Safety & Loss Prevention Program Manual

Safety First!

Environmental Air, Inc.

1100 McCartney Street
Pittsburgh, PA 15220
P: (412) 922-8988 | F: (412) 922-2857
E: info@env-air.net | W: env-air.net

INTRODUCTION

This manual documents the various health and safety programs and procedures established at Environmental Air, Inc. Its purpose is to assist in the identification and control of workplace hazards and thereby promote a safe and healthy environment for employees, visitors, and subcontractors.

The programs and procedures documented here have been developed specifically for Environmental Air, Inc. in accordance with the applicable legislation and good safety practice. Further information and resources are available centrally from the Safety Coordinator as listed below. Comments and questions regarding the manual should be directed to the Safety Coordinator.

This manual is not intended to provide an exhaustive treatment of the subject of sheet metal construction worker safety, and will not be used as a substitute for reading and interpreting federal or state OSHA regulations or any other pertinent state or local laws, rules, regulations, or standards.

PROGRAM MANAGER/COORDINATOR

The Program Manager/Coordinator of the OSHA Hazard Communication Program is Craig R. Neil, who can be reached at the following telephone number 412.922.8988 during normal office hours from 6:00 AM to 2:30 PM, Monday through Friday. In case of emergencies or outside of normal office hours, call 412.874.6537.

The Program Manager/Coordinator is responsible for the effective implementation of this Program. The Program Manager/Coordinator will periodically report to management regarding the Program's implementation, effectiveness, and continuing update requirements. The Program Manager/Coordinator will establish the specifics of the "Hazard Communication" Policy and coordinate the efforts and activities of employees and management.

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SECTION I

POLICIES

COMPANY POLICY STATEMENT ON SAFETY & HEALTH

The safety and health of all employees of Environmental Air, Inc. is of primary importance. The prevention of work related injuries shall be given precedence over operating productivity. Safety shall be practiced by all personnel at all times. Only safe methods and equipment shall be used.

Recognizing that the responsibility for safety must be shared by all, we establish the following:

- Environmental Air, Inc. accepts responsibility for enacting, maintaining, and improving our company's safety and health standards and expects full cooperation toward the prevention of occupational (job related) accidents, injuries, and/or illnesses.
- Craig R. Neil is hereby designated as the Environmental Air, Inc. Safety Coordinator and is responsible to Paul Neil on all matters relating to safety and health. He will be responsible to see that all employees have received training in the safe performance of their job.
- Each employee is responsible for wholehearted cooperation with all aspects of safety and health, including compliance with all rules and regulations and for continuously practicing safety while performing his or her duties.

Environmental Air's safety standards include:

- Compliance with all applicable safety laws, rules, and regulations.
- Regular safety meetings to provide education and training on safety and health matters.
- Regular safety inspections that identify and eliminate unsafe working conditions and practices.
- Prompt and thorough investigation of every accident to determine what caused it and to correct the problem so that it will not happen again.

Environmental Air's safety and health program is designed to keep the number of injuries to a minimum. Our goal is zero accidents, injuries, and illnesses.

It will be the policy of Environmental Air to establish and maintain an aggressive safety program to provide a safe and accident free working environment for all employees.

- Safety reminders and safe working practice suggestions will be distributed on a regular basis with the paychecks.
- The company president and company safety coordinator will visit each jobsite to conduct inspections and hold safety meetings regularly, but not less than once per month for each jobsite.
- Each foreman is responsible for safe working conditions on the individual jobsite, but all employees are expected to report any unsafe working conditions to the office and take immediate steps to correct unsafe conditions.
- Each foreman will ensure that the following items are available at each jobsite.
    1. Posters conspicuously posted
        a. Job safety and health protection
        b. Emergency telephone numbers
        c. Occupational injury / illness records
        d. Crane signals
    2. First aid kits in good condition
    3. Fire extinguishers
    4. Protective headgear and personal protective equipment as necessary to the type of work being done (goggles, welding helmets, respirator, etc.)
- Jobsite safety check lists and mechanical contractor's guide to OSHA regulations will be issued to any employee, upon request

President

Safety Coordinator

COMPANY COMMITMENT

Welcome New Employee,

Congratulations on joining the Environmental Air team! We are committed to providing each of our employees a safe and healthy work environment. Construction processes and other operations performed at our various jobsites sometimes require the use of materials and chemicals that can be hazardous, if not handled properly. When using these substances, it is important that workers are aware of the identity of the substances, as well as the toxic or other hazardous properties of the chemicals; since an informed employee is more likely to be a careful employee. Therefore, in an effort to promote and maintain jobsites that are free from controllable safety and health hazards, Environmental Air, Inc. has implemented this Hazard Communication Program to protect you, our valuable employee. Because you will play a major role in helping keep the workplace safe and healthful, you are asked to learn our safety policies, rules, and procedures as quickly as possible and implement them each day while you work.

If you have questions about our policies or rules, or if you have any concerns or ideas regarding workplace safety or health, take them to your supervisor or to our Safety Coordinator immediately. All of our supervisors have been instructed to address worker safety and health immediately.

Welcome!

Sincerely,

Environmental Air, Inc.

EMPLOYEE RESPONSIBILITY

The success of this Hazard Communication Program depends to a great extent upon the cooperation of every employee. Employees should be alert to the potential hazards in their work areas; know and understand the hazards of those chemicals; consult the Safety Data Sheets (SDS) for the specifics concerning the hazardous chemicals with which they work; follow the appropriate safe working procedures that have been established; wear required personal protective equipment; and actively participate in the training programs implemented to protect their health and safety.

Worker Training Requirements:

Description:

Worker Safety and health training provides workers with the information they need to protect themselves from job site hazards. Safety and health training is a major key to keep workers safe on the job site.

A certain amount of safety training is necessary before a new worker starts to work. This is referred to as safety orientation training. A checklist and suggested training resources are provided below:

Active employee participation in Environmental Air, Inc. Hazard Communication Program will result in the continued reduction of the incidences of chemical related illnesses and injuries at Environmental Air, Inc. jobsites and facilities. This written program will be at 1100 McCartney Street for review by any interested employee. A master copy of this will also be maintained at Environmental Air, Inc.

Safety and Health Training Check List:

_____ General Safety and Health Provisions
_____ Motor Vehicle / Driver Safety
_____ Ladders
_____ Scaffolds
_____ Fall Protection / Openings / Edges
_____ Manual Handling of Materials
_____ Personal Protective Equipment (Equipment Eye Protection)
_____ Electrical Safe Work Practices
_____ First Aid
_____ Hearing Protection
_____ Portable Fire Extinguishers
_____ Hazard Communication
_____ Flammable, Combustible Liquids
_____ Welding, Cutting, & Brazing
_____ Fire Protection and Prevention
_____ Hand and Power Tools
_____ Aerial and/or Scissor Lifts
_____ Process Safety Management of Highly Hazardous Chemicals
_____ Respiratory Protection
_____ Confined Spaces
_____ Lockout / Tagout
_____ Cranes and Derricks
_____ Asbestos
_____ Lead
_____ Bloodborne Pathogens
_____ Excavations and Trenching
_____ Gases, Vapors, Fumes, Dust, & Mists
_____ Radiation
_____ Mechanical Moving of Equipment

DISCIPLINARY ACTION

As a matter of policy all of Environmental Air's employees are required to:

- Obey all established safe work rules and company policies;
- Attend and participate in designated safety training sessions; and
- Immediately report any unsafe acts, conditions or company policy violations.

Failure to comply with any of these requirements will result in immediate disciplinary action as follows:

- 1st Offense – The supervisor addressing the violation shall take immediate action to ensure that the unsafe act is stopped or the unsafe/unhealthful condition is abated and that the worker responsible for the violation receives a verbal warning. The supervisor will document the warning and place it in the worker's personnel file.
- 2nd Offense – The supervisor addressing the violation shall take immediate action to ensure that the unsafe act is stopped or the unsafe/unhealthy condition is abated and the worker responsible for the violation receives a written warning. A copy of the written warning shall be placed in the worker's personnel file.
- 3rd Offense – The supervisor addressing the violation shall take immediate action to ensure that the unsafe act is stopped or the unsafe/unhealthy condition is abated and the worker responsible for the violation is suspended for three days without pay (contact the union business manager before implementing the suspension). Documentation regarding the suspension shall be placed in the worker's personnel file.
- 4th Offense – Occurrence of the same violation a fourth time shall be documented and placed in the worker's personnel file. The worker shall be discharged (contact the union business manager before implementing the discharge).

This course of disciplinary action does not apply to managers or workers determined to be under the influence of alcohol or drugs. See the Alcohol & Substance Abuse Policy for more information.

SAFETY INCENTIVES

Environmental Air, Inc. does not currently have a safety incentive program in place, but is in the development stage of reviewing several different model programs for future implementation.

SUBSTANCE ABUSE AND DRUG TESTING

LETTER TO ALL EMPLOYEES:

The illegal use of drugs and alcohol abuse is a national problem that seriously affects every American. Substance abuse not only affects individual abusers and their families, but it also presents new dangers for the workplace, and you.

As you are aware, Environmental Air, Inc. has always been committed to providing a safe work environment and fostering the well-being and health of our employees. Illegal drug use and alcohol abuse jeopardizes this commitment and undermines the capability of Environmental Air, Inc. to produce quality products and services.

To address this problem, Environmental Air, Inc. has developed a policy regarding the illegal use of drugs and alcohol abuse that we believe best serves the interests of all employees. Our policy formally and clearly states that the illegal use of drugs and abusive use of alcohol will not be tolerated. This policy was designed with two basic objectives in mind: 1.) employees deserve a work environment that is free from the effects of drug and alcohol abuse and the problems and dangers associated with such abuse, and 2.) this company has a responsibility to maintain a healthy and safe workplace.

I believe it is important that we all work together to make Environmental Air, Inc. a substance-free environment and a safe, rewarding place to work.

Sincerely,

Paul N. Neil
President

SUBSTANCE ABUSE AND DRUG TESTING POLICY:

Environmental Air, Inc. is committed to maintaining a work environment which is free from the influence of illegal drugs and alcohol to protect the health, safety, and well-being of our employees. This Policy is not intended as and should not be construed as a contract with any employee. This Policy applies to all employees of Environmental Air, Inc. and all persons conditionally offered employment with Environmental Air, Inc.

Environmental Air, Inc. prohibits the use, possession, transfer, and sale of alcohol and illegal drugs while working, while on all premises owned or operated by the Company, and while operating any Company vehicle, machinery, or equipment. It also prohibits reporting for work and working anywhere on behalf of Environmental Air under the influence of alcohol or illegal drugs. This policy applies to all official or unofficial break and meal periods, and all other times during the working day in which an employee has reported for work, including unpaid meal breaks.

“Illegal drugs” means inhalants and controlled substances, and includes medications which contain a controlled substance which are used for a purpose, in an amount, or by a person for which they were not prescribed or intended.

The use and possession of properly prescribed drugs or medications is permitted provided that it does not interfere with the employee’s job performance or pose a direct threat to the health or safety of the employee and/or others.

The only exception to this policy is the ***responsible use*** of alcohol at official company sponsored social or business events at which alcoholic beverages are served.

The goal of this policy is to balance our respect for individuals with the need and obligation to maintain a safe, productive and substance-free environment. The intent of this policy is to offer a helping hand to those who need it, while sending a clear message that the use of alcohol and/or illegal drugs in the workplace is incompatible with employment at Environmental Air, Inc.

Violation of this policy may result in discipline up to and including discharge.

Important Note: Physician prescribed use of drugs or controlled substances can adversely affect workplace safety and job performance. Therefore, if you are taking any such medication, you should inform the prescribing doctor of the nature of your job and ask whether the medication poses a threat to your health or safety on the job, or to that of others. If your doctor believes that such a threat exists, you must inform your supervisor accordingly.

TESTING

We are a member of SMACNA and are signatory to the Sheet Metal Local Union No. 12 collective bargaining agreement. The agreement acknowledges our right to pre-employment testing, probable cause testing, after-incident testing, and work opportunity testing, as allowable by law.

Environmental Air may request an employee voluntarily submit to testing, as allowable by law, with probable cause and for work opportunity.

- Probable cause testing occurs when it is based on objective evidence and there is a reasonable belief that an employee is impaired by alcohol or drugs. An employee shall not be required to submit to a "Probable cause" drug or alcohol test unless:
    - First hand observation of the employee's behavior is made by a trained supervisor; and
    - The observing supervisor generates a signed and dated report describing the perceived condition of the employee and makes copies available to the employee
- Work opportunity testing occurs when Environmental Air, Inc. must agree to a testing program in order to qualify as a bidder, but only if performed in accordance with the standards enumerated in this Policy and applied uniformly to all personnel having access to the affected workplace or specific work order.
- There shall be no discrimination against any employee who refuses a job assignment to a job or project that is subject to testing. An employee who refuses a job assignment to a job or project to which Environmental Air is required to agree to a random testing program may be laid off if there is no alternate work available for which said employee is qualified.

All testing is to be done by an independent federally certified facility, and may be conducted for the following substances;

- Alcohol
- Amphetamines
- Cocaine
- Marijuana
- Opiates
- Phencyclidine (PCP); and
- Substance-of-choice drugs.

All drug testing shall be done in strict accordance with I.S. Department of Transportation standards found in Title 49 of the Code of Federal Regulations, Part 40, Subpart B. All alcohol testing shall be done in strict accordance with U.S Department of Transportation standards found in Title 49 of the Code of Federal Regulations, Part 40, Subpart C and D.

Test results will be released to the Safety Coordinator and marked confidential. The results of a test will only be made known to the employee, employer, union, JATC (if an apprentice, pre-apprentice, or trainee {positive/negative}), and the Safety Coordinator. Upon written request, the testing facility and/or Safety Coordinator shall make available to the employee the laboratory reports concerning his or her positive test. Results of any positive test will not be released to any other party or agency unless required by law or with the written permission of the employee.

Employees who test positive in any type of test shall have the right to have the sample retested at their own expense by an independent, federally certified facility. If the results of the initial test are found to be inaccurate, the employee shall be allowed to return to work immediately with back pay and equal benefits. The company shall reimburse the employee for the cost of the retest. The supervisor in charge shall protect the integrity of the sample by monitoring chain of custody between testing facilities.

DISCIPLINE

This policy recognizes that alcohol / substance abuse is a treatable illness and recommends rehabilitation through a state approved counseling or rehabilitation program as an alternative to disciplinary action.

Discipline of bargaining unit members shall be in accordance with the provisions of the collective bargaining agreement and/or the rules of the Joint Apprenticeship & Training Committee when trainees, pre-apprentices, or apprentices are involved. Union members subject to this policy continue to have access to the usual protections provided as a part of their union membership. Union members may request that a union representative be available or present prior to any action taken by an employer at any stage of the policy and its administration. If an individual is aggrieved by any action taken under this Policy and his or her complaint cannot be resolved, it may, if the individual or Union requests, be referred as a grievance under the grievance and arbitration provisions of the individual's collective bargaining agreement. In the event the matter is referred to arbitration, the Arbitrator shall be bound substantively by the provisions of this Policy.

Any employee who has tested positive for alcohol and/or chemical substance or drugs shall be required to enroll in a state approved counseling or rehabilitation program. Upon submission of a work release from the program, said employee may return to work if a job is available. Any employee who has tested positive for alcohol and/or chemical substance or drugs but refuses to seek counseling and or rehabilitation or fail to complete a rehabilitation program will be subject to disciplinary action up to and including termination.

ENVIRONMENTAL AIR INC.
SAFETY FIRST!

Pre-Task Safety Planning Card

Project: _____

Job / Task _____ Work Area _____ Date _____

Steps of Task:	Hazard / Reaction to Failure:	Safe Plan:
* Ensure work area has been cleaned and is left in a safe condition		

Team Member Signatures:

Sign Name	Print Name	Sign Name	Print Name

The signature of the Supervisor certifies the review of the hazard assessment and Pre-Task Safety planning Card.

Supervisors Signature: _____ Date: _____ Auditors Signature: _____ Time: _____

Instructions: **1.** Write the name of the job or task in the space provided. **2.** Write the steps of the task in a safe sequence. **3.** List all possible hazards involved in each step as well as reaction to failure. **4.** In the Safe Plan column, provide the corrective actions that will be taken to prevent the hazards and injury from reaction to failure. **5.** Have each team member that helped develop and will use this Pre-Task Safety Planning Card sign in the spaes provided at the bottom. **6.** Review the Pre-Task Safety Planning Card at the end of the task for improvements. **(NOTE: THE WORK SHALL STOP IF CONDITIONS CHANGE, JOB CHANGES, OR DEFICIENCY IN PLAN IS NOTED)**

ACCIDENT / INCIDENT INVESTIGATION

To help prevent the recurrence of accidents and or injuries it is the policy of Environmental Air, Inc. to investigate all accidents that result in worker injuries that require medical attention and any reported incident where no injuries are involved. The supervisor(s) in charge at the time of the accident / incident shall:

- Start the investigation as soon as possible after the accident / incident occurs
- Prepare mentally to be impartial throughout the investigation
- Interview the victim(s) alone as soon as possible after victim(s) is out of danger
- Interview all other witnesses individually as soon as possible (one at a time away from other witnesses)
- Get as much detail as possible from victim(s) and witnesses
- Carefully inspect the scene for evidence. Take photographs or videotape where appropriate
- Study all possible causes. Consider the possibility that both unsafe acts and/ or unsafe conditions may have contributed to the accident / incident
- Try to reconstruct the accident / incident and describe it in the report
- Write a narrative style report. Include the following:
    - Date, time, and location of accident / incident
    - A detailed description of the accident / incident
    - If applicable, the number of workers injured, type of injuries, weather conditions, lighting, substance abuse, fatigue, etc,
    - All obvious contributing factors
    - All other possible contributing factors
    - Strategy for preventing recurrence
- If more than one supervisor conducted an investigation, compare draft reports and work out the details so that all investigators agree on the final report
- Implement recurrence prevention strategies immediately

MODIFIED DUTY POLICY

It is the policy of Environmental Air to bring workers who are collecting workers' compensation insurance back to work as soon as possible. Workers, who are physically capable of performing modified duty tasks, are required to report to work as usual. Whether workers are physically capable of performing modified duty tasks is to be determined by a qualified health care provider.

The modified duty tasks shall be determined by the worker's supervisor and based on recommendations from the health care provider. The supervisor shall communicate directly with the health care provider and document its recommendations. The supervisor shall obtain a written document from the health care provider stating that the worker in question is physically capable of performing modified duty work.

Workers who are physically capable of performing their regular duties shall return to them immediately. Whether a worker is physically capable of performing regular job tasks shall be determined by the health care provider. The supervisor shall obtain a written document from the health care provider stating that the worker is physically capable of performing regular work assignments.

RECORD-KEEPING

The Occupational Safety and Health Administration (OSHA) requires that employers keep records of occupational illness and injuries. In some situations employers must also report them to OSHA.

SMALL EMPLOYER EXEMPTIONS

Employers with 10 or fewer employees throughout the course of a calendar year are exempt from OSHA's record keeping requirements **except:**

- When one or more fatalities occurs
- When a single incident results in hospitalization of three or more workers; or
- If chosen to participate in the U.S. Bureau of Labor Statistics survey

REPORTING FATALITIES OR MULTIPLE HOSPITIALIZATIONS INCIDENTS

One or more fatalities or an incident where three or more workers require hospitalization must be reported orally to OSHA by telephone or in person within 8 hours regardless of the employer's size (Call OSHA's hotline to make a report **(800)-321-OSHA**)

LOG AND SUPPLEMENTARY RECORD

- Employers with more than 10 employees must maintain a log (OSHA 200 Log or equivalent) and a supplementary record (OSHA 101 Form or equivalent) of "recordable" occupational injuries and illnesses

NOTE: A number of actions took place on January 1, 2002, including: The revised 29 CFR Part 1904, entitled Recording and Reporting Occupational Injuries and Illnesses, is in effect. Three new recordkeeping forms came into use; 1). OSHA Form 300, Log of Work-Related Injuries and Illnesses; 2.) OSHA Form 300A, Summary of Work-Related Injuries and Illnesses (The 300 and 300A forms will replace the former OSHA Form 200, Log and Summary of Occupational Injuries and Illnesses); and 3.) OSHA Form 301, Injury and Illness Incident Report (The 301 form replaces the former OSHA Form 101, Supplementary Record of Occupational Injuries and Illnesses)

- There must be one supplementary record for each injury or illness
- A case is recordable whenever a worker
    - Dies
    - Loses consciousness

- Experiences restriction of work or motion
- Is transferred to another job because of the injury or illness; or
- Received medical treatment other than first air

- Information on how to record injuries and illnesses on the proper OSHA forms is shown on the back of each document. Most of the information requested on each document is self explanatory.

ANNUAL POSTING REQUIREMENT

- A summary of the preceding year's occupational injuries and illnesses must be posted from February 1st to March 1st each year
- The OSHA 300-A form should be posted to satisfy this requirement. (Make sure the appropriate supervisor signs the log before it is posted
- In order remain HIPPA compliant, employee names should not be published or posted
- The summary should be posted in common areas where it is easily visible by all workers
- Worker(s) who do not report to a fixed facility must be sent a copy of the summary in February each year if they worked for any period of time the preceding calendar year.

RETENTION OF RECORDS

Each completed OSHA 300, 300-A, and 301 log form or their equivalent should be retained in each establishment for 5 years.

BEHAVIOR BASED SAFETY

Between 85 and 90 percent of all job site incidents that result in worker injury and or property damage are caused by the usage acts of workers. Unsafe job site conditions rarely result in these types of incidents unless there is also some type of worker misconduct. Behavior-based safety strategies help companies effectively address the worker behavior issue. The concept is to change worker's unsafe behavior by establishing a system to observe them while working and provide them with constructive feedback based on the observations

- In January of each year a designated supervisor and field worker shall review the company's incident reports from the preceding year and analyze the incidents that resulted in injury and/or property damage.
- An assessment of unsafe behaviors shall be performed on each job site at the start of each project and halfway through the project by the designated supervisor and field worker
- The results of the company wide incident report analysis and project by project assessment of unsafe behaviors shall be used to identify up to 20 of the most potentially hazardous "unsafe behaviors"
- Examples of unsafe behaviors which are common in mechanical construction include:
    - Workers carrying materials while climbing ladders
    - Workers leaning out too far while working on ladders
    - Workers using ladders on surfaces that are not level
    - Workers climbing ladders that are not secured
    - Workers using stepladders as straight ladders
    - Workers on scaffolds without guardrails
    - Workers who have not been trained to operate scissor or aerial lifts
    - Workers not wearing personal protective equipment such as hard hats and safety glasses
    - Workers using improper lifting techniques when lifting heavy material
    - Workers ignoring housekeeping responsibilities in their work areas
    - Workers walking or working in areas wile not protected from overhead falling object
    - Workers entering trenches that re not sloped, benched or shored
    - Workers using conductive ladders near sources of electricity

    - Workers using power tools with defective cords or grounding plugs; and
    - Workers not using Ground Fault Circuit Interrupters (GFCI)
- The unsafe behaviors identified in the incident report analysis and job site behavior assessments shall be documented
- Every field worker shall be trained by the designated supervisor and field worker to identify these behaviors
- A system shall be established whereby each field worker shall be observed by another field worker. All workers shall be observers and shall also be observed by others
- The observations shall be conducted by each field worker twice each month and shall take between 5 and 20 minutes maximum
- The observing worker shall tell the worker who is going to be observed when the observation will begin. This prevents mistrust that would otherwise be generated if workers felt they were being spied on.
- The observing worker shall focus on the previously identified adverse behaviors, but shall document both safe and unsafe behaviors.
- Immediately following the observation period the observing worker shall meet briefly with the worker he or she observed and point out first the safe behaviors and then the usage behaviors that were observed.
- The worker who was being observed may respond to each unsafe behavior identified during the observation. The observing worker shall document each response.
- The documentation made from each observation shall be kept by the observing worker for discussion at the job site safety meeting held on the last working day of each month.
- At the safety meeting each worker shall describe the usage behaviors he or she observed. This shall be done without identifying any worker who was observed performing an unsafe act.
- The field workers shall develop an action plan to reduce the occurrence of unsafe behaviors and shall implement the action plan immediately following the safety meeting.

MOTOR VEHICLE / DRIVER SAFETY

Motor vehicle collisions are the leading cause of work-related deaths. Three workers are killed each day in the United States from work-related motor vehicle collisions. That comes close to 1,100 fatalities each year. Unfortunately, many of these workers are construction workers. The fatalities alone are bad enough, but motor vehicle collisions are also a leading cause of profit loss in mechanical construction.

The most common vehicle incidents involving construction workers that lead to injury, death, and/or loss are shown below.

- Rear-end collisions – usually involve an operator rear-ending another vehicle. These collisions are usually caused by:
    - Tailgating
    - Changing lanes hurriedly
    - Excessive speed
    - Weather (rain, ice, snow, mud)
    - Losing concentration while talking on a cell phone while driving
    - Losing concentration while reading a map or work-order while driving
    - Failure to watch for stopping or stopped traffic ahead of the vehicle directly in front
    - Substance abuse
- Back-in collisions – usually involve an operator backing into another vehicle or object. These collisions are usually caused by:
    - Missing, improper adjusted or fogged up mirrors or windows
    - Backing up too quickly
    - Failure to use a spotter in tight backing situations
    - Inoperative backup lights
    - Inoperative backup alarms
    - Substance abuse
- Struck by Object – usually involve vehicle windshields being struck by rocks, dirt or debris that comes up off the road or out of another vehicle. These incidents are usually caused by:
    - Following too closely behind other construction vehicles, garbage trucks, etc.

