we are dealing with is a mixture of several materials in some sort of process or waste stream. The rule of thumb is that all the material is considered flammable if one component of the material meets the flash point requirements of a flammable material.

We need to know what causes a fire and why the flashpoint is so critical. The flash point is defined as:

- The flash point of a material is the lowest temperature at which the vapor of a material can mix with oxygen to form an explosive mixture.

The flashpoint of a material is the measure of how easily the material will ignite. The lower the flash point the easier the material will ignite and the greater the hazards are. Knowing the flash point of the material is valuable in determining the fire/explosive potential and how we handle the material.

Where can we find the flash point information for a given material? The flash point for a given material may be found on a Safety Data Sheet (SDS). This is why the use of SDS during our pre job safety meetings is critical. Other sources for finding the flash point are product knowledge, or asking the customer. If you are not sure of the flash point of a material do not attempt to vacuum it until you do know. Your life could depend on it.

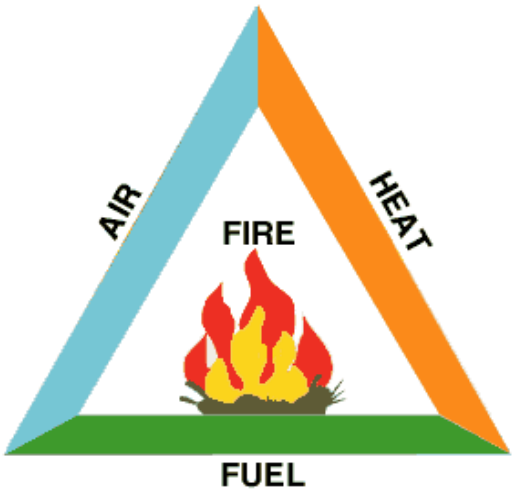
What is needed for a fire or explosion to occur?

To ignite and sustain fire there are 3 elements that are required. They are.

- Fuel – There has to be something to burn.
  If there is no fuel then there will be no fire.

- Oxygen – Fire is the chemical process in
  which oxygen reacts with the fuel.
  If we take the oxygen away we cannot
  have or sustain fire.

- Heat – For the reaction of oxygen and
  fuel to take place there must be a
  source of heat to start and sustain the reaction.



Fire Triangle

Take away any of the three elements and the fire will cease to exist. These are the principals used for firefighting technology.

How can we eliminate these hazards?

When it comes to vacuuming flammable material especially liquids extreme caution must be taken to prevent the fire triangle from coming together. If the fire triangle comes together fire and explosion are eminent. By eliminating any one of the three items needed to create and sustain fire we can be completely safe in handling flammable materials.

Which source is the easiest to eliminate?

Heat is the easiest of the three elements to eliminate. Often, we do not recognize how small the heat source is. The heat source can be generated by something as simple as a cell phone, a flashlight, or turning on a light switch. Any of these can generate an ignition source strong enough to complete the fire triangle. By using proper tools, such as intrinsically safe electrical equipment, bonding/grounding of all equipment and/or non-sparking tools we have eliminate the source of heat.

Fuel would be the second easiest to eliminate. One thing to remember about a fuel source is that, especially with liquids that they do not burn. It is the vapor mixed with oxygen that burns. That is why knowing the flash point is so critical. In most cases we will have to pump flammable liquids into our vacuum truck. Since introducing a flammable liquid into a vacuum lowers the flash point even more and vapors will be exhausted out of the compressor exhaust into the atmosphere which contains about 20.5% oxygen we are creating two of the elements needed for the fire triangle. The only way that we could safely accommodate eliminating the fuel source would be to divert the exhaust from the vacuum compressor to a scrubber or flare line of some sort where the flammable vapor would be captured or to run a open hose a minimum of 50 feet from the vacuum truck and discharged to the atmosphere provided no air quality regulations are being broken. Also warning sign must be posted around the area stating flammable atmosphere.

Oxygen is the hardest of the three to eliminate. The air we breathe is comprised of approximately 20.5% oxygen. So as flammable vapors are being exhausted into the atmosphere from the vacuum compressor, we have completed 2 elements of the fire triangle. The only way to eliminate oxygen is with an inert gas such as nitrogen. So, you can see that in most cases of vacuuming a flammable liquid it would be impossible to eliminate oxygen. Also as mentioned previously when the exhaust from the vacuum compressor is diverted then you have in since eliminated the oxygen. So you can see how critical it is for us to handle flammable material properly.

Since vacuuming a flammable material is so dangerous a deviation form shall be in place and all hazards addressed by management prior to beginning the job. Failure to do so could result in termination of employment with EVO.

The following are minimum guidelines for handling flammable materials.

- Prior to beginning any vacuum job, the vacuum truck shall be grounded. If a flammable material is being vacuumed then all hose connection shall be grounded also.
- If vacuuming from an open tank, pit, sump, or other open containment the end of the vacuum hose shall stay submerged in the liquid to prevent the introduction of oxygen.

- The vacuum truck shall be vented in a way as to harmlessly dispose of any explosive or flammable vapors.
- If the liquid is to be pumped to the vacuum truck the pump and all components in the pumping system shall meet the requirements for pumping flammable liquids. This includes material of construction and grounding/bonding parameters.
- No employee shall vacuum flammable material prior to receiving proper training.

The following diagram is a possible hook up for pumping flammable liquids into one of our trucks.

Often systems containing flammable materials are blanketed with nitrogen to displace oxygen. As you can see in this first diagram the vessel is blanketed with nitrogen. In this case if the vent line from the vacuum truck where to be tied into the flare line header then I would be safe to vacuum this liquid.

Also note that if the unit has a temporary nitrogen purge on it while vacuuming is in process that the nitrogen shall be regulated to no more than 10 psi. Any higher pressure may cause the vacuum truck to become over pressured.

Always remember when in doubt ask. If you are not sure it is much better to ask someone than not and suffer the severe and unforgiving results of a fire.

Chapter 22- Asbestos Awareness

1.0 PURPOSE

The purpose of this program is to provide information about asbestos, the potential health effects associated with exposure, and safety procedures that should be followed to reduce exposure and protect the health of employees.

2.0 INTRODUCTION

The word asbestos is derived from a Greek word that means inextinguishable or indestructible. Asbestos is a naturally occurring mineral that is found throughout the world. Major deposits, however, are found primarily in the U.S., Canada, Russia, and S. Africa. Asbestos has several characteristics that make it desirable for many commercial uses. The fibers are extremely strong, flexible, and very resistant to heat, chemicals, and corrosion. Asbestos is also an excellent insulator, and the fibers can be spun, woven, bonded into other materials, or pressed to form paper products. For these reasons and because it is relatively inexpensive, asbestos has been widely used for many years and now is found in over three thousand different commercial products.

Exposure to asbestos fibers can cause serious health risks. The major risks from asbestos come from inhaling the fibers. Asbestos is composed of long silky fibers that contain hundreds of thousands of smaller fibers. These fibers can be subdivided further into microscopic filaments that will float in the air for several hours. Asbestos fibers can easily penetrate body tissues and cause disabling and fatal diseases after prolonged exposure.

Although exposure to asbestos is potentially hazardous, health risks can be minimized. In most cases the fibers are released only if the asbestos containing materials (ACM) is disturbed. Intact and undisturbed asbestos materials do not pose a health risk. The mere presence of asbestos does not mean that the health of occupants is endangered. When ACM is properly managed, release of fibers into the air is prevented or minimized, and the risk of asbestos related disease can be reduced to a negligible level. However, asbestos materials can become hazardous when they release fibers into the air due to damage, disturbance, or deterioration over time.

The ability to recognize the kinds of material that contain asbestos, knowing under what conditions they are dangerous, and understanding basic safety precautions, are all important in keeping exposures to a minimum.

3.0 TYPES

The term "asbestos" is a name that refers to six naturally occurring minerals. The three types most commonly used in buildings are chrysotile, amosite, and crocidolite. Chrysotile accounts for approximately 95% of the asbestos used in commercial products. Chrysotile is commonly called white

asbestos because of its natural color. Amosite, known as brown asbestos, is the second most likely type found in buildings. It is hard to wet and therefore hard to control. Amosite is commonly found in boilers and pipes. The third type of asbestos is known as crocidolite. It is also know as blue asbestos or blue mud. Crocidolite is used in high temperature applications around pipes.

4.0 IDENTIFYING ASBESTOS

There are many substances that workers contact that may contain asbestos and have the potential to release fibers. Only rarely can asbestos in a product be determined from labeling or by consulting the manufacture. The presence of asbestos cannot be confirmed visually. The only way to positively identify asbestos is through laboratory analysis of samples. If the presence of asbestos is suspected always assume that it is an asbestos containing material and have it analyzed.

5.0 FRIABLE ASBESTOS

The potential for a product containing asbestos to release fibers depends on its degree of friability. Friable ACM can easily be crumbled or reduced to a powder by hand pressure, releasing fibers into the air.

The white fibrous or fluffy spray-applied asbestos material found in many buildings for fireproofing, insulating, sound proofing, or decorative purposes are friable. Friable ACM is found primarily in building areas not generally accessible to the public, such as boiler and machinery rooms. For example, asbestos insulation around pipes and boilers is considered friable.

Asbestos that is tightly bound with another material is considered non-friable and will only release fibers if sanded, cut, or broken. For example, ceiling tiles containing asbestos, and asbestos-cement pipe or sheets will not normally release fibers unless cut or broken. Vinyl asbestos tile is also considered non-friable and generally does not emit fibers unless sanded, cut, or sawed.

6.0 REGULATORY PROGRAMS

Both the EPA and OSHA control exposure to asbestos. EPA regulations are known as NESHAP (National Emission Standards for Hazardous Air Pollutants). These regulations specify control measures and work practices to reduce releases of asbestos into the environment. NESHAP regulations may require ACM removal before renovation and/or demolition projects to prevent significant asbestos releases into the air.

EPA has also implemented a separate regulation to handle asbestos materials used inside schools (grades K-12). This regulation is known as AHERA (Asbestos Hazards Emergency Response Act). The regulations require that all schools be inspected to determine the presence and quantity of asbestos. The type of corrective action such as removal, encapsulation, or maintenance in place is left up to the school.

OSHA regulations are designed to protect workers who handle ACM. OSHA has set standards for the number of fibers that a worker can be exposed to, called the permissible exposure limit (PEL). Current OSHA regulations have set a maximum workplace concentration limit of 0.1 f/cc measured as an 8-hour time-weighted-average. This is equivalent to approximately six fibers in a volume of air the size of a baseball. The time-weighted-average is calculated by dividing the total exposure for a workday by eight hours. Exposures over 0.1 f/cc are allowed as long as they are balanced by exposures under 0.1 f/cc. The standard includes requirements for respiratory protection, medical surveillance, and work practices to reduce indoor asbestos levels.

7.0 USES

Asbestos has been used for over three thousand years. There was very little use for asbestos until the start of the twentieth century when it was used as thermal insulation in steam engines. Since then it has been used in thousands of products. Consumption in the U.S. increased to a peak of 800,000 tons per year in the early 1970s. Because of health concerns, however, consumption has dropped by more than 70%.

Asbestos gained widespread use because it is plentiful, readily available, and low in cost. It has several properties that make it very desirable to industry such as fire resistance, high strength, poor heat and electric conductor, and resistance to chemicals. These properties have made it useful for electrical, acoustical, and thermal insulation and products that resist fire, friction, and chemicals.

Examples of these uses include automotive brake and clutch linings, floor and ceiling tiles, plastics, asbestos-cement pipes and sheets, paper products, textile products such as curtains and gloves, and insulation for boilers and pipes. It is also present in sprayed-on materials located on beams, in crawlspaces, and between walls. The amount of asbestos contained in these products may vary from 1-100%.

Fireproofing

One of the most common uses for asbestos was as a fireproofing material. More than half of the large multi-story buildings constructed during 1950-1970 period contain some form of sprayed ACM. It was sprayed on steel beams and columns to prevent these structures from warping or collapsing in case of a fire. Asbestos comprised 5-95% of the fireproofing mixture. This mixture is soft and fluffy in appearance and to the touch and is considered very friable. The material may vary in color from white to dark gray and may have been painted or encapsulated with a sealant. Spray painting of asbestos was banned in 1978.

Insulating and Decorative Purposes

Sprayed or trowelled asbestos coatings generally have an asbestos content of 50-80%. The coatings were commonly applied to steel I-beams and decks, concrete ceilings and walls, and hot water tanks and boilers. The coatings were applied primarily for thermal insulation but also provided acoustical insulation and a decorative finish. Sprayed coatings typically have a rough fluffy appearance.

Trowelled coatings have a smooth finish and may be covered with a layer of plaster or other non-asbestos material. Both sprayed and trowelled coatings are friable. Asbestos insulation board was used as a thermal/fireproofing barrier in many types of walls, ceilings and ducts or pipe enclosures. This material looks like A-C sheets but is less dense and much more friable.

Pipe Insulation

Pipe insulation for hot and cold water and steam pipes commonly contained asbestos. These coverings have an asbestos content of about 50%. This material is usually white and chalky and was typically manufactured in 3-ft long half round sections. The sections were joined around the pipe using plaster soaked canvas or metal bands. Asbestos pipe coverings are easily crumbled and are considered friable.

Boilers and Hot Water Tanks

Asbestos block insulation was used as thermal insulation on boilers, hot water heaters and heat exchangers. These blocks are usually chalky white, 2 inches thick, and 1-3 ft long. The blocks are held in place by metal wires or lath and are often wrapped in a plaster-saturated canvas. The insulation is friable and readily deteriorates in a high humidity environment or when exposed to water.

Cement Pipes and Sheets

Asbestos cement was used to form pipes and sheets. Asbestos-cement pipes have been widely used for water and sewer lines. It was also used for electrical conduits, drainage pipes, and ventilation pipes. Asbestos-cement sheets have been used primarily for roofing and siding. It is also used in cooling towers, laboratory tables and hoods, and electrical switching gear panels. Asbestos-cement products are dense and rigid with gray coloration. The asbestos in these products is tightly bound and does not release fibers to the air under normal use.

Building Materials

Asbestos is added to a variety of building materials to act as a binder and increase strength. It can often be found in concrete, concrete tile products, and plaster and may contain up to 50% asbestos by weight. These products are used in siding and roofing shingles, wall board, corrugated and flat sheets for roofing, cladding, partitions, and as pipes. Asbestos has also been added to asphalt, vinyl, and other materials to make products like roofing felts, exterior siding, floor tiles, joint compounds, and adhesives. Fibers in these products are usually firmly bound and are released if the material is mechanically damaged, for example by drilling, cutting, or sanding. Roofing shingles and siding may also show slow deterioration due to weathering.

Friction Products

Asbestos is used in brake and clutch linings on automobiles. In the past, asbestos linings accounted for up to 99% of the market. Although the asbestos is tightly bound, dust in a brake drum from worn linings contains high levels of asbestos. Non-asbestos brake linings have been developed and are replacing asbestos linings. Extreme care should be used when working on brake linings to ensure that the asbestos dust is properly contained.

Plastic Products

Asbestos was added to many plastic products for increased strength. For example, asbestos was added to vinyl and asphalt floor coverings, roof coatings, and some molded plastic products such as cooking pot handles. These products are usually tough and non-flexible. The asbestos is tightly bound and is not released under typical conditions of use. However, any sawing, drilling, or sanding may result in the release of fibers.

Paper and Textile Products

Asbestos fibers were also manufactured into many paper and textile products. Paper products containing asbestos include commercial insulating papers, gaskets, roofing materials, heat protecting mats and pads, filters, and tiles for walls and ceilings. Asbestos yarn is used to manufacturer fire resistant curtains, protective clothing, electrical insulation, thermal insulation, and packing seals. These materials may release fibers when cut or torn.

8.0 HEALTH HAZARDS

The increase in the use of asbestos resulted in a dramatic rise in asbestos related diseases among workers. At first, asbestos was not regarded as a health hazard because it has no taste or odor, often cannot be seen, and causes no immediate health effects. Health problems however, developed over time in exposed workers. It was not until the 1950s that asbestos received widespread attention as a potential health hazard. The diseases associated with asbestos did not appear for 20-40 years after the initial exposure, making it very difficult to confirm asbestos as the cause. However, overwhelming evidence now exists that exposure to airborne asbestos fibers is linked to several serious diseases.

Exposure to asbestos can cause disabling respiratory diseases and several types of cancer. The main routes of exposure are inhalation and ingestion. Asbestos fibers cannot penetrate the skin. Asbestos has been shown to cause asbestosis, lung cancer, mesothelioma, and cancer of the stomach and colon. The majority of people who died from asbestos exposure were exposed to very high concentrations of asbestos fibers at work and had little or no protection. These employees worked with asbestos regularly and for long periods of time. Examples include workers who held jobs in industries such as shipbuilding, mining, milling, and fabricating. Many of these workers were also smokers.

The most dangerous exposure to asbestos is from inhaling airborne fibers. The body's defenses can trap and expel many of the particles. However, as the level of asbestos fibers increase many fibers bypass these defenses and become embedded in the lungs. The fibers are not broken down by the body and can remain in body tissue indefinitely.

The Respiratory System

Since the primary health effects due to asbestos exposure are on the lungs, it is important to know how the respiratory system works. Air passes through the mouth and nose into the windpipe which splits into two smaller airways called the bronchi. The bronchi divide into smaller and smaller tubes which terminate into air sacs called alveoli. It is in these air sacs that oxygen is absorbed into small blood vessels and carbon dioxide passes out of the blood.

The lungs are surrounded by a thin membrane which looks like saran wrap. These membranes are very moist and slide easily across each other, but are difficult to pull apart. The linings are composed of cells known as mesothelia cells. Interaction of asbestos with these cells can result in a cancer called mesothelioma. If the linings are damaged, inhalation cannot occur properly.

The body has several mechanisms to filter the air we breathe. Large particles are trapped by the hairs in the nose. Smaller particles impact on the mucous coated walls of airway and are caught. The airway has hair-like linings (ciliated cells) which constantly beat upward. Dust particles caught in the mucous are swept upwards into the back of the mouth and swallowed. Cigarette smoking temporarily paralyzes these hair-like projections preventing them from discharging the dust particles. This is one reason cigarette smokers who work with asbestos are at increased risk.

Particles reaching the tiny air sacs are engulfed by large cells called macrophages. However, because asbestos is a mineral fiber they are often unsuccessful. When this occurs the macrophages deposit a coating on the fiber and may form scar tissue around it.

Asbestosis

Asbestosis is a non-cancerous chronic respiratory disease caused by an accumulation of asbestos fibers in the lungs. The fibers cut the air sacs and cause scar tissue to form. Even after exposure to asbestos has stopped, scar tissue will continue to form around existing scar tissue and fibers in the lungs. The scarring reduces the capacity of the lung to take in air resulting in shortness of breath, coughing, and fatigue. As the disease worsens, shortness of breath occurs even at rest. In severe cases death may be caused by respiratory or cardiac failure.

Asbestosis is typically found in workers who have been exposed to large doses of asbestos over a long time. The greater the asbestos exposure the more likely asbestosis will develop. It may take 15-30 years for the disease to develop. Because the presence of asbestosis indicates that workers have been exposed to a large dose of asbestos, they are at greater risk for lung cancer.

Lung Cancer

Exposure to asbestos has been linked to an increased risk of lung cancer. Symptoms include a cough, chest pain, and blood-streaked sputum. The pain is usually felt as a persistent ache unrelated to the cough. Lung cancer has a latency period of 15-20 years. Exposure to asbestos and cigarette smoking combine to create a significantly higher risk of developing lung cancer than would be expected from each substance alone. A smoker exposed to asbestos may have 50-100 times the risk of developing lung cancer compared to a non-exposed non-smoker.

Mesothelioma

Mesothelioma is an extremely rare cancer of the thin membrane lining the chest and abdomen. Most incidences of mesothelioma have been traced directly to a history of asbestos exposure. Symptoms include shortness of breath, pain in the walls of the chest, or abdominal pain. Mesothelioma spreads very rapidly and is always fatal. It has a latency period of approximately 40 years. Mesothelioma is more likely to be found among workers who were first exposed to asbestos at an early age, such as in school.

Other Diseases

There are no known immediate effects associated with exposure to asbestos. There is no evidence that asbestos fibers can penetrate the skin. However, some workers have experienced irritation and a rash from exposure. There is some evidence suggesting that swallowing asbestos fibers may cause cancers of the digestive tract and may be carried to other parts of the body after being absorbed into the bloodstream.

Risks Associated with Low-Level Exposure

Asbestos is a known hazard based on studies of asbestos workers and laboratory animals exposed to high doses. However, the risks associated with low level non-occupational exposure (e.g., an occupant of a building containing ACM) are not well established. Risks from low level exposure are based on extrapolation from workers exposed to high levels of asbestos and may not be reliable.

Based on a review of the literature EPA concludes that there is no safe or threshold level of exposure. Since asbestos fibers accumulate in the lungs, the risk of disease increases as exposure increases. Theoretically any exposure could result in an asbestos related disease. Although the risk at very low exposures may be negligible, measures to reduce exposure and the accumulation of fibers should be followed.

9.0 SAFE WORK PRACTICES- REDUCING EXPOSURE

Operations and Maintenance (O&M) Program

An Operation and Maintenance Program is designed to manage asbestos in place to safeguard the health of building occupants. This is accomplished by training, cleaning, work practices, and inspections to maintain ACM in good condition. Removal is often not the best course of action to reduce asbestos exposure. The O&M program is designed to prevent asbestos fiber release and control fiber releases if they occur. A well-run O&M program may be all that is necessary to control the release of fibers. Emphasizing the importance and effectiveness of a good O&M program is critical to putting the potential hazards of asbestos exposure in proper perspective. That effort centers on communicating the following five facts to employees:

1. Although asbestos is hazardous, the risk of asbestos-related disease depends upon exposure to airborne fibers. An individual must breathe asbestos fibers in order to develop an asbestos-related disease. How many fibers an individual must breathe are uncertain. However, at very low exposure levels, the risk may be negligible or zero.

2. The average airborne asbestos level in buildings is very low. Therefore, the health risk to most building occupants will be very low. An EPA study in 1987 found asbestos air levels in buildings to be essentially the same as levels outside. Based on that data, most building occupants (i.e., those unlikely to disturb ACM) appear to face only a very slight risk, if any, of developing an asbestos-related disease.

3. Removal is often not the best course of action to reduce asbestos exposure. In fact, improper removal can create a dangerous situation where none previously existed. Asbestos removals tend to elevate the airborne level of asbestos fibers in a building. Unless all safeguards are properly applied, a removal operation can actually increase rather than decrease the risk of asbestos related disease.

4. EPA only requires asbestos removal during building demolition or renovation activities. This is done to prevent significant public exposure to airborne fibers.

5. EPA recommends a proactive, in-place management program whenever ACM is discovered. In place management does not mean "do nothing." It means having a program that reduces the release of asbestos fibers, and ensures that proper controls and cleanup procedures are implemented if fibers are released. If in doubt about the possibility of disturbing ACM during maintenance activities, adequate precautions should be taken to minimize fiber release.

Basic O&M procedures to minimize and/or contain asbestos fibers may include wet methods, HEPA vacuuming, area isolation, PPE, and avoidance of certain activities, such as sawing, sanding, and drilling ACM. The need for these practices varies with the situation. For example, removing light fixtures located near ACM may disturb the material and might involve the use of special cleaning, area isolation, and respiratory protection. Periodic emptying of a trash can near asbestos containing plaster may not disturb the material, so special work practices would be unnecessary.

ACM may readily release fibers into the air when certain mechanical operations are performed directly on it. For example, fiber release can occur when workers are drilling, cutting, sanding, breaking, or sawing vinyl asbestos floor tile. Maintenance or repair operations involving those actions should be eliminated or carefully controlled to prevent or minimize asbestos fiber release. Certain activities that occur near ACM can also cause damage which may result in asbestos fiber release. For example, maintenance and custodial staff may damage ACM accidentally with broom handles, ladders, and fork-lifts while performing other tasks. Activities performed near ACM should always be done in a way that minimizes fiber release.

The O&M program should include a system to control all work that could disturb ACM. The person requesting the work should submit a Job Request Form to the Asbestos Manager before any maintenance work is begun that could disturb ACM.

Informing Building Occupants and Workers

Owners should inform occupants and workers about the location of ACM and stress the need to avoid disturbing the material. Occupants should be notified because they are less likely to disturb the material and cause fiber release.

In maintenance areas (such as boiler rooms and equipment rooms) signs should be placed directly next to boilers, pipes, and other equipment to remind maintenance workers not to disturb the ACM. As an alternative, color coding can be used to identify ACM if all potentially exposed workers understand the coding system.

The information given to building occupants should contain the following points:

1. The location, condition of the ACM, and the appropriate response.

2. Asbestos only presents a health hazard when fibers become airborne and are inhaled. The mere presence of ACM does not present a health hazard.

3. Do not disturb the ACM.

4. Report any evidence of disturbance or damage of ACM to supervision.

5. Report any dust or debris that might come from the ACM or any changes in the condition of ACM to supervision.

6. Cleaning and maintenance personnel are taking special precautions to properly clean up any asbestos dust and to guard against disturbing ACM.

7. All ACM is inspected periodically and additional measures will be taken if needed to protect the health of building occupants.

General Safety Procedures

Everyone has probably been exposed to asbestos because it is so widely used. However, the health risks associated with asbestos are directly related to the amount and frequency of exposure. Decreasing exposure to asbestos will decrease the health risks associated with it. This can be done by following safe work practices and taking proper precautions.

The health risks associated with exposure to asbestos occur when it is disturbed and releases fibers into the air. To reduce exposure, it is important to know where asbestos is located and to minimize activities that will release fibers into the air. The potential for a particular form of asbestos to release fibers will depend on several factors including the degree of friability, wear, age, and location.

Exposure to asbestos fibers can be hazardous. The following general precautions will reduce exposure and lower the risk of asbestos related health problems:

1. Drilling, sawing, or using nails on asbestos materials can release asbestos fibers and should be avoided.

2. Floor tiles, ceiling tiles or adhesives that contain asbestos should never be sanded.

3. Use care not to damage asbestos when moving furniture, ladders, or any other object.

4. Know where asbestos is located in your work area. Use common sense when working around products that contain asbestos. Avoid touching or disturbing asbestos materials on walls, ceilings, pipes, ducts, or boilers.

5. All asbestos containing materials should be checked periodically for damage or deterioration. Report any damage, change in condition, or loose asbestos containing material to a supervisor.

6. All removal or repair work involving asbestos must be done by specially trained personnel. OSHA and EPA regulations are very specific about work practices and equipment required to work safely with asbestos. These requirements may include proper respirators, special enclosures, training, exposure monitoring, long term record keeping, and medical surveillance.

7. Asbestos should always be handled wet to help prevent fibers from being released. If asbestos is soaked with water or a mixture of water and liquid detergent before it is handled, the fibers are too heavy to remain suspended in the air.

8. In the presence of asbestos dust above the PEL, the use of a respirator approved for asbestos work is required. A dust mask is not acceptable because asbestos fibers will pass through it. The use of respirators must be approved by the Safety Office.

9. Dusting, sweeping, or vacuuming dry asbestos with a standard vacuum cleaner will put the fibers back into the air. A vacuum cleaner with a special high efficiency filter (HEPA) must be used to vacuum asbestos dust.

10. If a HEPA vacuum is not used cleanups must be done with a wet cloth or mop. The only exception to this would be if the moisture presents an additional hazard such as around electricity.

11. Asbestos waste, including all clean up materials, must be sealed in a double 6-mil plastic asbestos bag and properly labeled before being disposed in an EPA approved landfill.

Remember, the mere presence of asbestos itself does not create a health hazard unless the material is disturbed and releases fibers to the atmosphere. Protect yourself and others by being aware of where asbestos is located, the dangers involved, and using common sense when working around ACM.

Safety Procedures for Housekeepers

Housekeepers and maintenance workers may come into close proximity to ACM during the performance of their job duties. During routine activities exposure to custodians is very low and does not pose a significant risk for the development of asbestos related disease. A recent study determined that custodians who performed routine activities in buildings that contained friable ACM were not exposed to airborne asbestos above the PEL.

If gradual deterioration or damage to ACM has occurred, asbestos-containing dust or debris could be present. Special cleaning practices should be used to collect residual asbestos dust. Routinely cleaning floors using wet methods is an example of one such practice. Custodial and maintenance workers should also identify and report areas that are in need of special cleaning or repair. Cleaning must be done properly because the use of improper techniques may result in widespread contamination, and increase air-borne asbestos fiber levels in the building. In addition, improper cleaning may cause damage to the ACM, thus releasing more airborne asbestos fibers.

Workers involved in cleaning up small quantities of asbestos dust must receive training in asbestos awareness. The following practices should be used:

1. Always use wet cleaning or wet-wiping practices to pick up asbestos fibers. Dry sweeping or dusting can result in asbestos fibers being re-suspended and should never be used.

2. Wet cloths, rags, or mops used to pick up asbestos fibers, should be properly disposed of as asbestos waste while still wet.

3. The use of special vacuum cleaners known as HEPA vacuums may be preferable to wet cleaning in certain situations. Never use a regular vacuum cleaner to clean up asbestos dust. Workers should wear proper PPE when changing HEPA filters. Waste must be disposed of as asbestos waste.

4. If ACM has been released onto a carpet it may be impossible to adequately clean the carpeted area. Consult with supervision prior to cleaning. Steam cleaning and HEPA vacuuming can be used. Proper respiratory protection may be necessary. This type of cleaning should be done after hours.

Asbestos Floor Tiles

The following procedures should be used when caring for asbestos containing floor tiles.

1. Sanding of asbestos containing floor tiles is prohibited.

2. Stripping of finishes shall be conducted using wet methods and low abrasion pads at speeds lower than 300 rpm. Do not perform dry stripping or overstrip the floor.

3. When high speed buffing is done, ensure that there is adequate sealer and finish on the floor. Always keep the machine moving.

4. Do not remove or attempt to repair loose floor tiles. Improperly removed asbestos containing floor tiles could result in the release of high levels of asbestos.

5. Report loose floor tiles to supervision immediately. Avoid running the machine over loose tiles.

Asbestos Fiber Releases

Special procedures are needed to reduce the spread of asbestos fibers after a release of fibers has occurred, such as the partial collapse of an ACM ceiling or wall. Depending on the severity of the release, an asbestos contractor may be needed to conduct the cleanup operation. If fibers are released through an incident, personnel should take the following steps to reduce asbestos exposure to occupants until trained asbestos personnel arrive:

1. Prevent access to the contaminated area if possible.

2. Shut and lock doors.

3. Report the damaged ACM to supervision.

4. Remain in the area to direct asbestos personnel to the site.

5. Do not attempt to clean up a release.

On occasion potentially large releases of asbestos fibers will occur. When this happens, supervision should be notified immediately. Supervision will notify the Asbestos Manager and the Safety Manager. They will conduct a joint evaluation of the release and determine what actions should be taken. A minor release episode is defined as three square or linear feet or less of friable ACM. A licensed asbestos contractor will be called to clean up releases greater than three square or linear feet. If the release is minor specially trained in-house personnel may clean-up the release using the following procedures:

1. Secure the area and post signs to prevent unauthorized personnel from entering the area.

2. If fibers could enter the HVAC system the unit should be shut down and sealed.

3. Put on a half or full face respirator with HEPA cartridges.

4. Put on a tyvek suit and gloves.

5. Clean up loose asbestos with a HEPA vacuum, do not use a regular vacuum.

6. If a HEPA vacuum is not available, wet down the area with amended water (water in which a few drops of liquid laundry detergent have been added).

7. Place all trash into two 6-mil plastic labeled bags.

8. Wipe the area clean.

9. Properly dispose of waste.

10.0 SUMMARY

The following key points should be remembered:

1. Inhalation of asbestos fibers can cause asbestosis, lung cancer, and mesothelioma. These health effects were noted primarily in workers exposed routinely to very high levels of asbestos on their jobs.

2. The health effects from exposure to low-level amounts of asbestos fibers are not as well understood. Therefore, custodial/maintenance workers should exercise caution when working around ACM and try to minimize exposures.

3. Three naturally occurring asbestos minerals, chrysotile, amosite, and crocidolite, are commonly used in building products.

4. Asbestos became a popular commercial product because of its strength, heat resistance, corrosion resistance, and thermal insulation properties.

5. ACM is regulated by EPA, OSHA, the Consumer Product Safety Commission, and individual state

and local agencies.

6. Friable ACM can be found in about 700,000 public and commercial buildings. Many areas where asbestos is found are not accessible to the general public.

7. Some common uses of asbestos included pipe/boiler insulation, spray-applied fireproofing, floor and ceiling tile, and cement pipe/sheeting.

8. Positive identification of asbestos requires laboratory analysis. Information on labels or visual examination is not sufficient.

9. Intact, undisturbed materials generally do not pose a health risk. Asbestos may become hazardous when damaged, disturbed, or deteriorated over time and release fibers into the air.

10. If you smoke and work around asbestos your risks for developing asbestos related disease dramatically increase.

11. Report all releases and damaged ACM to supervision. Do not attempt to clean up asbestos spills.

12. Contractors are required to follow strict OSHA and EPA regulations when removing asbestos. Construction debris may be present after the contractor has left. This material will be free of asbestos.

13. Always consult the Asbestos Management Plan to determine where ACM is located in your work area.

Chapter 23- Benzene Awareness

INTRODUCTION

The following Awareness level Benzene Safety Program has been established by Evo Corporation to reduce employee exposure and potential hazards that may be encountered during various industrial cleaning operations conducted at assigned work locations. This written program is available for affected employee or employee representative inspection, and upon request for examination or copying by an auditing or regulatory agency.

Employees are not expected to perform emergency response cleanup where concentrations of Benzene have the potential to be above the PEL (Permissible Exposure Limit) of 1ppm (part per million). Should employees be assigned such duties, specialize training will be provided. This written program is being established to effectively control any employee exposures to the extremely hazardous benzene containing materials.

Evo Corp. employees work in locations such as 1. Petroleum refining sites 2. Tank Gauging (tanks at producing, pipeline & refining operations), and 3. Field maintenance. Employees shall be made aware of the host facilities contingency plans and programs for preventing exposure to Benzene.

TOXICITY

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.
3. The by-products of Benzene should be considered toxic and the same precautions shall be used when around or otherwise handling Benzene containing materials.
IDENTIFICATION
Liquefied or gaseous Benzene (C_6H_6) is a clear, colorless sweet-smelling aromatic highly flammable hydrocarbon that can usually be found naturally occurring in crude oil, and in processed intermediate

or finished product hydrocarbon streams at petrochemical or refining operation facilities. It is further described by the following physical and chemical characteristics:

Boiling Point (C 760 mmHg)	80.1C or 176F
Melting Point (C)	5.5C
Specific Gravity (H2O = 1)	0.879
Vapor Pressure (mm Hg)	74.6 @ 20C
Percent Volatile by Vol (%)	99+%
Vapor Density (Air = 1)	2.77
Evaporation Rate (BuAc = 1)	6.0
Solubility in Water (%)	Insoluble
NFPA Hazard Ratings :	Health : 2
Flammability : 3	
Reactivity : 0	Special Hazards : None

EXPOSURE DETERMINATION AND LIMITS

Prior to any Evo Corp. employee's entry into an assigned work location, the host-facility operator will have conducted tests to determine the actual presence of benzene (positive test), or identified a potential area where Benzene could be reasonably expected to be encountered. This area is usually demarcated by the use of specific-worded signs or colored barricade tape. Evo Corp. Management is accountable for informing employees of the location of potential Benzene exposures.

The Host Company is accountable for identifying the locations where Benzene containing materials are used and for informing employees of their contingency plans along with the awareness of general plant safety rules, including evacuation.

A positive test is one, which exceeds the airborne concentration action level of .5 ppm, or the PEL (permissible exposure limit), which could be either the 8-hour TWA (time-weighted average) of 1 ppm or the STEL (short-term exposure limit) of 5 ppm for 15 minutes.

Determination of employee exposure is then made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene. 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.

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 Company may then use objective data, such as measurements from brief period measuring devices to determine where STEL monitoring is needed. Except for initial monitoring as required, where the employer can document that one shift will consistently have higher employee exposures for an operation, Evo Corp shall only be required to determine representative employee exposure for that operation during the shift on which the highest exposure is expected.

Initial monitoring must be conducted at each covered work place or work operation to determine accurately the airborne concentrations of benzene to which employees may be exposed.
The initial monitoring required shall be completed by 60 days after the effective date of this standard or within 30 days of the introduction of benzene into the workplace. Where Evo Corp. or the host-facility operator has monitored, and the monitoring satisfies all other requirements, Evo Corporation may rely on such earlier monitoring results.

Periodic monitoring and monitoring frequency requirements must be met if the monitoring reveals employee exposure at or above the action level but at or below the TWA. This shall be repeated at least every year. IF the monitoring reveals employee exposure above the TWA, the monitoring shall be repeated for each such employee every (6) six months.

The Company 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. Monitoring for the STEL shall be repeated as necessary to evaluate exposure of employees subject to short-term exposures.

Monitoring can be terminated if the initial monitoring reveals employee exposure to be below the action level, except as otherwise required. If the periodic monitoring reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level, then Evo Corp. may discontinue the monitoring for that employee, except as otherwise required.

Additional monitoring shall be conducted 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 Evo Corp. has any reason to suspect a change which may result in new or additional exposures. Whenever spills, ruptures, or other breakdowns occur that may lead to employee exposure, Evo Corporation or the host-facility 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.

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

Employees shall be notified of all monitoring results, within 15 working days after the receipt of the results of any monitoring performed, in writing, individually or by posting of results in an appropriate location that is accessible to affected employees. Whenever PEL’s are exceeded, the written notification shall contain the corrective action taken to reduce the employee exposure to or below the PEL, or shall refer to a document available to the employee which states the corrective action to be taken.

CONTROLS

Employees are protected from Benzene exposure by the use of various engineering and work practice controls established by the various host-facility operations where industrial cleaning work will be performed.

Hydrocarbon liquids and vapors are normally contained by designed closed systems consisting of reactors, towers, process piping, vessels, or stored in closed tanks, drums, barrels, cylinders, bottles, and cans. However, sometimes these closed systems rupture, leak, fail, or are required to be opened up for service work, increasing exposure potentials.

Benzene liquid is highly flammable and its vapors may form explosive mixtures in air. Fire extinguishers must be readily available for use. Smoking is prohibited in areas where Benzene is stored or used.

Regulated areas are then established 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. Access to these regulated areas is then limited to authorized personnel who will be provided with appropriate levels of personal protective equipment.

Safe work practices are then instituted which could consist of or involve product line removal, blinding, blanking, draining, cleaning, steaming, purging, high-pressure washing, or neutralizing. Safe-work procedures such as lock-out/tag-out, hot-work, or confined space entry are implemented to further control exposure potentials.

PERSONAL PROTECTIVE EQUIPMENT - (PPE)

PPE will be worn where appropriate to prevent eye contact and limit dermal (skin) exposure to liquid benzene. Employees will refer to the PPE Program found in this manual, for proper protective equipment requirements, as well as comply with any host-facility's PPE rules or regulations. Employees can expect to wear one or more combinations of the following provided equipment, as based on the work permit requirements, operator's instructions, or established PPE guidelines:

- ANSI Z87.1 safety glasses with rigid side shields
- Chemical splash-proof goggles
- Full face-shield
- Chemical/hydrocarbon-resistant suit/coverall/clothing
- Chemical/hydrocarbon-resistant gloves
- Chemical/hydrocarbon-resistant over-shoes/boots

This equipment will be inspected prior to use and maintained in a safe working condition. If any defects are found or occur during use, this equipment will not be allowed for use and will be provided and replaced at no cost to the employee.

RESPIRATORY PROTECTION

Whenever the described engineering and work practice controls are determined to be ineffective at reducing employee Benzene exposure potentials, then respiratory protection will be provided in accordance with the Respirator Program, found in this manual, which meets the guidelines established by OSHA Regulation 29 CFR 1910.134 (b) (d) (e) and (f). Respirators shall be used in the following circumstances:

- During the time period necessary to install or implement feasible engineering and work practice controls;

- In work operations for which assessments establishes that compliance with either the TWA or STEL through the use of engineering or work practice controls is not feasible, such as some maintenance and repair activities or vessel cleaning;

- Other operations where engineering and work practice controls are infeasible because exposures are intermittent in nature and limited in duration;

- In work situations where feasible engineering and work practice controls are not yet sufficient or are not required to reduce exposure to or below the PEL's;

- In emergency cleanup situations can reasonably be expected to be encountered;

Employees will be required to participate in a respirator user's program to prevent Benzene exposures, and their selection of NIOSH/MSHA approved equipment will be based on the following guidelines:

- For airborne concentrations of 10 ppm or less, as a minimum, a half-face, negative-pressure, air-purifying respirator with organic vapor cartridge must be used.

- For airborne concentrations of 50 ppm or less, as a minimum, a full-face piece, negative-pressure, air-purifying respirator with organic vapor cartridges must be used

- For airborne concentrations of 100 ppm or less, as a minimum, a full-face piece, powered air-purifying respirator with organic vapor cartridges must be used.

- For any unknown or concentrations determined to be immediately dangerous to life and health (IDLH), a self-contained breathing apparatus (SCBA) with full-face piece in positive pressure demand mode, or a full-face piece, supplied-air respirator in positive pressure demand mode with auxiliary self-contained air supply must be used.

- For an emergency escape of any concentration, any organic vapor or supplied-air respirator must be used.

CFS shall select and provide, at no cost to the employee, the appropriate respirator as specified above, and shall ensure that the employee uses the respirator provided. Any employee who cannot wear a negative pressure respirator shall be given the option of wearing a respirator with less breathing resistance such as a powered air-purifying respirator or supplied-air respirator.

Where air-purifying respirators are used, The Company shall replace the air purifying element at the expiration of service life or at the beginning of each shift in which they will be used, whichever comes first. If an air-purifying element becomes available with an end of useful life indicator for benzene approved by MSHA/NIOSH, the element may be used until such time as the indicator shows no further useful life.

The Company shall permit employees who wear respirators to leave the regulated area to wash their faces and respirator face-pieces as necessary in order to prevent skin irritation associated with respirator use or to change the filter elements of air-purifying respirators whenever they detect a change in breathing resistance or chemical vapor breakthrough. All respirators issued to be worn shall be fit-tested according to the Company's respirator users program found in this manual.

MEDICAL SURVEILLANCE

The Company recognizes that some employees might be exposed to Benzene levels that could exceed established permissible exposure levels. The medical surveillance program has been implemented and the following guidelines are to be followed at all times:

- In the event employees are or may be exposed to Benzene at or above the action level of .5 ppm for 30 or more days per year.

- In the event employees are exposed to a PEL or greater for 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 a former employer.

Evo Corp. will 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. 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.

All examinations and procedures are provided at no cost to the employee and at a reasonable time and place. Within 60 days of the effective date of this standard, or before the time of initial assignment, Evo Corp. shall provide each affected employee 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 dysfunctions
5. A history of medicinal drugs routinely taken
6. A history of previous exposure to ionizing radiation
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 thrombo-cyte 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.