- Inadequate Clearance – usually involve operators attempting to drive vehicles under objects which are not high enough or through areas which are too narrow for the vehicle to clear. These incidents are usually caused by:
    - Lack of operator awareness (training)
    - Rushing to complete a task
    - Substance abuse
- Changing Lanes – usually involve an operator changing lanes into another vehicle. These incidents are usually caused by:
    - Aggressive driving
    - Missing or improperly adjusted mirrors
    - Failure to signal when changing lanes
    - Substance abuse
- Other Vehicle Changing Lanes – usually involve drivers of other vehicles changing lanes into a construction vehicle. These incidents are usually caused by:
    - Aggressive or non-alert drivers (other than the construction vehicle operators)
    - Operators driving into the blind spots of other vehicles
    - Not anticipating the moves of other drivers
    - Substance abuse
- Other vehicle Rear-ending – usually involve drivers of other vehicles rear-ending construction vehicles. These collisions are usually caused by:
    - Other drivers tailgating
    - Inoperative brake lights
    - The operator of the construction vehicle having to stop quickly because he or she is tailgating
    - Excessive speed
    - The operator having to stop quickly for other reasons
    - Substance abuse
- Failure to Yield – usually involve operators failing to yield the right-of-way to other vehicles. These collisions are usually caused by:
    - Aggressive operators or drivers
    - An obstructed view
    - Failure to signal
    - Non-alert / aware operators

    - Excessive speed
    - Substance abuse
- Failure to Stop
    - Aggressive operators or drivers
    - Non-alert / aware operators
    - Operator fatigue
    - Substance abuse

MOTOR VEHICLE / DRIVER SAFETY POLICY

To prevent the losses associated with motor vehicles Environmental Air, Inc. has established the following loss prevention policy to be carried out by each supervisor in charge of workers who drive company vehicles.

- A valid PA driver's license is required in order to operate a company owned vehicle. A driver's license background check shall be conducted annually on each worker who will drive a company vehicle
- Workers with a pattern of moving violations for speeding, failure to stop, failure to yield right of way, aggressive driving, etc., or causing collisions shall not be permitted to drive a company vehicle
- Every worker who operates or rides in any company vehicle shall be in a seat equipped with a seat belt
- Every worker shall be buckled into his or her seat before the vehicle starts into motion
- Schedules shall be established that will allow operators enough time to complete their tasks without speeding, rushing, driving aggressively, etc.
- All workers who drive a company vehicle shall be reminded about the leading causes of vehicle accidents / incidents in weekly tool box or tailgate safety talk meetings
- All workers who operate company vehicles shall receive refresher training annually that addresses:
    - The effects of alcohol and/or illegal drugs on driving; the effects of certain prescriptions drugs on driving
    - The effects of fatigue on driving
    - The dangers of aggressive driving; and defensive driving including a review of the most common incidents / causes

- Drivers shall comply with all federal and state rules and regulations regarding motor vehicle operations
- Each driver of a company vehicle shall perform a per-trip inspection of the vehicle he or she is to use at the start of the work shift. The inspection shall include:
    - Tires
    - Brake lights, Head lights, Tail lights, and Backup lights
    - Turn signals
    - Horn and back up alarm
    - Wipers
    - Parking brake, and fire extinguisher
- Every company vehicle shall be maintained according to the manufacturer's recommended maintenance schedule
- Any defects shall be reported to the driver's supervisor immediately. The supervisor will instruct the driver how to handle the defect
- Each driver shall adjust the rear view and/or side mirrors prior to starting vehicle
- The rated load capacity of any company vehicle or rental shall not be exceeded
- Pipe or other materials being transported by motor vehicle shall be properly balanced, properly secured and flagged when necessary to warn other drivers.
- Any motor vehicle accident or incident must be reported immediately. An internal accident investigation will occur along with any government or insurance required investigation(s).

LOSS PREVENTION

PROPERTY LOSS PREVENTION

The most common property losses in mechanical construction are as follows:

- Theft & Inland Marine – claims usually involve the theft of tools from construction vehicles and theft of equipment or materials from job sites. These thefts are made easier by:
    - Vehicles left unlocked
    - Vehicles parked in unlighted areas overnight
    - No security lights on job sites
    - Lack of job boxes or job boxes left unlocked
    - Tool rooms left unlocked overnight
    - Lack of fences around high crime area job sites
    - Lack of night time or weekend security guards on high crime area job sites
    - Disgruntled worker involvement
- Burglary – claims usually involve break-in and entry into a job site trailer or construction office to steal computer equipment, fax machines, etc. These thefts are made easier by:
    - Unlocked trailer or construction office doors and windows
    - Lack of security lights around trailers and offices
    - Lack of fences around job site construction trailer complexes
    - Lack of central station security alarm systems for office buildings in high crime areas
    - Lack of bars on windows and deadbolt locks on trailers and offices in high crime areas
- Lightening – claims usually involve damage to computers, printers, telephones, fax machines and other electronic devices. The electronic equipment damage is more likely to occur when there is
    - Lack of surge protection
- Wind Damage – claims usually involve fallen trees on top of vehicles, equipment and buildings. The damage is usually caused by:
    - Large older trees too close to office buildings, trailers, vehicle parking areas and construction equipment yards

- Vandalism – claims usually involve broken windows on job site trailers, construction offices, construction vehicles and heavy equipment. Graffiti on trailers, office building walls, construction vehicles and heavy equipment is another major claim along with damaged signs, equipment and materials. These incidents are made easy by:
    - Lack of lighting around job sites, trailers, offices, vehicles and equipment
    - Lack of security guards in high crime areas
    - Lack of fencing around job sites, construction trailer complexes, etc.
- Fire Damage – claims usually involve welding, cutting or soldering operations where flammable/combustible materials such as insulation or carpeting catch fire. These incidents occur more frequently when:
    - Flammable/combustible materials are not removed from hot work areas
    - Barriers are not erected to protect non-moveable flammable/combustible materials
    - Work areas are not observed for at least 30 minutes following the completion of hot work
    - Workers are not trained to be aware of fire hazards
    - Fire extinguishers are not readily accessible in hot work areas

PROPERTY LOSS POLICY

To prevent common property losses from occurring, Environmental Air, Inc. has established the following property loss prevention policy which is to be carried out by the senior company supervisor at each job site.

- All company vehicles shall be parked in a designated area at the end of each work shift.
- All tools and equipment shall be placed in job boxes or tool rooms when not being used. All job boxes and tool rooms shall be kept locked at all times when tools or equipment are not being removed or replaced
- Security lights shall be installed and illuminated each night around construction trailers and offices
- Construction office buildings in high crime areas shall be equipped with central station security alarms which shall be activated each night and on weekends
- Steel bars shall be placed over the windows of construction trailers and office buildings in high crime areas
- Dead bolt locks shall be placed on doors of construction trailers and office buildings

- Lightening surge protectors shall be installed to protect electronic devices in all offices
- Construction trailers, vehicles, equipment and materials shall not be stored near wooded areas or large older trees
- Vehicles, materials and equipment shall be stored inside of buildings whenever possible
- Flammable / combustible materials shall be removed from hot work areas before the hot work begins
- Where flammable/combustible materials cannot be removed, non-combustible barriers shall be erected to protect the materials from fire
- All hot work areas shall be observed for at least 30 minutes after work stops
- At least one fully charged ABC type fire extinguisher shall be placed within 25 feet of all hot work operations

GENERAL LIABILITY LOSS PREVENTION

General Liability losses involve a third party insurance claim or law suit. The most common losses are as follows:

- Struck By – claims usually involve ladders falling onto parked vehicles, heavy equipment or construction materials. These claims also involve many incidents where materials such as pipe, duct work and tools/equipment fall to a lower level onto parked vehicles and building materials. These incidents are usually caused by:
    - Unsecured ladders
    - Vehicles parked too close to construction work
    - Materials not properly secured to prevent them from falling to a lower level
- Leak/Seep – claims usually involve water leaks from defective materials. These incidents are usually caused by:
    - Use of poor quality materials
    - Failure to inspect materials for defects
- Construction Defect – claims usually involve property damage from faulty workmanship such as water damage to carpets or drop ceilings from leaky pipe, joints, or inadequate seals. These incidents are usually caused by:
    - Poor work attitude
    - Disgruntled workers
    - Overly fatigued workers

- Fire / Explosion – claims usually involve fire/explosion damage to the property of a third party from welding, cutting or soldering operations. These incidents are usually caused by:
    - Failure to use barriers between hot work and flammable/combustible materials
    - Failure to observe the hot work area for at least 30 minutes after hot work stops
    - Failure to train workers about potential fire hazards
    - Failure to provide a fire extinguisher in hot areas
- Exposure / Contact – claims usually involve exposing a third party to asbestos, refrigerant vapors, carbon monoxide, lead, or other chemical exposures. These incidents are usually caused by:
    - Failure to train workers about the potential to expose others to chemical hazards
    - Inadequate ventilation in work areas
    - Failure to identify chemical exposures during pre-task planning
- Struck Against – claims usually involve backhoes or dozers destroying underground utilities. These incidents are usually caused by:
    - Failure to have underground utilities marked before digging or earth moving beings

GENERAL LIABILITY LOSS PREVENTION POLICY

To prevent general liability claims, Environmental Air, Inc. has established the following policy which is to be carried out by the senior supervisor on each job site.

- All straight ladders shall be secured into place while being used by workers
- All straight ladders shall be taken down and stored immediately after work is completed
- All building materials shall be stored away from areas where there is a drop to a lower elevation
- Where materials are being used and could fall to a lower level, a screen, net, barricade, or other effective barrier shall be erected to prevent their fall to a lower level
- Where vehicles cannot be protected from falling objects by a barrier, they shall be moved by their owners before the work starts
- All construction materials shall be inspected by the worker before installation
- Completed work shall be inspected on a random basis by the foreman and tested where necessary to ensure quality workmanship
- Non-combustible barriers shall be erected in hot work areas to prevent fires

- Hot work areas shall be observed for a minimum of 30 minutes each time the work stops
- At least one fully charged ABC fire extinguisher shall be placed in close proximity to all hot work
- All third parties that could be exposed to any chemical substance generated by our work shall be warned in writing about the potential hazard before work begins
- The supervisor shall request a meeting with all those who could be exposed to hazardous chemical substances and provide them with the information they need to effectively protect themselves from the hazards
- The supervisor shall contact all local utility companies and have each underground utility marked before any digging or earth moving begins

GENERAL WASTE MANAGEMENT POLICY

PURPOSE

The purpose of this waste management strategy was developed to provide guidance and requirements necessary for efficient, effective and compliant waste management during construction operations.

SCOPE

This procedure applies to all Environmental Air, Inc. employees. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Environmental Air, Inc. employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

PROCEDURE

Craig R. Neil, Safety Manager or other designated person in his absence is accountable for managing waste and disposition of wastes generated at the work site.

WASTE ESTIMATION

Each work site will estimate the waste, trash and/or scrap that will be generated and taken into consideration prior to work being performed so the need for containers and waste removal, if necessary, can be determined.

Environmental Air, Inc. will coordinate with the project site or owner to ensure proper disposal of wastes or scrap materials.

WASTE SEGREGATION

- Do not mix waste streams
- Only place waste in the designated container, recyclable or waste.

RECYCLING

Wastes should be recycled whenever practicable. Environmental Air, Inc. will encourage proper segregation of waste materials to ensure opportunities for reuse or recycling occurs at

each work site. The collection of recycled material will reduce the total load on the environment.

- The handling, organization and storage of waste and scrap materials to minimize potential impact to the environment.
- Waste materials shall be properly stored and handled to minimize the potential for a spill or impact to the environment.
- During outdoor activities receptacles must be covered to prevent dispersion of waste materials and runoff.

STORAGE REQUIREMENTS

Environmental Air, Inc. will ensure project related wastes are stored and maintained in an organized fashion to encourage proper disposal and minimize risks to employees. Proper waste receptacles must be provided for trash and materials that may be reused or recycled during a project.

PPE

For each site waste management plan, Environmental Air, Inc. will determine PPE requirements that includes gloves, hand protection, eye and face protection and/or other necessary PPE.

EDUCATION AND TRAINING

Employees shall be instructed on managing waste generated at the work site and on the proper disposal method of wastes annually.

Examples include:

Instruction on the proper handling, storage and disposal of wastes and depending on the waste generated at the site to also include general instruction on disposal of non-hazardous wastes, trash or scrap.

SECTION II

RULES

COMPANY SAFETY RULES

It is necessary to establish company safety rules so that our workers know exactly what is expected of them. You are encouraged to read these rules and ask questions about the procedures at any time.

The following Section is an overview of our program and the procedures necessary for our workers to protect themselves.

ACIDS AND CAUSTICS

- Workers shall use the proper personal protective equipment when working with acids or caustics including splash proof safety goggles, a face shield and the appropriate gloves
- The work area shall have adequate ventilation to protect workers from respiratory hazards caused by certain acids and caustics
- Whenever it is necessary, workers shall wear the appropriate respiratory protection to prevent respiratory illnesses
- When workers are required to wear respirators, the company's written respiratory protection program shall be followed

CONFIED SPACE ENTRY

The following is a brief overview of the company rules for confined space entry. A detailed program explanation can be found in Section IV, “Model Confined Space Entry Program.”

- No worker shall enter a confined space without authorization from a supervisor
- All confined spaces shall be tested for oxygen content, flammable and explosive atmospheres and toxic gases before entry is approved
- No worker shall enter a confined space with an unsafe oxygen content or the presence of any flammable, explosive or toxic gases until proper confined space entry procedures have been established by the company’s Permit Required Confined Space Entry Program and implemented by the company.
- No worker shall enter a confined space without the required training
- No worker shall attempt a confined space rescue. Emergency rescue services shall be called immediately if a worker goes down in a confined space
- All workers shall comply with the company’s Permit Required Confined Space Entry Program

CRANES, HOISTS, RIGGING

GENERAL

- Lifting equipment shall not be loaded beyond its maximum rated capacity
- The operator shall take signals from one person only before moving the load. All operators and flag persons shall be familiar with crane signals
- All lifting equipment shall be inspected before being used. Defective or unsafe equipment shall be removed from service and tagged with “DO NOT USE” tags
- Flag persons shall check the surrounding area before moving the load to see that everyone is in a safe position
- Workers shall not be allowed under the load of a crane boom that is being raised or lowered. Workers required to work in close proximity to a suspended load shall ensure that no part of their body is ever placed directly beneath the load
- All hooks shall have a safety latch
- The operator shall not leave the controls while a load is suspended
- No one shall be permitted to ride on the load, hood, or ball of any crane of hoist
- The load shall be attached to the load block by slings or other approved devices
- Tag lines shall be used to control swinging loads
- Paint shall not be applied to hooks

MOBILE CRANES

- Only qualified personnel shall operate cranes
- Each operator shall be familiar with the manufacturer’s operating manual for safe operation of the equipment
- All cranes shall be equipped with a legible load rating chart affixed to the crane in a place that is easily visible to the operator while at their control station. The rated load capacities of the chart shall not be exceeded
- All cranes shall be equipped with a working boom angle indicator
- A fire extinguisher shall be kept in the cab
- The crane shall be level
- Outriggers shall be used to support cranes and shall be placed on wood blocks or other suitable solid bases
- Sudden starts and stops shall be avoided when swinging the crane

- After completion of a job or at the end of the work day, the boom shall be lowered to the ground
- All personnel shall be kept clear of the cab and counter weights while the crane is in operation. Barricades or barricade tape shall be used around the outriggers
- Cranes shall be inspected monthly with written, signed, and dated reports

RIGGING

- Hooks, slings, cables, ropes, and lifting devices shall be free from defects and be strong enough to carry the load. Job-made slings are not permitted
- A safety factor of five (5) shall be used when determining the lifting capacity of rigging equipment
- The rigging shall be secure and the load properly balanced before it is moved
- Loads shall not be lifted by the top of the hook
- The hook should be centered over the load before lifting
- The sling shall not be shortened with knots, bolts, or unapproved devices
- Hands and feet shall not be placed under materials being raised or lowered
- Flag persons shall stand in a safe position while the load is being moved
- Ladders shall be used when it is necessary to climb on a load to attach rigging
- Workers shall not attempt to place blocks under a load that is in motion
- Padding shall be used on loads that could cut or damage slings or chokers
- Shackles shall be used where multiple slings are involved
- Shackles shall be used instead of threading the eye of a choker or sling
- When using shackles, the “running” section of the rope or sling shall be on the curve of the shackle and not over the shackle pin
- All workers who are designated to render first aid shall receive blood-borne pathogens training
- Each first aid kit shall contain Personal Protective Equipment to protect first aid responders from blood-borne pathogens. The kits shall have, at a minimum, hypoallergenic rubber gloves, a one-way breathing mask for CPR and mouth-to-mouth resuscitation and eye glasses with side shields
- Any first aid kit used in an emergency shall be restocked immediately

ELECTRICAL PROTECTION

Electrical work may only be performed by qualified persons. Electrical hazards are a significant source of injuries and fatalities in the construction industry. Employee contact with electricity is responsible for approximately 18% of the fatalities observed in construction. Many injuries and fatalities could be prevented through the use of safe electrical work practices that include providing ground fault circuit interrupters on all temporary wiring. Employees will be provided with yearly training on electrical hazard exposure.

All employers on construction sites are required to use either ground fault circuit interrupters (GFCI) or assured equipment grounding conductor programs to protect employees from the risk of electrocution or shock. There are several different means of employing GFCI depending on the application: A. as an attachment to an appliance cord, B. installed at the breaker panel, or C. provided at the receptacle.

- Ground Fault Circuit Interrupters (GFCI) shall be used on all 120-volt single phase 15-amp and 20-amp receptacle outlets which are not part of the permanent wiring of the building or structure; and an assured equipment grounding program covering all cord sets, receptacles and equipment connected by cords and plugs shall be implemented
- Portable tools and appliance protected by an approved system of double insulation or its equivalent need not be grounded, provided that they are distinctly marked “DOUBLE INSULATED” or with the symbol for double insulated tools (small square inside a slightly larger square)
- All ladders used must be non-conductive
- Extension cords shall be rated to accept the maximum current (amps) pulled by the tools, appliances, or equipment
- Extension cords shall be protected against damage that could be caused by traffic, sharp corners or projections, pinch in doorways, etc.
- Extension cords shall not be fastened with staples, hung by nails or suspended by wire
- Electrical cables, extension cords, power tools, appliances and equipment shall be inspected for
    - Broken, cut, or frayed insulation
    - Broken or exposed wires
    - Damaged plugs

    - Missing ground terminals
    - Separated male/female plugs
    - When a “pigtail” is used in conjunction with an extension cord, you must connect the GFCI equipped cord to the outlet.
- Damaged or otherwise usage cables, cords, and plugs shall be repaired by a qualified person or replaced
- Exposed, de-energized parts are to be treated as if “live”
- Damaged electrical cords, tools, appliances and equipment shall be removed from service immediately and tagged “DO NOT USE”. Workers shall report the damage to a supervisor as soon as possible.
- Employees must not wear jewelry or clothing that could be conductive, such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear, if they might contact exposed, energized parts.

Workers must not enter spaces containing exposed energized parts, unless illumination is provided that enable the workers to perform the work safely. Use protective *shields*, *barriers*, or *insulating* materials as necessary to avoid inadvertent contact with exposed live parts in a confined or enclosed space. Where lack of illumination or an obstruction precludes observation of the work to be performed workers may not perform tasks near exposed energized parts. Workers must not reach blindly into spaces that may contain energized parts. Additional lighting fixtures are not required where the working space is illuminated by an adjacent light source. In electrical equipment rooms the lighting must not be controlled by automatic means only.

FALL PROTECTION

Environmental Air will provide a fall protection training program to workers who might be exposed to fall hazards, each year. Training will include personal *fall arrest*, *safety* net, warning line, and safety monitoring systems; and other protection to be used. Review and re-training of the fall protection tools, system, rescue plan, and site specific requirements will be provided prior to the start of any project requiring fall protection system use.

LADDERS

- Employees may only use ladders owned and provided by Environmental Air, Inc. to ensure that the ladder has been inspected prior to delivery to site and complies with OSHA/ANSI standards. Ladders are to be inspected prior to each use by the employee using the ladder. Each ladder provided to an employee will be inspected by the Tool Manager prior to arrival to site as well as upon retrieval from site.
- Ladders that appear unsafe, have broken or missing steps or side rails or damaged hardware shall not be used
- Defective ladders shall be tagged with “DO NOT USE” tags and removed from service immediately
- Ladder rungs or steps shall be cleared of mud, grease, ice and other slippery substances before they are used
- Ladders shall be used only on firm, level foundations
- Unauthorized objects shall not be used to level ladders
- Ladders shall not be painted
- Ladders shall not be allowed to contact overhead electrical wires or any other electrical source
- Wooden ladders shall not be considered insulated
- Only ladders strong enough to support the load safely shall be used
- Ladder weight ratings (from 200 pounds up to 300 pounds) shall be checked on the side rail of each ladder before use
- Workers shall not be permitted to overreach while on a ladder
- Ladders shall be moved from the ground when it is necessary to reach another area
- Workers shall not be permitted to carry tools or equipment in their hands while climbing ladders

- A three point contact shall be maintained by workers climbing up or down ladders
- Tools and equipment shall be pulled up by hand after workers have safely reached the landing
- Workers shall carry tools in tool belts while climbing ladders
- Ladders shall be taken down immediately when work is completed
- Ladders shall be protected in doorways, passageways, etc. from being knocked over by barricades or other suitable means
- Only one person shall be permitted on a ladder at one time

STRAIGHT LADDERS

- Straight ladders shall be pitched at one foot out from vertical for every four feet of ladder height
- Straight ladders shall extend at least three feet above the landing
- Straight ladders shall be secured in place by tying them off at the top and/or supporting them at the bottom
- Workers shall not be permitted to use the top three rungs of a straight ladder for steps

STEP LADDERS

- Step ladders shall not be used as straight ladders
- Step ladders shall only be used in a fully open position
- The top two steps of a step ladder shall not be used as steps

SCAFFOLDS

- No scaffold shall be erected, moved, dismantled or altered except under the supervision of a qualified company supervisor
- All scaffolds shall be inspected for stability, defects and cluttered or slippery surfaces
- All scaffolds shall be inspected for stability, defects and cluttered or slippery surfaces before starting work
- Scaffolds shall be able to support at least four times the intended load without failure
- Scaffolds shall be placed on solid footing
- No unauthorized objects shall be used to support scaffolds
- All scaffolds more than ten feet above the ground or floor shall have guardrails between 38 inches and 45 inches high, mid-rails and toe boards
- Scaffold platforms shall not be cluttered with tools, materials, or other loose objects
- Workers shall not be permitted to work outside on scaffolds during storms or high winds
- Scaffolds shall not be overloaded with workers, materials, tools, or equipment

MOBILE SCAFFOLDS

- On mobile scaffolds, casters and wheels shall be locked to prevent movement while the scaffold is in use
- Workers shall not be permitted to move mobile scaffolds from platform
- Mobile scaffolds shall be mounted and dismounted only from ground level
- Before a mobile scaffold is moved, each worker on the scaffold shall be made aware of the move
- Mobile scaffolds shall not be moved with loose items on them platform

AERIAL AND SCISSOR LIFTS

- Only workers trained by this company to operate lifts shall be permitted to operate them
- Lifts shall be inspected before each use
- Any apparent damage or fluid leak shall be fixed by a qualified mechanic before the lift is used for work
- The lift controls shall be test before using the lift
- All operating instructions, warnings, and cautions shall be obeyed
- The manufacturer’s recommendations regarding fall protection shall be followed

- Oil, grease, and other slippery substances shall be removed from footwear and lift platforms before the start of work
- Aerial lifts shall not be driven with outriggers extended
- Aerial lift turntables shall be in the store/locked position when lifts are being moved
- Lifts shall not be operated on soft or uneven surfaces
- Aerial lifts shall be leveled and stabilized by extending outriggers prior to operating the boom
- Clearances shall be checked thoroughly before positioning the platform
- The platform shall be entered and exited only from ground level and never from an adjacent structure
- Gate or mid-rail chains shall be secured in the closed position before moving

ROOF, FLOOR, AND WALL OPENINGS AND EDGES

- All workers shall be protected from falls of 6 feet or more to a lower level
- Guardrails, personal fall arrest systems and/or hole covers shall be used to protect our workers from falls to a lower level
- Guardrail systems shall have a top rail 39 inches to 45 inches high, measured from the floor to the top of the rail, intermediate rail and posts
- The top rail shall be built to withstand, without failure, a force of 200 pounds applied anywhere along the top in any outward or downward direction
- Where a personal fall arrest system is needed, workers shall use, at a minimum, a full body harness, connectors, lanyard with locking snap hooks, and suitable anchorage point
- Only locking snap hooks shall be used as part of a personal fall arrest system
- Floor and roof holes shall be covered with “Hole Covers” or surrounded by guardrail systems
- Hole covers exposed to vehicular traffic shall be capable of withstanding, without failure, twice the maximum axle load of the largest vehicle expected to cross it
- All other hole covers shall be capable of withstanding twice the weight of workers, equipment and materials that may be imposed on it
- Hole covers shall be secured in place and marked with the words “HOLE” or “COVER”

- A Fall Protection Rescue Plan should be reviewed, adjusted, and tailored to each site specific requirements by the Safety Director, Superintendent, on-site Foreman prior to the start of each job where fall protection will be necessary
- Should a fall occur, a post-fall investigation is required to be completed and reviewed by management prior to continued work

FIRE PREVENTION AND PROTECTION

GENERAL

- All “No Smoking” signs and other fire or explosion warning signs shall be obeyed
- Oily or greasy rags shall be disposed of in approved metal containers with self closing lids
- Flammable liquids or solvents such as carbon tetrachloride, benzene, gasoline, and paint thinner shall not be used for cleaning pipe or other materials
- At least one recently inspected (within one year) and fully charged multipurpose (ABC) fire extinguisher shall be readily accessible at all times while working
- Firefighting equipment, including fire extinguishers, will be periodically inspected, no less than once per month, and maintained in operating condition at all EAI sites
- Fire extinguisher training will be provided annually. After training each employee will be expected to: Identify the different classes of fires and determine when to use each type of extinguisher; List all parts of a fire extinguisher; and Demonstrate how to extinguish a fire using the PASS technique, (pull, aim, squeeze, sweep)
- Potential fire hazards shall be abated as soon as they are observed

FLAMMABLE / COMBUSTIBLE LIQUIDS

- Portable quantities of flammable/combustible liquids shall be kept in approved, self closing containers
- Flammable/combustible liquid containers shall be properly labeled. Labels that are defaced shall be replaced immediately
- Flammable/combustible liquids shall be kept away from other chemicals and sources of ignition
- When transferring a flammable/combustible liquid from a drum to a smaller container the drum shall be grounded first. Then the drum and container shall be bonded by attaching a conductive wire from the drum to the container

Fire Protection and Prevention for Construction Self-Inspection Checklist

Please Circle **General Requirements**

Y N ? Is access to firefighting equipment maintained at all times at construction sites? [29 CFR 1926.150(a)(2)]

Y N ? Is firefighting equipment conspicuously located at construction sites? [29 CFR 1926.150(a)(3)]

Y N ? Is firefighting equipment periodically inspected and maintained in operating condition at construction sites? [29 CFR 1926.150(a)(4)]

Y N ? Is a fire extinguisher, rated not less than 2A, or a 55-gallon open drum of water with two fire pails provided for each 3,000 square feet of protected building area? [29 CFR 1926.150(c)(1)(i) and (ii)]

Y N ? Is the travel distance to the fire extinguisher or drum of water 100 feet or less? [29 CFR 1926.150(c)(1)(i)]

Note: A 1/2-inch diameter garden-type hose line (100 feet in length or less and equipped with a nozzle) may be substituted for a 2A-rated fire extinguisher, provided it can discharge at least 5 gallons per minute with a minimum hose stream range of 30 feet horizontally. The garden-type hose lines must be mounted on conventional racks or reels and must be able to reach all points in the area. [29 CFR 1926.150(c)(1)(iii)]

Y N ? Are one or more fire extinguishers, rated not less than 2A, provided on each floor? [29 CFR 1926.150(c)(1)(iv)]

Y N ? At construction sites involving multistory buildings, is at least one fire extinguisher located adjacent to the stairway? [29 CFR 1926.150(c)(1)(iv)]

Y N ? Are fire extinguishers and water drums protected from freezing? [29 CFR 1926.150(c)(1)(v)]

Y N ? If more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are present, is a fire extinguisher, rated not less than 10B, provided within 50 feet? [29 CFR 1926.150(c)(1)(vi)]

Note: This requirement does not apply to the integral fuel tanks of motor vehicles.