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

PERIODIC EXAMINATIONS

Evo Corp. shall provide each affected employee 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.

Where the employee develops signs and symptoms commonly associated with toxic exposures to benzene, Evo Corp. will provide employees with an additional medical examination which shall include those elements considered appropriate by the examining physician.

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 pulmonary system shall be made at the time of the pulmonary function test.

EMERGENCY EXAMINATIONS

In addition to the surveillance required, if an employee is exposed to benzene in an emergency situation, Evo Corp. will 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. If the result of the urinary phenol test is below 75 mg. Phenol/L. of urine, no further testing is required.

If the result of the urinary phenol test is equal to or greater than 75 mg. Phenol/L. of urine, then Evo Corp. will 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. If any of the conditions specified exists, then the further requirements of this section shall be met, and Evo Corp. will, in addition, provide the employees with periodic examinations if directed by the physician.

ADDITIONAL EXAMINATIONS AND REFERRALS

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 normal 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% 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 3 or there is anabnormal differential count.
1. 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 un-necessary.

D. The Company will provide the hematologist or internist with the information required to be provided to the physician and the medical record required to be maintained. The hematologist or internist's evaluation shall include a determination as to the need for additional test, and Evo Corp. will assure that these tests are provided.

INFORMATION PROVIDED TO THE PHYSICIAN

Evo Corp. will provide the following information to the examining physician:

- A copy of this regulation and its appendices.

- A description of the affected employee's duties as they relate to the employee's exposure.

- The employee's actual or representative exposure level

1. a description of any personal protective equipment used or to be used

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

PHYSICIAN'S WRITTEN OPINIONS

For each examination under this section, Evo Corp. will 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:

- The occupationally pertinent results of the medical examination and tests.
- 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.

- 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.

- 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.

The written opinion obtained by Evo Corp. will not reveal specific records, findings and diagnoses that have no bearing on the employee's ability to work in a benzene-exposed workplace.
Based on the physician's/hematologist's/internist's written opinion, an employee can be removed from benzene exposure if the examinations reveals that exposure levels may exceed the action level. A follow-up examination will be provided to the affected employee. Return to a benzene work-related environment may occur based upon physician referral after a 6 month period and review of further medical testing that is conducted.

FIRST AID MEASURES

- Eye Contact: Flush with water for at least 15 minutes. Get medical assistance.

- Skin Contact: Wash with soap and water thoroughly. Immediately remove soaked clothing. Wash clothing separately before re-use.

- Inhalation: Move person to fresh air. If breathing has stopped, perform artificial respiration. Get medical assistance immediately.

- Ingestion: Do not induce vomiting. Do not give liquids. Get medical assistance immediately. Small amounts that enter the mouth should be rinsed out thoroughly.

POTENTIAL HEALTH EFFECTS (Acute and Chronic)

Symptoms of exposure include toxic by any route, headache, dizziness, nausea, weakness, breathing difficulties, collapse. May cause anemia, liver and kidney damage. Irritation on contact with skin or eyes; may cause eye damage. Benzene is a known, proven carcinogenic substance per NTP, IARC, & OSHA. All known exposures are to be reported to the employees' immediate supervisor and members' management as soon as practical.

Non-compliance by any employees, with any part of this described program will result in disciplinary action as outlined in the Company's Corrective Action/Disciplinary Program.

Chapter 24 – Lead Awareness

What is Lead?

Lead is a highly toxic metal and it is all around us. Lead was used for many years in paints and other products found in and around our homes. Lead-based paint and lead contaminated dust are the main sources of exposure for lead in U.S. children. Lead-based paints were banned for use in housing in 1978. There is a good chance that any home, building, school or day care center built before 1978 contains some lead paint.

One million children are affected by lead poisoning, but when you know what to look for and what to do, lead poisoning is entirely preventable.

Where is Lead Found?

The most common source of lead is from paint in homes and buildings built before 1978. Lead also can be emitted into the air from industrial sources and leaded aviation gasoline, and lead can enter drinking water through plumbing materials.

It is also used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. The use of lead as an additive to automobile gasoline was banned in 1996 in the United States.

Lead is also a naturally occurring element. Natural levels of lead in soil range between 50 parts per million (ppm) and 400 ppm. Mining, smelting, and refining activities have resulted in substantial increases in lead levels in the environment, especially near mining and smelting sites. For example, near some types of industrial and municipal facilities, and adjacent to highways (Chaney et al., 1984; Schacklette et al., 1984) soil lead concentrations have been reported to be more than 11,000 ppm (National Research Council, 1980).

Read more about where lead can be found:

•At home
•At schools and childcare facilities
•In products
•In drinking water
•In outdoor air
•In soil

How Can People Be Exposed to Lead?

Children

Lead is dangerous to children because babies and young children often put their hands and other objects that can have lead dust on them in their mouths. Also, children's growing bodies absorb more lead than adult bodies do, and their brains and nervous systems are more sensitive to the damaging effects of lead.

Children living at or below the poverty line who live in older housing are at greatest risk. Children of some racial and ethnic groups, and those living in older housing, are disproportionately affected by lead.

Pregnant Women
Pregnant women can be exposed to lead by spending time in areas where lead-based paints are deteriorating into lead dust that they then breathe in. Likewise, eating and drinking from dishes or glasses that contain lead water, or using certain folk remedies to which lead is intentionally added can cause exposures to lead. In addition, working in a job or engaging in hobbies where lead is used, such as making stained glass, can increase exposure.

Adults
Adults are also susceptible to lead exposure. This may be from:

•Breathing in lead dust, especially during renovation or repair work that disturbs painted surfaces in older homes and buildings.
•Putting their hands or other objects covered with lead dust in their mouths.
•Eating or drinking contaminated food or water or using certain folk remedies.
•Working in a job or engaging in hobbies where lead is used.

Lower Your Chances of Exposure to Lead
Simple steps like keeping your home clean and feeding your family a well-balanced diet will go a long way in preventing lead poisoning. You can lower the chances of exposure to lead in your home, both now and in the future, by taking these steps:

•Use only cold water to prepare food and drinks.
•Flush all water outlets used for drinking or food preparation.
•Clean debris out of all outlet screens or aerators on faucets on a regular basis.
•Keep your home clean and dust-free.
•Wipe up any paint chips or visible dust with a wet sponge or rag. Clean dust around areas where there is friction and dust can be generated, such as doors, windows, and drawers.
•Wash children's hands, bottles, pacifiers and toys often.
•Teach children to wipe and remove their shoes and wash hands after playing outdoors.
•Ensure that your family members eat well-balanced meals. Lead interferes with some of the body's basic functions. Our bodies can't tell the difference between lead and calcium, which is a mineral that strengthens bones. Children with healthy diets absorb less lead.
•Make sure your contractor is Lead Safe Certified.
Determine if your family is at risk for lead poisoning with the Lead Poisoning Home Checklist (PDF) (1 pg, 47K, About PDF).

Possible Adverse Health Effects of Exposures to Lead
Lead exposure affects the nervous system and can cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. Children six years old and younger are most at risk.

Children
If not detected early, children with high levels of lead in their bodies can suffer from:

•Damage to the brain and nervous system
•Behavior and learning problems, such as hyperactivity
•Slowed growth
•Hearing problems
•Headaches
•Anemia
•In rare cases of acute lead poisoning from ingestion of lead, seizures, coma and even death.

Pregnant Women
Lead can accumulate in our bodies over time, where it is stores in bones along with calcium. During pregnancy, lead is released from bones as maternal calcium is used to help form the bones of the fetus. This is particularly true if a woman does not have enough dietary calcium. Lead can also be easily circulated from the mother's blood stream through the placenta to the fetus. Mothers with high levels of lead in their bodies can expose their developing fetuses, resulting in serious and developmental problems including:

•Miscarriages,
•Premature births or low birth weight,
•Brain damage, decreased mental abilities and learning difficulties, and/or
•Reduced growth in young children.
Find out more about lead's effects on pregnancy:

•March of Dimes Healthy Pregnancy
•Effects of Workplace Hazards on Female Reproductive Health, National Institute for Occupational Safety and Health.
Adults
Lead is also harmful to adults. Adults can suffer from:

•Hearing and vision impairment,
•Reproductive problems (in both men and women),
•High blood pressure and hypertension,
•Nerve disorders,
•Memory and concentration problems,
•Poor muscle coordination, and
•Muscle and joint pain.
Read more on the health effects of lead at the Agency for Toxic Substances and Disease Registry (ATSDR).

Lead Exposure Data
The Centers for Disease Control's National Center for Health Statistics monitors blood lead levels in the United States.

National Center for Health Statistics

Get information on the number of children with elevated blood lead levels, and number and percentage of children tested for lead in your area.

References

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Chapter 25 – Heat Illness & Cold Stress Prevention

I. OVERVIEW AND OBJECTIVES

Employees who work in outdoor places of employment or on job tasks in other areas at those times when the environmental risk factors for heat illness and cold stress are present, are at risk for developing heat illnesses and cold stress if they do not protect themselves appropriately. The objective of this program is employee awareness regarding heat illness & cold stress symptoms, ways to prevent illness, and what to do if symptoms occur.

II. SCOPE

The Evo Corporation Heat Illness & Cold Stress Prevention Program applies to the control of risk of occurrence of heat illness and applies to all outdoor places of employment at those times when the environmental risk factors for heat illness are present.

III. POLICY

It is the policy of Evo Corporation that any employee participating in job tasks when environmental risk factors for heat illness and cold stress are present will comply with the procedures in this document and in the Injury and Illness Prevention Program.

IV. PURPOSE

To ensure that all employees of Evo Corporation are protected from heat illness and cold stress while working on job tasks where environmental risk factors for heat illness and cold stress are present and to establish the minimum requirements for working in this environment.

V. DEFINITIONS

The term “acclimatization” means temporary adaptation of the body to work in the heat or cold that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for about two hours per day in the heat or cold.

“Environmental risk factors for heat illness & cold stress” means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun, conductive heat sources such as the ground, air movement, wind chill, workload severity and duration, protective clothing and personnel protective equipment worn by employees.

The term “heat illness” means a serious medical condition resulting from the body’s inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

"Personal risk factors for heat illness & cold stress" means factors such as an individual's age, degree of acclimatization, health, diabetes, hypertension, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

"Preventative recovery period" means a period of time to recover from the heat or cold in order to prevent heat illness and cold stress.

The term "shade" means blockage of direct sunlight. Canopies, umbrellas, and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

VI. RESPONSIBILITIES

A. Chief Safety Officer is responsible for:

1. Preparing and maintaining a written program which complies with the requirements of applicable OSHA requirements.

2. Assisting with providing training to all potentially impacted employees and their supervisors on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.

B. Directors, Managers, and Supervisors are responsible for:

1. Identifying all employees who are required to work outdoors where potential heat illness or cold stress could occur and identifying the supervisor of the employees.

2. Assuring that adequate water, shade, layered clothing are available at a job site when the environmental risk factors for heat illness or cold stress are present.

3. Ensuring that all affected employees have received training on heat illness/cold stress prevention.

4. Ensuring that the requirements in this document are followed.

5. Contacting emergency medical services to request emergency medical services in the event medical assistance is required.

C. Affected employees are responsible for:

1. Complying with the provisions of the Heat Illness & Cold Stress Prevention Program, as described in this document and in the training sessions they attend.

2. Ensuring they have drinking water available or layered clothing at all times when the environmental risk factors for heat illness or cold stress are present.

3. Ensuring they have access to a shaded area to prevent or recover from heat related symptoms.

4. Reporting heat related illness & cold stress symptoms to the supervisor.

VII. BASIC REQUIREMENTS

A. The following basic requirements apply to all employees while working where environmental risk factors for heat illness or cold stress are present.

1. All employees shall be identified who are required to work where environmental factors for heat illness or cold stress are present.

2. Training shall be provided for all potentially impacted employees working where environmental risk factors for heat illness & cold stress are present and their supervisors. Training information shall include but not be limited to the topics listed in the training section of this written program. All potentially impacted employees & supervisors who supervise these employees must be trained on the risks & prevention, including how to recognize symptoms and respond when they appear.

3. Drinking water in the quantity of 1 quart per hour shall be available at all times for each employee for the duration of the entire shift while working outdoors in the heat, or rest breaks from cold. Supervisors shall remind employees to drink frequently and discuss at pre-job safety briefings.

4. Employees shall have access to a shaded area to prevent or recover from heat illness symptoms or where they can take their rest breaks. The importance of taking rest breaks and recognizing when a preventative recovery period is needed allowing employees to cool or warm shall be addressed at pre-job safety briefings.

5. In the event an employee feels discomfort from the heat or cold, a preventative recovery period is needed to allow the employee to cool down or warm & prevent the onset of heat illness or cold stress.

6. Supervisors and employees shall carry radios/phones or other means of communication to ensure that emergency services can be called. Verification that the radios or other means of communication are functional at the work site shall be carried out prior to each shift.

VIII. TRAINING

A. LEVELS OF TRAINING

Training shall be provided for employees working on job tasks where environmental risk factors for heat illness and cold stress are present, and training for their respective supervisors.

B. EMPLOYEES

All employees working on job tasks where environmental risk factors for heat illness or cold stress are present shall receive instruction before being assigned to work tasks. Training topics shall include the following:

1. Environmental and personal risk factors for heat illness or cold stress.

2. Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness or cold stress.

3. Employees who experience excessive sweating require frequent consumption of small quantities of water, up to 4 cups per hour when working in extreme conditions of heat.

4. Importance of acclimatization.

5. Different types, signs, and symptoms of heat illness or cold stress.

6. Importance of immediately reporting symptoms or signs of heat illness or cold stress in themselves or in coworkers to their supervisor.

7. Procedures for responding to symptoms of possible heat illness or cold stress, including how emergency medical services will be contacted and provided, should they become necessary.

C. SUPERVISORS OF AFFECTED EMPLOYEES

Supervisors or their designees shall receive training on the following topics prior to being assigned to supervise outdoor employees:

1. Information as detailed above in employee training requirements.

2. Procedures the supervisor shall follow to implement the provisions of this program.

3. Procedures the supervisor shall follow when an employee exhibits symptoms consistent with possible heat illness or cold stress, including emergency response procedures.

IX. PROGRAM AUDITS

A. RESPONSIBILITY
Audits of the Heat Illness & Cold Stress Prevention Program shall be performed by Supervisors and Chief Safety Officer.

B. FREQUENCY
Audits of the Heat Illness & Cold Stress Prevention Program shall be performed annually.

C. CONTENTS
1. The audit shall review the program to ensure that heat illness and cold stress prevention procedures are in place and are being properly followed.
2. The audit process and findings shall be documented.

X. RECORDS

All training, audit, and other records prepared in association with the Heat Illness & Cold Stress Prevention Program shall be managed in accordance with the requirements of the Evo Corporation Injury and Illness Prevention Program.

XI. COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS
When the body is unable to warm itself, serious cold related illnesses and injuries may occur, and permanent tissue damage and death may result.

Hypothermia can occur when land temperatures are above freezing or water temperatures are below 98.6°F/ 37°C.

Cold related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.

FROST BITE
What Happens to the Body: freezing in deep layers of skin and tissue; pale, waxy-white skin color; skin becomes hard and numb; usually affects the fingers, hands, toes, feet, ears, and nose.

HYPOTHERMIA - (Medical Emergency)
What Happens to the Body: normal body temperature (98.6° f/37°c) drops to or below 95°f (350 c); fatigue or drowsiness; uncontrolled shivering; cool bluish skin; slurred speech; clumsy movements; irritable, irrational or confused behavior.
How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine
- Eat warm, high-calorie foods like hot pasta dishes.

Chapter 26 – Rigging Material Handling

1 Purpose

1.1 Establishes rigging procedures for movement of any materials by hoisting means.

2 Applicability

2.1 This policy applies to all employees and subcontractors of Evo Corporation.
2.2 All organizations are required to comply with the provisions of this policy and procedure. Any deviation, unless spelled out specifically in the policy, requires the permission of the Chief Safety Officer or designee.

3 Definitions

3.1 Competent person: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to team members, and who has authorization to take prompt corrective measure to eliminate them. The competent person in charge of the lift is the lift director as per ASME (defined below).
Personnel responsibilities as per ASME American Society of Mechanical Engineers
 All responsibilities listed below shall be assigned in the work site organization. A single individual may perform one or more of these roles.
 Crane Operator: directly controls the crane's functions
 Crane Owner: has custodial control of a crane by virtue of lease or ownership
 Crane User: arranges the crane's presence on a worksite and controls its use there.
 Lift Director: directly oversees the work being performed by a crane and the associated rigging crew.
 Site supervisor: exercises supervisory control over the work site on which a crane is being used and over the work that is being performed on that site.
3.2 Load: The total weight of the materials being hoisted and all rigging and devices attached below the hook of the hoisting equipment, plus any deductions required by the manufacturer of the hoisting equipment (i.e. the block, the cable below the tip, etc.)
3.3 Qualified Rigger: A person that possesses a recognized degree, certificate or professional standing or has extensive knowledge, training and experience and can successfully demonstrate the ability to solve problems related to rigging loads.
3.4 Qualified Signal Person: A person that knows and understands the type of signals used at the work site, is competent in using these signals, understands the operations, limitations and dynamics of the equipment being used, knows and understands the signal person qualification requirements and has passed an oral or written test and a practical test. (Please see OSHA Standard 1926 Subpart CC for the entire description.)
3.5 Rigging: Any device used for attaching a load to a hoisting piece of equipment, such as a crane or chain fall, or the process of attaching the device to the equipment.
3.6 Softener: A material used to protect the rigging or hoisting cable from being damaged or cut by a sharp surface. Softeners are of two basic types – cut protection and abrasion protection.
3.7 Signal Person: The person designated to signal the crane operator, to keep an eye on obstructions and to assist the operator in making the hoist.
3.8 WLL: Working Load Limit.
3.9 WSTDA: Web Sling and Tie Down Association

4 Policy

4.1 To maintain the highest level of safe rigging operations, Evo Corporation will use these procedures during all lifting / hoisting operations. All rigging operations will occur under the control of a competent rigger.

5 Responsibilities

5.1 A competent or qualified person/rigger is responsible for providing annual inspections and approval for the use of hoisting machinery and safe rigging procedures under this policy.
5.2 The top Evo Corporation manager of the job site is responsible for the implementation of this policy on the job site.
5.3 Chief Safety Officer is responsible for maintaining this document.

Chapter 27 – Hydrogen Sulfide Awareness

INTRODUCTION

When performing routine mechanical inspection, safety reviews, pressure vessel testing, or other assigned work for Evo Corporation, it has the potential to place you nearby refinery hydrocarbon processing operations that can produce potential airborne concentrations of deadly hydrogen sulfide gas (H2S). As a result of this exposure potential, the following written program is provided for employee safety and health protection.

PHYSICAL/CHEMICAL CHARACTERISTICS

H2S is a highly toxic, poisonous gas which is deadly to humans, and has no visible color. It is soluble in hydrocarbons and water at a ratio of 4: 1, and highly corrosive to certain metals due to either hydrogen embrittlement or sulfide stress cracking. H2S is flammable when mixed with air at a temperature of 500 degrees F, and the lower flammability limit is 4.3% while the upper flammability limit is 46% by volume in air. When ignited, H2S produces Sulfur Dioxide (SO2) which is extremely hazardous and may leave victims disabled with pneumonia or respiratory damage.

Hydrogen Sulfide gas is 20% heavier than air, and can be dispersed great distances with only a slight breeze. As a result, unidentified locations about refineries or industrial settings could indicate detectable levels of H2S. These may include low lying areas such as: utility vaults, pits, ditches, trenches, confined spaces, inside dikes, or poorly ventilated areas.

PERSONAL DETECTION

Hydrogen Sulfide (H2S), also known as Sulfereted Hydrogen, Hydrosulfuric Acid, Sour Gas, Sulfur Hydride, Rotten-Egg Gas, or Sour Crude can be easily detected due to a strong odor of rotten eggs, or to others, a sweet, offensive, sickening odor. Although it can be detected at a low concentration of 1 ppm, this early warning property should not be depended upon as an accurate indicator of its presence. Hydrogen sulfide detection by your nose may not occur as a concentration of this gas between 100 and 150 ppm can deaden your sense of smell.

HEALTH EFFECTS

Hydrogen Sulfide gas is a rapidly-acting systemic poison which causes respiratory paralysis and asphyxia at high concentrations. It can irritate the eyes and respiratory tract at low concentrations. At a concentration greater than 700 ppm, inhalation of H2S may cause coma and/or death after a single breath.

It is important to note here that each individual person may be affected differently by different concentration levels of H2S. Some individuals are more sensitive to H2S and will be affected by a smaller concentration, and others may be less sensitive and can tolerate higher concentrations without

experiencing adverse health effects. If you should smell the presence of H2S or hear warnings from monitor alarms, then immediately evacuate this area and notify the host-facility operator or Evo Corporation management. Do not re-enter this area without proper respiratory protection and Operator permission.

LOCATIONS AND SIGNAGE

Locations where potentially high concentrations of H2S gas may be identified exist throughout refineries, industrial settings, waste treatment facilities, or petrochemical facilities as it can be found naturally in crude oil or produced as a byproduct of oil refining. (Other locations may be in sewers, cesspools, or stagnant water, as H2S is also formed by the decay of organic materials.)

Process areas of most refineries/plants have been identified by the use of fixed or portable detection methods, and are usually indicated by a sign that is yellow with black print that states, "CAUTION" HIGH LEVELS OF H2S MAY BE PRESENT

MONITORING

Identification of hydrogen sulfide concentrations is the responsibility of the host-facility operator, who may rely on the use of fixed detector systems, or the use of a hand-held bellows pump or syringe-draw instrument that utilizes colorimetric tubes. Personal, battery-operated, electronic single-gas detectors may be required to be worn by personnel, or can be made available for use upon request of the host-facility operator. The exposure limit is set to alarm at a concentration of 10 ppm.