Y N ? Are portable fire extinguishers selected according to the classes of anticipated fires and size and degree of hazards? [29 CFR 1926.150(c)(1)(x) and N.J.A.C. 5:18-3.4(f)1]

Fire Protection and Prevention for Construction Self-Inspection Checklist

Please Circle **Fire Prevention**

Y N ? Is internal-combustion-engine-powered equipment located so that the exhausts are well away from combustible materials? [29 CFR 1926.151(a)(2)]

Y N ? When internal combustion engine exhausts are piped outside the building under construction, is a clearance of at least 6 inches maintained between such piping and combustible material? [29 CFR 1926.151(a)(2)]

Y N ? Is stability maintained when combustible materials are piled? Are piles lower than 20 feet? [29 CFR 1926.151(c)(1)]

Y N ? Are weeds and grass kept down and a regular procedure provided for the periodic cleanup of the entire area? [29 CFR 1926.151(c)(3)]

Y N ? Are outdoor combustible materials stored more than 10 feet from a building or structure? [29 CFR 1926.151(c)(5)]

Y N ? Are indoor materials stored so that they do not obstruct or adversely affect the means of exit? [29 CFR 1926.151(d)(1)]

Y N ? Are indoor materials stored, handled, and piled to minimize the spread of fire and permit convenient access for firefighting? [29 CFR 1926.151(d)(2),(3),(4)]

Y N ? Are indoor materials stored so that a clearance of at least 36 inches is maintained between the top level of stored materials and the sprinkler deflectors? [29 CFR 1926.151(d)(5)]

Y N ? Is proper clearance maintained around lights and heating units to prevent ignition of combustible materials? [29 CFR 1926.151 (d)(6)]

Y N ? Is a clearance of at least 24 inches maintained around the path of travel of fire doors, unless a barricade is provided? [29 CFR 1926.151 (d)(7)]

Y N ? Are materials stored more than 36 inches away from a fire door opening? [29 CFR 1926.151(d)(7)]

Temporary Heating Devices

Y N ? Are temporary heating devices stored away from flammable and combustible materials? [29 CFR 1926.154(b)(1),(2),(3),(4)]

Comments/Corrective action:

FIRST AID

Sudden injuries or illnesses, some of which may be life-threatening, occur at work. The OSHA First Aid standard (29 CFR 1910.151) requires trained first-aid providers at all workplaces of any size if there is no “infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees.”

- Employees wishing to be designated certified to render first aid will receive training to receive a valid certificate from the American Red Cross (or agency equivalent). As such, all workers who are designated to render first aid shall receive blood-borne pathogens as well as, AED and CPR training
- First aid kits and other equipment used to treat injuries and illnesses will be provided to ensure each worker at the workplace has access to it. Each kit will be located in a central and easily accessed location (i.e. jobsite gang boxes, job site trailers, or designated safety cabinets).
- Each first aid kit shall contain Personal Protective Equipment to protect first aid responders from blood-borne pathogens. The kits shall have, at a minimum, hypoallergenic rubber gloves, a one-way breathing mask for CPR and mouth-to-mouth resuscitation and eye glasses with side shields alongside normal supply inclusions such as antiseptic solution, scissors, cotton balls, sterile dressings and covers, band-aids, and instructions for use.
- Any first aid kit used in an emergency shall be replaced or restocked immediately. The on-site job Foreman will inspect each first aid kit, daily, and request restocking materials as needed to keep each kit maintained and readily stocked
- Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate use.
- Each on-site job Foreman will be provided a list of contacts for police, fire, ambulance, Poison Control, etc., including estimated arrival times for the closest EMS for each jobsite.
- Injured workers will be transported to a health care facility, either by ambulance or EAI management, if deemed necessary.

HEALTH HAZARD

This section is an overview of the various types of health hazards to which construction workers may be exposed: A detailed explanation of our Hazard Communication Program can be found in Section IV, ”Hazard Communication Program”.

- Chemical – dust, fumes, fibers, liquids, mists, gases, vapors through inhalation, ingestion and/or absorption
    - Carbon Monoxide
        - Adequate ventilation shall be established for work around internal combustion engines fueled by diesel fuel, gasoline, or LP gas
        - Adequate ventilation shall be established for hot work operations (Some welding operations generate carbon monoxide)
        - Adequate ventilation shall be established when working around sources of burning propane gas
    - Asbestos
        - The construction dates of all buildings or structures shall be determined before work begins
        - All workers shall be informed when working in any building that may have an asbestos exposure
        - When working in buildings or structures built before 1980, asbestos safety procedures shall be followed to protect workers from over exposure to asbestos
        - Pipe wrap, boiler wrap, ceiling tiles, floor tiles, insulation and wall board shall be checked for signs of dilapidation. If it appears that any of these materials could easily crumble or become pulverized by the work to be performed in the area, workers shall not begin work until: it is determined that the materials do not contain asbestos; it is determined that workers would not be exposed to harmful concentrations of asbestos; the materials are removed by a certified asbestos removal company; or the materials are encapsulated
    - Lead
        - Work involving flame torch cutting, welding or grinding of painted surfaces, maintenance of duct work or use of plumbing solder shall not begin until: it

has been determined that lead is not present in the paint or materials; it is determined that workers would not be exposed to harmful concentrations of lead; or workers have been properly trained and have received the appropriate personal protective equipment required to keep them safe from the lead exposure

        - All workers shall comply with the company's Lead Compliance Program when airborne lead concentrations require its use

- Physical – different types of energy which may be hazardous to workers, such as noise, vibration, temperature extremes, radiation
    - Heat Stroke – Heat Exhaustion
        - Workers shall be permitted to take frequent breaks in cool places when working in hot environments
        - Workers shall be provided with plenty of drinking water and trained/encouraged to drink it throughout the day (individual drinking cups shall be provided for each worker)
        - Workers shall be trained to wear lightweight, light colored clothing with a breathable fabric whenever the job allows it
- Ergonomic – manual handling is the most common cause of injury at work (refer to Section III, "Manual Handling of Materials")
- Biological / Blood-borne Pathogens
    - Workers shall be trained about: the blood-borne pathogens they could be exposed to while working; specifically, when and where they could be exposed and how to protect themselves from those hazards
    - The training shall focus on proper work practice controls and use of proper personal protective equipment to prevent exposure to blood-borne pathogens
    - A copy of the company's Blood-borne Pathogen Exposure Control Plan shall be accessible to all workers

HOUSEKEEPING

- All work areas shall be cleaned as the work progresses
- Materials shall be stored in a neat and orderly way
- All scrap material, trash, tools, materials, and equipment shall be kept out of walkways and passageways
- Grease, oil, or other chemical spills shall be cleaned up immediately with an absorbent material and disposed of properly
- Greasy and oily rags and flammable materials shall be disposed of in approved disposal containers with self closing lids
- Flammable/combustible liquid spills shall be cleaned up immediately with an absorbent and shall be disposed of properly as required by regulation

LOCKOUT / TAGOUT

The following is a brief overview of the company rules for lockout/tagout. A detailed program explanation can be found in Section V, “Model Lockout/Tagout Program.”

POLICY, TRAINING, AND AUDIT

It is our goal to have compliant lockout/tagout procedures. Each employee will be trained yearly on the implemented lockout/tagout procedures and will receive a review/retraining of the procedures prior to implementation of lockout/tagout in order to confirm that they understand their responsibilities under each procedure and are able to follow steps properly. An annual audit review of the implemented procedures will help to determine if the procedures are providing adequate protection to employees and if any changes are needed.

The information required on each procedure, is as follows:

- The scope, purpose, methods, and rules used for controlling energy
- The intended use of the procedure (lockout)
- Steps for shutting down the equipment
- Steps for isolating and controlling hazardous energy
- Steps for the placement and removal of lockout or tagout devices
- Steps for testing the machine to confirm it was properly locked out

MACHINE-SPECIFIC LOCKOUT / TAGOUT PROCEDURES

Lockout/tagout procedures must be developed for any machine with two or more sources of lockable and/or residual energy. Equipment that is not owned by Environmental Air, Inc. and is not serviced by our employees does not need a written procedure. Procedures are also not needed for simple, single-energy source machines.

Lockout/tagout procedures should be machine-specific. The procedure should identify the machine-specific information including description of machine, location, energy sources and methods of controlling those sources.

Generic lockout/tagout procedure are acceptable for use on a group of similar equipment, if only group equipment have the same energy source types and methods for isolation. Generic

procedures should only be used for simple machines, with a maximum of two to three energy sources.

PROCEDURE REQUIREMENTS FOR AUTHORIZED EMPLOYEES

Performing maintenance or servicing equipment can be dangerous to employees, so only authorized employees are allowed to perform maintenance or servicing of equipment. OSHA clearly defines who is an authorized employee (those who are applying the locks), the responsibilities of an authorized employee, and who is an affected employee (those who are in the area during a lockout, such as operators).

By OSHA lockout/tagout standards, an authorized employee is a person who locks or tags out equipment to perform servicing or maintenance, including an employee who will:

- perform energy source isolation
- implement lockout and/or tagout on machines or equipment
- dissipate potential (stored) energy
- verify energy isolation
- implement actions to release LOTO
- test or position machines or equipment

The requirements for when a machine is required to be locked out include:

- If the employee is placing any part of his/her body into the equipment where work is being performed
- If any part of his/her body is in an associated danger zone
- If an employee bypasses a guard or other safety device, the machine must be locked out
- If an employee must do work on the equipment that is not routine, they are considered an authorized employee

Authorized employees are required to attend training on applicable hazardous energy, types, and magnitudes in the workplace. In the training, authorized employees learn how to perform lockout/tagout while servicing or performing maintenance. They need to know the proper steps for isolating and locking out energy sources and should be trained on methods for verifying the accuracy of the lockout.

Also, authorized employees need to understand how to perform a group lockout, handle shift change, and know what to do in other, special circumstances.
Deviation from the written lockout/tagout procedure is strictly prohibited.

LOCKOUT / TAGOUT PROCEDURE

1. Notify all affected employees that servicing is required and the machine is going to be locked out; this needs to be done before lockout is performed.
2. The authorized employee should familiarize themselves with the procedure; employees must have knowledge of the energy sources & their hazards and understand how to lock them out.
3. The employee shall locate the devices needed to lockout the equipment.
4. If the machine or equipment is operating, shut it down by the normal stopping procedure.
5. Energy sources need to be isolated and controlled. Lockout or tagout devices should be applied to each source by the authorized employee.
6. Stored or residual energy must be dissipated or restrained by methods such as blocking or chaining, bleeding off pressure, or repositioning parts. If there is a possibility of re-accumulation of energy, verification must be continued throughout the lockout.
7. Finally the employee must verify the lockout has effectively been applied by testing the machine for re-energization using the machine controls or other means.

LOCKS / DEVICES AND DOCUMENTATION

- We have purchased locks and devices that are specific for lockout/tagout and uniform in make and color.
- All Locks and/or tags applied to machinery / equipment will identify the individual applying the device. All workers involved in the maintenance activity must place their own lock and tag on each energy control point.
- The Safety Director will ensure enough locks, identification tags, and isolation devices are available for the volumes of equipment to be locked out and that all types of isolating devices are available for the various types of isolation points (ball valves, gate valves, breakers, etc.).

Sample Lockout / Tagout Written Tag

Subject: AIR COMPRESSOR #1	**Equipment #: AC-1**
Area: EAI Fabrication Shop Building - Blue	**PAGE: 1 of 1**
Approved By: Craig R. Neil, Vice President	**EFFECTIVE: 1-20-2020**
	REVISED: 0
Note: Only shut down Air Compressor #1 when Air Compressor #2 is fully operational. Shutting down both compressors will affect facility operations.	

PURPOSE:

To prevent injury to personnel when performing maintenance or operation of equipment.

POLICY:

The following lockout / tagout procedure will be followed to ensure that appropiate lockout devices or tagout devices are used to disable machines or equipment , preventing unexpected energization, start up or releasing of stored energy, thus preventing injury to personnel.

PROCEDURE:

Notify all effected enployees that servicing or maintenance is required on a machine or equipment , and that the machine or equipment must be shut down and locked out.

Perform Machine Stop. If the maintenance or equipment is operating, shut it down by the normal stopping procedure.

Locate and identify power sources, potential hazards, and all control devices

LOCK OUT STEPS

Step	Source	Location	Method
1	Electrical 4400V	Isolation point located on MCC-L7274M	Move electrical disconnect to off. Lock with padlock.
2	Electrical 480V	Isolation point located on North Side of unit	Move electrical disconnect to off. Lock with padlock.
3	Pneumatic 120 PSI	Isolation point located above unit	Turn valve to closed position. Lock out with cable device.
4	Cooling Water Inlet 40 PSI	Isolation point North Side of unit	Turn valve to closed position. Lock out with cable device.
5	Cooling Water Outlet 30 PSI	Isolation point North Side of unit	Turn valve to closed position. Lock out with cable device.
6	Thermal Energy 300F	Be sure to wait until head has dissipated from machine until cool to touch before servicing. Wear proper PPE before beginning work.	
7	Kinetic Energy 600 RMP	Be sure to wait until all moving parts have come to a complete stop. If necessary, use a block or chain to prevent equipment from moving while servicing.	

Dissipate Energy. Isolate all power sources by blocking or bleeding and venting energy that may be stored.

Attempt to Restart. Ensure that the equipment is disconnected from the energy sources by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating controls

RESTORE TO SERVICE SEQUENCE

Check Machine: Check the machine or equipment and the immediate area around the machine to ensure that nonessential items such as parts and tools have been removed and that the machine or equipment components are operationally intact including replacements of guards.

Check Area: Check the work are to ensure all employees have been safely positioned or removed from the area

Verify Machine: Verify the controls are in neutral

Remove Lockout: Remove the lock, tags, and lockout devices and reenergize the machine or equipment

Notify: Notify all employees that the servicing or maintenance is completed and the machine is ready for use

ALTERNATIVE MEASURES FOR LOCKOUT / TAGOUT

In some specific instances, Alternative Protective Measures (APMs) can be used as a complement to traditional lockout/tagout procedures. Certain machine tasks that are “routine, repetitive and integral to production” may use alternative measures. In order to justify the use of alternative measures, the machine user must perform a systematic evaluation of the tasks being performed and the alternative safeguards that are available. Most machine safety standards prescribe a lifecycle approach to accomplish this task. The below listed machine safety lifecycle is to be used to promote proper identification, deployment, and documentation for alternative measures.

1. Risk Assessment to identify and quantify risks
2. Safety Functional Requirement Specification to select and specify among the multiple possibilities which is the most recommended corrective measure to reduce the risk
3. Design Verification to define the project to implement the corrective measures identified before and make sure that they reduce the risk as required on the risk assessment
4. Installation and Validation, which is basically executing the proper installation of the safety solution at the machine and testing if it works as planned at the functional specification for both normal and abnormal operation modes
5. Maintain and Improve to make sure that the system keeps operational and functional over time

MANUAL HANDLING OF MATERIALS

Workers lifting and carrying equipment or materials can be injured when they use improper techniques, twist repeatedly, stand in awkward positions, or try to handle heavy loads without help. The following are the steps required for safe manual handling of materials:

- Hand trucks, carts, or other material handling equipment shall be used whenever possible to move materials
- Make sure your path is clear
- Workers shall get help when lifting objects that are too heavy or bulky to be moved safely by one person
- Use a wide, balanced stance with one foot slightly ahead of the other.
- Get as close to the load as possible.
- Tighten your stomach muscles as the lift begins.
- Keep your lower back in its normal arched position and use your legs to lift.
- Pick up your feet and pivot to turn. Don't twist your back.
- Workers shall watch for “pinch points” when lifting or setting down objects
- Lower the load smoothly, maintaining the natural curve in your lower back.
- Workers shall wear leather work gloves to protect their hands from materials with sharp ends or edges
- Stored materials shall be inspected before they are moved to ensure they will not fall off the shelf or rack while pieces are being moved

PERSONAL PROTECTIVE EQUIPMENT

Employees will be trained annually on the selection, use, and care of personal protective equipment. Training review and or retraining will also occur as PPE is assigned to each employee prior to each use. Sizing to ensure proper and safe fit of PPE will be completed at time of issuance to each individual employee prior to use. Employees are asked to maintain assigned PPE in a sanitary/clean condition. Out-sized, damaged, scratched, or old PPE is to be discarded and replaced with new, as needed.

EYE PROTECTION

- Safety glasses or safety goggles, depending on the hazard, shall be worn at all times while working
- Safety goggles with side shields shall be worn for protections against flying particles or objects
- Splash-proof safety goggles shall be worn for protection against chemical substances like acids, solvents, etc.
- Face shields shall be worm for face protection against flying particles and splashing chemicals. Safety glasses with side shields or safety goggles, depending on the hazard, shall always be worn under a face shield
- A welding helmet with appropriate shaded lenses and flash goggles under the helmet shall be worn when welding
- Flash goggles with appropriate shaded lenses shall be worn when cutting or brazing

HARD HATS / HEAD PROTECTION

Hard hats shall be worn whenever there is potential for falling objects or head contact with electrical sources. Specific areas where hard hats must be used include:

- Construction areas designated as hard hat areas
- Areas where any crane, hoist, or other overhead lifting device is in operation
- Areas where there is a possibility of falling objects
- Areas on or adjacent to roads or highways where construction or maintenance activity is being performed
- Any area on a customer’s facility where hard hats are required

- EXCEPTIONS: Hard hats need not be worn when the hazard created by wearing them offsets the benefits of protection created by their use. Determinations under such circumstances will be left up the supervisor's discretion, not the involved employee(s)

HARD HAT RULES

- All hard hats must be worn with the bill facing forward
- All hard hats will be RED in color.
- All hard hats will be marked on three sides with ½" x 3" strips of reflective tape, positioned 1" above the brim of the hat.
- All hard hats will be marked with employee name, clearly visible, on a label positioned 1" above the brim of the hard hat
- It is the employee's responsibility to insure the safekeeping, maintenance, and cleanliness of the hard hats. Cleansing should be done with mild soap solution and water
- If hard hats are damaged during use or sustain a blow, they should be discarded and a new one obtained.
- The shell of the hard hat or suspension should not be altered or modified in any way

HAND PROTECTION

Environmental Air, Inc. shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

- Proper gloves shall be worn when handling rough, sharp, hot or toxic materials that could cause hand injuries
- Leather work gloves shall be worn when working with sharp materials
- Welding gloves shall be worn when welding, cutting, or brazing
- Neoprene, latex, or other similar type gloves shall be worn for protection against chemical substances like acids, caustics, solvents, etc.
- All gloves shall be selected based on the manufacturer's recommendation for protection against the specific exposure
- Gloves shall not be worn where they could be caught by moving equipment

FOOT PROTECTION:

Environmental Air, Inc. shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards

- Work shoes or work boots with steel toes shall be worn by workers at all times

RESPIRATORY PROTECTION

Respirators shall be provided by Environmental Air, Inc. when such equipment is necessary to protect the health of our employee. Environmental Air, Inc. shall provide the respirators which are applicable and suitable for the purpose intended. Environmental Air, Inc. shall be responsible for the establishment and maintenance of a respiratory protection program (reference Section VI, “Model Respirator Protection Program”).

In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far 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 respirators shall be used pursuant to this section.

- The company shall attempt to reduce the concentration of hazardous airborne substances to safe levels before requiring workers to use respirators
- The company shall determine whether respiratory protection is necessary to protect workers from airborne concentrations of hazardous substances that could be harmful to them
- The company shall select the appropriate type of respirator
- No worker shall wear a respirator without proper training. The company shall provide the training
- Supervisors shall monitor the use, maintenance, and sanitation of the respirators used by their workers
- All workers shall receive a medical evaluation before using a respirator

- All workers required to wear respirators shall be fit tested and shall not be permitted to wear facial hair that interferes with the respirator to face seal
- All workers of this company shall comply with the company's written respiratory protection program (Section VI, "Model Respirator Protection Program") when respirator use is required.

Environmental Air, Inc. PPE Hazard Assessment Instructions:

Based on the hierarchy of controls, PPE is a last resort. Personal protective equipment alone should NOT be relied upon to provide protection against hazards but should be used in conjunction with engineering controls, administrative controls, and procedural controls.

This document addresses eye, face, head, hand, foot, torso, respiratory, noise, and fall protection. It will serve as the Personal Protective Equipment (PPE) Certification Document required to satisfy the federal requirements of the Occupational Safety and Health Administration (OSHA) Standard, 29 CFR 1910.132 Subpart I – Personal Protective Equipment.

General Guidelines

The PPE Hazard Assessment can be conducted for an area, a job category or for an individual by selecting and filling in the appropriate box. The assigned evaluator shall include their name, department/division being assessed, and the date. Completed assessments must be accessible to employees and inspectors and updated when needed.

PPE Hazard Assessment Instructions:

STEP ONE: Inform Affected Employees of the Process

Affected employees from each work area that is being assessed should be involved in the process. Discuss the reasons for the survey and the procedures being used for the assessment. Review the job procedures, potential hazards, and the PPE currently in use.

STEP TWO: Review Data

Reports of work related injuries or illnesses, near miss events and reported safety concerns are sources of data that can provide helpful information for assessing hazards.

STEP THREE: Conduct a Walk-Through Survey

The purpose of the survey is to identify sources of hazards to employees. Observe the following: layout of the workplace, location of the employees, work operations, hazards and places where PPE is currently used including the device and reason for use. Using the form, check the type of hazard(s) present within each section (organized by body part). Further descriptions can be provided in the adjacent box. Consideration should be given to the following basic hazard categories:

1. Impact (falling / flying objects)
2. Penetration (sharp objects piercing foot / hand)
3. Compression (roll-over or pinching objects)
4. Chemical exposure (inhalation, ingestion, skin contact, eye contact or injection)

5. Temperature extremes (heat/cold)
6. Dust/flying debris (grinding, chipping, sanding, etc.)
7. Fall (slip/trip, scaffolds, elevated work)
8. Radiation (non-ionizing: UV/IR/light, welding, brazing, cutting, furnaces, etc.)
9. Noise (mechanical rooms, machines, cage washing, jackhammers, etc.)
10. Electrical (shock, short circuit, arcing, static)

STEP FOUR: Select Proper PPE

After considering and/or planning for other controls, select the PPE which provides at least the minimum level of protection required to protect employees from the hazards. Using the form, note the appropriate PPE in the required PPE box. For help with proper PPE selection, contact the Safety Director or consult the guides found on the OSHA webpage:
https://www.osha.gov/SLTC/personalprotectiveequipment/

STEP FIVE: Make Document Accessible

Once completed, signed and dated, store the form either electronically or as a hard copy in a location easily accessible to employees and inspectors.

STEP SIX: Revise Protocol

Update departmental protocols with the new or modified PPE requirements, if applicable

STEP SEVEN: Reassess the workplace as necessary by identifying and evaluating

1. New equipment and processes
2. Accident records
3. Suitability of previously selected PPE

See the attached completed example of the PPE Hazard Assessment Certificate.

ENVIRONMENTAL AIR - PPE HAZARD ASSESSMENT FORM

I am reviewing (Check the appropriate box):	☐ A worksite	Specify location:
	☐ A single employee's job description	Name of Employee:
		Position Title:
	☐ A job description for a class of employees	Position Titles:
		Location:

Your Name: **Job Name:** **Date:**

EYE HAZARDS: Tasks that can cause eye injury include: working with chemicals or acids; UV lights; chipping, sanding, or grinding; welding; furnace operations; and metal and wood working.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ High Heat / Cold		
☐ Dust / Flying Debris		
☐ Impact		
☐ UV / IR Radiation		
☐ Other:		

HEAD/NECK/FACE HAZARDS: Tasks that can cause head/neck/face injury include: working below other workers who are using tools or materials that could fall, working on energized electrical equipment or utilities, and working in trenches or confined spaces.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ Dust / Flying Debris		
☐ Impact		
☐ UV / IR Radiation		
☐ Electrical Shock		
☐ Other:		

FOOT HAZARDS: Tasks that can cause foot injury include: exposure to chemicals or acids, welding, cutting, materials handling, renovation or construction, and electrical work.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ High Heat / Cold		
☐ Impact / Compression		
☐ Electrical		
☐ Puncture		
☐ Slippery / Wet Surfaces		
☐ Other:		

ENVIRONMENTAL AIR - PPE HAZARD ASSESSMENT FORM

HAND HAZARDS: Tasks that can cause hand injury include: work with chemicals or acids, exposure to cut or abrasion hazards (for example, during demolition, renovation, woodworking, or food service preparation), work with very hot or cold objects or materials, or exposure to sharps.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ High Heat / Cold		
☐ UV / IR Radiation		
☐ Electrical Shock		
☐ Puncture		
☐ Cuts / Abrasion		
☐ Other:		

BODY HAZARDS: Injury of the body (torso, arms, or legs) can occur during: exposure to chemical, acids, or other hazardous materials; abrasive blasting; welding, cutting or brazing; chipping, sanding, or grinding; use of chainsaws or similar equipment; and work around electrical arcs.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ High Heat / Cold		
☐ Impact / Compression		
☐ Electrical Arc		
☐ Cuts / Abrasion		
☐ Other:		

FALL HAZARDS: Personnel may be exposed to fall hazards when performing work on a surface with an unprotected side or edge that is 4 feet or more above a lower level, or 10 feet or more on scaffolds. Fall protection may also be required when using vehicle man lifts, elevated platforms, tree trimming, performing work on poles, roofs, or fixed ladders.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Fall Hazard		

NOISE HAZARDS: Personnel may be exposed to noise hazards when working in mechanical rooms; machining; grinding; sanding; cage washing; dish washing; working around pneumatic equipment, grounds equipment, generators, chillers, motors, saws, jack hammers, or similar equipment.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Noise Hazard		

RESPIRATORY HAZARDS: Personnel may be exposed to respiratory hazards that require the use of respirators: during emergency response, when using certain chemicals outside of a chemical fume hood; when working with hazardous powders; when entering fume hood plenums, when working with animals; when applying paints or chemicals in confined spaces; when welding, cutting, or brazing certain metals; and when disturbing asbestos, lead, silica, or other particulate hazards.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ Particulate Exposure		
☐ Other:		

I certify that the above hazard assessment was performed to the best of my knowledge and ability, based on the hazards present of this date.

_____(signature)

ENVIRONMENTAL AIR - PPE HAZARD ASSESSMENT FORM

I am reviewing (Check the appropriate box):		
	☐ A worksite	Specify location:
	☐ A single employee's job description	Name of Employee:
		Position Title:
	■ A job description for a class of employees	Position Titles: **Shop Journeyman, all levels**
		Location: **Shop**

Your Name: Jane Doe **Job Name: EAI Shop** **Date: 07/01/2020**

EYE HAZARDS: Tasks that can cause eye injury include: working with chemicals or acids; UV lights; chipping, sanding, or grinding; welding; furnace operations; and metal and wood working.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure	Exposure to dust and flying debris during handling and fabrication of materials made of metal. Exposure to impact from metal. Exposure to UV/IR Radiation when welding.	Safety glasses w/ side shields or goggles, welding mask w/ shield, face shields
☐ High Heat / Cold		
■ Dust / Flying Debris		
■ Impact		
■ UV / IR Radiation		
☐ Other:		

HEAD/NECK/FACE HAZARDS: Tasks that can cause head/neck/face injury include: working below other workers who are using tools or materials that could fall, working on energized electrical equipment or utilities, and working in trenches or confined spaces.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure	Exposure to dust and flying debris during handling and fabrication of materials made of metal. Exposure to UV/IR Radiation when welding.	Welding mask w/ shield, face shields
■ Dust / Flying Debris		
☐ Impact		
■ UV / IR Radiation		
☐ Electrical Shock		
☐ Other:		

FOOT HAZARDS: Tasks that can cause foot injury include: exposure to chemicals or acids, welding, cutting, materials handling, renovation or construction, and electrical work.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure	Exposure to puncture, impact or compression during metal fabrication	Heavy duty Steel toed boots
☐ High Heat / Cold		
■ Impact / Compression		
☐ Electrical		
■ Puncture		
☐ Slippery / Wet Surfaces		
☐ Other:		

ENVIRONMENTAL AIR - PPE HAZARD ASSESSMENT FORM

HAND HAZARDS: Tasks that can cause hand injury include: work with chemicals or acids, exposure to cut or abrasion hazards (for example, during demolition, renovation, woodworking, or food service preparation), work with very hot or cold objects or materials, or exposure to sharps.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure	Exposure to cuts from sharp metals during material handling	Gloves
☐ High Heat / Cold		
☐ UV / IR Radiation		
☐ Electrical Shock		
☐ Puncture		
■ Cuts / Abrasion		
☐ Other:		

BODY HAZARDS: Injury of the body (torso, arms, or legs) can occur during: exposure to chemical, acids, or other hazardous materials; abrasive blasting; welding, cutting or brazing; chipping, sanding, or grinding; use of chainsaws or similar equipment; and work around electrical arcs.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure	Exposure to high heat during welding	Flame resistant arm shields or welding jackets
■ High Heat / Cold		
☐ Impact / Compression		
☐ Electrical Arc		
☐ Cuts / Abrasion		
☐ Other:		

FALL HAZARDS: Personnel may be exposed to fall hazards when performing work on a surface with an unprotected side or edge that is 4 feet or more above a lower level, or 10 feet or more on scaffolds. Fall protection may also be required when using vehicle man lifts, elevated platforms, tree trimming, performing work on poles, roofs, or fixed ladders.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Fall Hazard		

NOISE HAZARDS: Personnel may be exposed to noise hazards when working in mechanical rooms; machining; grinding; sanding; cage washing; dish washing; working around pneumatic equipment, grounds equipment, generators, chillers, motors, saws, jack hammers, or similar equipment.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
■ Noise Hazard	Exposure to noise hazards from machining, grinding, hammering metal etc.	Ear plugs, noise canceling plugs

RESPIRATORY HAZARDS: Personnel may be exposed to respiratory hazards that require the use of respirators: during emergency response, when using certain chemicals outside of a chemical fume hood; when working with hazardous powders; when entering fume hood plenums, when working with animals; when applying paints or chemicals in confined spaces; when welding, cutting, or brazing certain metals; and when disturbing asbestos, lead, silica, or other particulate hazards.

Check the appropriate box for each hazard	*Description of hazard(s):*	*Required PPE*
☐ Chemical Exposure		
☐ Particulate Exposure		
☐ Other:		

I certify that the above hazard assessment was performed to the best of my knowledge and ability, based on the hazards present of this date.

_____(signature)

TOOLS AND EQUIPMENT

GENERAL

- Manufacturer installed safety devices and guards shall not be removed or bypassed
- All hand tools, power tools and similar equipment shall be maintained in safe working order. Manufacturer's instructions shall be followed regarding proper maintenance
- All tool and equipment blades shall be kept sharp
- All damaged tools shall be removed from service immediately and tagged with "DO NOT USE" tags.
- No maintenance on a powered tool or piece of equipment shall be performed unless it has been de-energized, i.e. unplugged, etc.

HAND TOOLS

- Workers shall use the proper tool for each task
- Cheater bars or hammers shall not be used on wrenches
- Only files with handles shall be used by workers
- Tools with mushroomed heads shall not be used
- Screwdrivers shall not be used as pry bars
- Wooden handles on tools shall be kept free of splinters
- Knives shall not be used as screwdrivers or pry bars
- Workers shall not use folding knives unless they are equipped with a lock blade

POWER TOOLS

- Portable power tools shall not be lowered, lifted, or carried by their cords
- All power tools shall be unplugged before changing parts
- All power tools shall be inspected before use for defects and broken parts
- Repairs to power tools, cords, plugs and motors shall be performed only by a qualified person
- Power tools shall be properly grounded unless they are double insulated (look for the words "DOUBLE INSULATED" or a square inside a square symbol on the tool to be sure it is double insulated).
- Power tools and cords shall be kept out of water

- Workers using power tools shall be protected by Ground Fault Circuit Interrupters
- Triggers on air impact tools and power actuated tools shall not be actuated until the tool is in proper contact with the work
- Fuel-powered tools shall not be refueled or serviced until they have been shot off and allowed to cool down slightly
- Tool safety clips or retainers shall be securely installed and maintained on pneumatic and electric impact tools

ABRASIVE WHEEL TOOLS AND EQUIPMENT

- Abrasive wheel tools and equipment including the wheel shall be inspected for defects including broken or cracked parts before each use
- Grinding shall be performed only on the face of the wheel
- Guards shall be adjusted properly and shall cover the spindle, nut, and flange projections
- Only abrasive wheels that are designed specifically for the tool shall be used. Modifications to fit an incorrect size or type are not permitted

WELDING, CUTTING, SOLDERING, BRAZING

COMPRESSED GAS CYLINDERS

- While being transported, cylinders shall be secured on a cradle, sling-board or pallet
- Chokers, slings, or electric magnets shall not be used to transport or lift cylinders
- Cylinders shall always be secured in a vertical position while being used or stored
- Valve protection caps shall always be replaced when cylinders are not being used
- Regulators shall always be used when working with compressed gas cylinders
- Regulators shall be removed and valve protection caps replaced when cylinders are moved even a short distance unless the cylinders are secured to a cart designed specifically for moving them
- A chain or other suitable securing device shall be used to secure cylinders in an upright position and prevent them from being knocked over
- Cylinder valves shall be open only when work is being performed. Valves shall be closed immediately after work with the cylinder stops
- Hoses shall be bled out after the cylinders are shut off
- All torches shall be equipped with anti flash-back devices while being used
- All hoses, hose connections, valves, torches and flash back arresters shall be inspected before each use
- Defective equipment shall be taken out of service immediately and tagged with “DO NOT USE” tags.
- Cylinders shall be kept away from sparks, hot slag or flames
- Cylinders shall not be placed where they could become part of an electrical circuit
- Oxygen and acetylene cylinders shall be separated by a minimum of 20 feet or by a ½ hour rated 5 foot high non-combustible barrier
- Oxygen cylinders shall be kept away from oil and grease to prevent fires and explosions
- Empty cylinders shall be marked as empty and stored in a secured upright position with valve cover caps secured in place

WELDING GENERAL

- Welders shall wear clothing that will protect them from hot sparks, slag, etc. such as flame resistant coveralls, welding gloves, flame resistant leggings and leather high top boots

- Welders shall wear a welding helmet with the lens shade necessary to protect their eyes from the work. Flash goggles shall be worn under the helmet

BRAZING AND SOLDERING

- Proper eye protection shall be worn by workers while soldering or brazing
- Work areas shall be adequately ventilated while soldering or brazing operations are being performed
- Water/moisture shall be kept away from molten metal to prevent its propulsion

GAS WELDING AND CUTTING

- Cylinder valves shall be cracked open and quickly closed before a regulator is connected to remove dirt and other particles
- The worker cracking the valve shall stand to one side of the outlet and not in front of it
- Valves shall not be “cracked” in any area where the escaped gases could come into contact with sparks, flames, or other sources of ignition
- Fuel gas hoses and oxygen hoses shall be easily distinguishable from each other
- Torches shall be lighted with friction lighters only

ARC WELDING AND CUTTING

- Only material electrode holders which are specifically designed for arc welding shall be used for arc welding and cutting
- Electrodes shall not be placed against cylinders to strike or arc
- All current carrying parts shall be inspected to ensure that they are insulated from ground
- All arc welding and cutting cables shall be checked to ensure that they are capable of handling the maximum current required by the work in progress
- Only cables with standard insulation connectors of capacity at least equivalent to that of the cable shall be used
- Defective cables or other parts shall be removed from service and tagged with “DO NOT USE” tags (the first 10 feet of stinger line must be free of all defects)
- Ground return cables shall have a safe current carrying capacity at least equal to the specified maximum output capacity of the arc welding units they will service

- The frames of all arc welding machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire that is grounded at the source of the current
- All ground connections shall be inspected for capacity and proper connection
- Gasoline or propane-fueled portable welding machines and auxiliary generators shall have a positive ground before being started
- Arc welding and cutting operations shall be shielded with non-combustible or flame proof materials whenever possible to protect others from looking into the arc rays
- Cables shall not be allowed to lie in water or oil
- Workers shall not be permitted to loop the cables around their bodies
- Exposed terminals on welding machines shall be covered with insulated boots
- Only chipping hammers shall be used

FIRE PREVENTION

- Objects to be welded, cut, or heated shall be moved to a safe location whenever possible. Where objects can't be moved, flammable/combustible materials must be removed or protected from sparks and heat by non-combustible or fireproof barriers
- Welding or cutting shall not be performed in areas where the application of flammable paints, the presence of flammable compounds, or heavy dust concentrations create a fire or heavy dust concentrations create a fire or explosion hazard
- Suitable fire extinguishers shall be readily accessible where welding or cutting is being performed
- Welders shall ensure that an adequate vent is in place before welding or cutting on a drum, container or hollow object before beginning hot work
- Welders shall ensure that adequate ventilation is provided before beginning hot work in enclosed areas

SECTION III

BLOOD-BORNE PATHOGEN EXPOSURE CONTROL PLAN

BLOOD-BORNE PATHOGEN EXPOSURE CONTROL PLAN

Developed in accordance with the OSHA Blood-borne Pathogens Standard, 29 CFR 1910.1030

PURPOSE

The purpose of this exposure control plan is to eliminate or minimize employee occupational exposure to human blood or other infectious body fluids. Other potentially infectious body fluids include: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, and any body fluid visibly contaminated with blood.

SCOPE

This Standard applies to all Environmental Air, Inc. personnel who, during the course of their employment, may come into contact with human blood or potentially infectious bodily fluids.

RESPONSIBILITY

Supervisors and foremen shall be responsible for ensuring their employees comply with the provisions of this plan. The Safety Coordinator is responsible for providing all necessary supplies such as personal protective equipment, soap, bleach, etc. The Safety Coordinator shall also be responsible for training employees and for disposing of bio-hazardous waste contained in biohazard bags.

ENGINEERING AND WORK PRACTIVE CONTROLS

Universal precautions will be observed by all employees in order to prevent contact with blood or other potentially infectious materials. All blood or other potentially infectious materials will be considered infectious regardless of the perceived status of the source individual.

Engineering and work practice controls will be utilized to eliminate or minimize exposure to all employees working at Environmental Air, Inc.

1. Employees must wash their hands or other skin with soap and water, or flush mucous membranes with water, as soon as possible following an exposure incident (such as a splash of blood to the eyes or an accidental needle stick). **

2. Employees must wash their hands immediately (or as soon as feasible) after removal of gloves or other personal protective equipment. **

   **Employees shall familiarize themselves with the nearest hand washing facilities for the buildings in which they work. Because most of our jobsite locations have public access, they will have available hand washing facilities in public restrooms and custodial / janitorial closets. (If hand washing facilities are not available, each site foreman will provide its workers either an antiseptic cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. If these alternatives are used, then the hands are to be washed with soap and water as soon as feasible.)
3. Employees who encounter improperly disposed needles shall notify his or her supervisor of the location of the needle(s). Additionally, the appropriate authorities at the location shall be notified (i.e. job superintendent, facilities director). Needles shall be disposed of in labeled sharps containers provided at the location. If sharps containers are not available at that location, Environmental Air, Inc. Safety Coordinator will pick up and dispose of the needles in an appropriate, labeled sharps container.
   - Needles should never be recapped.
   - Needles may be moved only by using a mechanical device or tool (forceps, pliers, broom and dust pan).
4. Breaking or shearing of needles is prohibited.
5. No eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses is allowed in a work area where there is a reasonable likelihood of occupational exposure.
6. No food or drinks shall be kept in refrigerators, freezers, shelves, cabinets, or on counter tops or bench tops where blood or other potentially infectious materials are present.
7. Employees must perform all procedures involving blood or other potentially infectious materials in such a manner as to minimize splashing, spraying, splattering, and generation of droplets of these substances.

HOUSEKEEPING

Decontamination will be accomplished by utilizing the following materials:

- 10% (minimum) solution of chlorine bleach
- Lysol or other EPA-registered disinfectants

1. All contaminated work surfaces, tools, objects, etc. will be decontaminated immediately or as soon as feasible after any spill of blood or other potentially infectious materials. The bleach solution or disinfectant must be left in contact with contaminated work surfaces, tools, objects, or potentially infectious materials for at least 10 minutes before cleaning.
2. Equipment that may become contaminated with blood or other potentially infectious materials will be examined and decontaminated before servicing or use.
3. Broken glassware will not be picked up directly with the hands. Sweep or brush material into a dustpan.
4. Known or suspected contaminated sharps shall be discarded immediately or as soon as feasible in containers that are closeable, puncture-resistant, leak-proof on sides and bottom, and marked with an appropriate biohazard label. If sharps container is not pre-labeled, biohazard labels are available through the Safety Coordinator.
5. When containers of contaminated sharps are being moved from the area of use or discovery, the containers shall be closed immediately before removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.
6. Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner that would expose employees to the risk of percutaneous injury.

OTHER REGULATED WASTE

Other regulated waste shall be placed in containers that are closeable, constructed to contain all contents and prevent leakage of fluids during handling, storage, transportation or shipping. The waste must be labeled or color coded and closed before removal to prevent spillage or protrusion of contents during handling, storage, or transport.

Biohazard bags and labels are available through the Safety Coordinator.

Incineration of bio-hazardous waste shall be handled by a biological waste destructor. This shall be coordinated through the Safety Coordinator if pre-existing disposal arrangements have not already been made through the job site location.

PERSONAL PROTECTIVE EQUIPMENT

Where occupational exposure remains after institution of engineering and work controls, personal protective equipment shall also be utilized.

Each job site foreman will provide gloves, face shields, eye protection, and aprons to employees and will replace or repair personal protective equipment as necessary, all at no cost to their employees.

All personal protective equipment will be chosen based on the anticipated exposure to blood or other potentially infectious materials. The protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach the employee's clothing, skin, eyes, mouth, or mucous membranes under normal conditions of use and for the duration of time for which the protective equipment will be used.

Employees must:

- Utilize protective equipment in occupational exposure situations.
- Remove garments that become penetrated by blood or other potentially infectious material immediately or as soon as feasible.
- Replace all garments that are torn or punctured, or that lose their ability to function as a barrier to blood-borne pathogens.
- Remove all personal protective equipment before leaving the work area.
- Place all garments in the appropriate designated area or container for storage, cleaning, decontamination, or disposal.

POST EXPOSURE EVALUATION AND FOLLOW-UP

All exposure incidents shall be reported, investigated, and documented. When the employee incurs an exposure incident, it shall be reported immediately to their supervisor.

Following a report of an exposure incident, the exposed employee shall go to the Physician of their choice for a confidential medical evaluation and follow-up, including at least the following elements:

1. Documentation of the route(s) of exposure
2. A description of the circumstances under which the exposure occurred
3. The identification and documentation of the source individual (The identification is not required if the employer can establish that identification is impossible or prohibited by state or local law.)
4. The collection and testing of the source individual's blood for HBV and HIV serological status

5. Post-exposure treatment for the employee, when medically indicated in accordance with the U.S. Public Health Service
6. Counseling
7. Evaluation of any reported illness

The Healthcare professional evaluating an employee will be provided with the following information:

1. A copy of this plan.
2. A copy of the OSHA Blood-borne Pathogen regulations (29 CFR 1910.1030)
3. Documentation of the route(s) of exposure.
4. A description of the circumstances under which the exposure occurred.
5. Results of the source individual's blood testing, if available.
6. All medical records applicable to treatment of the employee, including vaccination status.

The employee must submit a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.

The healthcare professional's written opinion for Hepatitis B vaccination is limited to the following: (1) whether the employee needs Hepatitis B vaccination; (2) whether the employee has received such a vaccination. The healthcare professional's written opinion for post-exposure evaluation and follow-up is limited to the following information:

1. That the employee was informed of the results of the evaluation.
2. That the employee was informed about any medical conditions resulting from exposure to blood or other infectious materials that require further evaluation or treatment.

All other findings or diagnoses will remain confidential and will not be in a written report.

All medical evaluations shall be made by or under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional. All laboratory tests must be conducted by an accredited laboratory at no cost to the employee. All medical records will be kept in accordance with 29 CFR 1910.1020.

TRAINING

All high risk employees shall participate in a training program. Training will occur before assignment to a task where occupational exposure may take place and at least annually

thereafter. Additional training will be provided when changes such as modification of tasks or procedures affect the employee's occupational exposure.

Any employee who is exposed to infectious materials shall receive training, even if the employee was allowed to receive the HBV vaccine after exposure.

The training program will include at least the following elements:

1. An accessible copy of the regulatory text of 29 CFR 1910.1030 and an explanation of its contents.
2. A general explanation of the epidemiology and symptoms of blood-borne diseases.
3. An explanation of the modes of transmission of blood-borne pathogens.
4. An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan.
5. An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood or other potentially infectious materials.
6. An explanation of the use and limitations of methods that will prevent or reduce exposure, including appropriate engineering controls, work practices, and personal protective equipment.
7. Information on the types, proper use, location, removal, handling, decontamination, and disposal of personal protective equipment.
8. An explanation of the basis for selection of personal protective equipment.

SECTION IV

MCA MODEL CONFINED SPACE ENTRY PROGRAM

Introduction

The requirements for keeping mechanical construction and service workers safe in confined spaces can be confusing. Mechanical construction employers do not have an OSHA confined space standard governing their confined space entry procedures. However, these employers are still required to protect their workers from confined space hazards. On the other hand, mechanical service employers do have a complicated confined space entry standard, which must be followed to the letter. To further complicate things, many mechanical construction firms perform both mechanical construction and service work. To help with this confusion, MCAA has prepared this Model Confined Space Entry Program specifically for the mechanical construction and service industry.

The MCAA Model Confined Space Entry Program is designed to make the development of a written job site specific confined space entry program as easy and cost-effective as possible. MCAA thanks the **Mechanical Contracting Foundation** for making the production of this model possible. The model program is a product of **MCAA's Safety Excellence Initiative.**

This model program is not intended to provide exhaustive treatment on the subject of confined space entry for the mechanical construction and service industry. It should not be used as a substitute for reading and interpreting federal or state OSHA regulations or any other pertinent state or local laws, rules, regulations or standards. Further, it is not intended to provide legal advice. Employers must make independent determinations regarding the need for legal assistance.

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Instructions

Although confined space operations in construction don't require a written program, MCAA encourages mechanical construction employers to develop and implement a written confined space entry program each time hazardous confined space work must be performed. Construction employers are required to protect their workers from recognized hazards. Following a carefully written program may be the easiest way to achieve safety in confined spaces.

Service employers are required to comply with OSHA's General Industry Permit-required Confined Space Standard, which requires them to develop and implement a written confined space entry program when the space to be entered is classified as "Permit-required." A Permit-required Confined Space is any space to be entered by workers that:

- contains or has the potential to contain a hazardous atmosphere;
- contains a material that has the potential to engulf an entrant;
- has an internal configuration that could trap or asphyxiate an entrant by converging walls or sloping/tapering floors; or
- contains any other recognized serious hazard.

Carefully read the instructions below. If you have any questions that are not answered in this publication, please contact MCAA.