EMERGENCY ESCAPE/CONTINGENCY PLANS

Emergency escape equipment is usually placed in several different locations about most refineries' process units, consisting of self-contained breathing apparatus (SCBA) located in high-density plastic storage boxes. This is the only approved type of respiratory equipment for work to be performed in concentrations exceeding the 10 ppm exposure limit.

Most host-facility contingency plans are explained in detail at site-specific contractor orientations. Evacuation is generally initiated by a particular warning alarm sound, or personal detection of an H2S release. All affected employees would then check the current wind direction, move cross-wind out of the immediate area, and then proceed to a primary or secondary evacuation point for a head-count.

All special precautions to be taken when performing work inside of a confined space are listed in the Company's Confined Space Entry Program.

FIRST AID

First aid needs will depend on the concentration level of contaminant H2S. Do not immediately rush to the aid of an affected coworker unless properly trained and without protecting yourself with proper PPE. Signs and symptoms of an exposure may be respiratory paralysis by inhalation, burning sensation of the eyes due to contact, or skin irritation.

Inhalation - remove victim to fresh air immediately. If not breathing, administer mouth-to-mouth artificial respiration until medical assistance arrives or victim is deceased. If breathing is restored but slow and labored, administer 100% oxygen by canister/mask as H2S is rapidly detoxified by the body. Maintain normal body temperature. Transportation to medical services should follow immediately.

Eye or skin contact - should be treated by a 15 minute wash/flush at a safety shower/eye-wash station. If irritation or discomfort persists, transportation to medical services should follow immediately.

Non-compliance by any Evo Corporation employee, with any part of this described program will result in disciplinary action as outlined in the Company's Corrective Action/Disciplinary Program.

Chapter 28 – Aerial Lifts

1.0 Overview

Aerial lifts are commonly used in environmental and industrial services and repair services to lift Evo Corporation employees to an elevated work position. Proper operation and use of aerial lifts can make completion of tasks at elevation, safer and more efficient. However, unsafe use, operation and aerial lift work practices can result in serious injury. This program has been developed due to the hazards associated with improper use and Evo Corporation's concern for the safety of individuals in and around this type of equipment. In addition, this program outlines general, operating, maintenance, inspection and training requirements governing safe aerial lift use.

2.0 Policy

Supervisors ensure operators comply with all aspects of this safety program. All Evo Corporation employees must successfully complete a training program prior to the operation of any aerial lift. Contractors operating aerial lifts on Evo Corporation projects are expected to meet or exceed the requirements found in this program, and comply with all applicable statues and regulations governing the use of powered industrial trucks as listed in Section 3.0 of this document.

3.0 Requirements

 OSHA Standard 29CFR 1910.68 (Powered Platforms, Manlifts, and Vehicle-Mounted Work Platform)
 OSHA Standard 29CFR 1926.453 (Aerial Lifts)
 ANSI/SIA A92.6 – 2006 (Self-Propelled Elevated Work Platforms)

4.0 Purpose

This program has been developed to reduce the risk of physical injury or property damage in areas where aerial lifts are in operation and provide compliance with federal, state, and local law.

5.0 Scope

This program applies to the operation of all aerial lifts operated by Evo Corporation employees. Please see– Examples of Aerial Lifts for specific examples.

6.0 Aerial Lift Procedures

6.1 Pre-Use Inspection

 Prior to the operation of any aerial lift the Pre-Use Inspection Checklist example found below must be completed and documented to file. This applies at the beginning of every work period, and whenever a new equipment operator takes control of the aerial lift.

 Any safety defects (such as hydraulic fluid leaks; defective brakes, steering, lights, or horn; and/or missing fire extinguisher, lights, seat belt, or back-up alarm) must be reported for immediate repair. They must also be locked and tagged, and taken out of service.

6.2 General Safe Work Practices

 Operators shall not wear any loose clothing or any accessory that can catch in moving parts.

 Before machine is started, the operator must walk completely around the machine to ensure everyone and everything is clear of the machine.

 Articulating boom and extendable boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.

 Modifications and additions that may affect the capacity or safe operation of an aerial/scissor lift are strictly prohibited without the manufacturer's written approval. Capacity, operation, and maintenance instruction markings will be changed as necessary if the manufacturer approves a modification.

 The insulated portion (if applicable) of an aerial / scissor lift shall not be altered in any manner that might reduce its insulating value.

 Any signs, plates, or decals which are missing or illegible must be replaced.

 • If the aerial / scissor lift becomes disabled, a "out of service" tag or equivalent shall be attached to the controls inside the platform in a conspicuous location.

 Aerial/scissor lift devices with noted, reported deficiencies shall not be operated until repairs are made and equipment is authorized for use.

 Operators must report all accidents, regardless of fault and severity, to their Supervisor.

6.3 Safe Work Practices before Operation

 Consideration shall be given to the amount of wind. Follow the manufacturer's instruction regarding operation in windy conditions. As a general rule aerial lifts shall not be operated in winds exceeding 25mph although this can vary depending on the model of equipment

- At 20mph wind speeds or anticipated gusts, lifts will be lowered to a maximum height of 20 feet.
- At 25mph wind speeds or anticipated gusts, lifts will be grounded.

 Guardrails must be installed and access gates or openings must be closed before raising the platform as fall protection.

 Boom and platform load limits specified by the manufacturer shall not be exceeded.

 Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position (if equipped).

 Consideration shall be given to the protection of bystanders via barricading, having another employee keep bystanders at a safe distance or by other means.

 Aerial lifts shall not be operated from trucks, scaffolds, or similar equipment.

6.4 Safe Operation during Operation

 Attention shall be given towards the direction of travel, clearances above, below and on all sides.

 Employees shall not sit or climb on the guardrails of the aerial lift.

 Planks, ladders or other devices shall not be used on the work platform.

 An aerial lift shall not be moved when boom is elevated in a working position with employees in basket.

 Aerial lift shall not be placed against another object to steady the elevated platform.

 Aerial lift shall not be used as a crane or other lifting device.

 Aerial lift devices shall not be operated on grades, side slopes or ramps that exceed the manufacturer's recommendations.

 The brakes shall be set with wheel chocks and outriggers, when used, shall be positioned on pads or a solid surface during operation with attachments, including buckets and platforms.

 Speed of aerial lift devices shall be limited according to the conditions of the ground surface, congestion, visibility, slope, location of personnel and other factors that may cause hazards to other nearby personnel.
 Stunt driving and horseplay shall not be permitted.
 Booms and elevated platform devices shall not be positioned in an attempt to jack the wheels off the ground.
 The area surrounding the elevated platform shall be cleared of personnel and equipment prior to lowering the elevated platform.
 All equipment must be secured on the inside of the aerial lift
 Operators are to call for assistance if the platform or any part of the machine becomes entangled.
 Harness and lanyards are to be worn while on lifts as required fall protection.

6.5 Safe Work Practices after Operation

 Safe shutdown shall be achieved by utilizing a suitable parking area, placing the platform in the stowed position, placing controls in neutral, idling engine for gradual cooling, turning off electrical power, and taking the necessary steps to prevent unauthorized use.
 Aerial lifts shall be shut off prior to fueling. Fueling must be completed in well ventilated areas free of flames, sparks or other hazards which may cause fires or explosions.

6.6 Changing and Charging Batteries

 Battery charging installations must be located in areas designated for that purpose
 Facilities must provided for: flushing and neutralizing spilled electrolyte, fire protection, protection of charging apparatus from damage by trucks, adequate ventilation for dispersal of fumes from gassing batteries.
 Precautions must be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
 Employees charging and changing batteries shall be authorized to do the work, trained in the proper handling, and required to wear protective clothing, including face shields, long sleeves, rubber boots, aprons, and gloves.

6.7 Maintenance

 Any aerial lift which is deficient or not in safe operating condition must be removed from service and tagged out. Authorized personnel must make all repairs.
 Repairs to the fuel and ignition systems of aerial lifts that involve fire hazards must be conducted only in locations designated for such repairs.
 Aerial lifts in need of repairs to the electrical system must have the battery disconnected before such repairs.
 Only use replacement parts that are currently recommended by the manufacturer.

7.0 Responsibilities

7.1 Supervisors Utilizing Powered Industrial Trucks

 Must implement and administer the Aerial Lift Safety program.
 Review the Aerial Lift Safety program annually for compliance and effectiveness.
 Verify that all employees who operate or work near aerial lifts are properly trained.
 Maintain written records of operator training on each model of aerial lift and the name of the trainer.

 Maintain written records of all inspections performed by the aerial lift owner, including the date any problems found, the date when fixed, and the name of the person performing the repairs.
 Maintain written records of the name and purchaser of each aerial lift.
 Make recommendations for revisions if necessary.
 Establish expected operating conditions for aerial lift and send to OHS to review prior to operation

7.2 Supervisors
 Coordinate employee training, and certify that all operators receive annual training including, but not limited to, the items listed in Section 8.0 of this document.
 Ensure that only trained and qualified individuals use aerial lifts.
 Verify employee compliance with the principles and practices outlined in the Aerial Lift Safety Program.
 Provide specific operational training for each aerial lift.
 Observe the operation of aerial lifts, and correct unsafe practices.

7.3 Operators
 Read the Aerial Lift Safety Program.
 Complete the Daily Pre-Use Inspection Checklist before operating any aerial lift.
 At least annually review the procedures outlined in Section 6.0 of this document.
 Observe the operation of the aerial lift, and report unsafe practices to your supervisor.

7.4 Chief Safety Officer
 Annually review and update the Aerial Lift Safety Program as necessary.
 Provide orientation and initial training.
 Provide the general safety training requirements for program.
 Monitor the effectiveness of program by receipt of copies of inspection checklists.
 Evaluate designated areas for aerial lift use.
 Define appropriate eyewash facilities for battery changing/charging areas.
 Observe the operation of aerial lifts, and report unsafe practices to the appropriate supervisor.

8.0 Training Requirements
Employees who are authorized to operate aerial lifts must receive training with certification prior to engaging in their duties, and at least every three (3) years thereafter. The training is to ensure that the Aerial Lift Safety Program is understood. The supervisor will also ensure that authorized aerial lift operators have acquired the necessary practical skills required for safe operation. Training is offered through Evo orientation, refreshers and rental providers.
Evo will perform an operational training with each employee to determine if operators have the knowledge, training, and skills necessary to use the aerial lift. Operational training will consist of a combination of general safety instruction, practical/operational training (demonstrations performed by the trainer, and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace. All operational training must be conducted under close supervision.

8.1 Initial Training
 Receive instruction on the intended purpose and function of each control.

 Prior to operating any Aerial Lift the trainee will read and understand the manufacturer's operating instruction(s) and aerial lift procedures (Section 6.0), or receive training by a qualified person on the contents of the manufacturer's operating instruction(s) and users safety rules.
 Be informed of the Aerial Lift operating limitations and restrictions as defined by the manufacturer.
 Understand by reading or having a qualified person explain all decals, warnings, and instructions displayed on the Aerial Lift.
 During operational training, trainees may operate a aerial lift only under the direct supervision of authorized trainers, and where such operation does not endanger the trainee or other employees.
 All training and evaluation must be completed before an operator is permitted to use an aerial lift without continual and close supervision.

8.2 Annual Training – must include at least the following
 Review of the Aerial Lift Inspection & Maintenance Record
 Review of Section 6.0 – Procedures.
 Updated information on new equipment.
 Review of written program.

8.3 Training Records
A record of individual training includes:
- Subject of training.
- Date of training.
- Name of individual trained.
- Name of supervisor or Occupational Health and Safety person providing the training.
- Training records will be maintained by Human Resources for a minimum of 3 years.

9.0 Program Evaluation
 The aerial lift program shall be evaluated on an annual basis by the Chief Safety Officer. The deficiencies determined in the report will be documented and corrective action plans will be developed.

Aerial Lift Inspection & Maintenance Record

OSHA regulation 29 CFR Part 1926.453(b)(2)(i) requires owners and operators to perform daily pre-shift inspections of their aerial lifts. This Aerial Lift Inspection & Maintenance Record is provided to help you meet this requirement. The information contains a pre-use inspection checklist, frequent inspection checklist, work area inspection checklist and a maintenance record. If you have any questions about the use of the inspection and maintenance record please call: Evo Maintenance at 336-725-5844.

Department
Manufacturer
Model #
Serial #
Aerial Lift ID
Aerial Lift
Location

Chapter 29 – General Waste Management

Evo Corporation is committed to pollution prevention and the management of hazardous and solid wastes in compliance with applicable regulations. It is our goal to (a) reduce these wastes; (b) reuse or recycle them, when possible and (c) manage them safely and in accordance with the law.

Hazardous materials and wastes generated range from soiled and oily rags to chemical wastes and are handled by a wide variety of trained employees. The following information is designed to provide an introduction to the proper management and disposal of wastes. These wastes should never be poured down the drain.

To everyone who may play a role in the generation and management of these wastes, please remember the following basic tenets of good management:

1. Compliance and safety is everyone's job.
2. Manage the accumulation of wastes only at designated areas.

Batteries

All batteries used will be sent off-site to a recycling facility.

Chemical Waste Segregation

Waste containers should be physically separated according to this compatibility chart.

- Acids - Inorganic
- Acids - Organic
- Bases - Alkaline
- Bases - Flammable
- Flammable Liquids
- High-Hazard Peroxide Formers
- Mercury or any Solutions Containing Mercury
- Metals or Solutions Containing Metals
- Oil
- Oxidizers
- Pesticides
- Photo Fixer; Developer; Other
- Reactives
- Silica Gel
- Solvents: Non-Halogenated Organic
- Solvents: Halogenated
- Water Reactive Compounds

Contractor Responsibility for Hazardous & Universal Wastes

Outside contractors are responsible for the removal of any waste they create. It is recommended that clear guidelines be established on project scope documents.

Emergency Response Information

In the event of a hazardous material release, take the following actions:

Minor Chemical Spill - a small spill (e.g., <1 Liter) in your immediate work area that does not pose a significant risk of harm.

1. Alert people in the immediate area of spill.
2. If you clean up the spill, be sure to use the appropriate Personal Protective Equipment (PPE), such as safety goggles, gloves and long-sleeved lab coats.
3. Confine spill to a small area by circling the spill with absorbent and work inward. Use the appropriate kit to neutralize and absorb inorganic acids and bases.
4. Collect residue and place in container, label and dispose of as chemical waste. Check with your supervisor if it should be managed as a hazardous waste.

Major Chemical Spill - 1 Liter or Greater (and likely to produce a harmful concentration in the air)

1. Attend to injured or contaminated persons and remove them from exposure.
2. Alert people in the immediate area to evacuate.
3. If the spilled material is flammable, turn off ignition and heat sources if you can do so without putting yourself at risk.
4. Close the door(s) to isolate the area.
5. Call emergency services/fire department.

Fire

1. Alert people in the immediate area
2. Vacate the area and pull the fire alarm
3. Contact fire department.

Key Phone Numbers

911 for all emergencies

Equipment Disposal

When disposing of equipment review the following prior to disposal.

1. Was the equipment used to store radioactive materials? Does it have a radiation sticker or is there a radioactive source in the equipment?
2. Could the equipment be contaminated with hazardous chemicals? If possible, the equipment should be thoroughly cleaned prior to disposal.
3. Was the equipment used with bio-hazardous material? If yes, the equipment should be decontaminated with appropriate cleaners.
4. If the equipment is a refrigerator or freezer or other type of equipment that could contain freon, contact maintenance services to remove the freon prior to disposal.
5. Does the equipment contain oils, antifreeze or other types of chemicals? If yes, the chemical/oil should be drained prior to disposal. The drained material should be put into hazardous waste containers.
6. If the equipment could contain asbestos, such as an oven, maintenance services should be contacted for disposal.
7. After following the above steps, make sure all hazard stickers are removed prior to disposal.
8. After following the above procedures, the equipment should be ready for pick up and disposal.

Gas Cylinder Disposal

1. Most five foot tanks are rented. When empty, these tanks are usually exchanged.
2. Small, lecture-size gas cylinders should be returned to the manufacturer once empty. Keep manufacturer labels intact.
3. If gas samples, called "spuds" are received, arrangements should be made for return to the manufacturer. The department accepting these samples is responsible for this function.
4. Releasing contents of a cylinder as a disposal method is strictly prohibited.
5.

Handheld Electronics

All small handheld electronics used will be sent off-site to a recycling facility. They can be dropped off at the following locations:

- Main Offices
- Operations Offices
-

Hazardous Waste - Definition

EPA regulations define a hazardous waste as a "solid waste or combination of solid wastes, which because of its quantity, concentration, chemical or infectious characteristics may (1) cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed." EPA also states a waste is hazardous if it is "ignitable, corrosive, reactive or toxic" or fits one of these lists: (1) Non-Specific Source Wastes (F Codes); (2) Discarded Commercial Chemical Products, Off-Specification Species, Container Residues and Spill Residues; (3) Acute Discarded Waste [in its original form](P Codes); (4) Toxic Discarded Waste [in its original form] (U Codes).

Two important federal acts are:

RCRA: The Resource Conservation & Recovery Act passed in 1976. It empowered the Environmental Protection Agency (EPA) to regulate the disposal of solid and hazardous waste. In North Carolina DENR oversees this program. In 1984, the Hazardous & Solid Waste Amendments banned hazardous waste from landfills.

CERCLA: The Comprehensive Environmental Responsibility, Compensation and Liability Act, known as Superfund was enacted in 1980. This law makes the original generator of a waste responsible for that material forever.

Hazardous Waste Accumulation Areas

Main Accumulation Area (MAA): An area where hazardous wastes are collected and managed prior to off-site shipment. Greater than 55-gallons of hazardous waste can be accumulated in MAAs. Check the following weekly:

- Containers Closed tightly
- No signs of leakage
- No signs of corrosion
- Segregated properly according to compatibility

- Proper aisle spacing
- Labels Marked as "hazardous waste"
- Marked with chemical constituents
- Marked with hazards
- Dated (upon entering waste area)
- Signage MAA signs visible
- Area marked as "hazardous waste"
- Emergency Information & Equipment Contact phone numbers available and posted
- Spill clean up supplies and PPE should be immediately available
- General Area secure (i.e. locked)
- Floor/Shelving in good shape
-

Satellite Accumulation Area (SAA): An area that is at or near the site of generation of hazardous waste. The SAA must be under the control of a designated person who works in the immediate work area. Storage is limited to one container per waste stream, which may not exceed 55 gallons. The management requirements are less stringent than for a Main Accumulation Area but must be checked weekly.

- Containers in secondary containment
- Containers fully and properly labeled
- Containers closed at all times except when adding or removing chemical
- Containers properly segregated
- Containers in good condition
- Area secure
- SAA signage posted
- Only one container per waste stream/type

Hazardous Waste - General Information

- Segregate hazardous chemical waste according to compatibility.
- Choose appropriate impervious containers for storage.
- Flammable wastes should only be stored in 1 gallon containers except for 2.5 gallons stored in fireproof rated cans.
- All containers must be properly labeled with waste labels. Complete chemical names must be used. Hazard info should be noted.
- Date the container when full or when ready for disposal.
- Only one container at a time may be used to collect one waste stream (one type of waste). The container will have a maximum capacity of 55 gallons.
- Waste containers must be kept tightly closed at all times except when pouring in waste. Funnels may only be inserted when pouring in waste.
-

Hazardous Waste Manifest

Under the EPA Hazardous Waste regulations, it is specified that a hazardous waste manifest must be used for the shipping of hazardous waste. The manifest must accompany the waste wherever it goes.

To ship hazardous waste off the premises, the waste must be packaged and labeled. The waste is then shipped to a facility permitted or authorized by the EPA to accept hazardous waste.

You must be approved to sign a manifest; annual training is required, and you must also be familiar with the waste shipment.

Basic Steps:
1. Currently, each state has its own manifest. Soon, EPA will be requiring a uniform manifest for every state.
2. Once the contractor is done packaging the shipment, they will record all materials to be disposed of on all or one of these forms:
1) packing slips
2) hazardous waste manifests
3) land ban forms.
3. You will be provided with all documentation. Check the manifest before signing for:
- Correct US EPA ID NO. - contact EHS for number
- All sections are complete and legible.
- Ensure that in section 3 to have either your 'department/name' or 'Office/Shop location'. This will ensure that the final manifest signed by the destination site is sent back on a timely basis.
- The generator (you) sign section 16.

4. The contractor will leave you with copies 6, 7, and 8. Send all original copies to EHS. Make a copy for your files. Also send the other documentation noted above to EHS.
5. If/when you receive copy 3 in the mail, send original to Operations, and make a copy for your files.

Hazardous Waste - Training
All generators who are responsible for hazardous waste management in their area/department must receive annual awareness training. EHS will schedule this on an annual basis. Topics covered include generator status, hazardous waste determination, hazardous characteristics, accumulation and storage requirements, transportation procedures, manifests, land disposal restrictions, waste minimization, emergency response and record keeping.

Oil and Latex Paint Management

Hazards:
- Oil based paints and stains contain volatile organic compounds (VOCs) that vaporize at room temperature; vapors may be toxic when inhaled.
- Oil based paints and stains are flammable - store away from sources of sparks or heat.
- Old oil based paints and marine paints may contain lead, mercury, chromium or cadmium, which are toxic to humans, animals and the environment.

Handling:
- Containers should be opened in a well-ventilated area. Wear appropriate respirator (must be approved by medical professional to wear a respirator - contact Chief Safety Officer) when pouring off or mixing large volumes of oil-based paints.