1. Go through the checklist on the next page to determine whether the confined space that must be entered is classified as a Permit-required Confined Space.
2. If the space is identified as "Permit-required," it means there are hazards in the space that must be addressed. You may still be able to enter the space without going through the permit process if forced-air ventilation maintains a safe atmosphere inside the space. Choose MCAA's Model A Permit-required Confined Space Entry Program in this situation. When the permit process is necessary, choose MCAA's Model B Permit-required Confined Space Entry Program. Read Appendix I before choosing a model. ***If the confined space is not classified as Permit-required, there is no need to proceed with a written program unless the classification changes.***
3. Read through the model program. Obvious areas that require your attention will be in a smaller, bolded font and underlined. For example, where you see (**type in the potential hazards**) you are prompted to type in the hazards that your workers could be exposed to (**such as insufficient oxygen or the presence of toxic gases**).
4. After reading through the model program, place the disk in your computer and choose Model A or Model B depending on your situation. Go through the program carefully and make changes where appropriate. Be sure not to leave any of the smaller, bolded, underlined font in your program. Delete these areas which are only there to prompt you to take action.
5. Implement your written Permit-required Confined Space Entry Program.

Preparation Checklist

❑ Read OSHA's Permit-required Confined Space Standard.

❑ Determine whether the confined space is classified as a "Permit-required Confined Space" by testing the atmosphere inside the space with a calibrated direct-reading instrument and observing/analyzing the configuration and conditions inside the space.

❑ Protect testers from any potential hazards while tests are being conducted. In other words, treat the space as if it has every conceivable hazard until the testing is completed and the results prove otherwise. Use the Entry Procedures in Model B if entry is necessary for initial testing (the tester must use a self-contained Breathing Apparatus).

❑ If any *one* of the following questions result in a "YES," the space is classified as a Permit-required Confined Space.

- ❑ YES ❑ NO Is the Oxygen Content below 19.5% or above 23.5%?
- ❑ YES ❑ NO Are flammable gases and/or vapors present at or in excess of 10% of their Lower Flammable Limit (LFL)?
- ❑ YES ❑ NO Is airborne combustible dust present at a concentration that exceeds its Lower Flammable Limit?
- ❑ YES ❑ NO Are any substances from OSHA's Toxic and Hazardous Substance list present in concentrations above Dose or Permissible Exposure Limits?
- ❑ YES ❑ NO Is there any material in the space that could potentially engulf the entrant?
- ❑ YES ❑ NO Could the entrant be trapped or asphyxiated by inwardly converging walls or a floor that slopes downward or tapers to a smaller cross section?
- ❑ YES ❑ NO Are there any other recognizable safety or health hazards?

❑ Regardless of whether the space is classified as a Permit-required Confined Space, document the results of your observations and tests and keep them in a safe and readily accessible location.

❑ If the space is not classified as a Permit-required Confined Space, workers may enter. Periodically test the atmosphere for changes that could make the space hazardous. Go no further with this program, unless changing conditions require reclassification to a Permit-required Confined Space.

❑ If the space is classified as a Permit-required Confined Space, inform your employees about the hazards of entry and instruct them not to enter until they are properly trained and entry is approved.

❑ Use forced-air ventilation to ventilate the space. Re-test for the hazards described above.

❑ Go to MCAA's Model Permit-required Confined Space Entry Programs starting on the next page. Choose either Model A or Model B depending upon your specific situation. (See Appendix I for help in determining which model to use.) Tailor the program to meet your company's specific confined space entry requirements and implement your new program.

Model Confined Space Entry Program

Model A

For Entry Without A Permit

(Choose this model when ventilation effectively eliminates the hazards)
(See Appendix I for details)

(Type In Your Company Name Here)

Confined Space Entry Program for

(Type in the Job Name Here)

Located at

(Type in the Job Site Address Here)

_____

_____

_____

_____

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Introduction:

(Type in your company name) has determined that entry into an area classified by OSHA as a Permit-required Confined Space is necessary to perform the required mechanical (construction or service) work. The hazardous condition(s) that make the space a Permit-required Confined Space include (type in the hazard(s) such as oxygen-deficiency, presence of toxic gases, etc.). It has been established that forced-air ventilation maintains a safe atmosphere inside the space and entry will be done without a permit. The purpose of this program is to protect our workers, who will enter the space, from confined space hazards.

This confined space program applies to all company employees who are required to enter into a Permit-required Confined Space. Before starting work on this project, all company employees who will work at this job site will be:

- informed about the presence and location of the Permit-required Confined Spaces(s);
- informed about the specific hazards which require classifying the space as a Permit-required Confined Space; and
- instructed not to enter the space for any reason until the appropriate training has been completed and entry has been authorized following the completion of the pre-entry checklist.

Permit-required Confined Spaces

(Briefly describe the Permit-required Confined Space that your workers must enter. Include a brief description of the type and location of the work to be performed. For example – Entry is required into a sewer line, which will be accessed through a manhole on the West Side of the plant. The workers will be unplugging and repairing branch lines that run out to the main sanitary sewer system).

Potential Hazards

(Type in the potential hazard(s) in bullet form below. For example –)

- (Methane Gas - Explosive /flammable;)
- (Oxygen deficient atmosphere, etc.)
- (Etc.)

Entry

- All confined spaces are treated as Permit-required Confined Spaces until pre-entry procedures determine that the atmosphere inside is safe for entry.
- Forced-air ventilation maintains a safe atmosphere inside the Permit-required Confined Space. Work will take place without a Permit. A Pre-entry Checklist will be used. (Model Pre-entry Checklist in Appendix IV).
- All employees who will enter the confined space will successfully complete training covering:
  - ❑ control of atmospheric and engulfment hazards;
  - ❑ surveillance of surrounding areas for the purpose of hazard avoidance;
  - ❑ testing of the atmosphere;
  - ❑ safe entry procedures; and
  - ❑ rescue.
- Training will be completed:
  - ❑ before the work is assigned;
  - ❑ before there is a change in assigned duties;
  - ❑ whenever there is a change in operations that presents a new hazard;
  - ❑ whenever there are deviations from established entry procedures; and
  - ❑ whenever inadequacies in a worker's knowledge on the subject become evident.
- A written copy of operating and rescue procedures will be available at the job site for the duration of the job.
- The Confined Space Pre-entry Checklist will be completed by (type in the name of your designated "Lead Worker") who is our designated Lead Worker for this project.
- The checklist will be kept at the job site for the duration of the job.
- If there is an interruption in the work, the space will be reevaluated and a new check list will be completed before re-entry occurs.

Control of Atmospheric and Engulfment Hazards

- All pumps, pipes or lines that may cause contaminants to flow into the space will be:
  - ❑ disconnected;
  - ❑ shut down and locked out according to established lockout/tagout procedures; or
  - ❑ effectively isolated by other means.

Surveillance

- The area surrounding the confined space will be surveyed to avoid hazards such as drifting vapors from (type in the appropriate response such as tanks, pipes, lines, sewers, etc.).

Testing

- The atmosphere inside the confined space has been tested to determine whether dangerous air contamination and/or oxygen-deficiency exists.
- (Type in the type of direct reading gas monitoring equipment you used, such as detector tubes, alarm—only gas monitors, explosion meters, etc.) was used for atmospheric testing.

- Testing was performed by the (type in the name of the designated "Lead Worker").
- (Type in the name of the "Lead Worker") received gas detector training for the (type in the brand name, type and model of the gas monitor to be used) on (type in the date of training).
- The minimum test parameters (type in the parameters, such as oxygen-deficiency, Lower Flammable Limit (LFL) for methane gas, etc.).
- A written record of pre-entry test results will be kept at the job site for the duration of the job.
- Before entry into the confined space is authorized, the Supervisor (type in the name of the supervisor) will certify in writing, based on the results of the pre-entry testing, that the space is safe for entry.
- Affected workers will be permitted to access and review the testing results at any time.
- When there are two adjoining or connecting confined spaces, the most hazardous conditions will govern how work is to be performed.

Entry Procedures

- Entry into the confined space will be permitted when:
- there are no atmospheric hazards present;
- pre-entry tests show there is no dangerous air contamination and/or oxygen-deficiency within the confined space; and
- there is no reason to believe that any hazardous conditions are likely to develop.
- Continuous testing of the atmosphere within the confined space in the immediate vicinity of the workers within the space will be performed.
- All workers inside the confined space will exit the space immediately if any of the gas monitor alarm set points are reached.
- The workers will not return to the area until the Supervisor (type in the name of the supervisor) who completed gas monitor training for the (type in the brand name, type and model of the direct reading gas monitor to be used) on (type in the date of the training) has used the monitor to determine that it is safe to enter.

Rescue

- Arrangements for rescue services will not be made unless conditions change requiring the use of a permit.

Model Confined Space Entry Program

Model B

For Entry Where a Permit is Required

(Choose this model when ventilation does not eliminate the hazards)
(See Appendix I for details)

(Type In Your Company Name Here)

Confined Space Entry Program for

(Type in the Job Name Here)

Located at

(Type in the Job Site Address Here)

_____

_____

_____

_____

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Introduction

(Type in company name) has determined that entry into an area classified by OSHA as a Permit-required Confined Space is necessary to perform the required mechanical (construction or service) work. The hazardous condition(s) that make the space a Permit-required Confined Space include (type in the hazard(s) such as oxygen-deficiency, presence of toxic gases, etc.). It has been established that forced-air ventilation does not eliminate the hazard(s). The purpose of this program is to protect our workers, who will enter the space, from confined space hazards.

This confined space program applies to all company employees who are required to enter into a Permit-required confined space. Before starting work, all company employees who will work at this job site will be:

- informed about the presence and location of the Permit required confined Space(s);
- informed about the specific hazards which lead to the classification of the space as Permit-required; and
- instructed not to enter the space for any reason until the appropriate training has been completed and the entry permit has been approved.

Permit-required Confined Spaces

(Briefly describe the Permit-required Confined Space that your workers must enter. Include a brief description of the type of work to be performed and approximate location of the space on the job site. For example – Entry is required into a sewer line, which will be accessed through the manhole on the West Side of the building maintenance area. The workers will be unplugging and repairing branch lines that run out to the main sanitary sewer system).

Potential Hazards

(Type in the potential hazards in bullet form below. For example -)

- (Methane Gas – Explosive/flammable;)
- (Oxygen-deficient atmosphere;)
- (Etc.)

Entry

- All spaces are treated as Permit-required Confined Spaces until pre-entry procedures determine that the atmosphere inside the space is safe for entry.
- Forced-Air Ventilation has not maintained a safe atmosphere inside the space. An Entry Permit will be used (Model Permit in Appendix V).
- All employees permitted to enter a confined space will successfully complete training covering:
  - control of atmospheric and engulfment hazards;
  - surveillance of surrounding areas for the purpose of hazard avoidance;
  - testing of the atmosphere;
  - space ventilation;
  - entry procedures; and
  - rescue.
- Training will be completed:
  - before work is assigned;
  - before there is a change in assigned duties;
  - whenever there is a change in operations that presents a new hazard;
  - whenever there are deviations from established entry procedures; and
  - whenever inadequacies in a worker's knowledge on the subject become evident.
- A written copy of operating and rescue procedures will be available at the job site for the duration of the job.
- The Permit will be completed before it is submitted for approval.
- The Permit will verify completion of:
  - control of atmospheric and engulfment hazards;
  - surveillance of surrounding areas for the purpose of hazard avoidance;
  - testing of the atmosphere;
  - space ventilation;
  - entry procedures; and
  - rescue.
- The Permit will be kept at the job site for the duration of the job.
- If there is an interruption in the work, the space will be reevaluated and a new Permit will be completed.

Control of Atmospheric and Engulfment Hazards

- All pumps, pipes or lines that may cause contaminants to flow into the space will be:
  - disconnected;
  - shut down and locked out according to established lockout/tagout procedures; or
  - effectively isolated by other means.

Surveillance

- The area surrounding the confined space was surveyed to avoid hazards such as drifting vapors from (type in the appropriate response such as tanks, pipes, lines, sewers, etc.).

Testing

- The atmosphere inside the confined space was tested to determine whether dangerous air

contamination and/or dangerous oxygen concentrations exist.

- (Type in the type of direct reading gas monitoring equipment you used, such as detector tubes, alarm only gas monitors, explosion meters, etc.) was used for atmospheric testing.
- Testing was performed by the Supervisor (type in the name of the supervisor).
- (Type in the name of the supervisor) received gas detector training for the (type in the brand name, type and model of the gas monitor to be used) on (type in the date of training).
- The minimum test parameters are: (type in the parameters such as oxygen-deficiency, Lower Flammable Limit (LFL) for methane gas, etc.)
- A written record of pre-entry test results will be kept at the job site for the duration of the job.
- Affected workers will be permitted to access and review the testing results at any time.
- When there are two adjoining or connecting confined spaces, the most hazardous conditions will govern how the work is to be performed.

Space Ventilation

- Mechanical ventilation systems will be set at 100% outside air.
- Additional (type in additional ventilation sources where applicable such as manholes, doorways, etc.) will be opened to increase air circulation.
- Portable blowers will be used to augment natural circulation if needed.
- Testing will be repeated after a suitable ventilation period.

Entry Procedures

- The following procedures will be observed where: (delete all those that do not apply; ventilation does not correct dangerous and/or deficient conditions inside the space; unsafe conditions are expected to develop; automatic fire suppression systems can't be deactivated and it is not feasible to provide workers with a quick safe exit; or an emergency exists and it is not feasible to wait for pre-entry procedures to take effect).
- All affected workers must have the proper training before entry begins.
- All workers entering the space will have appropriate respiratory protection.
- At least one worker will be stationed outside the space to assist in case of an emergency.
- The standby worker will have a self-contained breathing apparatus available for immediate use.
- At least one additional worker will be within sight or call of the standby worker.
- All workers entering the space will use a safety harness attached to a lifeline that is secured outside the opening.
- (Choose either–The Safety Harness will be capable of holding a person upright; or, entry will be made through side openings).
- Continuous powered communications will be maintained between the workers within the space and the standby worker.
- If there is any questionable action or non-movement by a worker inside, a verbal check will be made.
- If there is no response, the worker will be removed immediately.
- The standby worker will attempt to remove a disabled worker from outside the space by using the attached lifeline.
- The standby worker may enter the space only: in an emergency; after being relieved by a backup standby worker; and is always required to wear a self-contained breathing apparatus.

- If a worker inside a space is injured from a fall or by other impact, he or she will not be moved unless there is immediate danger to life.
- If the injured worker is not to be moved, local rescue personnel will be summoned immediately.
- Where the use of a hoisting device, safety harness and/or wristlets may endanger a worker, their use will be discontinued.
- Only Class 1, Division 1 rated lighting and electrical equipment will be used inside confined spaces where explosive or flammable substances are present.
- Continuous gas monitoring will be performed throughout confined space entry operations.

Rescue

- Local rescue personnel will be summoned during emergency situations.
- Where immediate hazards to an injured person are present, workers at the site will implement emergency procedures.

Appendices

Appendix I – Help on Choosing the Correct Model

- The term ***Permit-required Confined Space*** means that the space contains hazards that must be addressed before entry can occur. Under certain conditions you may enter ***Permit-required Confined Spaces*** without going through the permit process (without a permit). You may allow your workers to enter a Permit-required Confined Space without a permit provided that:
  - the only hazard is an actual or potential hazardous atmosphere;
  - forced-air ventilation alone maintains the space for safe entry;
  - your monitoring and inspection data supports the two preceding criterion;
  - where entry is required to obtain initial monitoring and inspection data the Permit-required Confined Space Program, Permit System, Entry Permit, Training, Duties of Authorized Entrants, Duties of Attendants, Duties of Entry Supervisors and Rescue and emergency Services provisions of the standard are to be followed;
  - monitoring and inspection data is documented and made available to each employee who is to enter the Permit-required Confined Space; and
  - the procedures established by the standard for entry into a Permit-required Confined Space without a permit are followed.

- If you meet these criterion you may choose **Model A** (For Entry Without a Permit).

- If you do not meet all of these criterion you must use **Model B** (For Entry Where a Permit is Required).

Appendix II – Summary of OSHA's Permit-required Confined Space Standard

General Requirements:

- Employers must evaluate the workplace to determine whether there are any Permit-required Confined Spaces on the job site.
- Employers must post danger signs or otherwise inform employees about Permit-required Confined Spaces, their locations and dangers.
- Employers must take measures to prevent employees from unauthorized entry into Permit-required Confined Spaces.
- Employers must develop and implement written confined space entry programs for entry into Permit-required Confined Spaces.
- Under certain conditions employers may enter spaces identified as Permit-required Confined Spaces without a permit. See Appendix I of this publication for details.
- When changes occur in non-Permit-required Confined Spaces that could create hazards; employers must re-evaluate and reclassify the spaces if necessary.
- Under certain conditions a Permit-required Confined Space may be reclassified as non-Permit-required . Refer to the standard at 29 CFR 1910.146 (c) (7).
- When a host employer contracts work out with another employer, the host employer must work carefully with the contractor to ensure compliance with the Permit-required Confined Space program, coordination and cooperation with contractors and protection for all workers that will enter a Permit-required Confined Space.
- Contractors must also ensure compliance with the Permit-required Confined Space program as well as coordination and cooperation with all other applicable employers.
- Employee representatives must have access to any information provided to employees under the standard.
- Where entry into a Permit-required Confined Space is permissible without a permit, employees and employee representatives must be given the opportunity to observe the testing of the space during pre-entry procedures and during entry.

Permit-required Confined Space Program:

- Employers must implement measures to prevent unauthorized entry.
- Employers must identify and evaluate the hazards before workers can enter the spaces.
- Employers must develop and implement the procedures necessary for safe entry including:
  - specifying acceptable entry conditions;
  - isolating Permit-required Confined Spaces;
  - purging, flushing or ventilating the spaces to control the hazards;
  - providing pedestrian, vehicle or other barriers as necessary to protect entrants; and
  - verifying that conditions in the space are acceptable throughout the entry.
- Employers must provide the necessary equipment such as:
  - testing and monitoring equipment;
  - ventilation equipment;
  - communications equipment;

- personal protective equipment;
- lighting equipment;
- barriers to protect entrants from external hazards such as vehicles, etc.;
- equipment for ingress and egress such as ladders;
- rescue and emergency equipment;
- any other equipment necessary for safe entry and rescue.

- Employers must evaluate Permit-required Confined Space conditions as follows:
  - test to ensure that conditions are acceptable before entry;
  - test throughout the entry process to ensure that conditions remain acceptable;
  - test for oxygen first, combustible gases/vapors second and toxic gases/vapors last.

- Employers must provide at least one attendant outside the Permit-required Confined Space.

- When an attendant is assigned to cover more than one Permit-required Confined Space employers must include in the permit program the procedures for the attendant to respond to emergencies without distraction from his or her responsibilities.

- Employers must designate the individuals who will have active roles in the permit entry such as authorized entrants; attendants, entry supervisors, etc.

- Employers must develop and implement procedures for summoning rescue and emergency services.

- Employers must develop a system for issuing and canceling entry permits.

- Employers must develop and implement procedures for coordinating entry operations when workers from more than one employer are working in the Permit-required Confined Space.

- Employers must develop and implement procedures for concluding Permit-required Confined Space entry such as closing off the Permit-required Confined Space and canceling entry permits.

- Employers must review entry operations when there is reason to believe that present measures, are not enough to protect workers inside Permit-required Confined Spaces.

- Employers must review the Permit-required Confined Space program, using any cancelled permits within one year after entry and revise the program as necessary.

Permit Systems:

- Employers must document the completion of measures taken such as testing, monitoring, purging, ventilating, etc., before authorizing entry.

- The entry supervisor must sign the entry permit before entry begins.

- The completed permit must be available to all authorized entrants at the time of entry.

- The duration of the permit must not exceed the time required to complete the work.

- The entry supervisor must terminate entry and cancel the entry permit when:
  - entry operations are completed; or
  - a condition arises that is outside the parameters of the entry permit.

- Employers must retain each cancelled entry permit for at least one year to facilitate review of the Permit-required Confined Space Program.

Entry Permit:

- Entry permits must identify:
  - the Permit-required Confined Space to be entered;
  - the purpose of the entry;
  - the date and authorized duration of the permit;
  - the authorized entrants by name;
  - the attendants by name;
  - the entry supervisor by name;
  - the hazard(s) of the Permit-required Confined Space;
  - the measures to be used to isolate the Permit-required Confined Space and control the space hazards;
  - the acceptable entry conditions;
  - the results of all tests on the Permit-required Confined Spaces, and names of testers and test locations;
  - the rescue and emergency services and the means to summon them;
  - the communication procedures between entrants and the attendant;
  - the equipment to be used for worker protection, testing, communication, rescue, etc.
  - any other necessary information; and
  - any additional permits, i.e. hot work permits issued to authorize work in the space.

Training:

- Employers must provide training for all workers involved with Permit-required Confined Space entry.

- Employers must provide the training;
  - before the worker is assigned Permit-required Confined Space entry duties;
  - before there is a change in assigned duties;
  - whenever there is a change in operations that presents a new hazard;
  - whenever the employer believes there are deviations from the entry procedures; and
  - whenever inadequacies surface regarding an employee's knowledge of procedures.

- The training must establish employee proficiency in his or her duties.

- New or revised entry procedures must be introduced as necessary.

- Employers must certify that the required training has been accomplished.

- Certification must show worker's names, signatures of trainers and dates of training.

- Certification documents must be available to workers and authorized representatives.

Duties of Authorized Entrants:

- Employers must ensure that all authorized entrants:
  - know the hazard(s) they may face during entry;
  - properly use the equipment provided to them;
  - communicate with the attendant as necessary;
  - alert the attendant when hazard warning signs or prohibited conditions occur;
  - exit from the space immediately when ordered by the attendant/supervisor to do so;
  - exit from the space immediately when hazard warning signs occur;
  - exit from the space immediately when prohibited conditions become evident; and
  - exit the space immediately when an evacuation alarm sounds.

Duties of Attendants:

- Employers must ensure that each attendant:
  - knows the hazard(s) that entrants may face during entry;
  - is aware of behavioral effects of hazard exposure;
  - maintains an accurate system to identify, count and keep track of entrants;
  - remains outside the Permit-required Confined Space until relieved by another attendant;
  - communicates with entrants as necessary;
  - monitors activities inside and outside the space to ensure that the space remains safe;
  - orders evacuation when a prohibited condition occurs;
  - orders evacuation when he or she detects behavioral effects of hazard exposure;
  - orders evacuation when a situation outside the space endangers the entrants;
  - orders evacuation if he or she cannot effectively perform their duties as attendant;
  - summon rescue/emergency services when entrants need assistance to escape;
  - warn unauthorized persons to stay away from the Permit-required Confined Space;
  - advise unauthorized persons to exit immediately if they enter the space;
  - inform authorized entrants and entry supervisor if unauthorized person enters;
  - perform non-entry rescues as specified by the employer's rescue procedures; and
  - perform no duties that interfere with attendant's primary Permit-required Confined Space duties.

Duties of Entry Supervisor:

- Employers must ensure that each entry supervisor:
  - knows the hazards that may be faced during entry;
  - verifies that all appropriate entries have been made on the permit;
  - verifies that all tests specified by the permit have been conducted;
  - verifies that all procedures and equipment specified by the permit are in place;
  - terminates entry and cancels permits as required;
  - verifies that rescue services are available;
  - verifies that the means to summon rescue services are operable;
  - removes unauthorized persons who enter or attempt to enter the Permit-required Confined Space;
  - determines that entry operations remain consistent in terms of entry permits; and
  - determines that entry operations remain consistent regarding space conditions.

Rescue and Emergency Services:

- Employers that designate rescue and emergency services required for Permit-required Confined Space entry (where permits are required) must evaluate the prospective rescuer's ability to respond in a timely manner and proficiency with rescue-related tasks and equipment.
- The selected rescue team or service must have the capability to reach victims in a time frame appropriate for Permit-required Confined Space hazards and be equipped and proficient in performing the needed rescue services.
- Employers must inform each rescue team or service about the hazards they may confront during rescue operations.

- Employers must provide the rescue team or service with access to all Permit-required Confined Spaces from which rescue may be necessary.

- Employers with employees designated to provide rescue and emergency services must;
  - provide the personal protective equipment necessary for safe rescue;
  - provide appropriate rescue training;
  - provide CPR and first-aid training;
  - ensure that the designated employees practice Permit-required Confined Space rescues at least once each year.

- Worker retrieval systems must be used unless doing so would create a greater hazard;

- Retrieval systems must:
  - use a chest or full body harness;
  - have a retrieval line attached at the center of the entrant's back at shoulder level;
  - have the other end of the retrieval line attached to a mechanical retrieval device.

- Wristlets may be used in lieu of a chest or full body harness if the chest or body harness is infeasible or creates a greater hazard.

- If an entrant is exposed to a substance for which a material safety data sheet (MSDS) is required, that MSDS must be made available to the emergency medical treatment facility.

Employee Participation

- Employers must consult with affected employees and their authorized representatives on the development and implementation of **all** aspects of the Permit-required Confined Space program under the General Requirements section of the standard.

Appendix III - Definitions

Acceptable Entry Conditions means the conditions that must exist in a Permit-required Confined Space to allow entry and to ensure that employees involved with a Permit-required Confined Space entry can safely enter into and work within the space.

Attendant means an individual stationed outside one or more Permit-required Confined Spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's Permit-required Confined Space program.

Authorized Entrant means an employee who is authorized by the employer to enter a Permit-required Confined Space.

Blanking or Blinding means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, lien, or duct with no leakage beyond the plate.