- Identify leftover paint as latex or oil-based. Latex paint is labeled as such or has instructions to clean up with water. Oil based paint may be labeled: alkyd, contains solvents, clean up with mineral spirits, combustible, or enamel.
- Pourable paint may be reused, unless it contains lead. To test if paint is still good, paint a small test area on clean surface and allow to dry for 48 hours. Place a piece of masking tape over the paint and pull off. If paint comes off on the tape, the paint is no longer good.
- To store usable paint for long periods of time, cover the opening of the paint can with a piece of plastic wrap and seal the lid tightly. Store the can upside down and away from heat.
- Do not store latex paint outside or in unheated area. Frozen latex paint cannot be reused.
- Do not put liquid paint in the trash, down a storm sewer, or down a sink drain.
- Do not dry out oil based paints, stains or wood finishes for disposal in the trash. The volatile chemicals are air pollutants.

For surplus latex or oil-based paints:

- Take to the municipal surplus paint collection program, if available.
- If the paint is usable and there is a reasonable quantity, try to donate it to a community service organization or theater group.
- Latex paint can be disposed of as trash if dry. To dry small amounts, remove lid and let the paint dry in the can. For larger amounts, mix in "speedi dri" or pour one-inch layers of paint in a cardboard box lined with a plastic bag. Stir the paint occasionally to speed drying. Put completely dried paint in the trash.
- Hardened oil-based paint can also be disposed of in the trash.
- If no reuse or recycling option is available or convenient for oil-based paints, they should be saved for hazardous waste collection.

Pollution Prevention & Waste Minimization

End of Process Treatment

End of process treatments can be incorporated. This can include neutralization procedures or other standard practices outlined in many reference materials.

Management

Periodic inventories of chemical supplies, inventory control, and purchase of minimal quantities are all ways to manage chemicals in your area.

Process Modification

Use of micro-scale techniques or a decrease in the use of hazardous materials can reduce the amount of waste generated.

Product Substitution

Use of non-hazardous and less toxic chemicals in your area is a safe and environmentally friendly way to reduce chemical hazardous waste.

Recycling

Segregation and Characterization
Hazardous and non-hazardous waste should not be mixed. Follow guidelines on the proper segregation of hazardous waste to minimize costs.

Training
Employees and should all be made aware of the above concepts to reduce waste generated.

Signage
Contact the Chief Safety Officer for signage which is required to be posted by all accumulation areas.

- No Smoking Signs must be posted.
- "No Pouring Chemicals down the Drain" signage available for sink areas.

Toner & Ink Cartridges
Used toner and ink cartridges may be sent back to the manufacturer. Most manufacturers are including return boxes for shipment with orders. Ink jet cartridge: please dispose of all expended cartridges at Information Services.

Questions on disposal may be directed either to the distributor or office supplies purchaser.

Universal Waste

Definition:

- Material that cannot go to a regular landfill, so it cannot be disposed of in the regular trash.
- Requires special handling procedures
- Must use a licensed disposal contractor.

Types:

- Lamps and Bulbs that contain mercury or lead. Examples include fluorescent, neon and mercury vapor.
- ‘Green Cap' bulbs are universal waste.
- Cathode Ray Tubes or CRTs contained in computer screens and television sets.
- Batteries to include nickel-cadmium and small sealed lead acid batteries.
- Larger lead acid batteries for cars are subject to other regulations.
- Thermostats that contain mercury.

Management

- Universal Waste must be kept in containers or packages.
- Containers must be kept closed and lack evidence of leakage, spillage, or damage.
- It is recommended that box dividers are used to avoid breakage.
- Designated storage areas must be set up to manage universal wastes on campus
- Waste lamps must be put in appropriate storage at the end of each work shift and placed in designated universal waste accumulation area(s).

Labeling

- The waste itself or the package must be labeled:

"Universal Waste - _____" (type of waste)

Accumulation Time Limits

- Held for one year from the date generated.
- Containers should be dated with the beginning accumulation date.

Inventory

- An inventory system must be in place that identifies the date an item is placed in storage.
- Identify what is in storage at any given time.

Releases, Spills, or Breakage

- Must be immediately contained, cleaned up and the material disposed of properly.

Shipment

- Must track waste shipments and generation to know ‘waste status.'

Chapter 30 – Process Safety Management

General Company Policy

Evo Corporation has operations which may involve hazardous chemicals on site which require protections defined under OSHA's Process Safety Management (PSM) regulation; found at 29 CFR 1910.119 and 1926.64. Therefore, we have implemented this PSM program at each of our project sites where it applies. In this way we promote overall worker safety.

Our PSM enables our company to prevent the occurrence, and minimize the consequences, of significant releases of toxic substances as well as fires, explosions, and other types of catastrophic accidents. Overall, the PSM prevents accidental fatalities, injuries and illnesses and avoids physical property damage.

The "process" part of the Process Management Program is 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. 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.

Our PSM prevents accidents because it focuses on the rules, procedures, and practices which govern individual processes, activities or pieces of equipment. These rules are detailed and improved as necessary. They are also communicated to and accepted by all persons at the facility.

At the same time, our PSM covers not only highly hazardous chemicals, but also those that may be harmless in terms of flammability, explosivity, or toxicity, but, when mixed with another substance, can produce a highly hazardous substance or situation. The accidental mixing of some reactive chemicals can cause explosions or the release of toxic vapors, situations which are clearly a threat to the life and health of workers at the site.

Like all PSM written programs, ours contains the following major elements:

- Purpose statement,
- Employee participation plan,
- Process safety information,
- Process hazard analysis records,
- Operating procedures,
- Training,
- Contracting,
- Process equipment integrity maintenance procedures,
- Nonroutine work,
- Management of change procedures,
- Incident investigation reports,
- Compliance audit reports, and
- Emergency Action Plan

Our Chief Safety Officer has overall responsibility for the program. He/She will review and update the program, as necessary. Copies of the written program may be obtained from our written Health and Safety Plan or from our corporate offices.

All employees, or their designated representatives, can obtain further information on this written program or the process management standard from their Operations Manager/Project Supervisor.

If after reading this program, you find that improvements can be made, please contact the Project Supervisor. We encourage all suggestions because we are committed to the success of our written risk management program. We strive for a comprehensive, integrated prevention system which obtains clear understanding, safe behavior, and involvement in the program from every level of the facility and the public.

Purpose Statement

The purpose of our PSM program is to prevent the occurrence, and minimize the consequences, of significant releases of toxic substances as well as fires, explosions, and other types of catastrophic accidents. Overall, the PSM prevents accidental fatalities, injuries and illnesses and avoids physical property damage.

Employee Participation

Our employees are a significant ally in helping the facility to implement and maintain an effective PSM program for all employees. We strongly encourage employees to participate in:

1. Gathering job Safety information,
2. Conducting and developing the PSM program elements and hazards assessments as well as incident investigation findings,
3. Obtaining access to job hazards analyses and the rest of the PSM program.

Process Safety Information

Accurate and complete written information concerning the process chemicals, process technology, and process equipment is essential to an effective PSM program and to a job hazards analysis. The compiled information is a necessary resource to a variety of users including:

- The team that will perform the job hazards analysis;
- Those developing the training programs and the operating procedures;
- Contractors whose employees will be working with the process;
- Those conducting the pre-startup reviews;
- Local emergency preparedness planners; and
- Insurance and enforcement officials.

The information compiled about chemicals, including process intermediates, is comprehensive enough for accurate assessments of the fire and explosion characteristics, reactivity hazards, the safety and health hazards to workers, and the corrosion and erosion effects on the process equipment and monitoring tools.

The following information is acquired by the Project Manager when our operations fall under the PSM program:

- Hazards of each highly hazardous chemical used in each process. This data must cover: - Toxicity information, - Permissible exposure limits, - Physical data, - Reactivity data, - Corrosivity data, - Thermal and chemical stability data, - Hazardous effects of inadvertent mixing of different materials that could foresee ably occur.
- Technology of processes. This must include: - Block flow diagram or simplified process flow diagram; - Process chemistry; - Maximum intended inventory; - Safe upper and lower limits for such items as temperatures, pressures, flows or compositions; - Evaluation of the consequences of deviations, including those affecting the safety and health of employees; and - Consequences of any deviations in the process, including those affecting the safety and health of employees. Where original technical information no longer exists, you may develop such information along with the process hazard analysis in sufficient detail to support the analysis.

• Equipment involved in processes. This must include: - Materials of construction, - Electrical classification, - Ventilation system design, - Material and energy balances for processes built after 5/26/92, - Piping and instrumental diagrams, - Relief system design and design basis, - Design codes and standards employed, - Safety systems (such as interlocks, detection, and suppression systems. We ensure equipment which is utilized is designed and constructed in accordance with codes, standards, or practices that are expected in the industry. Examples would include explosion proof equipment, non sparking tools, intrinsically safe instruments, and UL approved apparatus.

Job Hazard Analysis Records

Our Job Hazard Analysis (JHA), sometimes called a process hazard evaluation, is one of the most important elements of the PSM program. Our JHA is an organized and systematic effort to identify and analyze the significance of potential hazards associated with the processing or handling of highly hazardous chemicals. Our JHA provides information which will assist the facility and our employees in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals. Our JHA is directed toward analyzing potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals and major spills of hazardous chemicals. Our JHA focuses on equipment, instrumentation, utilities, human actions (routine and nonroutine), and external factors that might impact the process. These considerations assist in determining the hazards and potential failure points or failure modes in a process.

The team member(s) who perform our process hazard analysis are our Project Supervisor(s), our employees, and designated representatives of our client which by qualifications are familiar with the appropriate operations to provide valuable input.

Any actual team recommendations, resolutions, and dates of resolutions are included in the JHA.

Operating Procedures

Our operating procedures describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected, and safety and health precautions to be taken. Our procedures are technically accurate, understandable to employees, and revised periodically to ensure that they reflect current operations. Our up-to-date operating procedures for safely conducting activities involved in each process are attached to this PSM program and/or described here.

Because of the unique nature of our operations, our procedures are tailored to the specific operations and conditions at our clients. These operating procedures shall be developed and in writing and will cover the following: Operating phases including: - Initial startup; - Normal operations; - Temporary operations; - Emergency shutdown, conditions for an emergency shutdown, and assignment of shutdown responsibility; - Emergency operations; - Normal shutdown; and - Startup following a turnaround, or after an emergency shutdown. Operating limits including: - Consequences of deviation; and - Steps required to correct or avoid deviation. Safety and health considerations including: - Properties of, and hazards presented by, the chemicals used in the process; - Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment; - Control measures to be taken if physical contact or airborne exposure occurs; - Quality control for raw materials and control of hazardous chemical inventory levels; and - Any special or unique hazards, safety systems and their functions. Also, operating procedures are reviewed for the facility which work may be being performed at. These procedures will be reviewed and followed where applicable in addition to performing our own process hazard analysis per our hazard assessment process.

The Operations Manager/Project Supervisor is responsible for reviewing the operating procedures to make sure they are current and accurate, and also reviews operating procedure changes that result from changes in process chemicals, technology, equipment, and the facility. This will include activities such as procedures to ensure piping and other vessels are free of chemicals and other reactive or hazardus materials which may be encountered when performing the scope of our work. The Operations Manager/Project Supervisor is responsible for certifying the operating procedures each year.

We have also attached to the PSM program and/or described here our safe work practices which limit employee and contract employee exposure to covered process areas and which control hazards in situations 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. The Operations Manager/Project Supervisor is responsible for performing a pre-startup safety review for new facilities and modified facilities when the modification changes the process safety information.

Training

All of our employees, including maintenance and contractor employees, who are involved with highly hazardous chemicals, need to fully understand the safety and health hazards of the chemicals and processes they work with for the protection of themselves, their fellow employees, and the citizens of nearby communities.

While training in Hazard Communication will help employees to be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding SDS's, additional training will be covered in this PSM program in subjects such as operating procedures and safety work practices, emergency evacuation and response, safety procedures, routine and nonroutine work authorization activities, incident reporting (must notify Operations Manager/Project Supervisor immediately and initiate investigation with in 24 hours) and other areas pertinent to process safety and health.

The Operations Manager/Project Supervisor or designated representative trains employees. He/she trains new employees at the time of their initial hire and when new hazards are introduced. Records of training are maintained by the Operations Manager/Project Supervisor and forwarded to the corporate office for retention.

All training and retraining records containing the identity of the employee, the date of training, and the means used to verify that they understood their training are attached to this PSM program.

Contracting

Occasionally subcontractors will perform work in and around processes that involve highly hazardous chemicals. Our goal is to hire subcontractors who accomplish the desired job tasks without compromising the safety and health of employees at the facility.

Our facility obtains and periodically evaluates contract employer's safety performance in accordance with Evo Corporation Contractor Safety Plan located in our written Safety and Health manual. We also keep the contract employee injury and illness log related to contractor's work.

We inform and train contract employers of the known potential fire, explosion, or toxic release hazards related to the subcontractor's work and processes through safety meetings. At a minimum this includes a thorough review of the SDS sheets for the chemicals, a review of all applicable safety requirements, review of the PHA, and that hot work is not allowed with out the use of a hot work permit.

We provide an explanation of the emergency action plan to contract employers during our safety meetings and provide a copy of procedures to follow in case of an emergency.
We ensure that the contract employer advises our organization of any unique hazards presented by the subcontract employer's work, or of any hazards found by the contract by establishing a clear line of communication. Safety concerns are addressed as a part of pre work meetings held at the beginning of every shift.

Process Equipment Integrity Maintenance Procedures

Process equipment integrity maintenance procedures are designed to ensure that process equipment receives appropriate, regularly scheduled maintenance. The goal is on-going mechanical integrity rather than "breakdown" maintenance.
The maintenance procedures that preserve the integrity of each piece of equipment and instrumentation are accomplished utilizing a Preventative Maintenance Program
Our organization ensures that employees involved in maintaining the on-going integrity of process equipment are trained in the proper procedures required by the PSM Standard.
Our Organization performs inspections and tests on process equipment. These tests are documented by maintenance and include the following information:

- Date of inspection or test,
- Description of the inspection or test performed,
- Name of person who performed the inspection or test,
- Results of the inspection or test,
- Serial number or other identifier of the equipment that was inspected or tested.

Tests and inspections are performed in accordance with the Preventative Maintenance Program in place at facilities which we may work.
Our facility ensures that new equipment, maintenance materials, spare equipment, and parts meet design and material specifications in order to protect against the use of improper materials.
The Project Manager is responsible for the quality assurance including ensuring that proper materials of construction are used, that fabrication and inspection procedures are proper, and that installation procedures recognize field installation concerns.

Nonroutine Work

Nonroutine work (i.e., lockout/tagout, line breaking, confined space entry and hot work) are controlled in a consistent manner, communicated to those doing the work as well as operating personnel, and authorized, as necessary, with clear steps.
We provide an explanation of hazards of non routine work to contract employers during our safety meetings and provide a copy of procedures to follow in case of an emergency.
We ensure that the contract employer advises our organization of any unique hazards presented by non routine work, or of any hazards found by the contract by establishing a clear line of communication. Safety concerns are addressed as a part of pre work meetings held at the beginning of every shift.

Management of Change Procedures

PSM changes include all modifications to equipment, procedures, raw materials, processing conditions other than "replacement in kind," and temporary changes.
The general procedures to manage any changes (except for replacements in kind) to process chemicals, technology, equipment, procedures and facilities are to conduct a PHA with the following perspectives as a basis for the Process Hazard Analysis: - Technical basis for a proposed change; -

Impact of a change on safety and health; - Modifications to operating procedures; - Necessary time period for a change; and - Authorization requirements for a proposed change.
Evo Corporation will ensure that our employees involved in operating a process and maintenance AND subcontract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process.

Accident/Incident (Near Miss) Investigation Reports
Accident/Incident (Near Miss) Investigation is the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. With our incident investigations, we intend to learn from past experiences and thus avoid repeating past mistakes. Incidents that need to be investigated are the types of events which result in or could reasonably have resulted in a catastrophic release. Some of the events could be "near misses," meaning that a serious consequence did not occur, but could have.
The Operations Manager/Project Supervisor is responsible for incident investigations. Employees and subcontractors are notified to immediately report all injuries, illnesses and incidents to the Operations Manager/Project Supervisor. Incident investigations must be initiated within 24 hours to obtain accurate information to assist in the identification of root causes and contributing factors that causes the incident.
All accident/incident (near miss) investigation reports (if any) within the last five years are maintained in the Accident/Incident (Near Miss) database. The reports indicate at least the following:
• Date of the incident;
• Description of the incident;
• Recommendations resulting from the investigation;
• Date the investigation began; and
• Factors that contributed to the incident.
Our organization promptly addresses and resolves an incident report's findings and recommendations. Any actual incident report findings and recommendations in the last five years are attached to this PSM program and/or described above along with the dates on which resolutions were or will be completed.
Evo Corporation ensures that all affected personnel, whose job tasks are relevant to an incident finding (including subcontract employees where applicable), review the report to prevent or reduce the likelihood of reoccurrence.

Trade Secrets
Evo Corporation ensures that all employees and subcontractors that are responsible for compiling process safety information, those assisting in the development of the process hazard analysis, those responsible for developing operational procedures, and those involved in incident investigation, emergency planning, and compliance audits are provided with all information needed to conduct such activities without regard to possible trade secret status.
In cases where trade secrets may be disclosed, confidentiality agreements not to disclose such information may be required.

Compliance Audit Reports

The Chief Safety Officer completes a compliance audit which evaluates and certifies compliance with the PSM program to verify that procedures and practices developed in the PSM are adequate and are being followed. In this way, our facility is able to focus on areas of continuing concern that surfaced through the audits

Emergency Action Plan

Our Emergency Action Plan addresses what actions our employees are to take when there is an unwanted release of highly hazardous chemicals. Our Emergency Action Plan (EAP) is located in our written Health and Safety Plan (HASP).

Chapter 31 - Subcontractor Management

1 Overview

1.1 Evo Corporation has established procedures to review and require that subcontractor safety programs, training, procedures and initiatives coordinate with the Company's own standards of safety.

1.2 The process is intended to help ensure that, in the event subcontractors are utilized by the Company as part of a work project, each subcontractor's safety programs, OSHA compliance, training, confirmations, documentations and statistical results of previous safety performance are in accordance with requirements of both the Company and general contractor.

1.3 Under this program and its associated processes, any subcontractor will be reviewed and qualified by the Company prior to performing work for a general contractor as part of a Company project.

2 Subcontractor safety and health requirements

2.1 Pre-qualification by the Company may include review of the subcontractor's:

2.1.1 OSHA 300 log for the last five years, or from the date the subcontractor began doing business if this time is less than five years;

2.1.2 OSHA experience regarding any previous inspections or citations;

2.1.3 Written safety and health programs as required by the Company and/or the respective host employer or general contractor;

2.1.4 Written subcontractor procedures for at-work incident, injury, illness and emergency response, reporting and investigation requirements;

2.1.5 Workers' compensation insurance EMR (Experience Modification Rating) information;

2.1.6 Proof of insurance documented by a current certificate of insurance from the subcontractor's insurance agent(s);

2.1.7 Documentation of required safety training of subcontractor employees that will be assigned to the respective project, including supervisor, competent person training and site safety representative training;

2.1.8 Documentation of required Operator Qualification (OQ) and other individual qualifications or certifications as may be required by the project; and

2.1.9 Documentation as may be available to explain the subcontractor's previous safety performance using a statistical method.

2.2 Review and evaluation will be performed by the Chief Safety Officer, designee or a qualified third party as designated by the Chief Safety Officer.

2.3 Written materials, submissions, results and documentations of subcontractor pre-qualification reviews will be maintained by the Safety Coordinator in a file for a period to be determined in coordination with the Company's designated legal counsel.

3 Measurements of workplace safety and health results

3.1 To manage a process or system, you must be able to measure it. This is why the Company measures safety performance and results as a tool toward identifying and eliminating hazards, mitigating risks and protecting employees and other individuals from workplace injuries and illnesses.

3.2 For purposes of this program, a safety ***metric*** will be considered as any such measurement of safety performance and injury/illness/incident prevention results.
3.3 Specific safety metrics to be considered during subcontractor pre-qualification may include, but are not limited to, items 2.1.1 through 2.1.9 above.
3.4 Safety metrics will be utilized to help evaluate when, where and how safety programs and initiatives have been successful, and also to identify areas that require additional attention.
3.5 Subcontractor safety performance will be reviewed and evaluated in part through comparisons of the subcontractor's safety metrics with levels of accomplishment as identified by the Company.
3.6 Subcontractors that evidence safety metrics that are not in accordance with project requirements will not be utilized for that specific project; or they will be utilized in roles and assignments that have lower levels of risk and are acceptable to the Company and host employer or general contractor.
3.7 All determinations of acceptability of a subcontractor's safety metrics, as requested and reviewed in accordance with this program, will be made by the Company and/or the host employer or general contractor for the respective project.

4 Inclusion and participation of subcontractors in project safety initiatives

4.1 Subcontractors assigned by the Company to a project should attend initial safety and planning meetings; project safety orientations; incident, injury and illness response planning and coordination meetings.
4.2 Subcontractor personnel should participate in these and other such activities as required in preparation for working safely at the project location.
4.3 Subcontractor personnel should utilize, cooperate with, attend and support all pertinent components of safety programs and procedures; safety orientation, training, tailgate and daily meetings; qualification and/or certification requirements; periodic safety meetings and awareness activities; safety inspections; incident reporting and investigation procedures; and other such safety, health and incident prevention initiatives as may be established for all workers at a project location.
4.4 Subcontractor personnel should participate in and cooperate with Job Hazard Analysis (JHA), Job Safety Analysis (JSA) and Job Safety Observations (JSO) as established for the project workplace.