Confined Space means a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
3. Is not designed for continuous employee occupancy.

Double Block and Bleed means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the Permit-required Confined Space that could endanger entrants.

Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry means the action by which a person passes through an opening into a Permit-required Confined Space. Entry includes ensuring work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Permit (Permit) means the written or printed document that is provided by the employer to allow and control entry into a Permit-required Confined Space and that contains the information specified in paragraph (f) of this section.

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-required Confined Space where entry is planned, authorizing entry and overseeing entry operations, and 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.

Hazardous Atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is to, escape unaided from a Permit-required Confined Space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
2. Airborne combustible dust at a concentration that meets or exceeds its LFL;

Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in 29 CRF 1910 Subpart G, Occupational Health and Environmental Control, or Subpart Z, Toxic and Hazardous Substances, and which could result in employee exposure in excess of its dose or Permissible Exposure Limit (PEL);

Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

5. Any other atmospheric condition that is immediately dangerous to life or health.

Note: For air contaminants for which OSHA has not determined a Dose or Permissible Exposure Limit (PEL), other sources of information, such as Material Safety Data Sheets that comply with OSHA's Hazard Communication Standard, §1910.1200 published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Hot Work Permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately Dangerous to Life or Health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a Permit-required Confined Space.

Note: Some materials – hydrogen fluoride gas and cadmium vapor, for example – may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12 hours to 72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

Inerting means the displacement of the atmosphere in a Permit-required Confined Space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Note: This procedure produces an IDLH oxygen-deficient atmosphere.

Isolation means the process by which a Permit-required Confined Space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line Breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Non-permit Confined Space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen Deficient Atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-required Confined Space (Permit Space) means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard.

Permit-required Confined Space Program (Permit Space Program) means the employer's overall program for controlling, and, where appropriate, for protecting employees from, Permit-required Confined Space hazards and for regulating employee entry into Permit-required Confined Spaces.

Permit System means the employer's written procedure for preparing and issuing permits for entry and for returning the Permit-required Confined Space to service following termination of entry.

Prohibited Condition means any condition in a Permit-required Confined Space that is not allowed by the permit during the period when entry is authorized.

Rescue Service means the personnel designated to rescue employees from Permit-required Confined Spaces.

Retrieval System means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for a non-entry rescue of persons from Permit-required Confined Spaces.

Testing means the process by which the hazards that may confront entrants of a Permit-required Confined Space are identified and evaluated. Testing includes specifying the tests that are to be performed in the Permit-required Confined Space.

Note: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

Appendix IV – Model Confined Space Pre-entry Checklist

_____ Unsafe conditions for removing an entrance cover are eliminated.

_____ Entrance openings are guarded to prevent workers and objects from falling into the space.

_____ Oxygen content tested and suitable for entry.

_____ Flammable gases and vapors tested and space suitable for entry.

_____ Potential toxic air contaminants tested and space suitable for entry.

_____ Forced-air ventilation has eliminated any hazardous atmosphere.

_____ Forced-air ventilation ventilates the immediate area where work is performed.

_____ Forced-air ventilation continues until all workers have left the space.

_____ All test results are documented.

_____ Air supply for the forced-air ventilation is clean and does not increase hazards in the space.

_____ Atmosphere inside the space is periodically tested as necessary.

_____ The employer has taken the required pre-entry procedures through a written certification process.

_____ Certification includes date, location of space and the signature of the certifying person.

_____ The employer has verified that the space is safe for entry.

Appendix V – Model Confined Space Entry Permit

(You will probably have to tailor this Model Permit to meet specific job needs. The way it appears now meets OSHA's Permit System requirements. Make sure your tailored permit meets the requirements as well.)

Date & Time Issued: _____ Date & 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.F.L.	
Toxic	PPM	

2. Tester's signature _____

3. Source isolation (No Entry)	N/A	Yes	No
Pumps or lines blinded, disconnected, or blocked, etc.	❑	❑	❑
4. Ventilation Modification Mechanical	❑	❑	❑
Natural Ventilation only	❑	❑	❑

5. Atmospheric check after Isolation and ventilation:

Oxygen	%	>19.5%
Explosive	% L.F.L	<10
Toxic	PPM	<10 PPM H_2S
Time		

Testers signature _____

6. Communication procedures _____

7. Rescue procedures _____

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	❑	❑	❑
Appropriate respirators	❑	❑	❑
SCBA's for standby persons	❑	❑	❑
Protective clothing	❑	❑	❑
All electric equipment listed Class I, Division I, Group D and Non-sparking tools	❑	❑	❑

10. Periodic atmospheric tests:

Oxygen_____%	Time _____	Oxygen_____%	Time _____
Oxygen_____%	Time _____	Oxygen_____%	Time _____
Explosive _____%	Time _____	Explosive _____%	Time _____
Explosive _____%	Time _____	Explosive _____%	Time _____
Toxic _____%	Time _____	Toxic _____%	Time _____
Toxic _____%	Time _____	Toxic _____%	Time _____

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

Permit prepared by: _____

Approved by: _____

Reviewed by: _____

(Print Name) _____ (Signature) _____

This permit is to be kept at the job site. Return job site copy to the supervisor.

SECTION V

MCA MODEL LOCKOUT / TAGOUT PROGRAM

Model Lockout Program

Introduction

The term Lockout/Tagout refers to the control of hazardous energy during the servicing or maintenance of machines and equipment. Hazardous energy that mechanical construction and service workers may be exposed to includes electrical, mechanical, thermal, pneumatic and chemical.

OSHA has a standard that covers Lockout/Tagout for general industry. The standard, applies to mechanical service work and prefabrication shops, but does not apply to actual construction work. However, this model program will be useful to construction employers because they are still required to protect their workers from "recognized hazards" and construction owners are more frequently requiring Lockout/Tagout Programs despite the absence of an OSHA standard for construction.

MCAA's Model Lockout/Tagout Program is designed to make the development of written Lockout and/or Tagout procedures as easy and cost effective as possible. MCAA thanks the **Mechanical Contracting Foundation** for making the production of this model possible. The model is a product of **MCAA's Safety Excellence Initiative.**

This model program is not intended to provide exhaustive treatment on the subject of controlling hazardous energy (Lockout/Tagout) for the mechanical construction and service industry. It should not be used as a substitute for reading and interpreting federal or state OSHA regulations or any other pertinent state or local laws, rules, regulations or standards. Further, it is not intended to provide legal advice. Employers must make independent determinations regarding the need for legal assistance.

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Instructions

Carefully read the instructions below. If you have any questions that are not answered in this publication, please contact MCAA.

1. Read the definitions for **"Affected Employee" and "Authorized Employee"** at the top of the first page in Appendix III (page 7-APP).

2. Read through the checklist on the next page which highlights the key areas you will need to address when implementing your lockout or tagout program.

3. Turn to the appropriate model program at the pages that follows the checklist (See Appendix I – Help on Choosing the Correct Model if you are not sure which model to use).

4. Read through the model program. Obvious areas that require your attention will be in smaller, bolded font and underlined. For example, where you see (**type in the machine, equipment or process to be shut off and isolated**) you are prompted to type in the requested information.

5. After reading through the model program, place the disk in your computer and bring the program up on the screen. Go through the program and make changes, additions and deletions where necessary.

6. Fill in the information where you are prompted to do so. Be sure not to leave any of the smaller, bolded, underlined font in your program. Delete these areas which are only there to prompt you to take action in specific areas.

7. Be sure to take everything out of the program that does not apply.

8. Go back through and re-read every word of your tailored program. The sections that do not prompt you to make changes may still require changes. If you have any questions about any particular section, refer to the appendices in this publication.

9. Implement your new lockout or tagout program using the compliance checklist to ensure that you are covering all the required areas.

10. If you have any questions or need any additional information call MCAA at 301-869-5800.

Compliance Check List

_____ Read OSHA's Lockout/Tagout Standard.

_____ Identify machines, equipment or processes to be shut down and isolated.

_____ Determine whether lockout devices can be used.

_____ Based on your findings develop a written lockout or tagout program using either Model A or Model B in this publication.

_____ If a tagout system is used, ensure that the workers are afforded protection equal to that provided by a lockout system.

_____ Establish energy control procedures.

_____ If applicable, provide the hardware to isolate, secure or block the energy sources.

_____ Periodically inspect the established energy control procedure(s).

_____ Ensure that all authorized employees, affected employees and all other employees receive the proper training.

_____ Ensure that lockout/tagout is performed only by the authorized employee who, will actually be doing the work.

_____ Ensure that affected employees are notified by the employer or authorized employee about the application and removal of lockout/tagout devices.

_____ Follow the procedures you established for preparation of shutdown.

_____ Shutdown the machine or equipment using your program's procedures.

_____ Apply the lockout/tagout devices.

_____ Relieve, disconnect or restrain stored energy.

_____ Ensure that the authorized employee verifies that isolation and deenergization are accomplished before starting work.

_____ Ensure that the area is inspected before removing lockout/tagout devices.

_____ Ensure that all employees are safely positioned.

_____ Ensure that lockout/tagout devices are removed only by the employee who applied them.

Model Lockout Program

Model A

(Choose this model when using a Lockout System)

(Type In Your Company Name Here)

Lockout Program for

(Type in the Job Name Here)

Located at

(Type in the Job Site Address Here)

_____

_____

_____

_____

Table of Contents

Introduction

(Company Name) will be performing work on **(type in the name of the machine, equipment or process where company employees could be exposed to a source of hazardous energy).** This lockout program was developed to protect the company's Authorize Employees from hazardous sources of energy while the **(type in servicing, maintenance or construction work)** is being performed by establishing procedures for:

- employee training;
- energy control; and
- periodic inspections of the established process.

This lockout program applies to all company employees and other employer's employees who are Authorized Employees, Affected Employees or otherwise assigned to work in close proximity to the (type in the name of the machine, equipment or process).

Employee Training

- Before (type in servicing, maintenance or construction work) begins all employees will be trained as follows.

Authorized Employees — will receive training on:

- how to recognize hazardous sources of energy;
- the types of hazardous energy they could be exposed to;
- the magnitude of the energy they could be exposed to;
- the methods necessary to isolate and control potentially hazardous energy; and
- the means necessary to isolate and control potentially hazardous energy.

Affected Employees — will receive training on:

- the presence of the energy control procedures
- the purpose of the energy control procedures; and
- the use of the energy control procedures.

All Other Applicable Employees — will be trained on:

- the energy control procedures; and
- prohibitions against re-energizing locked out machines, equipment or processes.

Retraining — will be provided for Authorized and Affected Employees:

- when changes occur that present a new hazard; or
- when there is a change in the energy control procedure.

Additional Retraining — will be provided whenever there is concern about an employees knowledge or use of the energy control procedures.

Lockout Procedure

Purpose

- This procedure establishes the minimum requirements for the lockout of (type in the name of the machine, equipment of process).

Compliance with this Program

- All employees are required to comply with the restrictions and limitations imposed upon them throughout the use of the lockout procedure.
- Any employee who is found to be in violation of the procedure will be:

  – dismissed without pay for the day (first offense); and

  – discharged (second offense).
- Only Authorized Employees will perform the lockout in accordance with this procedure.
- No employee who observes lockout on (type in the name of the machine, equipment or process) will attempt to start, energize or use it.

Lockout Sequence

- All Affected Employees listed below will be notified by the Authorized Employee that (type in servicing, maintenance or construction work) is required on (type in the name of the machine, equipment or process) and that it must be shut down and locked out.

Affected Employees (Type in Names)	**Job Titles** (Type in Job Titles)
_____	_____
_____	_____
_____	_____

- Notification will take place verbally and through a written notice at a pre-lockout meeting before the energy control methods are applied.
- Employees will sign and return the written notice before leaving the meeting.
- The Authorized Employee will refer to the company procedure for identifying the type of hazardous energy and its magnitude with regard to worker safety.
- The Authorized Employee will understand the hazards associated with the energy.
- The Authorized Employee will know the methods needed to control the hazardous energy.

Type(s) of Hazardous Energy (Type in the energy such as electrical, thermal, etc.).

1. _____
2. _____
3. _____

Potential Hazards (Type in hazards such as electrocution, burns, etc.).

1. _____
2. _____
3. _____

Magnitude(s) of the Energy (Type in magnitudes such as voltage, temperature, etc.).

1. _____
2. _____
3. _____

Methods of Control (Type in methods such as shut off power or stream line & lock it out).

1. _____
2. _____
3. _____

- The Authorized Employee will shut down the (type in the name of the machine, equipment or process) by (type in the normal stopping procedure such as depressing the stop button, opening the switch, closing the valve, etc.).

Type(s) of Operating Controls (Type in the controls such as button, switch, valve, etc.).

1. _____
2. _____
3. _____

Location of Operating Controls (Type in location such as switch on the right side of the unit, etc.).

1. _____
2. _____
3. _____

- The Authorized Employee will de-activate the (type in the energy isolating device(s) such as a circuit breaker or line valve).

Energy Isolating Device(s) (Type in the device(s) such as circuit breaker, line valve, etc.).

1. _____
2. _____
3. _____

- The Authorized Employee will lockout the (type in the energy isolating device(s)) with (type in the lockout device(s) such as an assigned individual lock on the breaker box door or grate valve lockout device and assigned individual lock, etc.).
- The Authorized Employee will ensure that the stored or residual energy is (type in either dissipated or restrained) by (type in the method such as bleeding out a steam line, etc.).

Stored or Residual Energy (Type in the energy such as steam, compressed air, etc.)

1. _____
2. _____
3. _____

- The Authorized Employee will ensure that the (type in the machine, equipment or process) is disconnected from the energy source(s) by:

  – checking to ensure that no one is exposed to a hazard; and

  – verifying that isolation has been achieved by attempting to operate the (type in the name of the machine, equipment or process).

- The Authorized Employee will return the operating controls back to the neutral or "off" position.

Restoring to Service

- The Authorized Employee will check the (type in the name of the machine, equipment or process) to ensure that non-essential items have been removed and that all components are operationally in tact.
- The Authorized Employee will check the work area to ensure that all employees have been safely positioned or removed from the area.
- The Authorized Employee will verify that the controls are in neutral.
- The Authorized Employee will remove the lockout device(s) and re-energize the (type in the name of the name of the machine, equipment or process).
- The Authorized Employee will notify affected employees that the (type in servicing, maintenance or construction) has been completed and the (type in the name of the machine, equipment or process) is ready for use.

Periodic Inspections

- An Authorized Employee other than (type in either "the one" or "those") utilizing the energy control procedures being inspected will periodically inspect the procedures to ensure that the requirements are being followed. Periodic inspections will be performed at least annually.
- This inspector will correct any deviations or inadequacies identified during the inspection.
- The inspector will review with (type in either "the" or "each") Authorized Employee (type in his, her or their) responsibilities under the energy control procedures being inspected.
- Each time a periodic inspection is conducted the inspector will document in a written report the following:

  – the name of the machine, equipment or process;

  – the date of the inspection;

  – the names of each employee involved in the inspection;

  – the inspectors name;

  – if applicable a statement that no problems were found;

  – if applicable a description of any deficiencies or inadequacies;

  – if applicable the time the problem(s) was found.

  – if applicable the time the problem(s) was corrected; and

  – if applicable a description of how the problem(s) was corrected.
- The inspector will provide the supervisor with the report as soon as possible after the inspection is completed.
- The supervisor will verify and certify that the inspection was performed.

Model Tagout Program

Model B

(Choose this model when using a Tagout System)

(Type In Your Company Name Here)

Tagout Program for

(Type in the Job Name Here)

Located at

(Type in the Job Site Address Here)

_____

_____

_____

_____

Table of Contents

Introduction

(Company Name) will be performing work on (type in the name of the machine, equipment or process where company employees could be exposed to a source of hazardous energy). This tagout program was developed to protect the company's Authorized Employees from hazardous sources of energy while the (type in servicing, maintenance or construction work) is being performed by establishing procedures for:

- employee training;
- energy control; and
- periodic inspections of the established process.

This tagout program applies to all company employees and other employer's employees who are Authorized Employees, Affected Employees or otherwise assigned to work in close proximity to the (type in the name of the machine, equipment or process).

Employee Training

- Before (type in servicing, maintenance or construction work) begins all employees will be trained as follows.

Authorized Employees — will receive training on:

- how to recognize hazardous sources of energy;
- the types of hazardous energy they could be exposed to;
- the magnitude of the energy they could be exposed to;
- the methods necessary to isolate and control potentially hazardous energy; and
- the means necessary to isolate and control potentially hazardous energy.

Affected Employees — will receive training on:

- the presence of the energy control procedures
- the purpose of the energy control procedures; and
- the use of the energy control procedures.

All Other Applicable Employees — will be trained on:

- the energy control procedures; and
- prohibitions against re-energizing tagged out machines, equipment or processes.

All Employees — will be trained on the limitations of tags including:

- tags are only warning devices and provide no physical restraint;
- tags can only be removed with the authorization of the Authorized Employee;
- tags must be legible and understandable to all employees;
- tags and their means of attachment must be capable of withstanding the environmental conditions of the workplace;
- tags may evoke a false sense of security and their use must be understood as part of the overall energy control program; and
- tags must be attached securely so they cannot be inadvertently or accidentally removed.

Retraining — will be provided for Authorized and Affected Employees:

- when changes occur that present a new hazard; or
- when there is a change in the energy control procedure.

Additional Retraining — will be provided whenever there is concern about an employees knowledge or use of the energy control procedures.

Tagout Procedure

Purpose

- This procedure establishes the minimum requirements for the tagout of (type in the name of the machine, equipment of process).

Compliance with this program

- All employees are required to comply with the restrictions and limitations imposed upon them throughout the use of the tagout procedure.
- Any employee who is found to be in violation of the procedure will be:

  – dismissed without pay for the day (first offense); and

  – discharged (second offense).
- Only Authorized Employees will perform the tagout in accordance with this procedure.
- No employee who observes the tagout of (type in the name of the machine, equipment or process) will attempt to start, energize or use it.

Tagout Sequence

- All Affected Employees listed below will be notified by the Authorized Employee that (type in servicing, maintenance or construction work) is required on (type in the name of the machine, equipment or process) and that it must be shut down and locked out.

Affected Employees (Type in Names)	**Job Titles** (Type in Job Titles)
_____	_____
_____	_____
_____	_____

- Notification will take place verbally and through a written notice at a pre-tagout meeting before the energy control methods are applied.
- Employees will sign and return the written notice before leaving the meeting.
- The Authorized Employee will refer to the company procedure for identifying the type of hazardous energy and its magnitude with regard to worker safety.
- The Authorized Employee will understand the hazards associated with the energy.
- The Authorized Employee will know the methods needed to control the hazardous energy.

Type(s) of Hazardous Energy (Type in the energy such as electrical, thermal, etc.).

1. _____
2. _____
3. _____

Magnitude(s) of the Energy (Type in magnitudes such as voltage, temperature, etc.).

1. _____
2. _____
3. _____

Potential Hazards (Type in hazards such as electrocution, burns, etc.).

1. _____
2. _____
3. _____

Methods of Control (Type in methods such as shut off power or stream line & tag it out).

1. _____
2. _____
3. _____

- The Authorized Employee will shut down the (type in the name of the machine, equipment or process) by (type in the normal stopping procedure such as depressing the stop button, opening the switch, closing the valve, etc.).

Type(s) of Operating Controls (Type in the controls such as button, switch, valve, etc.).

1. _____
2. _____
3. _____

Location of Operating Controls (Type in location such as switch on the right side of the unit, etc.).

1. _____
2. _____
3. _____

- The Authorized Employee will de-activate the (type in the energy isolating device(s) such as a circuit breaker or line valve).

Energy Isolating Device(s) (Type in the device(s) such as circuit breaker, line valve, etc.).

1. _____
2. _____
3. _____

- The Authorized Employee will tagout the (type in the energy isolating device(s)) with durable tags and fastening devices.

- The Authorized Employee will ensure that the stored or residual energy is (type in either dissipated or restrained) by (type in the method such as bleeding out a steam line, etc.).

Stored or Residual Energy (Type in the energy such as steam, compressed air, etc.).

1. _____
2. _____
3. _____

- The Authorized Employee will ensure that the (type in the name of the machine, equipment or process) is disconnected from the energy source(s) by:

  – checking to ensure that no one is exposed to a hazard; and

  – verifying that isolation has been achieved by attempting to operate the (type in the name of the machine, equipment or process).

- The Authorized Employee will return the operating controls back to the neutral or "off" position.

Restoring to Service

- The Authorized Employee will check the (type in the name of the machine, equipment or process) to ensure that non-essential items have been removed and that all components are operationally in tact.

- The Authorized Employee will check the work area to ensure that all employees have been safely positioned or removed from the area.

- The Authorized Employee will verify that the controls are in neutral.

- The Authorized Employee will remove the tag(s) and re-energize the (type in the name of the machine, equipment or process).

- The Authorized Employee will notify affected employees that the (type in servicing, maintenance or construction) has been completed and the (type in the name of the machine, equipment or process) is ready for use.

Periodic Inspections

- An Authorized Employee other than (type in either "the one" or "those") utilizing the energy control procedures being inspected will periodically conduct inspections to ensure that the requirements are being followed. Periodic inspections will be performed at least annually.
- This inspector will correct any deviations or inadequacies identified during the inspection.
- The inspector will review with (type in either "the" or "each") Authorized Employee (type in his, her or their) responsibilities under the energy control procedures being inspected including the limitations of tags as described in the training section of this program.
- Each time a periodic inspection is conducted the inspector will document in a written report the following:

  – the name of the machine, equipment or process;

  – the date of the inspection;

  – the names of each employee involved in the inspection;

  – the inspectors name;

  – if applicable a statement that no problems were found;

  – if applicable a description of any deficiencies or inadequacies;

  – if applicable the time the problem(s) was found.

  – if applicable the time the problem(s) was corrected; and

  – if applicable a description of how the problem(s) was corrected.
- The inspector will provide the supervisor with the report as soon as possible after the inspection is completed.
- The supervisor will verify and certify that the inspection was performed.

Appendices

Appendix I – Help on Choosing the Correct Model

Lockout

Lockout — Lockout refers to the placement of a lockout device on an energy-isolating device such as a circuit breaker box or a steam pipe valve. The lockout device provides a physical restraint between the energy-isolating device and people in the area. The lockout device is usually controlled with a key or combination lock.

When to use Lockout — You must lockout hazardous sources of energy whenever lockout is feasible unless you can demonstrate that the use of a tagout system will provide worker protection that is equal to the protection that would be provided by a lockout system. It would be difficult at best for an employer to successfully make such a demonstration. Tagout systems are seldom used where lockout systems are feasible because lockout systems provide the best possible protection for workers.

Use MCAA's Model Lockout Program each time you plan to use a lockout system.

Tagout

Tagout — Tagout refers to the placement of a tagout device on an energy-isolating device such as a circuit breaker box or steam pipe valve. Tagout devices can be easily removed and provide only a visual warning to people who read them.

When to use Tagout — Tagout should only be used when a lockout system is not feasible. For example, if there is no mechanism in place that would accept a lock or lockout device a tagout system may be necessary.

Tagout System where Lockout System is Feasible — If you choose to use a tagout system where a lockout system is feasible you must provide full employee protection. In other words you must demonstrate that your tagout system will achieve a level of worker safety that is equivalent to the level of safety achieved by a lockout system. To achieve this you must at a minimum:

- attach the tagout device to precisely the same place the lockout device would have been attached;
- demonstrate full compliance with all tagout provisions; and
- implement additional safety measures such as blocking a controlling switch or removing a valve handle.

Use MCAA's Model Tagout Program each time you plan to use a tagout system.

Appendix II - Summary of OSHA's Lockout/Tagout Standard

Affected Employee — An employee working with or around machinery or equipment on which servicing or maintenance is being performed under lockout/tagout.

Authorized Employee — A person who locks or tags out machine or equipment to perform servicing or maintenance. An ***Affected Employee*** becomes an ***Authorized Employee*** when that employee's duties include performing service or maintenance under lockout/tagout.

Energy Control Program

- This standard covers the control of energy during servicing and/or maintenance of machines and equipment.
- The standard applies to all sources of stored energy from machines and equipment (such as electrical, thermal, pneumatic, mechanical, hydraulic, etc.) that could be unexpectedly released and result in worker injury.
- Employers must establish a program that includes energy control procedures, employee training and periodic inspections to ensure that applicable machines and/or equipment are isolated and rendered inoperative before service or maintenance work begins.
- Where a source of energy cannot be locked out a tagout system must be used.
- Where a source of energy can be locked out a lockout system will be used unless the employer can demonstrate that a tagout system will provide full employee protection.
- When a tagout device is used on equipment that could be locked out:

  – the device must be attached where the lockout device would have been attached;

  – the employer must demonstrate that the tagout system will be as safe as a lockout system.
- When using a tagout system the employer must demonstrate full compliance with all tagout provisions in the standard.
- When using a tagout system the employer must also demonstrate additional elements that are necessary to provide safety equivalent to a lockout system such as removal of a valve handle.
- Employers must establish, implement and document procedures for controlling potentially hazardous energy.
- The procedures must clearly and specifically outline the scope, purpose authorization, rules and techniques for the control of hazardous energy.
- The procedures must also include the means to enforce compliance including:

  – a specific statement of the intended use of the procedure;

  – specific procedural steps for shutting down, isolating, blocking and securing machines or equipment;

  – specific procedural steps for the placement, removal and transfer of lockout/tagout devices; and

  – specific requirements for testing a machine or equipment to verify the effectiveness of lockout/tagout devices and other energy control measures.
- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners or other hardware must be provided for controlling energy sources.
- Lockout/tagout devices must be singularly identified.