5 Requirements for reporting hazards, incidents, injuries and illnesses

5.1 Subcontractor employees are responsible for reporting any observed near-miss, hazard or unsafe behavior of another person when there is a potential for causing an incident, chemical release, injury or illness in the project workplace.
First report will be made to the subcontractor's on-site supervisor or to the Company contact person if the supervisor is not readily available. Reporting should be made without delay to help facilitate intervention and preventive measures.
5.2 Subcontractor supervisors and/or management will forward any such report to their Company contact person so that additional communication can be made and/or actions taken if the Company deems this necessary.
5.3 Any on-the-job injury or illness that requires medical attention by a physician or professional medical provider will be reported immediately to the Company contact person after the individual(s) requiring treatment are in route to medical care.

5.4 Subcontractors will investigate near-misses, first aid injuries, and incidents, injuries or illnesses in the project workplace in accordance with requirements established for the project.

6 Post-project review of subcontractor safety performance and results

6.1 On conclusion of a project, the Company will make a timely review of each subcontractor's safety performance, incident and injury experience, and other factors that will be helpful in evaluating the subcontractor's suitability for future projects.

6.2 In the event that a subcontractor exits or is terminated from a project that remains in progress, a similar timely review as explained in 6.1 will be performed.

6.3 Post-project evaluations will be performed by the Operations Manager/Project Supervisor in coordination with Company managers and other supervisors who worked with the subcontractor during the specific project under review.

Chapter 32 – Fall Protection

1. Policy.

Evo Corporation is committed to protecting its workers from on-the-job injuries. All employees and others for whom the company assumes workers' compensation liability are responsible for on-the-job safety; i.e., following safety rules and established procedures. This plan is designed to provide specific awareness and training for the location where the work will be conducted and addresses the use of non-conventional methods for fall protection on specific parts of a project.

This plan is designed to enable supervisors and employees to recognize fall hazards on the job and to establish the procedures that are to be followed in order to prevent falls to lower levels or through holes in walking and working surfaces. Each employee will be trained in these procedures and must strictly adhere to them except when doing so would expose them to a greater hazard. If, in an employee's opinion, the procedure exposes them to a greater danger, they must notify their supervisor prior to proceeding. All employees must understand the seriousness of the situation and act when unsafe conditions persist.

It is the responsibility of the Project Supervisor/competent person to implement this fall protection plan. The Project Supervisor/competent person will constantly observe work operation to ensure that safety policy and procedures are being followed. Any changes that are made to this plan must be approved by the competent person.

2. Fall Protection Systems to be used on this Project.

Where conventional fall protection systems are infeasible or create a greater hazard, Evo plans to use the following system:

Example:

We plan to use a safety monitoring system in addition to limiting the number of employees involved for the time necessary to complete the job. The (#) of employees will be observed and monitored by one safety monitor.

The safety monitor will be the designated Proejct Supervisor/competent person.
Only employees with appropriate experience, skills, and training will be allowed to perform work in the area designated by this fall plan. All employees that will be working in the area under the safety monitoring system shall be trained and instructed in the following areas:

(1) Recognition of fall hazards.

(2) Avoidance of fall hazards.

(3) The function, use, and operation of any fall protection systems in use.

(4) The correct procedure for constructing, maintaining, disassembling, and inspecting any fall protection system that will be used.

There will be a pre-job safety briefing in which all members of the work crew are present to discuss the procedures to be used for this work. Personnel will be made aware of any controlled access or off-limits areas during this meeting.

3. Safety Monitoring System.

A safety monitoring system is a fall protection system in which a Project Supervisor/competent person is responsible for recognizing and warning employees of fall hazards. The duties of a safety monitor are to:

(1) Warn by voice when an employee approaches an open edge in an unsafe manner.

(2) Warn by voice if a dangerous situation developing which cannot be seen by other employees involved in the task.

(3) Make the employees aware that they are in an area in which they could potentially fall.

(4) Be competent in recognizing fall hazards.

(5) Warn employees that appear to be unaware of a fall hazard or are acting in an unsafe manner.

(6) Be on the same walking/working surface as the monitored employees and within visual sighting distance of these employees.

(7) Be close enough to communicate orally with employees.

(8) Not allow other responsibilities to interfere with monitoring. If the safety monitor is encumbered with too many other responsibilities the work must be stopped or the monitoring responsibility turned over to another competent individual. (Work must not be conducted when weather conditions increase the likelihood of a fall such as high winds or slippery conditions).

4. Control Zone System.

A controlled access zone is an area, which is designated and clearly marked, where work may take place without the use of a guardrail, safety net, or personal fall arrest systems to protect employees in the area. Control zone systems will comply with the following provisions:

(In this section, describe the controls that will be put in place to protect individuals from falling over the edge, off a platform, tower, etc.)

Any holes greater than 12 inches by 12 inches will either have perimeter guarding or will be covered.

5. Personal Fall Protection Considered.

Fall arrest systems, safety nets, and guardrails will constitute primary fall protection devices.

Chapter 33 – Disciplinary Program

PURPOSE
The purpose of this policy is to support the enforcement of good safety performance and to eliminate repeated or continuing safety violations by the use of appropriate disciplinary measures.

SCOPE
The primary objective of the company Health & Safety Program is to provide a safe work environment for all employees. Managers or supervisors are required to issue appropriate specific safety instructions to all employees prior to assigning them work. Managers or supervisors are responsible for coordinating work with other supervisors in the work area to ensure that all work can be accomplished safely. Each employee is individually responsible for complying with each of the provisions of the Health and Safety Program, in addition to those safety instructions issued by the employees' supervisor, either verbally or in writing. However, when Safety Policies and Procedures are violated or individuals continue to be involved in accidents or infractions, disciplinary action must be considered, in order to emphasize the gravity of the situation and bring about desired improvement.

1.0 Procedure
1.1 Each employee who reports for work will be given a safety orientation as a part of the general hiring process. During this orientation, the company's positive attitude toward working safety will be stressed and the employee will be advised that safety compliance is a condition of work. The safety program will be explained and safe responsibilities will be clearly defined.
1.2 When an employee is observed committing an unsafe act, the employee is to be informed by means of a formal safety notice letter. The exact nature of the violation and what is acceptable must be thoroughly explained to the employee. A copy of the written warning will be given to the employee's supervisor and a copy placed in the employee personnel file.
1.3 Violations for which written warnings will be issued are as follows:
1.3.1 Any bargained rules.
1.3.2 Policy where bargaining doesn't address or conflict.

2.0 Responsible for Enforcement
2.1 Human Resources, Chief Safety Officer, Executive Management, Operations Managers and Project Supervisors all have a responsibility to enforce this policy. Each employee has a responsibility to follow all safety rules in our facility and at all of our customer’s facilities.

3.0 Examples of Violations:
3.1 Not following written or verbal safety procedures
3.2 Not wearing required Personal Protective Equipment
3.3 Abuse of Personal Protective Equipment
3.4 Horseplay
3.5 Excessive Timeliness/Tardiness
3.6 Work Production
3.7 Personal Conduct

DOCUMENT MANAGEMENT:
The only document associated with Disciplinary Program is the written standard form of notification, see below. If after reading this program, you find that improvements can be made, please contact the Chief Safety Officer. We encourage all suggestions because we are committed to the success of our Disciplinary Program. We strive for clear understanding, safe behavior, and involvement from every level of the company.

CHANGE CONTROL:
All management system changes are reviewed, approved or disapproved by the Chief Safety Officer.

PERSONNEL:
Evo Corporation management has the ultimate responsibility for the Disciplinary Program. They have designated the Chief Safety Officer to manage the Disciplinary Program.

DISIPLINARY RECORD AND CORRECTIVE ACTION FORM

Employee Warning Notice

Employee Name: _____ Date: _____

The following counseling has taken place:

___ Absence
___ Tardiness
___ Poor performance
___ Failure to follow instructions
___ Insubordination
___ Violation of Company Policy
___ Violation of Safety Rules
___ Unauthorized use of equipment, materials
___ Leaving work without authorization
___ Falsification of records
___ Harassment
___ Other

Summary and Date of violation:

_____

_____

See back page for additional summary of violation*

Summary of corrective plan of action:

_____

_____

See back page for additional summary of corrective plan of action*

Previous Employee Warning(s)

Date:	*Description:*	*Signed:*

See back page for additional warning history*

Employee Statement:

___ I agree with Employer Warning ___ I disagree with Employer Warning

Reason(s):_____

Employee Signature: _____ Date: _____

Supervisor Signature: _____ Date: _____

This form was refused by Employee

Supervisor Signature: _____ Date: _____

Chapter 34 – Job Hazard Analysis

PURPOSE
The purpose of this policy is to support the enforcement of good safety performance and to eliminate potential job hazards by the use of behavior based safety assessments to identify each basic job step, potential injuries or hazards, and required safe job procedures and/or PPE.

SCOPE
The primary objective of the Job Hazard Analysis (JHA) is to provide a safe work environment for all employees. Managers or supervisors are required to issue appropriate specific safety instructions to all employees prior to assigning them work. Managers or supervisors are responsible for coordinating work with other supervisors in the work area to ensure that all work can be accomplished safely. Each employee is individually responsible for complying with each of the provisions of the JHA policy and program outline, in addition to those safety instructions issued by the employees' supervisor, either verbally or in writing.

Each site supervisor, along with employees and/or sub-contractors, will conduct a job walk through to identify job steps, risks and necessary control measures and classify hazards based on severity. Once identified, hazards will be addressed with the most appropriate engineering, equipment or administrative controls. Training on the JHA process and a review of the same will be conducted with employees and subcontractors on site.

Chapter 35 – NFPA 70E-Electrical Safety

PURPOSE

The purpose of this policy is to support the enforcement of good safety performance and to eliminate potential job hazards related to electrical safety in the workplace.

SCOPE

Evo will advise the host employer of unique hazards in the workplace presented by Evo's work, unanticipated hazards, and any measures taken to correct hazards reported to them by the host employer.

Unqualified persons shall not be permitted to enter spaces that are required to be accessible to qualified employees only.

Additional training requirements for qualified persons who are allowed to work within the Limited Approach Boundary includes;
-introduction and understand the specific hazards associated with electrical energy
-how to mitigate these hazards and
-information that every supervisor needs to know if they are going to supervise employees working near energized electrical devices.

Retraning will be conducted when an employee is not complying with safety-related work practices or when workplace changes necessitate the use of safety-related work practices that are different from those that the employee would normally use. Refresher training will be conducted every 3 years and documentation of training shall be maintained for the duration of the employee's employment.

The Limited Approach Boundary is the shock protection boundary farthest away from the energized parts and is established to keep unqualified persons a safe distance from exposed live parts and marked with barricading and hazard signage. A qualified employee worker should be able to:
-Distinguish exposed energized conductors and circuit parts from other parts of the equipment;
-Determine the nominal voltage of exposed energized conductors and circuit parts;
-Determine the approach boundary distances;
-And demonstrate the decision making process necessary to perform job safety planning, hazard identification, risk assessment and the selection of appropriate risk control methods including personal protective equipment.

All work areas are to be properly illuminated for work activities to be performed.
A Job Hazard Analysis (JHA) or risk assessment will be conducted prior to work beginning within the Limited Approach Boundary, to include each job step, potential injuries/hazards and required safe job procedures and/or personal protective equipment (PPE). All insulating PPE will be inspected and tested prior to each day's use and immediately after any incident.

A pre-job site safety meeting/briefing will be conducted prior to the start of each project and outline;
-all steps identified in the JHA
-work permit requirements
-monitoring and
-emergency shut dowm protocol.

An energized electrical work permit will be completed for each task and include:
-Project information/location
-Hazard Analysis
-Personal Protective Equipment
-Site Control & Support
-Work schedule and personnel
-Authorization of permit

Only qualified persons may complete tasks such as testing, troubleshooting and voltage measuring within the limited approach boundary. All test instruments, equipment and their accessories will be rated for circuits and equipment to which they will be connected and verified to be in proper working order before and after an absence of voltage test is performed.

Chapter 36 – Ammonia Awareness Program

PURPOSE
This document summarizes how Evo Corporation complies with the requirements of OSHA's PSM 29 CFR §1910.119(c) and the EPA's 40 CFR §68.83 elements relating to Employee Participation.

SCOPE
The purpose of these elements is to provide for a cooperative participatory environment and ensure the necessary flow of information from management to employees and from employees to management on process safety to eliminate or mitigate the consequences of catastrophic releases of highly hazardous chemicals in the workplace. It is the goal of Evo Corporation to involve the employees who operate in the process at a fundamental level. Many times this participation is referred to as consultation; to paraphrase CPL 02-02-45, "Consultation refers to a two-way dialogue between the employer and the employees and their representatives (where they exist), in which the employer elicits, and responds to, employees' concerns and suggestions bearing upon the elements of process safety management… Consultation is therefore more than a way to inform employees about aspects of process safety; it is a process of seeking advice, criticisms, and suggestions from employees and their representatives." This is also part of Evo Corporation's behavior based safety initiative.

REFERENCES
 29 CFR §1910.119, Process Safety Management of Highly Hazardous Chemicals, paragraph (c).
 40 CFR §68.83, Chemical Accident Prevention Provisions
 OSHA Instruction CPL 02-02.45A, Process Safety Management of Highly Hazardous Chemicals – Compliance Guidelines and Enforcement Procedures, September 13, 1994.

OVERVIEW
Any employees of Evo Corporation who may potentially be affected by anhydrous ammonia are made aware of the amonia awareness program being implemented. Evo Corporation has, and will continue to:
 Develop this written plan of action regarding the implementation of the employee participation required.
 Consult with employees on the conduct and development of job hazard analyses and on the development of other elements of the standard.

EMPLOYEE AWARENESS
New employees are made aware of the ammonia awareness program as a part of the initial new hire orientation process, in conjunction with hazards communication required by 29 CFR §1910.1200. Employees acknowledge their awareness of this program by signing the New Hire Orientation training documentation. All affected employees are given the same orientation provided to new employees. The Responsible Person is responsible for an annual update on the company's safety program, providing updated information as required.
Any major anhydrous ammonia exposure events such as accidents, incidents or near misses, are communicated to the affected employees.

EMPLOYEE INVOLVEMENT/PARTICIPATION

Field technicians who work in close proximity to sources of anhydrous amonia are required to comply with the following:

 Hazard Communication Plan (HazCom): The location and accessibility of the HazComp plan is communicated to all employees during their initial training. The HazCom plan and Safety Data Sheet (SDS) directory are reviewed for accuracy and thoroughness by the operators during their use.

 Job Hazard Analysis (JHA): As discussed in the JHA Guidelines, Job Hazard Analysis reviews by the Chief Safety Officer (CSO)/Resposible Person involves input from all employees as part of the behavior based safety program.

 Operating Procedures: Developed with input from operations, management, safety and other groups as necessary. SOPs are reviewed for accuracy and thoroughness by the operators during their use.

 Training: Programs and needs for refresher training are reviewed with affected employees at hire/job start and follow up as required.

 Pre-Startup Safety Reviews and Management of Change/Pre-Job Safety: Conducted with involvement of at least one hourly employee. These are reviewed by management and employees are encouraged to offer their input.

 Mechanical Integrity: Mechanical Integrity audits are conducted. Employees are encouraged to continuously audit the performance of mechanical integrity components and the adherence to policy by other employees and contractors.

 Accident/Incident/Near Miss Investigation: Reports are reviewed with all affected employees. (An hourly employee may be asked to serve on the investigation team as appropriate.) All employees are encouraged to report issues they believe warrant an Incident Investigation.

 Emergency Planning and Response: Procedures are reviewed with affected employees. Training of response personnel also includes hourly personnel when required.

 Compliance Audits: At least one hourly employee is involved in an audit.

 Clients: Employees are encouraged to provide input on the performance of Evo Corporation employees who work on or near the covered process.

 Hot Work: Employees are encouraged to continuously audit the performance of the Hot Work policy and the adherence to the Hot Work policy by other employees and contractors.

All employees involved in close proximity work to anhydrous ammonia storage and process components are formally involved in all aspects of this safety program through training and meetings. Additionally, Evo Corporation has an Open-Door policy as an avenue for any employee with suggestions for improvements to the program.

Any employee having serious safety related concerns about any aspect of the ammonia awareness program have been instructed to submit those concerns in writing to the Responsible Person. Within 30 days the employee is provided with a written response answering his/her concerns. A record is kept of all employee recommendations. Affected employees are informed of the disposition of all recommendations.

TRAINING

Anhydrous Ammonia storage is common throughout the agricultural industry. Technicians will find themselves working in close proximity to large ammonia storage tanks that contain hazardous amounts of ammonia. Employees may be subject to exposure from the following sources:

 Fertilizer manufacturers and resale operations

 Food processors where refrigeration is used

 Chemical manufacturers
 Gold refining operations

Anhydrous Ammonia is the second most widely used chemical in industry and can be found in most dyes, fibers and plastics, explosives, polymers, and for gold extraction from ore.
Ammonia is a colorless gas with pungent odor that has a suffocating effect when inhaled.

Anhydrous Ammonia poses the following health hazards:
 Inhalation of ammonia is very toxic and can cause severe respiratory damage and death. It can cause life-threatening accumulation of fluid in the lungs. Symptoms may develop hours after exposure and be long-term
 Ammonia is corrosive and can irritate the skin, permanently damaging or scarring can result. Direct contact with the liquefied gas can freeze the skin and cause tissue damage, infection, and blistering.
 The corrosive nature of ammonia can cause severe eye damage and blindness, coughing and chest pain.

First aid measures:
 Inhalation: Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Move victim to fresh air. If breathing is difficult, trained personnel should administer emergency oxygen. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary edema may be delayed. Immediately call a Poison Center or doctor. Treatment is urgently required. Transport to a hospital.
 Skin Contact:
- Gas: flush with lukewarm, gently flowing water for 5 minutes. If irritation or pain persists, see a doctor.
- Liquefied gas: quickly remove victim from source of contamination. DO NOT attempt to rewarm the affected area on site. DO NOT rub area or apply direct heat. Gently remove clothing or jewelry that may restrict circulation. Carefully cut around clothing that sticks to the skin and remove the rest of the garment. Loosely cover the affected area with a sterile dressing. DO NOT allow victim to drink alcohol or smoke. Immediately call a Poison Center or doctor. Treatment is urgently required. Transport to a hospital.
 Eye Contact:
- Gas: immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes, while holding the eyelid(s) open. If irritation or pain persists, see a doctor.
- Liquefied gas: move victim to fresh air. Immediately and briefly flush with lukewarm, gently flowing water. DO NOT attempt to rewarm. Cover both eyes with a sterile dressing. DO NOT allow victim to drink alcohol or smoke.
- Ingestion: Not applicable (gas).

Some of the first aid procedures recommended here require advanced first aid training. All first aid procedures should be periodically reviewed by a doctor familiar with the chemical and its conditions of use in the workplace.

Stability and flammability
 Anhydrous Ammonia is a flammable gas and high concentrations pose a significant explosion hazard especially in a confined space.

 Extinguishing media can be carbon dioxide, dry chemical powder, appropriate foam, water spray, or fog.
 Normally stable except when exposed to strong acids, peroxides, and chlorines

PPE
 Wear chemical safety goggles or a full face shield with safety goggles
 Chemical protective gloves, apron, and boots
 NIOSH approved Self-Contained Breathing Apparatus (SCBA) must be carried when working on ammonia storage containers and transfer equipment.
Impervious clothing, gloves and/or face shields if there is a possibility of skin contact with liquid ammonia or vessels containing liquid Anhydrous Ammonia

Emergency procedures
 It is the responsibility of the Evo Corporation site supervisor & designated safety representative to obtain a copy of or develop a site specific emergency action plan.
 The site supervisor will brief the affected employees on the plan
 The site supervisor will ensure all employees are equipped with appropriate and serviceable PPE
 The employees of contracted service providers will be required to adhere to the PPE requirements and the emergency procedures contained in the emergency action plan.

EMPLOYEE ACCESS TO INFORMATION
The C.S.O./Responsible Person is responsible for controlling access to the safety program information. All employees are provided access to the ammonia awareness policy and procedures and information, but access is governed by the following limitations:
 Approval is needed to remove any original documents from the file.
 Original copies of documents are not removed from the file area.
 Requests for copies of materials are honored within 10 working days of the request.
 No markings are made on original documents.
 Previously unfiled documents are not added without the proper authorization.

Evo Corporation provides access to job hazard analyses to employees of contractors. Evo Corporation informs contract employees of their right to obtain information, and the means for doing so.

RECORDKEEPING
Evo Corporation’s ammonia awareness training shall be documented and kept in the employee’s record of training.

Employee communications such as bulletin board announcements or employee newsletter articles relating to ammonia will also be provided as a refresher.

Chapter 37 - Forklift/Industrial Truck/Skid Steer Safety Program

The purpose of this program is to establish procedures for the safe operation of power industrial trucks.

This program additionally supports compliance with the Occupational Safety and Health Administration Powered Industrial Truck Standard, as found in 29 CFR 1910.178. This program applies to all employees, permanent or temporary, who are required to operate material-handling equipment, including forklifts, industrial trucks or skid steers. A *Forklift Operations Risk Assessment* is available in the FORMS section of this web site.

Definitions

- *Authorized Operator:* An employee who has satisfactorily completed both classroom and operation training on material-handling equipment at the company's facilities.
- *Load Center:* The horizontal distance from the edge of the load (or the vertical face of the forks or other attachment) to the load's center of gravity.
- *Rated Capacity:* The maximum weight that the powered industrial truck is designed to lift, as determined by the manufacturer.

Responsibilities

Powered Industrial Truck Operators*:*

Operators are responsible for the following:

- Operating all powered industrial trucks in a safe manner consistent with safe rules of operation.
- Inspecting powered industrial trucks at the beginning of each work shift and completing the appropriate inspection forms.
- Reporting all equipment malfunctions and/or maintenance needs to their supervisors immediately. Park lift in safe place, remove key, tag or note problem.

Training Requirements

Only trained and certified operators are allowed to operate equipment and all personnel who operate forklifts, scissor lifts, boom lifts, powered hand trucks, skid steers and tractors are required to have the following training prior to use.

Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace. Someone who is authorized, qualified and determined to be competent shall conduct all training.

Training Program Topics

Training shall include providing information on the following topics:

- Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
- Truck controls and instrumentation: where they are located, what they do, and how they work;
- Engine or motor operation;
- Steering and maneuvering;
- Visibility (including restrictions due to loading);
- Fork and attachment adaptation, operation, and use limitations;
- Vehicle capacity and stability; balancer & counterbalances;
- Any vehicle inspection and maintenance that the operator will be required to perform;
- Refueling and/or charging and recharging of batteries;
- Operating limitations;
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.
- Workplace-related topics:
- Surface conditions where the vehicle will be operated;
- Composition of loads to be carried and load stability;
- Load manipulation, stacking, and unstacking;
- Pedestrian traffic in areas where the vehicle will be operated;
- Narrow aisles, distances & other restricted places where vehicle will be operated;
- Hazardous (classified) locations where the vehicle will be operated;
- Ramps and other sloped surfaces that could affect the vehicle's stability;
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust; and
- Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

Refresher Training Requirements

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.

Refresher training will be conducted when:

- The operator has been observed to operate the vehicle in an unsafe manner;
- The operator has been involved in an accident or near-miss incident;
- The operator has received an evaluation that reveals that the operator is not operating the truck safely;
- The operator is assigned to drive a different type of truck; or
- A condition in the workplace changes in a manner that could affect safe operation of the truck.

An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.

Program Activities

Equipment Inspection and Maintenance

- Each powered industrial truck will be inspected before each shift.
- A maintenance log will be kept that identifies repair needs and corrective actions taken for each powered industrial truck. This repair and preventative maintenance log will be kept by the company mechanic.
- If repairs are needed on a powered industrial truck such that it cannot be safely operated, it will; be taken out of service and tagged out immediately until the repairs have been made.
- After repairs have been completed, the powered industrial truck will be given a performance test to ensure that the equipment is safe to operate.
- Powered industrial trucks will be kept in clean condition, free of dirt, excess oil and grease.

Changing and Charging Batteries

- Equipment will be provided to safely flush and neutralize spilled battery acid and electrolyte.
- Smoking will be prohibited in all battery-charging areas.
- Eyewash equipment will be maintained in all charging areas.
- Precautions will be taken to prevent open flames, sparks and electric arcs in charging areas.
- Employees who change and service batteries and handle corrosive liquids will wear the proper Personal Protective Equipment (PPE).

Safe Work Practices

General Safe Work Practices

- Only authorized, trained personnel shall operate lift trucks.
- Before start of shift, a visual inspection must be conducted. Employees shall not operate an unsafe forklift/industrial truck/skid steer at any time.
- Fill fuel tanks out of doors while engine is off.
- Operators shall drive with both hands on the steering wheel. Horseplay is prohibited. Do not drive with wet or greasy hands.
- No person shall ride as a passenger on a forklift/industrial truck/skid steer or on the load being carried and/or in bucket.
- A forklift/industrial truck/skid steer will not be used to elevate a platform or pallet with persons on it or in bucket, except work platforms especially designed for this purpose. Work platforms must have standard guard rails, and must be securely fastened to the forks.
- No person shall stand or walk under elevated forks/buckets.
- Operators should avoid making jerky starts, quick turns, or sudden stops. The operator will not use reverse as a brake.
- Slow down on wet and slippery surfaces and at cross aisles or locations where vision is obstructed.
- Operators entering a building or nearing a blind corner shall make their approach at reduced speed. Sound horn and proceed carefully.
- Operators shall give pedestrians the right-of-way at all times.

- Operators shall not drive toward any person who is in front of a fixed object or wall.
- Operators shall not overtake and pass another forklift/industrial truck/skid steer traveling in the same direction, at intersections, blind spots, or hazardous locations.
- Operators should not put their fingers, arms, or legs between the uprights of the mast, or beyond the contour of the forklift & pinch points near bucket.
- Forks/buckets should always be placed under the load as far as possible. Do not lift a load with one fork.
- No load should be moved unless it is absolutely safe and secure.
- Use extra care when handling long lengths of bar stock, pipe, or other materials.
- Avoid sharp or fast end-swing.
- Compressed gas cylinders shall be moved only in special pallets designed for this purpose.
- When unloading/loading trucks or trailers, the brakes on the vehicle will be set (locked) and the wheels chocked, including verifying supports & dock plates, as well as attachments.
- Forklifts must be safely parked when not in use. The controls shall be neutralized, power shut off, brakes set, key removed, and the forks/bucket left in a down position flat on the surface, and not obstructing walkways or aisles.
- A forklift/industrial truck/skid steer shall not be left on an incline unless it is safely parked and the wheels blocked/chocked.
- Only stable and safely arranged loads will be handled.

- Only loads within the rated capacity of the powered industrial truck will be handled.

Traveling

- Posted speed limits will be observed, and under all travel conditions, a powered industrial truck will be operated at speeds that will permit it to be brought to a stop in a safe manner.
- Three truck lengths (or two seconds) will be maintained between powered industrial trucks in operation.
- The powered industrial truck will be kept under control at all times.
- When vision is obscured, the operator will slow down and sound the horn.
- If the load blocks the operator's view, the powered industrial truck will be driven in the direction that provides the best visibility.
- The powered industrial truck will cross railroad tracks at a diagonal approach.
- The powered industrial truck will be parked 8 feet or further from the center line of the railroad tracks.
- The operator will keep a clear view of the path of travel.
- The loaded powered industrial truck will be driven with the load upgrade when driving on ascending or descending grades greater than 10%.
- Dock boards and bridge plates will be properly secured before they are driven over.
- When the forklift/industrial truck/skid steer is not carrying a load, the operator shall travel with the forks/bucket as low as possible (maximum of 3 inches on paved surfaces). When carrying a load, it should be carried as low as possible (consistent with safe operation, 2 to 6 inches above the surface.)
- The forks/bucket should not be operated while the forklift/industrial truck/skid steer is traveling.

- On a downgrade, the load shall be last, and the forks/bucket raised only enough to clear the surface.
- On an upgrade, the load shall be first, and the forks/bucket raised only enough to clear the surface.

Chapter 38 - Gaseous Chlorine Awareness

Per the Centers for Disease Control and Prevention, CDC, chlorine is one of the most commonly manufactured chemicals in the United States. The most important use of chlorine is as bleach in the manufacture of paper and cloth, but it is also used to make pesticides (insect killers), rubber, and solvents.

Examples of possible locations where our employees may be exposed to chlorine during job functions may include, but are not limited to:
1. Water treatment facilities
2. Chlorine injection facilities
3. Water pre-treatment areas

Chlorine gas can be **pressurized and cooled to change it into a liquid** so that it can be shipped and stored. When liquid chlorine is released, it quickly turns into a gas that stays close to the ground and spreads rapidly.

Chlorine is a greenish-yellow gas under normal conditions. It has a distinct pungent, irritating odor, which is like the odor of bleach. The strong smell may provide an adequate warning to people that they have been exposed.

Exposure to chlorine
Employee risk for exposure depends on how close they are to the place where the chlorine was released.
1. If chlorine gas is released into the air, the employee may be exposed through skin contact or eye contact. The employee may also be exposed by breathing air that contains chlorine.
2. If chlorine liquid is released into water, the employee may be exposed by touching or drinking water that contains chlorine.
3. If chlorine liquid comes into contact with food, the employee may be exposed by eating the contaminated food.
4. Chlorine gas is heavier than air, so it would settle in low-lying areas.

Short Term (Acute) Health Effects
Exposure to chlorine can cause throat irritation, vomiting, frostbite burns, tooth enamel corrosion and nausea. Exposure to high concentrations of chlorine can be fatal. As a point of interest, chlorine was used during World War I as a choking (pulmonary) agent.

Long Term Health Effects
Long-term complications from chlorine exposure are not found in those who survive a sudden exposure unless they suffer complications such as pneumonia during therapy. Chronic bronchitis may develop in those who develop pneumonia during therapy.

Site Specific Contingency/Emergency Action Plans

The Chief Safety Officer (CSO) or other competent/responsible person will inform employees of the known potential fire, explosion or toxic release hazards related to their job and the process and the applicable provisions of the emergency action plan.

Employees must be informed where chlorine is used in a host facility and aware of additional facility safety rules. Per paragraph (h)(2), 29 CFR 1910.119, the facility for which we are working will provide our employees the known potential fire, explosion, or toxic release hazards related to our work and the process and explain the applicable provisions of their contingency plans and provisions such as escape routes, procedures to account for employees, means of reporting emergencies, and alarm system.

Chapter 39 - Hexavalent Chromium Program

Purpose

The purpose of this safety policy is to establish procedures for the protection of safety and health of Evo Corporation employees and contractors.

Scope

This policy applies to all employees who work near welding operations or who perform hot work.

Responsibilities

Chief Safety Officer (CSO)

 Develop and implement the Hexavalent Chromium program
 Identifying and list employees affected by this safety policy and procedure
 Provide training for affected employees
 Audit the program to ensure its effectiveness
 Determine tasks performed that present hazards

Managers/Supervisors

 Ensure only those employees who have been trained in the Hexavalent Chromium Program are working near Hexavalent Chromium hazards.
 Ensure that PPE is available for use by employees
 Ensure safety procedures are being followed
 Address employee concerns in the field

Employees

 Follow safety procedures for safe work on the job
 Notify the supervisor if concerns for safety are present that cannot be eliminated.
 Ensure PPE is in good condition and fitted correctly

Training

 All Employees with the potential of being exposed to Hexavalent Chromium shall be trained, initially and annually, in this procedure according to OSHA 1910.1026(I)(2). Additional training shall include Respiratory Protection Policy, Personal Protective Equipment Policy and the Job Hazard Analysis.

 Additional training materials can be obtained from the CSO and your supervisor.
 Every effort shall be made to protect employee exposure to Hexavalent Chromium.
 This policy is available for employees and owners or their representatives to review or copy at the job site. Additional pertinent information can be obtained from the safety manager.

Testing, Air Monitoring, Identifying, Maintenance, Ventilation, Protection Devices, and Communication

When a potential hazard or exposure is known, Evo Corporation is responsible for determining those parties responsible for:

 Testing
 Air monitoring
 Identifying
 Maintenance

 Upkeep of ventilation systems
 Protection devices
 Providing decontamination and personal hygiene facilities
 Communicating with client representative
 Location of areas and surfaces which pose potential exposure to Hexavalent Chromium.

Employees will be monitored every six months if the initial monitoring shows employee exposure in accordance with OSHA 1910.1026(d)(2). Respirators must be used when engineering controls and work practices cannot reduce employee exposure during work operations where engineering controls and work practices are not feasible, and emergencies. Respirators will be provided to employees in accordance with OSHA 1910.134.

Exposure
 The supervisor is responsible for communicating with the client facility representative and Evo Corporation Chief Safety Officer concerns pertaining to identifying work areas and surfaces, which pose potential exposure to Hexavalent Chromium.
 The supervisor is to ensure that no employee is exposed to Hexavalent Chromium permissible exposure levels above 5 micrograms per cubic meter of air (5 ug/m3) and the Action Level of 2.5 ug/m3 calculated as an 8-hour time weight average.
 Engineering controls shall be implemented if the exposure level is above the PEL for more than 30 days per calendar year.
 If at any time an employee is suspicious or aware of potential exposures that are not addressed, the employee is to contact their supervisor who will then coordinate with the client representative and the Evo Corporation CSO in addressing the Employees concerns.
 Once areas and surfaces of potential Hexavalent Chromium exposure have been identified, the Supervisor is to coordinate with the client facility representative and the Evo Corporation CSO to ensure employees are adequately protected from harmful exposure. This protection may include engineering controls, Respiratory Protection, Personal Protective Equipment Policy and additional training that may be needed.

 Supervisors must ensure proper housekeeping of all surface areas. Surface areas shall be as free as practicable of buildup of Hexavalent Chromium in order to limit the exposure levels.

Personal Protective Equipment will be provided at no cost to the employee in order to prevent emergency situations-1910.1027 (h), 1926.1127(h).
 Additional Personal Protective Equipment may include:
 A respirator appropriate for Hexavalent Chromium particles, including PAPR's according to OSHA 1910.1026 (g).
 Suitable coveralls and gloves.
 Activities should be conducted in well-ventilated areas to which access has been restricted.
 Plastic ground covers should be utilized to the extent possible to contain contaminants and facilitate cleanup.
 Gloves, respirators, coveralls, and rags should be decontaminated or placed in double bags, sealed and held for proper disposal.
 The need for Personal Medical Monitoring should be evaluated and provided as required.
 Personal Protective clothing exposed to Hexavalent Chromium should not be cleaned by:
 Air blasting

 Shaking
 Any method that could create air borne Hexavalent Chromium particulate.
 Surfaces shall be maintained as free as practicable of accumulation of chromium. All spills and releases of chromium, shall be cleaned promptly methods of cleaning include HEPA filtered vacuums, dry or wet sweeping, shoveling or other methods to minimize exposure in accordance with OSHA 1910.1026 (j)-1910.1026 (j) (2) (i).

Personal Hygiene
 All employees exposed to Hexavalent Chromium should wash their hands and faces before eating, drinking or smoking.
 No eating, drinking or tobacco products are allowed in the area where possible Hexavalent Chromium exposure may occur.
 Workers should shower and decontaminate before leaving work site.
 Vehicles should not be parked in contaminated areas.
 Employees are to maintain an extremely high level of personal hygiene.

Possible sources of Exposure are:
 Welding and cutting
 Paints
 Braising and welding filler material
 Chromium plated steel
 Chromate pigments and powders

The Job Hazard Analysis (JHA) and pre-job planning will include Hexavalent Chromium Awareness to ensure that work activity precautions are developed and communicated to each employee involved.

Signage and barricades shall be placed at a sufficient distance to protect any employee from entry in to the areas, which pose hazards from Hexavalent Chromium in accordance with OSHA 1910.1026(e)(!)-(e)(3)(i).

All work activities involving Hexavalent Chromium are to be coordinated with the Supervisor and Evo Corporation CSO, who is responsible for administering, coordinating, reviewing, and updating this policy at least annually. Medical surveillance shall be provided when an employee is exposed to Hexavalent Chromium levels above the PEL for 30 days or more per year, exposed in an emergency, or if the employee experiences signs or symptoms of the adverse health effects of Hexavalent Chromium (dermatitis, asthma, bronchitis, etc.). Medical evaluations will be provided at no cost to employees. Examinations will be performed by a physician or under the supervision of a physician or other licensed health care professional in accordance with OSHA 1910.1026 (k) (1)-1910.1026 (k) (l) (ii).
 Employees are to be notified within five working days, in writing, if they have identified unacceptable blood levels.

Evo Corporation will maintain and make available an accurate record of all employee exposure monitoring, medical surveillance and training records in accordance with OSHA 1910.1026 (m). OSHA

References: OSHA 29 CFR 1910.1027 OSHA 29 CFR 1926.1127

Chapter 40 – Stop Work Authority Policy

PURPOSE:

This program establishes the Stop Work Authority (SWA) of all employees and contractors to suspend individual tasks or group operations when the control of Heath, Safety or Environmental (HSE) risk is not clearly recognized or understood and/or equipment service is compromised. It is the policy of Evo Corporation that:

a. All employees have the authority and responsibility to stop any task or operation where concerns or questions regarding the control of HSE exist.
b. No work will resume until all stop work issues and concerns have been effectively addressed.
c. Any form of retribution or intimidation directed at any employee or company for exercising their authority as outlined in this program will not be tolerated.

As with any policy, accountability for non-compliance will follow established company procedures or contract requirements.

SCOPE:

This "stop work" program applies to all Evo Corporation projects and operations.

KEY ROLES and RESPONSIBILITIES

Operations managers/supervisors have a responsibility to accept and support all "stop work" intervention from employees. Management shall resolve issues resulting from an employee's "stop work" concerns and ensure no actions are taken as retribution against employees who raise safety concerns to stop an activity they believe is unsafe. This action of "stop work" will also include any evidence of potential equipment service interruption due to unsafe or undocumented processes (methods of procedure) when performing equipment installations or maintenance.

Employees have a responsibility and are authorized to "stop work" on any activity or situation they believe danger or a risk is present to them or a coworker without fear of retribution from management. The "stop work" may include discussion with other employees or management to resolve work related issues, address potential unsafe conditions, and/or clarify work instructions, etc.

Management is responsible for monitoring compliance with the requirements of this program, the maintenance of associated documents, processes, training materials, identification of trends, and sharing of lessons learned.

STOP WORK AUTHORITY PROCEDURE:

1. Employees who identify a potentially unsafe condition or act which could result in an undesirable event, a "stop work" intervention shall be immediately initiated for the individual(s) and/or equipment potentially at risk. All potential unsafe condition or acts shall be documented on a Job Hazard Analysis/Behavior Based Safety form. The form shall be completed/reviewed at the beginning of every job to indentify all potential unsafe condition or issues.

2. The employee who identified the "stop work" incident will notify all affected employees and management of the stop work issue.

3. All employees shall discuss and gain agreement on the "stop work" issue.

4. Resolve any issues that have resulted in the "stop work". The issue resolution or corrective action must be discussed with all employees, including manager/supervisor, and be in place before return to work.

5. If employees cannot provide a resolution to the "stop work", then work shall be suspended until a resolution can be achieved. The operation manager/supervisor shall make the final determination on the corrective action and provide the go-ahead to continue.

6. All corrective actions on job "stop work" incidence when finalized shall be documented. The employee(s) will use the Accident/Incident (Near Miss) Reporting form for this process.

REPORTING

All "stop work" concerns shall be documented as a "near miss" report. Employees shall use Evo Corporation's Accident/Incident (Near Miss) Reporting policy form for reporting purposes. The report shall be reviewed by the Chief Safety Officer and Operations Manager/Project Supervisor in order to:

a. Indentify the "stop work" incident
b. Notify and report to affected employees and management
c. Provide corrective action to job stoppage
d. Resume work after issues have been resolved and cleared to proceed
e. Facilitate lessons learned with team members.

The Chief Safety Officer will publish incident details regarding the "stop work" action to all management and employees outlining the issue, corrective action, and lessons learned.

FOLLOW-UP

Management will review all "stop work" reports in order to identify any additional investigation or follow-up required. The report will be used as part of "lessons learned". Operations Managers/Project Supervisors will provide the root cause analysis to the "stop work" action and identify any potential opportunities for improvement, encourage employee participation, and share lessons learned.

TRAINING

Training regarding this SWA Policy will be conducted as part of all new employee orientations. Additionally, this policy as well as other company safety policies shall be reviewed as part of Evo Corporation's pre-job safety briefings. All documented training shall be kept in the project and employee's file. The Chief Safety Officer and safety program administration is located at: 1703 Vargrave Street, Winston-Salem, NC 27107.

Chapter 41 - Silica Dust Safety Program

1.0 Introduction

1.1 It is the policy of Evo Corporation to take precautions to eliminate potential hazards in the workplace. The purpose of this Silica Dust Safety Program is to provide the hazards associated with silica dust and outline the steps to take to ensure employees who work with, or around silica are not exposed to hazardous levels of silica dust; and to provide procedures for common silica related work duties to minimize exposure in accordance with the OSHA Air Contaminants standard (29 CFR 1910.1000). Crystalline silica is a basic component of soil, sand, granite and many other minerals. Quartz is the most common form of crystalline silica. All materials containing silica can result in the presence of respirable silica particles when chipping, cutting, drilling or grinding takes place.
Silica exposure occurs through inhalation of silica containing particles and occurs through many construction and general industry methods. The most severe exposures generally occur during abrasive blasting with sand to remove paint and rust from bridges, tanks, concrete structures and other surfaces. Other activities that may result in sever silica exposure include jack hammering, rock/well drilling, concrete mixing, concrete drilling, brick and concrete cutting/sawing, tuck pointing, tunneling, and a variety of environmental and industrial contract operations. Exposure to excessive silica dust over long periods of time can result in silicosis.
This Silica Dust Safety Program applies to Evo employees who are expected to be exposed to silica dust through the methods outlined above; or through other means, which are determined by their supervisor.

2.0 Responsibilities

2.1 Human Resources & Safety

2.1.1 Human Resources & Safety (HR/Safety) provides program oversight and consultation to Evo work groups regarding potential risks, exposure prevention and training relating to silica dust exposures.

2.1.2 Conduct building/material assessments for silica containing materials and perform employee silica hazard assessments/monitoring upon request.

2.2.1 Managers/Supervisors engaged in enviroments or maintaining buildings or working in buildings with potential exposure to silica should:

2.2.1.1 Ensure the applicable components of the Silica Dust Safety Program are available to all affected employees.

2.2.1.2 Provide applicable training to employees expected to work in, or with, materials where there is a potential risk for silica exposure.
2.3 Managers/Supervisors

2.3.1 Evo employees who supervise personnel with responsibilities to work in areas where there is a risk of exposure to silica dust, must ensure employees are properly trained on the applicable contents of the Silica Dust Safety Program and are provided appropriate personal protective equipment (PPE)

when conducting such work.

2.4 Authorized Person

2.4.1 Employees working in areas where there is an identified risk of silica dust exposure must be properly trained on all applicable elements of the Evo Silica Dust Safety Program; and be provided and utilize the appropriate PPE for the task being performed.