- Lockout/Tagout devices must be the only devices used for controlling energy.
- Lockout/Tagout devices must not be used for any other purpose.
- Lockout/Tagout devices must be capable of withstanding the surrounding environment.
- Tagout devices must be able to withstand all weather conditions without damage.
- Tags must be capable of withstanding corrosive environments where applicable.
- Lockout/Tagout devices must be standardized within a facility by color, shape, or size.
- The print on tagout devices must be standardized.
- Lockout devices must be substantial enough to prevent removal.
- Tagout devices must be substantial enough to prevent inadvertent or accidental removal.
- Tagout attachment devices must be non-reusable, attachable by hand and self-locking.
- Tagout attachment devices must have a minimum unlocking strength of 50 pounds.
- Lockout and Tagout devices must show the identity of the employee(s) applying them.
- Tagout devices used on energized machines or equipment must warn against hazardous conditions and include a legend such as Do Not Start, Do Not Open, etc.
- Employers must conduct periodic inspections of the energy control procedures (at least annually).
- Inspections must be done by an Authorized Employee who is not utilizing the energy control procedure being inspected.
- The inspection must be conducted to correct any identified deficiencies.
- Where lockout is used the inspector must review each Affected Employee's responsibilities regarding the energy control procedure.
- Where tagout is used the inspector must review with each Affected Employee his or her responsibilities regarding the energy control procedure and the limitations of tags.
- The employer must certify that the periodic inspections have been performed.
- The employer must provide adequate training to Authorized Employees.
- Each Authorized Employee must receive training on recognition of hazardous energy sources.
- Each Authorized Employee must receive training on the methods necessary for energy isolation and control.
- Each Affected Employee must be instructed on the purpose and use of the energy control procedure.
- All other employees who may be working in the lockout/tagout area must be instructed on the procedures and prohibitions regarding re-starting or re-energizing machines or equipment that have been locked or tagged out.
- When tagout systems are used employees must also be trained on the limitations of the tag including:

  – tags are warning devices and do not provide the physical restraint that locks do;

  – tags must never be removed without authorization from the Authorized Employee;

  – tags must be legible and understandable to all employees;

  – tags and their attachment devices must be durable enough to withstand the environmental conditions of the workplace; and

  – tags must be attached so they cannot be inadvertently or accidentally detached.
- Retraining must be provided for all Authorized Employees and Affected Employees whenever there is a change in their job assignments, machines, equipment or processes that present a new hazard.

- Additional retraining must be provided whenever deviations from or inadequacies in an employee's knowledge become evident.
- Retraining must reestablish employee proficiency and introduce new or revised control methods and procedures as necessary.
- The employer must certify that retraining has been accomplished and is being kept up to date.
- Certification must contain each employee's name and dates of training.
- Lockout or tagout will be performed only by the Authorized Employees who are performing the servicing or maintenance.
- Affected employees must be notified by the employer or authorized employee about the application or removal of lockout/tagout devices.
- Notification must be provided before application and after removal of controls.

Application of Control

- Lockout/tagout procedures must cover the following elements and actions in the following sequence:

  – before turning off a machine or equipment the authorized employee must know the type of energy, it's hazards and the methods or means to control it;

  – the machine or equipment must be shut down using it's established procedures;

  – the shut down must be orderly;

  – all energy isolating devices must be located and operated to effectively isolate the machine or equipment from energy source(s);

  – lockout or tagout devices must be affixed to each energy isolating device by Authorized Employees. vlockout devices must be affixed to hold the energy isolating devices in a neutral or off position.

  – tagout devices must be affixed to clearly indicate that the operation or movement of energy isolating devices in a safe or off position is prohibited.

  – where tagout devices are used with energy isolating devices that are designed to be locked out the tagout device must be placed where the lock would be attached.

  – where a tag cannot be attached directly to the energy isolating device it must be located as close as possible in an immediately obvious position;

  – following the attachment of lockout/tagout devices stored or residual energy must be relieved, disconnected, restrained or otherwise rendered safe.

  – where there is a possibility of re-accumulation of stored energy, verification of isolation must continue until servicing or maintenance is completed;

  – Before starting work on machines or equipment that are locked or tagged out, the Authorized Employee must verify that isolation and deenergization have been accomplished.

- Before removal of lockout/tagout devices and restoration of energy, Authorized Employees must:

  – inspect the work area for nonessential items that have not been removed;

  – ensure that machine or equipment components are operationally in tact; and

  – ensure that all employees have been safely positioned or removed.

- After lockout/tagout devices have been removed, but before starting the machine or equipment, Affected Employees must be notified that lockout or tagout devices have been removed.
- Each lockout/tagout device must be removed by the employee who applied the device.

Additional Requirements

- Where lockout/tagout devices must be temporarily removed to test or position a machine or equipment the following sequence of actions must be followed:

  – clear away tools and materials;

  – remove employees from the area;

  – remove lockout or tagout devices;

  – energize the machine or equipment and proceed with testing or positioning; and

  – deenergize all systems and re-apply energy control measures in the Application of Control section of the standard.

- When outside servicing personnel are covered by this standard the on site employer and the outside employer must inform each other of their respective lockout or tagout procedures.

- The on-site employer must ensure that his or her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

- When service or maintenance is performed by a crew or group they must use a procedure that affords the employees protection that is equal to that of a personal lockout or tagout device.

- Group lockout or tagout devices must be used in accordance with the energy control procedures established in this standard and must include the following:

  – the Authorized Employee has primary responsibility for a set number of employees working under the protection of a group lockout or tagout device;

  – provisions must be established for the authorized employee to determine the exposure status of individual group members regarding the lockout or tagout of the energy source;

  – when more than one group is involved an Authorized Employee must be designated to coordinate the affected work forces and ensure continuity and protection;

  – each Authorized Employee must affix a personal lockout or tagout device to the group lockout device, group lock box or comparable device; and

  – each Authorized Employee must remove his or her personal lockout or tagout device when he or she stops working on the machine or equipment.

- Specific procedures must be used during shift or personnel changes to ensure the continuity of lockout or tagout protection including the orderly transfer of lockout or tagout device protection between off-going and oncoming employees.

Appendix III - Definitions

(b) Definitions applicable to this section.

Affected Employee — An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized Employee — A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An Affected Employee becomes an Authorized Employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of Being Locked Out — An energy, isolated device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized — Connected to an energy source or containing residual or stored energy.

Energy Isolating Device — A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolated energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy Source — Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot Tap — A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout — The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device — A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal Production Operations — The utilization of a machine or equipment to perform its intended production function.

Servicing and/or Maintenance – Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting Up — Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout – The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device – A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

SECTION VI

MCA MODEL RESPIRATORY PROTECTION PROGRAM

MCAA's Model Respiratory Protection Program

Introduction

At first glance, compliance with OSHA's respiratory protection program requirements can seem like a major hassle. Many employers are overwhelmed by the technical terms and bureaucratic language used by OSHA to convey a few simple messages. The truth is however, that it is not difficult to comply with these recently revised requirements, and MCAA is going to help you do it with this new publication.

The MCAA Model Respiratory Protection Program is designed to make compliance with OSHA's written program provisions as easy and cost effective as possible. MCAA thanks the **Mechanical Contracting Foundation** for making the production of this model possible. The model program is a product of **MCAA's Safety Excellence Initiative.**

This model program is not intended to provide an exhaustive treatment on the subject of respiratory protection for the mechanical construction industry. It should not be used as a substitute for reading and interpreting federal or state OSHA regulations or any other pertinent state or local laws, rules, regulations or standards. Further, it is not intended to provide legal advice. Employers must make independent determinations regarding the need for legal assistance.

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Appendices

Instructions

There is no such thing as a universal respiratory protection program that can be used on any job site. This is true even when you face the same respiratory hazards from one job site to the next. A site-specific, written respiratory protection program is required at each job site where your workers use respirators. **You must tailor each written program to the specific conditions of each and every job site.**

The good news is that, in most cases, your written, program will not need many changes when you switch job sites. For the most part, the respiratory exposures to pipefitters, service workers, plumbers and other mechanical construction workers are similar from job site to job site. Regardless of the circumstances, making the necessary changes will be easy with MCAA's new model program.

Carefully read the instructions below before starting. If you have any questions that are not answered in this publication, please contact MCAA.

1. Read the checklist on the next page. Complete the steps in order.

2. When you get to the second to last line of the checklist, go directly to the model program on the next page.

3. Read through the model program. Each area that requires your attention will be in a smaller, bolded font and underlined. For example, where you see (**name of program administrator**) you are prompted to type in the name of the individual you are designating to be your program administrator for the job site.

4. After reading through the model program, place the disk in your computer and bring the program up on the screen. Go through the program carefully and fill in the information where you are prompted to do so. Be sure not to leave any of the smaller, bolded, underlined font in your program. Delete these areas which are only there to prompt you to take action in specific areas.

5. As you go through the model, take out anything that does not apply. For example, if your workers will be using only air purifying respirators, you will want to delete the sections on "Atmosphere-Supplying Respirator Malfunction," "Air Quality" and any other reference to atmosphere-supplying respirators. Doing so will help you depict a site-specific respiratory protection program.

6. Go back through and re-read every word of your tailored program. Sections that do not have type that prompts you to add information may still require changes. If you have questions about any particular section, refer to "Help On Program Components" (Appendix I) and other pertinent appendices in this publication.

7. If you have questions or need any additional information call MCAA at 301-869-5800.

Check List

❑ Conduct a Pre-Task Analysis to determine whether potential respiratory hazards exist. If not, go no further with the model program. If so, continue...

❑ Conduct a Hazard Assessment, including air monitoring.

❑ Identify Hazard(s).

❑ Implement engineering controls such as increased ventilation.

❑ Conduct additional air monitoring.

❑ If engineering controls eliminate or reduce the hazard(s) to acceptable levels, go no further with the model program. Periodically monitor the air in the work areas for possible changes. If engineering controls do not reduce the hazard enough, continue...

❑ Select the appropriate respirator based on the type of hazard(s), airborne concentrations of hazardous substances in your work areas, established engineering controls and work area conditions.

❑ Go to MCAA's Model Respiratory Protection Program starting on the next page. Tailor it to make your own job site-specific respiratory protection program.

❑ Implement your company's new program exactly as it is written.

(Type In Your Company Name Here)

Respiratory Protection Program for

(Type in the Job Name Here)

Located at

(Type in the Job Site Address Here)

_____

_____

_____

_____

The Respiratory Protection Program Administrator is

(Type in Name of the Program Administrator Here)

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Introduction:

(**Company name**) has determined that some of its employees may be exposed to airborne concentrations of (**list the hazard or hazards if more than one, i.e. lead, carbon monoxide, legionella, etc.**) at or above established action levels while performing (**state the tasks where exposure occurs**) at (**type in job name**). It has been established that engineering controls to reduce worker exposure below established action levels (**pick only one: are not feasible or do not reduce airborne concentrations to an acceptable level**). The purpose of this program is to protect our workers at this job site from respiratory hazards.

This respiratory protection program applies to all company employees who are required to wear respirators while working at this job site and to those who choose to wear respirators on a voluntary basis. Company employees who wear dust masks are not subject to the medical evaluation, cleaning, storage and maintenance provisions of this program.

Employees who are required to wear respirators shall participate in this program at no cost to them. Employees who choose to wear respirators where respiratory protection is not required shall provide their own respirators.

Program Administrator Responsibilities:

- Identifying work areas, processes or tasks that require workers to wear respirators.
- Evaluating respiratory hazards.
- Selecting appropriate respiratory protection.
- Monitoring respirator use to ensure that respirators are used in accordance with their certifications.
- Arranging and/or conducting respirator user training.
- Ensuring proper storage and maintenance of respiratory protective equipment.
- Conducting qualitative fit-testing using (state the fit testing protocol you will use i.e. Banana Oil, Saccharin, Bitrex or Irritant Smoke).
- Administering the medical surveillance program.
- Maintaining records required by the program.
- Evaluating the program.
- Updating the written program as needed.

(Type in name of Program Administrator) is the designated Program Administrator for this project.

Supervisor Responsibilities:

- Ensuring that the program is implemented on the job site.
- Ensuring that employees using respirators understand and follow the program.
- Ensuring that company employees have received respirator use training, fit testing and an annual medical evaluation.
- Ensuring the availability of respirators and accessories.
- Enforcing the proper use of respiratory protection when required.
- Ensuring that respirator users properly clean, maintain and store their respirators.
- Coordinating with the (type in name of Program Administrator) regarding all aspects of the program.

Employee Responsibilities:

- Wearing a respirator when and where required.
- Wearing the respirator in the manner described during training.
- Maintaining the respirator as instructed.
- Storing the respirator in a clean and sanitary location.
- Informing the supervisor if respirator no longer fits and requesting a new one.
- Informing the supervisor or program administrator of any concerns regarding respiratory protection.

Selection Procedures:

(Type in name of Program Administrator) will select respirators to be used on site based on the hazards to which workers are exposed and in accordance with all OSHA standards. (Type in only one: he or she) will conduct a hazard assessment for each operation, process or work area where airborne contaminants may be present in routine operations. The hazard assessment will include:

- Identification and documentation of hazardous substances which could become airborne during (pick the most appropriate one: mechanical construction, plumbing or mechanical service work);
- Review of work processes to determine where potential exposures to these hazardous substances may occur.
- Exposure monitoring to quantify potential hazardous exposures. (Name of the company retained to perform the monitoring) has been retained to conduct the exposure monitoring.

The results of the hazard assessment for this job site are as follows:

- (Type in the results of the exposure monitoring and the kind of respiratory protection required for the job, for example...airborne concentrations of lead were present while painted pipes were being cut with acetylene cutting torches. The maximum concentration present in worker breathing zones was 52 micrograms per cubic meter of air calculated as an 8-hour time weighted average. Workers will be using half-face piece air purifying respirators with cartridges appropriate for protection against lead).

Updating the Hazard Assessment:

(Name of Program Administrator) will revise the hazard assessment each time there is a change in the work process that could affect worker exposure.

NIOSH Certification:

All respirators used by this company will be certified by the National Institute for Occupational Safety and Health (NIOSH). All filters, cartridges and canisters used by company employees will be labeled with NIOSH certification labels. Filters, cartridges and/or canisters that have missing or defaced NIOSH certification labels will be removed from service immediately and discarded.

Voluntary Respirator Use:

No employee may wear a respirator voluntarily unless (Name of Program Administrator) has determined that doing so will not create a hazard.

Where voluntary respirator use is permitted, employees who choose to wear respirators are responsible for providing their own respirators. (Name of Program Administrator) will provide each employee participating in voluntary respirator use with a copy of Appendix D of OSHA's current Respiratory Protection Standard.

Employees participating in voluntary respirator use wearing a half-face piece air-purifying respirator are required to comply with the procedures in this program for medical evaluation, respirator use, cleaning, maintenance and storage.

Medical Evaluations:

Employees who are either required to wear respirators, or who choose to wear air purifying respirators voluntarily, will receive a medical evaluation before respirator use begins. (Name of Physician or Licensed Health Care Professional) has been retained to provide medical evaluations for company employees who will use respirators on this job site. Medical evaluation procedures are as follows:

- The medical evaluation will be conducted using the questionnaire found in Appendix C of OSHA's Respiratory Protection standard. (Name of Program Administrator) will provide a copy of the questionnaire to all employees requiring medical evaluations.
- To the extent feasible, the company will assist employees who are unable to read the questionnaire. When this is not possible, the employee will be sent directly to the physician or licensed health care provider for medical evaluation.
- All affected employees will be given a copy of the medical questionnaire to fill out, along with a stamped, addressed envelope for mailing the questionnaire to (name of Physician or Licensed Health Care Professional). Respirator users will be allowed to complete the questionnaire on company time.
- Follow-up medical examinations will be granted to employees as required by OSHA's current Respiratory Protection Standard or as deemed necessary by (name of Physician or Licensed Health Care Professional).
- All employees will be given the opportunity to speak with (name of Physician or Licensed Health Care Professional) about their medical evaluation.

- (Name of Program Administrator) has provided (name of Physician or Licensed Health Care Professional) with the following:

  - ❑ a copy of this Respiratory Protection Program;
  - ❑ a copy of OSHA's current Respiratory Protection Standard;
  - ❑ a list of the hazardous substance or substances found during the Hazard Assessment;
  - ❑ the name and job description of each respirator user;
  - ❑ the type and weight of the respirator assigned to each user;
  - ❑ the estimated length of time each user will be required to wear a respirator;
  - ❑ the expected physical work load (light, moderate, heavy);
  - ❑ potential temperature and humidity extremes; and
  - ❑ information about any additional personal protective equipment and/or clothing each employee will be required to wear.

- Any employee required for medical reasons to wear a positive pressure, air-purifying respirator will be provided with a powered air-purifying respirator.

- After an employee has received clearance and begun to wear a respirator, additional medical evaluations will be provided under the following circumstances:

  - ❑ the employee reports signs and/or symptoms related to his or her ability to use a respirator such as shortness of breath, dizziness, chest pains or wheezing;
  - ❑ (name of Physician or Licensed Health Care Professional) believes the employee needs to be reevaluated;
  - ❑ information from this program, including observations made during fit-testing and program evaluation, indicates a need for reevaluation; or
  - ❑ a change occurs in workplace conditions that may result in an increased physiological burden on the employee.

All examinations and questionnaires are to remain confidential between the employee and (Name of Physician or Licensed Health Care Professional).

Fit-Testing:

Fit-testing is required for employees wearing (type in the kind of respirator your employees will be using, i.e. half-face piece air purifying respirators, tight fitting supplied air respirators, etc.) for protection against exposure to (type in the exposure, or exposures, if more than one, found during the Hazard Assessment, i.e. welding fumes, asbestos, etc.).

Employees who are required to wear respirators with tight fitting face pieces will be fit tested:

- Before starting work requiring the use of a respirator;
- Annually thereafter; and
- When there are changes in the employee's physical condition that could affect respirator fit such as obvious changes in body weight, facial scarring, extensive dental work, etc.

Employees will be fit-tested with the make, model and size respirator that they will actually be wearing. Employees will be provided with several models and sizes of respirators so that they can find the best and most comfortable fit possible. In situations where an employee must use a powered, air-purifying respirator, fit-testing will be done in the negative pressure mode.

(Name of Program Administrator) will conduct fit tests following OSHA's (type in the fit- testing protocol you will use, i.e. qualitative fit testing-irritant smoke protocol, etc.) found in Appendix A of OSHA's Respiratory Protection Standard.

(Name of Program Administrator) has determined that quantitative fit-testing is not required for respirators used under current conditions. If conditions affecting respirator use change, (Name of Program Administrator) will reevaluate whether quantitative fit-testing is needed.

Respirator use:

Respiratory Protection is required at this job for the individuals listed below while they are working in areas of potential over exposure to (state the name of the hazardous substance or substances, if there is more than one, found during the hazard assessment).

The following employees will be using respirators on this job site.

NAME	JOB TITLE	RESPIRATOR
(Type in name)	(Type in job title)	(Type in respirator type i.e. half-face piece air-purifying respirator with organic vapor cartridges)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)
(Name)	(Job title)	(Respirator type)

General Use Procedures:

- Employees will use their respirators under conditions specified in this program, and in accordance with the training they received on the use of the respirator they will use.
- All employees will conduct user seal checks each time they wear their respirator. Employees will use either the positive or negative pressure check depending on which works best for them. They will use the seal check procedures described in Appendix B of OSHA's Respiratory Protection Standard.
- Employees are permitted to leave their work areas to clean their respirators, change filters or cartridges, replace parts or to inspect their respirators. Employees are instructed to tell their supervisor before leaving the work area.
- Employees are not permitted to wear tight-fitting respirators if they have any condition, such as facial scars, facial hair, missing dentures or any other condition that prevents them from achieving a good seal.

Emergency Procedures:

The following work areas have been identified as having foreseeable emergencies:

(If applicable, type in the names of any work areas where an emergency escape situation could occur, such as temporary loss of ventilation in an enclosed welding area, etc. Otherwise type in...not applicable in this situation because...For example...workers are stationed in a well-ventilated area and are wearing their respirators voluntarily).

(If you have work areas where emergency escape situations could occur, type in the emergency procedure such as...immediately following ventilation fan failure employees in the affected area will don their emergency escape respirators, shut down their welders and exit to a fresh air location. Emergency escape respirators will be kept in protective cartons at each welding station).

Respiratory protection in these instances is for escape purposes only. Our employees are not trained as emergency responders, and are not authorized to act as such.

Respirator Malfunction:

1. Air Purifying Respirator Malfunction:

For any malfunction of an air purifying respirator, such as breakthrough, face piece leakage, defective valves, etc., the respirator user will leave the exposure area immediately and report the malfunction to his or her supervisor. The supervisor will ensure that the respirator is properly repaired or replaced before the user returns to work.

2. Atmosphere-Supplying Respirator Malfunction:

All workers wearing atmosphere-supplying respirators will use a buddy system. The worker who experiences a respirator malfunction will be assisted by his or her buddy. The buddy will immediately don an emergency escape respirator and assist his or her partner out of the exposure area.

Procedures for (Immediately-Dangerous-to-Life-or-Health IDLH) Situations:

(If you have a situation where respirator failure would pose an immediate threat to life, irreversible health effects or would impair emergency escape, type in your worker safety procedures).

Air quality:

For supplied air respirators, only Grade D breathing air will be used in cylinders. (Name of Program Administrator) will coordinate deliveries of compressed air with (name of compressed air vendor) and require it to certify that the air in the cylinders meets the specifications of grade D air.

(Name of Program Administrator) will maintain a minimum air supply of one fully charged replacement cylinder for each supplied air respirator unit.

Cleaning:

Respirators will be cleaned and disinfected regularly at the designated cleaning station located at (state the designated location).

Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary, but at least once a day.

Atmosphere-supplying and emergency use respirators will be cleaned and disinfected after each use.

The following procedure will be used to clean and disinfect respirators:

- Disassemble respirator.
- Wash the face piece and associated parts in a mild detergent with warm water.
- Rinse thoroughly in clean warm water.
- Wipe the respirator with disinfectant wipes of 70% isopropyl alcohol.
- Let the respirator dry in a clean area.
- Reassemble the respirator and replace any defective parts.
- Place the respirator in a clean, dry plastic bag.

Maintenance:

Respirators will be properly maintained at all times in order to ensure that they function properly and adequately protect the employee. As part of the maintenance program respirators will be inspected for cleanliness and defects. Worn or deteriorated parts will be replaced prior to respirator use. No components will be replaced or repairs made beyond those recommended by the manufacturer. The manufacturer will conduct repairs to regulators and/or alarms of atmosphere-supplying respirators.

Respirators will be inspected for the following:

Face pieces:
- Cracks
- Tears
- Holes
- Distortion
- Cracked or loose lenses/face shields

Head straps:
- Breaks
- Tears
- Broken Buckles

Valves:
- Residue/dirt
- Cracks
- Tears

Filters/Cartridges:
- NIOSH approval designation
- Gaskets
- Cracks in housing
- Dents in housing
- Appropriate cartridge for hazard

Air Supply Systems:
- Breathing air quality/grade
- Condition of supply hoses
- Hose connections
- Settings on regulators
- Settings on valves

Employees are permitted to leave their work to:
- wash their faces and respirator face pieces when skin irritation occurs;
- replace filter, cartridge or canister;
- when they detect leakage in the face piece; and
- for any other damage to the respirator.

Change Schedules:

Employees wearing (type in the kind of respirator and cartridge, such as air-purifying respirator with organic vapor cartridges, etc.) shall change the cartridges on their respirators:

- any time they begin to experience difficulty in breathing;
- any time they smell or taste a chemical substance; and
- (type in the change schedule recommendation of the manufacturer of the respirator and filters/cartridges/canister such as: at the end of each work week to ensure the continued effectiveness of the respirator).

Storage:

Respirators will be stored in a clean, dry area in accordance with the manufacturer's recommendations. Each employee will clean and inspect his or her own air-purifying respirator in accordance with the provisions of this program and will store respirators in plastic bags and place them (type in a designated location such as ...the respirator storage carton in the job site trailer). Each employee will have his or her name on the bag and that bag will only be used to store that employee's respirator.

Atmosphere-supplying respirators will be stored (type in the location such as: in a storage cabinet in the job site trailer).

(Name of Program Administrator) will store an adequate supply of respirators and respirator components in the original manufacturer's packaging in (type in the location such as: a storage cabinet in the job site trailer).

Defective Respirators:

Respirators that are defective or have defective parts will be taken out of service immediately. If, during an inspection, an employee discovers a defect in a respirator, he or she will bring the defect to the attention of his or her supervisor. Supervisors will give defective respirators to (name of Program Administrator) who will:

- temporarily take the respirator out of service until repairs can be made;
- perform a simple on-the-spot repair; or
- dispose of the respirator due to an irreparable problem or defect.

When a respirator is taken out of service for an extended period of time, the respirator will be tagged "out of service," and the employee will be given a replacement of the same make, model and size. All tagged out respirators will be kept (type in the location such as: in a storage cabinet in the job site trailer).

Training:

(Name of Program Administrator) will provide training to respirator users and their supervisors on:

- this Respiratory Protection Program;
- their responsibilities under the program;
- OSHA's Respiratory Protection Standard;
- the respiratory hazards identified at this job site;
- proper selection and use of the respirators to be used;
- limitations of respirators;
- respirator donning;
- positive and negative fit checks;
- fit-testing;
- emergency procedures;
- maintenance and storage; and
- medical signs/symptoms limiting the effective use of respirators.

Employees will be retrained annually or as needed, such as when it becomes necessary to use a different type of respirator. Employees will be required to demonstrate their understanding of the topics covered in the training through hands-on exercises. Respirator training will be documented by (name of Program Administrator) and the documentation will include the type, model and size of respirator for which each employee has been trained and fit-tested.

Program Evaluations:

(Type in name of Program Administrator) will conduct periodic evaluations of the workplace to ensure that the provisions of this program are being implemented. The evaluations will include regular consultations with employees who use respirators and their supervisors, site inspections, air monitoring and a review of records.

Problems identified will be noted in an inspection log and addressed by (Name of Program Administrator). These findings will be reported to (name of your company) management and will include recommendations to correct the deficiencies in the program, as well as a target date for the implementation of those corrections.

Documentation and Record Keeping:

A written copy of this program and a summary of OSHA's Respiratory Protection Standard is kept (type in the on-site location such as: in the safety files of the job site trailer). The program is available to all employees who wish to review it.

Copies of training records and fit-test records are kept in the same location. These records will be updated:

- as new employees are trained;
- as existing employees are retrained; and
- as new fit tests are conducted.

(Name of Program Administrator) will also maintain copies of the medical records for all employees covered under the respirator program. The completed medical questionnaire and documented medical findings are confidential and will remain in the possession of (type in name of Physician or Licensed Health Care Provider). (Name of your company) will retain only the written recommendations regarding each employee's ability to wear a respirator.

Appendix I – Help On Program Components

Program Administer Responsibilities:

You are required to designate a Program Administrator to oversee your respiratory protection program. It should be someone in a management position that is knowledgeable about:

- respiratory hazards;
- respirator use; and
- OSHA's recently revised Respiratory Protection Standard (including the appendices).

Your Program Administrator will have a tremendous amount of responsibility and will be the key to the success of your respiratory protection program. Choose carefully!

When tailoring this section of the model program you will be prompted to type in the fit testing protocol you intend to use. Refer to Appendix IV in this publication. Read over the four options for a qualitative fit-testing protocol and choose the one that best suits your company's needs. The stannic chloride (irritant smoke) protocol is very popular in the construction industry. **(Qualitative fit testing is acceptable in the vast majority of mechanical construction, service work and plumbing cases. However, if supplied air respirators are required or if airborne concentrations of hazardous substances would create a fit factor of more than 100, quantitative fit tests must be conducted. When this is the case refer to the OSHA's Respiratory Protection Standard at 29 CFR 1910.134 (f) and it's accompanying Appendix A.)**

Supervisor Responsibilities:

This section in the model program is fairly straightforward. It outlines the responsibilities of supervisors who will oversee respirator users. You will be prompted to type in the name of the Program Administrator. It is unlikely that you will have to make any other changes here.

Employee Responsibilities:

This section is also straightforward and will probably not require changes. You will not be prompted for a response in this section of the model program.

Selection Procedures:

This section of the model program describes your procedures for proper respirator selection. You can't select the proper respirator for a job until you have identified the respiratory hazard(s) (during hazard assessment) and analyzed workplace conditions. In most cases mechanical construction workers can use half face-piece air-purifying respirators. However, you must be sure. Air-purifying respirators may not be used in areas with insufficient oxygen or hazardous substances present in concentrations greater than an air-purifying respirator can safely handle. If air-purifying respirators are acceptable, the air monitoring performed during hazard assessment will dictate the type of filters, cartridges or canisters you will use. Obtain the information you need by having the air monitored by someone qualified to do so. In this section of the model program you will be prompted to type in the results of your hazard assessment.

Updating the Hazard Assessment:

Remember that OSHA wants your initial hazard assessment updated whenever there is a change in work processes that could result in new or different hazard exposures. When changes in work processes occur that will affect your workers, conduct another hazard assessment. Change your written program to reflect any changes. If there are no changes, state that another hazard analysis has been conducted and that no other changes to the original program are necessary. You will also be prompted to type in the name of your Program Administrator.

NIOSH Certification:

NIOSH is the acronym for the National Institute for Occupational Safety and Health. NIOSH was created by the same legislative act that created OSHA. It is charged with researching occupational safety and health issues. Be certain that all respirators, filters, cartridges and canisters are certified by NIOSH. It is unlikely that anything you purchase in the United States will not be NIOSH-certified. Just look for **"NIOSH"** on each item. If it's not there, don't use them. You will not be prompted for a response and will probably not have to make any changes to this section of the model program.

Voluntary Respirator Use:

Even in situations where your hazard assessment shows no exposure to airborne hazards your employees are entitled to wear respirators voluntarily. This is only true if your Program Administrator determines that the voluntary use of respirators will not create a "greater hazard." The good news is you can require your workers to provide their own respirators for voluntary use. The bad news is you still must comply with the medical evaluation, respirator use, cleaning, maintenance and storage provisions of your respiratory protection program. Make sure your workers comply with these provisions. If they don't, they are not liable, but your company is. This section of the model program will prompt you to type in the name of your Program Administrator. You will probably not need to make any other changes unless your collective bargaining agreement requires you to pay for respirators used voluntarily.

Medical Evaluations:

Before being allowed to use a respirator, each employee must complete a medical evaluation questionnaire, which you will find in Appendix VI of this publication. The purpose is to ensure that each worker is physically capable of wearing a respirator without suffering adverse health affects. You must hire a physician or other licensed health care professional such as a nurse practitioner to evaluate each completed questionnaire. This health care professional will also conduct physical examinations when necessary such as when a worker answers yes to any one question in Part A Section 2 (Questions 1 – 8) of the medical evaluation questionnaire. For purpose of confidentiality, completed questionnaires must remain in the possession of the health care professional. You will receive a recommendation from the health care professional regarding each employee's ability to work safely while wearing a respirator. You will be prompted to type in the name of the Health Care Professional and Program Administrator in several places throughout this section of the model program.

Fit-Testing:

If any employee wears a respirator with a tight-fitting face piece, he or she must be fit- tested to ensure that the respirator seal is a good one. Fit-testing will be required in most cases in the mechanical construction industry because we primarily use half-face piece air purifying respirators. In the vast majority of cases where respirator use is necessary in our industry, we can conduct qualitative fit tests. You can use one of four methods to conduct qualitative fit tests: isoamyl acetate (banana oil) fit test; saccharin fit test; bitrex fit test; or stannic chloride (irritant smoke) fit test. The irritant smoke seems to be the most popular in the construction industry because the sensitivity screening is very quick and easy. However, if a worker does not react to the smoke during screening you must use a different method. Be sure you have a variety of models and sizes of respirators so your workers can choose the one that is most comfortable and effective. In this section of the model program, you will be prompted to type in: the type of respirator(s) your workers will use; the type of exposure(s) they will face; the name of the Program Administrator; and the fit testing procedure you intend to use. **(Qualitative fit-testing is acceptable in the vast majority of mechanical construction, service work and plumbing cases. However, if supplied air respirators are required or if airborne concentrations of hazardous substances would create a fit factor of more than 100, quantitative fit testing must be conducted. When this is the case refer to OSHA's**

Respiratory Protection Standard at 29 CFR 1910.134 (f) and it's accompanying Appendix A).

Respirator Use:

In the respirator use section of the model program, you will find a table to type in the names and titles of each user and the type of respirator each will use. Be sure to delete each horizontal column that you do not fill in. In this section of the model program, you will also be prompted to type in the name(s) of the hazardous substance(s) your workers will face.

General Use Procedures:

This section refers to user seal checks, which each worker is required to do before starting work with a respirator. Refer to Appendix V of this publication for instructions on this simple procedure. You will not be prompted for an action in this section of the model program and will probably not need to make any changes.

Emergency Procedures:

In this section, OSHA wants you to give some thought to the possibility of respiratory emergency situations that could affect your workers. In this section of the model program, you will be prompted to respond to several requests for information. There will be times when this section will not be applicable to your particular work setting and/or job site conditions. If this is the case, fill out the section on the model program anyway. State that no foreseeable emergencies were identified and explain why.

Respirator Malfunction:

In this section you simply have to establish procedures for your workers to follow if their respirators malfunction. The language in this section of the model program will probably not need changing.

Procedures for Immediately-Dangerous-to Life-or-Health Situations:

For this section you need to determine whether respirator failure would pose an immediate threat to life, irreversible health effects or impair emergency escape. This section will not be necessary most of the time for typical mechanical construction, service work and plumbing. When it is necessary, develop a set of procedures and type them into the model program. If not, leave the heading in the model program and state that this section is not applicable at this job site and explain why. In this section of the model program you will not be prompted to take any action.

Air Quality:

This section applies to the quality of the air required for respirators that supply fresh air from cylinders. These types of respirators are not used frequently in mechanical construction. However, you may need them in some situations. For example, if your hazard assessment shows the oxygen content in a given work area is less than 19.5% you will need an atmosphere supplying respirator and may choose a self-contained unit. Another example would be if your hazard assessment shows airborne concentrations of a hazardous substance higher than an air-purifying respirator can safely handle. Again, you may choose a self-contained unit. If you use compressed breathing air, insist that your vendor certify that the air meets the requirements of Type 1 Grade D Breathing Air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989. In this section of the model program you will be prompted to type in the name of the Program Administrator and the name of your company's Compressed Air Vendor.

Cleaning:

To protect your workers from sickness and disease you must require them to keep their respirators clean and sanitary. This section in the model program describes the procedures you will use achieve this. This section in the model program will prompt you to type in a designated location for respirator cleaning. You will probably not need to make any other changes.

Maintenance:

This section in the model program covers maintenance procedures, which are necessary to ensure that

the respirators maintain their effectiveness. You will not be prompted to take action and will probably not need to make any changes.

Change Schedules:

Filters, cartridges and canisters must be changed at the appropriate time to ensure the effectiveness of each respirator. The manufacturer will provide you with their recommendations for changing these filtering mechanisms. Follow the manufacturer's recommendations carefully. If your workers experience difficulty in breathing or taste or smell a substance anytime in between changes, they may need to change the filtering mechanism(s) ahead of schedule and should be permitted to do so. In this section of the model program you will be prompted to type in information about the respirators and filtering devices you intend to use. You will also be prompted to type in the manufacturer's recommended change schedules for the filtering devices you plan to use.

Storage:

Proper storage is important to the effectiveness and longevity of respirators. Carefully choose your storage location so that the respirators will be kept clean and dry and keep their natural shape. In this section of the model program you will be prompted to type in a designated storage location.

Defective Respirators:

OSHA's concern here is that a defective respirator might be used by a worker who does not know it is defective. You need to have a few simple procedures in place and a designated storage area where defective respirators can be "tagged out" as defective and properly stored. The procedures in the model program will probably not require many changes. You will be prompted to type in the name of the program administrator and a designated storage location, which should be different than the storage area used for effective respirators.

Training:

Remember that both respirator users and their supervisors need respiratory protection training. The list of items shown in the model program cover the required components of respiratory protection training for users and their supervisors. This part of the model program will not require many changes and you will not be prompted to respond in this section.

Program Evaluations:

Once your respiratory protection program is implemented you must evaluate it as necessary to ensure its effectiveness. You will have to determine the frequency of program evaluations. Consider conducting program evaluations as often as you can and carefully document the results. When no changes to the program are necessary, document that the evaluations were done. This section in the model program will require little change. However, you will be prompted to type in the name of the Program Administrator and your company name.

Documentation and Record-Keeping:

An organized system for documentation and record-keeping will go a long way if an OSHA compliance officer asks to see the paper trail. If you can quickly and easily access the following documents you will be well ahead of the game.

- A copy of your company's job site-specific respiratory protection program.
- Your company's job site-specific respirator user/supervisor training records.
- Your company's job site-specific respirator fit testing records.
- Correspondence from your company's health care professional regarding the ability of your workers to use respirators.
- A copy of OSHA's Respiratory Protection Standard.

This section of the model program will probably not require many changes, but you will be prompted to type in: a designated location for keeping documentation files; the name of the Program Administrator; the name of your company's Health Care Provider; and your company name.

Appendix II - Summary of OSHA's Respiratory Protection Standard

- **Engineering Controls:** Whenever feasible engineering controls must be used to prevent atmospheric contamination. (Examples of engineering controls are local ventilation, general ventilation, confinement of the operation, and substitution of less toxic materials.)

- **Respirators:** Employers must provide respirators to workers when they are needed for protection against respiratory hazards.

- **Written Programs:** When employers determine that respirators are needed to protect their workers, they are required to develop and implement a written respiratory protection program. Written programs must cover:
  - site specific procedures;
  - required elements for respirator use;
  - administration by a suitably trained person;
  - program elements for voluntary use of respirators;
  - procedures for selecting respirators;
  - procedures for medical evaluations of workers required to use respirators;
  - fit testing procedures;
  - proper use in routine and emergency situations;
  - procedures for cleaning, disinfecting, storing, inspecting, repairing, maintaining and discarding respirators;
  - procedures to ensure air quality, air quantity and air flow for air supplied respirators;
  - worker training regarding routine and emergency respiratory hazards;
  - worker training in proper use of respirators; and
  - procedures for regular evaluation of the program.

- **Selection of Respirators:** Employers must select and provide respirators based on the respiratory hazards, workplace conditions and user factors that affect respirator performance and reliability. The acronym IDLH means Immediately Dangerous to Life or Health. See the regulations for a description of IDLH environments. Basic requirements are:
  - respirators must be certified by NIOSH;
  - employers must make a variety of models and sizes available to ensure compatibility with workers;
  - employers must select respirators that are adequate to protect the health of the workers;
  - respirators for oxygen-deficient areas must have full face pieces and pressure-demand air;
  - SCBA respirators for IDLH environments must have a minimum 30-minute service life;
  - use of supplied air respirators for IDLH requires auxiliary self contained supplied air;
  - air-purifying respirators for gases/vapors must have end of service life indicators (ESLI);
  - if there is no ESLI, a change schedule for cartridges/canisters must be implemented; and
  - air-purifying respirators for particulates must have HEPA or NIOSH approved filters.

- **Medical Evaluation:** Employers must provide medical evaluations to determine whether their workers are physically able to use respirators. Employers must identify a physician or licensed health care provider (PLHCP) to perform the medical evaluations. Basic requirements are:
  - medical evaluations must be done before workers are fit-tested;
  - employers can stop medical evaluations when workers no longer have to use respirators;
  - the medical questionnaire in Appendix C or a medical examination must be completed;
  - a follow-up exam is required if any of questions 1-8, Part A, Section 2 are answered yes;
  - a follow-up exam is required if an initial medical examination demonstrates the need;

- ❑ follow-up exams include medical tests, diagnostic procedures, and/or other procedures;
- ❑ evaluations and their results must be kept confidential;
- ❑ evaluations must be done during working hours or at a time convenient to workers;
- ❑ workers must be able to discuss the results with the physician or health care provider;
- ❑ supplemental information must be given to PLHCP before the final analysis of workers;
- ❑ supplemental information includes type/weight of respirator & duration/frequency used;
- ❑ supplemental information also includes expected physical work and other required PPE;
- ❑ temperature and humidity extremes must also be included in supplemental information;
- ❑ employers must get written recommendations from PLHCP regarding evaluated workers;
- ❑ recommendation must include limitations of any workers, need for follow up exams, and
- ❑ each worker must receive a copy of the physician or licensed health care provider's written recommendations.

■ **Fit-Testing:** Employers must fit-test all workers required to wear respirators with tight fitting face pieces. A fit-test must be passed with the same make, model, style and size of respirator that the worker will use. Basic requirements are:

- ❑ fit tests must be done prior to use, when a different respirator is to be used and annually;
- ❑ fit-tests must be done when physical changes to workers could affect the fit;
- ❑ (examples include facial scarring, dental work, cosmetic surgery, weight changes,) etc;
- ❑ workers whose respirators are unacceptable must be allowed to try different ones;
- ❑ fit-tests must be qualitative or quantitative depending on the type/use of the respirator;
- ❑ OSHA-accepted protocol must be used for all fit-tests (See Appendix A of the Standard); and
- ❑ fit-testing is complex and takes time (user seal checks are not fit tests).

■ **Use of Respirators:** Employers must establish and implement procedures for proper use of respirators. The basic requirements are:

- ❑ workers must not use tight-fitting respirators when facial hair interferes with the seal;
- ❑ workers with conditions that prohibit good seals/valve function must not use respirators;
- ❑ corrective glasses and PPE must be worn in a way that will not interfere with the seal;
- ❑ workers must do a "user seal check" each time they put on a respirator (See Appendix B of the Standard);
- ❑ changes in conditions or worker exposures require reevaluation of respirator effectiveness;
- ❑ workers must leave the use area to wash their faces and respirators to prevent skin irritation
- ❑ workers must leave the use area when they detect gas or vapor breakthrough;
- ❑ workers must leave the use area when changes in breathing resistance occurs;
- ❑ workers must leave the use area when there is leakage in the face piece;
- ❑ workers must leave the use area to replace respirators, filters, cartridges or canisters;
- ❑ respirators must be repaired or replaced before workers can return to the use area; and
- ❑ requirements for respirator use in environments that are immediately dangerous to life and health are specialized (see regulation).

■ **Maintenance and Care:** Employers must provide workers with respirators that are clean sanitary and in good condition. Respirators must be cleaned and disinfected according to procedures in Appendix B-2 of the standard. Basic requirements are:

- ❑ respirators used by a single worker must be cleaned and disinfected as necessary;
- ❑ respirators used by more than one worker must be cleaned and disinfected before changing users;
- ❑ respirators used for fit testing/training must be cleaned and disinfected after each use;
- ❑ respirators must be stored in a way that protects them from any damage or contamination;

- all respirators used routinely must be inspected before each use and during cleaning;
- inspections must include function, tightness of connections and condition of parts;
- at a minimum, parts to be inspected include face piece, straps, valves & connecting tubes;
- cartridges, filters and canister must also be inspected;
- repairs and adjustments must be made by persons specifically trained for the purpose;
- repairs must be made with manufacturers' NIOSH-approved parts for the respirator; and
- repairs must be made according to the manufacturers' recommendations/specifications.

■ **Breathing Air Quality:** Employers whose workers use supplied-air respirators (SCBA or air supplied) must provide high purity breathing gases (see regulations).

■ **Identification of Filters, Cartridges and Canisters:** Employers must ensure that all filters, cartridges and canisters are labeled and color coded with NIOSH approval labels.

■ **Training Information:** Employers must provide training to all workers required to use respirators. Basic requirements for training are:

- training must be presented in a way that is understandable to the workers;
- training is required at least annually and more often if necessary; and
- workers must be trained before they are required to use a respirator.

Following training, workers must be able to show knowledge in the following areas:

- why the respirator is necessary for their work;
- how improper fit, use and maintenance can make respirators less effective or ineffective;
- what the limitation and capabilities of the respirator are;
- how to use the respirator effectively in emergency situations, including malfunction;
- how to inspect, put on, remove, use and check the seals of the respirator;
- procedures for maintenance and storage of respirators; and
- how to recognize medical signs and symptoms that may limit or prevent effective use.

■ **Program Evaluation:** Employers must evaluate the workplace as necessary to ensure that their written respiratory protection program is being properly implemented and to ensure that their workers are using respirators properly. Basic requirements are:

- employers must consult with workers to assess their views and identify problems;
- any problems found must be corrected; and
- evaluations must include respirator fit, proper selection, use and maintenance.

■ **Record Keeping:** Employers must establish and retain written records in several areas. Basic requirements are:

- records on medical evaluations must be retained and kept readily accessible;
- records on all fit tests must be established;
- fit test records must include name of worker, type of test, date of test and the results;
- fit test records must state the type of test performed;
- fit test records must also show the make, model, style and size of the respirator tested;
- fit test records must be kept until the next fit test is administered;
- employers must keep a written copy of their respiratory protection program; and
- these records must be provided to workers and to OSHA upon request.

■ **Voluntary Respirator Use:** Where respirator use is not required, employers may provide respirators for workers who request them. Workers may also be permitted to use their own respirators. However, employers must ensure that voluntary respirator use does not create a greater hazard.

When workers are permitted to use respirators voluntarily, employer must provide them with the information in Appendix D of OSHA's Standard...Information for Employees Using Respirators When Not Required Under the Standard.

Employers must also establish and implement certain elements of a written respiratory protection program for voluntary use of respirators. **(Employers are not required to include employees who voluntarily use dust masks in their written program).** Written programs for voluntary use must include the following:

- provisions to ensure that workers are medically able to use respirators; and
- provisions to ensure that respirators are cleaned stored and maintained properly.

Appendix III - Definitions

The following definitions are important terms used in the Respiratory Protection Standard. Several of these terms also appear in the MCAA Model Respiratory Protection Program.

Air-purifying respirator — means a respirator with an air—purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Assigned protection factor — (APF) [Reserved]

Atmosphere-supplying respirator — means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators and self-contained breathing apparatus (SCBA) units.

Canister or cartridge — means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Demand respirator — means an atmosphere-supplying respirator that admits breathing air to the face piece only when a negative pressure is created inside the face piece by inhalation.

Emergency situation — means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure — means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-Of-Service-Life Indicator (ESLA) — means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Escape-only respirator — means a respirator intended to be used only for emergency exit.

Filter or air-purifying element — means a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering face piece (dusk mask) — means a negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium.

Fit factor — means a quantitative estimate of the fit of a particular respirator to a specific individual and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test — means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also qualitative fit test QLFT and quantitative fit test QNFT.)

Helmet — means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter — means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood — means a respirator inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) — means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, and or would impair an individual's ability to escape from a dangerous atmosphere.

Interior structural fire fighting — means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage (See 29 CFR 1910.155)

Loose-fitting face piece — means a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum use concentration (MUC) — [Reserved].

Negative pressure respirator (tight fitting) — means a respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere — means an atmosphere with oxygen content below 19.5% by volume.

Physician or other licensed health care professional (PLHCP) — means an individual whose legally permitted scope of practice (i.e., license registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide some or all of the health care services required by paragraph (e) of this section.

Positive pressure respirator — means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered air-purifying respirator (PAPR) — means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator — means a positive pressure atmosphere-supplying respirator that admits breathing air to the face piece when the positive pressure is reduced inside the face piece by inhalation.

Qualitative fit test (QLFT) — means a pass/fail fit test to assess the adequacy or respirator fit that relies on the individual's response to the test agent.

Quantitative fit test (QNFT) — means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering — means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may b a face piece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) — means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service life — means the period of time that a respirator, filter or sorbent or other respiratory equipment provides adequate protection to the wearer.

Supplied-air respirator (SAR) or airline respirator — means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

This section — means this Respiratory Protection Standard.

Tight-fitting face piece — means a respiratory inlet covering that forms a complete seal with the face.

User seal check — means an action conducted by the respirator user to determine if the respirator is properly seated on the face.

Appendix IV – Qualitative fit Testing Procedures

A. Isoamyl Acetate fit Test Protocol

Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.

a) Odor Threshold Screening

Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.

1 Three 1-liter glass jars with metal lids are required.
2 Odor-free water (e.g., distilled or spring water) at approximately 25°C (77°F) shall be used for the solutions.
3 The isoamyl acetate (IAA) (also known as isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1-liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.
4 The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.
5 The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.
6 A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.
7 The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.
8 The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the cover is on tight, and then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."
9 The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.
10 If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.
11 If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

B. Isoamyl Acetate Fit Test Procedure

1 The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hood attached.
2 Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.
3 After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and

respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

4 A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

5 Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

6 Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.

7 If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

8 If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in (b)(1) through (7) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before re-testing. Odor sensitivity will usually have returned by this time.

9 If the subject passed the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

10 When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

A. Saccharin Fit Test Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

a) Taste threshold screening. The saccharin test threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

1 During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M-hood assembly parts #FT 14 and FT 15 combined, is adequate.

2 The test enclosure shall have a 3/4-inch (1.9-cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

3 The test subject shall don the test enclosure. Throughout the threshold-screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

4 Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

5 The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100

ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

6 To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

7 Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

8 If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is complete. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

9 If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

10 The test conductor will take note of the number of squeezes required to solicit a taste response.

11 If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

12 If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

13 Correct use of the nebulizer means that approxi mately 1 ml of liquid is used at a time in the nebulizer body.

14 The nebulizer shall be thoroughly rinsed in water, shaken dry and refilled at least each morning and afternoon or at least every four hours.

B. Saccharin Fit Test Procedure

1 The test subject may not eat, drink (except plain water), smoke or chew gum for 15 minutes before the test.

2 The fit test uses the same enclosure described in 3. (a) above.

3 The test subject shall don the enclosure while wearing the respirator selected in section I.A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

4 A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

5 The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

6 As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

7 The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

8 After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. Of this appendix.

9 Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

10 The test subject shall indicated to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

11 If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

12 Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

A. Bitrex Fit Test Protocol

The Bitrix™ (Denatonium benzoate) solution aerosol qualitative fit test protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, The National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

a) Taste Threshold Screening

The Bitrex taste threshold screening performed without wearing a respirator is intended to determine whether the individual being tested can detect the taste of Bitrex.

1 During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M-hood assembly, parts #14 and #15 combined, is adequate.

2 The test enclosure shall have a _ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

3 The test subject shall don the test enclosure. Throughout the threshold-screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

4 Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

5 The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

6 To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

7 