3.0 Definitions

3.1 The following definitions are provided to allow for a better understanding of the Evo Silica Dust Safety Program.
Authorized person: An employee who has received proper training and exposure monitoring to safely work with silica containing materials.
Crystalline silica: Naturally occurring component in earth soils, sand, granite and many other minerals resulting in many building materials containing silica.
Exposure Assessment: The initial determination to find if any employee may be exposed to lead at or above the permissible exposure level. Until the assessment is completed, employees shall take all precautions necessary to maintain exposures below the PEL.
HEPA: High Efficiency Particulate Air. A filtering system capable of trapping and retaining at least 99.97% of all particles of 0.3 micron in diameter and larger.
Permissible Exposure Limit: (PEL) the OSHA limit for silica dust exposure. It is set at 50µg/m3, averaged over an 8-hour workday, as a TWA.
Silica containing material: Any material, which has the potential to contain silica at levels, which may pose a hazard to employees when the material is manipulated to create airborne particles
Silicosis: A lung disease caused by inhalation of silica dust. Silica dust can cause fluid buildup and scar tissue in the lungs that cuts down the ability for the lungs to fully function. The disease is not curable, but can be prevented through the use of protective systems.

4.0 Material Assessment

4.1 Any time there is a potential for silica containing materials to be involved in a project, sources of silica must be assessed prior to disturbing. Evo HR/Safety or an authorized contractor can perform material assessments to determine silica content.

4.2 Crystalline silica occurs naturally in the earth's crust and is a basic component of sand, concrete, brick, asphalt, granite, some blasting grit and wall spackling materials. Employees can be exposed to silica when conducting activities such as:

- Abrasive blasting
- Jack hammering
- Concrete crushing
- Hoe ramming
- Rock drilling
- Mixing of concrete or grout
- Concrete drilling
- Sawing concrete or bricks
- Chipping or scarifying concrete
- Rock crushing
- Moving or dumping piles of concrete, rock or sand
- Demolition of concrete or brick
- Using coatings containing silica
- Removing coatings containing silica

4.3 If airborne silica is expected to be generated during the project, Evo HR/Safety shall be contacted to conduct exposure monitoring and ensure all safety precautions are followed to minimize exposure to airborne silica dust.

5.0 Exposure Monitoring

5.1 Initial Exposure Monitoring:

5.1.1 Evo employees expected to come in contact/work with silica containing materials where there is a risk of exposure through inhalation of dust should develop an exposure monitoring program.

5.1.2 Initial exposure monitoring should be conducted by Evo HR/Safety to quantitatively/qualitatively evaluate the exposure to airborne silica.

5.1.3 Exposure monitoring should be conducted on any employee exposed to airborne silica dust as levels may vary based on job duty within a project. For example, the employee performing concrete cutting vs an employee providing supervision during the work.

5.2 Periodic Exposure Monitoring:

5.2.1 Whenever silica exposure levels are greater than, or equal to the Permissible Exposure Level (50μg/m3), periodic exposure monitoring is required. It is the responsibility of the affected crew supervision to work with HR/Safety and develop a periodic exposure monitoring schedule.

5.2.2 The frequency of exposure monitoring should be as follows:
Measured Concentration: **Monitoring Frequency**:
Permissible Exposure Level – 50 μg/m3 Annual

5.2.3 Exposure monitoring is not required by every employee at risk of airborne lead exposure. Enough sampling must be done to enable the employee's exposure level to be reasonably represented.

5.3 Termination of Exposure Monitoring:

5.3.1 Periodic exposure monitoring may be discontinued if results from two consecutive sampling periods taken at least 7 days apart show that employee exposure is below the PEL.

5.4 Sampling methods

5.4.1 Personal exposure monitoring will be conducted using an approved NIOSH method. Monitoring records shall include the following.

5.4.1.1 The date, number, duration, location and results of each of the samples taken, including a

description of the sampling procedure used to determine representative employee exposure where applicable.

5.4.1.2 A description of the sampling and analytical methods used.

5.4.1.3 The type of respiratory protective devices, if any.

5.4.1.4 Name and job classification of the employee(s) monitored.

5.4.1.5 Any environmental variables that could affect the measurement of the employee(s) exposure.

5.5 Reporting of exposure monitoring results

5.5.1 HR/Safety will notify the manager/supervisor of exposure monitoring results within as soon as the final laboratory analysis is completed. The manager/supervisor must provide this information to the affected employee(s) within 5 working days.

5.5.2 If levels are measured during the exposure monitoring exceeding the PEL, the HR/Safety report will include steps and controls to reduce exposure to below the PEL.

5.5.3 Follow up exposure monitoring may be necessary if engineering or administrative controls are put in place to reduce hazardous exposures.

6.0 Exposure Control

6.1 Pre-project planning

6.1.1 Prior to projects taking place affecting Evo employees, HR/Safety should be included in planning documents to account for potential exposures to hazardous materials, including silica.

6.1.2 HR/Safety can conduct material assessments to make determinations if there are any silica containing materials, which may be impacted by the project.

6.1.3 During the planning process, any silica containing materials are addressed and methods for exposure control are provided prior to work beginning.

6.1.4 If silica containing materials are to be disturbed during the project, the appropriate exposure control methods should be implemented.

6.2 Administrative/Engineering Controls

6.2.1 Where silica exposures at or above the Permissible Exposure Limit have been documented, or are expected, the appropriate engineering or administrative controls will be implemented, where feasible. Follow-up exposure monitoring may be necessary when administrative or engineering exposure controls are utilized.

6.2.2 Typical controls may involve:

6.2.2.1 Substituting non-silica containing materials for use while abrasive blasting

6.2.2.2 Alternative methods such as pre ordering grout already mixed instead of on-site mixing in bulk

6.2.2.3 Local exhaust ventilation

6.2.2.4 General ventilation

6.2.2.5 Vacuum methods with HEPA filters

6.2.2.6 Distance

6.2.2.7 Dust control products

6.2.2.8 Containment

6.2.2.9 Use of water to keep dust down

6.2.2.10 General work practices such as good housekeeping, worker rotation, development of specific SOPs to minimize exposure

6.3 Personal Protective Equipment (PPE)

6.3.1 In addition to administrative/engineering controls, employees may be required to wear specific PPE during the disturbance of silica containing materials and/or when airborne silica is present. The level of protection will depend on the task being conducted and the tools being utilized to complete the task.

6.3.2 Recommended PPE will typically include:

6.3.2.1 Respiratory Protection

6.3.2.2 Disposable or reusable work clothing to keep from spreading dust or bringing the dust home

6.3.2.3 Leather gloves

6.3.2.4 Safety glasses or goggles

6.3.2.5 Face shield

6.3.2.6 Boot covers or rubber boots

6.3.3 The following table provides recommended respiratory protection levels based on the measured or anticipated exposure levels:

Respirator	**Protection Factor**	**Typical Silica Activity**
N95	Less than 50 µg/m3	- Used on voluntary basis to control low exposures
Half-face with HEPA filters	50 – 500 µg/m3	- Housekeeping (wet method) - Saw cutting (wet method) - Drilling concrete (wet method) - Power tools with dust collection - Equipment operating with open cab
Full-face with HEPA filters	500 – 5,000 µg/m3	- Chipping concrete - Jack Hammering - Power tools without dust collection - Mixing grout in bulk - Vacuum abrasive blasting
SCBA	Above 5,000 µg/m3	- Abrasive blasting

7.0 Housekeeping & Hygiene Facilities

7.1 In areas where silica containing dust may be present, all surfaces must be maintained free from accumulations of dust to minimize potential silica exposure. Dust and other silica containing debris must be removed from the work area as soon as possible.

7.2 Acceptable method of silica dust removal includes the use of HEPA vacuum or wet methods such as wet mopping.

7.3 Unacceptable methods of silica dust removal include dry sweeping, vacuum cleaners, shop vacuums, and compressed air.

7.4 Follow all recommended procedures and utilize recommended PPE during silica containing debris cleanup activities.

7.5 Where silica containing materials are used, impacted, or being removed; the following requirements must be met.

7.5.1 PPE should be removed upon work completion and disposed of after each use.

7.5.2 Employees must wash hands and are recommended to shower prior to leaving work.

7.5.3 Ensure contaminated PPE, including footwear is not worn outside the work areas.

8.0 Medical Surveillance

8.1 Employees exposed to silica levels above the Permissible Exposure Limit (50 μg/m3), or any employee working with silica who develops signs/symptoms of excessive exposure, should be enrolled in the Medical Monitoring/Medical Surveillance Program.

8.1.1 All medical surveillance will be performed by Evo occ med services & results must be provided to affected employee and their supervisor within 15 days of the assessment.

8.1.2 The medical surveillance program consists of baseline examination and chest X-ray.

8.2 Employees enrolled in the medical surveillance program should be examined annually to track any changes as a result to exposure to silica dust.

9.0 Training and Recordkeeping

9.1 Hazard Communication training is required by all Evo employees and should be conducted initially upon hiring.

9.2 Silica Awareness Training is outlined in this policy and must be offered to affected employees prior to working with silica and annually thereafter.

9.2.1 Silica awareness training should include the following:

9.2.1.1 Information about the potential health effects and symptoms of exposure to respirable silica

9.2.1.2 Safety data sheets for silica, quartz, and applicable products containing silica

9.2.1.3 The purpose and set up of regulated areas to mark the boundaries of work areas containing silica dust

9.2.1.4 The use of engineering controls, work practices, good housekeeping and PPE to control exposure to silica

9.2.1.5 Use and care of PPE

9.2.1.6 Expected exposures to silica dust

9.2.1.7 Exposure monitoring process

9.2.1.8 Medical monitoring/Medical surveillance process

9.3 Respiratory protection training, medical clearance, and quantitative/qualitative fit testing is required under the Respiratory Protection Program. Contact HR/Safety for additional information regarding enrollment in the program.

9.4 The HR/Safety is required to maintain all training, medical surveillance, and exposure monitoring results for 30 years.

10.0 Signage & Restricted Access

10.1 In areas where exposure to silica dust may exceed the PEL, access will be restricted and the following type of signage must be in place to warn employee of hazards. “Caution – Silica Dust Hazard”

Chapter 42 – Pandemic Disease Plan

In the event of a disease pandemic, Evo Corporation and all employees share ownership and responsibility in mitigating measures to ensure the safety of others. These measures include hand washing facilities, antiseptic hand cleansers/towelettes and other hygiene items being made available for all employees to use as prevention in the spread of any disease. Housekeeping, drivers, operators, administrative staff, and others will all be instructed to periodically perform equipment, vehicle, office and/or all other working surfaces cleaning & sanitizing. Employees are encouraged to obtain appropriate immunizations.

Periodic training on illness prevention, how to avoid spread of disease, and company policies concerning illness is provided by way of communications to management and all employees through meetings, email alerts, posting of notifications and monthly safety and health newsletters as part of our internal/employee communication procedures. External/customer communications are conducted via email notifications with primary client contacts and postings within Evo facilities and job sites notifying the general public when special measures are taken to address a pandemic, including contact tracing.

Work-at-home or stay-at-home is required when employees are ill or are caring for others. Continuation of work operations may be conducted through telework arrangements if a large percentage of personnel become ill. Large or crowded gatherings of personnel if an outbreak or increased level of disease occurs will be prohibited, including conducting meetings, training, or other similar events through remote conferencing.

This plan, as with all other company safety policies, procedures, and standard operating procedures (SOP's) will be reviewed/tested as frequently as new information is available or annually at a minimum. Any lessons learned from a pandemic outbreak will be reviewed by management following any event and addressed with revisions to this policy as needed.

Appendix A

Evo Corporation
JOB HAZARD ANALYSIS (JHA) WORKSHEET

Job or Task Title: _____ Date: _____
Department/Location: _____
Employee(s) Observed: _____
JHA Analysis Completed By: _____
Job/Task Description (brief):_____
_____
_____
_____

(Hard hats, work gloves, safety glasses, reflective vests, steel toed boots, and long pants are required at all job sites unless otherwise designated)

Basic Job Steps	Potential Injuries/Hazards	Required Safe Job Procedures and/or PPE

Appendix B

Evo Corporation

ACCIDENT/INCIDENT (NEAR MISS) REPORT

Employee's Name: _____ D.O.B.: _____
Address: _____ D.O.H.: _____
Telephone: _____SS#: _____
Job Title: _____ Sex: ___Male ____Female
Office Location: _____Supervisor's Name: _____
Location at Time of Incident_____
Date/Time of Incident: _____

Describe clearly how the accident/incident occurred or near miss observed: _____
_____
_____
_____
Was incident: Physical_____
Chemical _____
Parts of body affected: _____ Exposure Dermal _____
right left inhalation _____
Ingestion _____
Witnesses: 1) _____ 2) _____
Conditions/acts contributing to this incident_____
_____

MANAGERS MUST COMPLETE THIS SECTION:

Date, responsible party & specific corrective action taken to prevent a recurrence: _____
_____
_____

Did injured go to doctor: _____ Where: _____
Did injured go to hospital: _____ Where: _____
When: _____

Signatures:

_____ _____
Employee Reporting Manager

_____ _____
Date Date

_____ _____
Vice President & Chief Safety Officer Date

This form must be completed & returned to the Chief Safety Officer within 5 working days.

Appendix C
Evo Corporation Job Description

Job Title: Light/Restricted Duty Job Activities
FLSA Status: Non-exempt/hourly
Prepared By: HR
Prepared Date: 07/02/2020

Summary: Performs any combination of the following duties outlined:

Assists with some light housekeeping activities, depending on range of motion and lifting restrictions outlined by healthcare provider, including sweeping, dusting, wiping, picking up litter, emptying waste containers, and vacuuming.

Using walk behind magnetic sweeper in parking areas & around equipment to remove tire hazards

Helps prepares and stock inventories.

Provide clerical support through keyboarding or operating office machines such as typewriter, adding, calculating, and duplicating machines, as well as filing, handling/delivering mail and interoffice correspondence and packages or answering and placing phone calls as requested.

Greets and assists visitors.

Performs all other duties as assigned by supervisor and management, with expectations that such duties will be carried out per company standards as with any other routine responsibilities.

Competencies
Quality - Demonstrates accuracy and thoroughness; Looks for ways to improve and promote quality; Applies feedback to improve performance; Monitors own work to ensure quality.

Quantity - Meets productivity standards; Completes work in timely manner; Strives to increase productivity.

Safety and Security - Observes safety and security procedures; Reports potentially unsafe conditions ; Uses equipment and materials properly.

Adaptability - Adapts to changes in the work environment

Attendance/Punctuality - Is consistently at work and on time.

Dependability - Follows instructions, responds to management direction

Physical Demands
While performing the duties of this Job, the employee is regularly required to talk or hear, taste or smell and stand or walk. The employee may be required to sit; use hands to finger, handle, or feel; and reach with hands and arms. The employee must regularly lift and /or move up to 10 pounds, unless restricted otherwise by heatlhcare provider instructions. Vision is required for this job.

Appendix D

Employee Self Inspection Form

Job Activity	*PPE/Materials/Documentation*	*Employee Initials*
General/Jobsite/Warehouse	**Hard hat, safety glasses, reflectorized vest, work clothes, & steel toed footwear protection**	
Bloodborne Pathogens/Biohazards/Pandemic Transmission Avoidance	**Gloves, spill kit, CPR protection, face mask, hand sanitizer, disinfectant cleaner, social distancing.**	
Confined Space Entry	**Permit, lanyard, harness, retrieval equip,respirator**	
Electrical Safety	**Lock out/tag out policy, grounding, insulation**	
Lock Out/Tag Out	**LOTO permit, locks issued, kit & tags.**	
Fall Protection	**Railings, lanyard, harness**	
Hand/Power Tools	**Guards, grounding, condition**	
Hearing Conservation	**Hearing protection, audiogram**	
Ladder	**Ladder/rung inspection, 3 points contact, capacity**	
Scaffolding	**Competent person inspection,erection,railing**	
Respirator	**Fit test, annual exam, cartridges, condition**	
Driver/Operator	**Pre-trip/Pre-shift Inspection of vehicle/equip before operating**	

I, _____ acknowledge having completed and/or inspected all necessary Personal Protective Equipment (PPE)/materials/supplies reflected and/or documentation required prior to performing work duties assigned with my above initials reflected.

_____ _____

(Employee Name) **(Date)**

_____

(Employee Signature)

Appendix E

Evo Corporation (Vagrave/Styers Ferry/FL) Emergency Action Plan

In the event of emergency, employees are alerted by:
• public address system announcement.

• Verbal announcement.

• An announcement will be made that due to an emergency an evacuation is required and to proceed to the nearest exit.

• A statement will be communicated that due to an emergency an evacuation is required and to proceed to the nearest exit.

• In the event of fire or other emergency, ALL employees shall evacuate immediately.

• In the event of an emergency, employees shall evacuate: Back hallway offices, file retention and break room/shop area should exit down warehouse stairwell through front warehouse door. Conference room and reception area should exit through main office building door. Offices and kitchen located on street side of the building should exit through the center office or kitchen doors. Warehouse should exit through front, side or bay doors depending on proximity at the time of an evacuation. Styers Ferry office and Terminal should exit through front or rear entrances nearest at the time of the alert. Jacksonville, FL offices should exit through nearest front or rear exit.

• Portable fire extinguishers are provided in the workplace for employee use. In the event of fire, any employee may use extinguishers to attempt to extinguish the fire before evacuating.

• Critical operations shutdown procedures are not required, because no employees are authorized to delay evacuation for this purpose.

• No employees are assigned to perform medical or rescue duties during emergency evacuation situations.

• After an emergency evacuation, employees are to gather in the following location(s): To one side of the Main Gate or Warehouse Gate entrances to property at Vargrave, main gate only at Styers Ferry, and Jacksonville, FL.

• After an emergency evacuation, the procedure for accounting for all employees is: Management/Supervisors should account for all employees reporting to them and notify one of the contacts listed below or other designated representative.

• For further assistance with emergency evacuation procedures, the following individuals may be contacted: Darren Poole, Vice President & Chief Safety Officer/HR-Safety
Tom Hammett, Chief Executive Officer/Administration
Tony Disher, President/Operations

Appendix F

Evo Corporation
New Hire & Annual Employee Orientation

New Hire & Annual Refresher Training and Presentations

(Employee's initials indicate receipt & completion of materials & training below.)

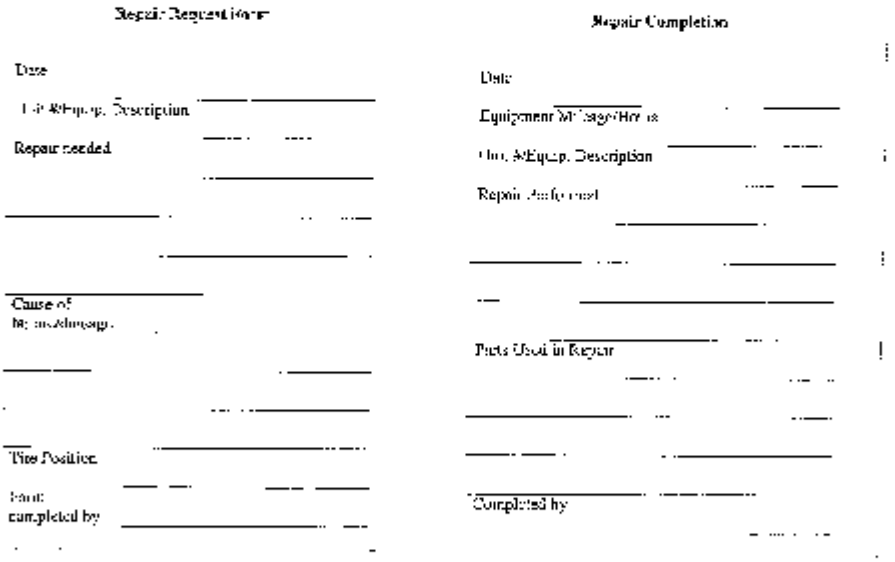
1. _____Company Benefits, Outline/History and Mission
2. _____Flagging Operations and Procedures
3. _____Drug and Alcohol Program & Disciplinary Policies
4. _____Health & Safety and HazCom (SDS)-GHS & Behavior Based Safety/JHA
5. _____Skid Steer/Industrial Truck Operators Training
6. _____Excavator Safety
7. _____Lifting, Pathogens, HazMat, Electrical, Fire, Vehicle, PPE, Fall, Excav. & Lock/Tag
8. _____Security Plan Training
9. _____Vehicle Inspections
10. _____How to Inspect, Tie Down and Secure Cargo
11. _____Harassment Prevention & Diversity Training
12. _____Industrial Hydro blasting/Vacuuming/Confined Space Entry
13. (Other) _____

I, _____, acknowledge having received & completed the above listed forms, materials, information & training. I have no knowledge of any violation of the law or any corporate policies or standards of conduct by me or any other employees while employed at this company.

Employee Signature_____ Date: _____

Instructor Signature _____ Date: _____

Appendix G



Repair Request Form

Date

Unit #/Equip. Description

Repair needed

Cause of

This Position

Form completed by

Repair Completion

Date

Equipment Mileage/Hours

Unit #/Equip. Description

Repair Authorized

Parts Used in Repair

Completed by

Appendix H

Job Evaluation Bid Form

Date: **Project No.:**

Company: **Generator/Site Name:**
Street: **Street:**
City: **State:** **Zip:** **City:** **State:** **Zip:**
Contact: **Site Contact:**
Telephone: **Telephone:**
Mobile: **Mobile:**
Fax: **Fax:**
Email: **Email:**

Services Needed:

Contamination:

Quantity:

Job Scope:

Overall Site Condition:

Work Area Constraints:

Utilities:

Hazards:

Other Bidders:

Payment Terms:

NOTES: New Equipment Purchase Review

Employees Trained on Safe Work/Operation

PPE Required for Project & Mitigate Hazards

Employees Trained on proper use of PPE: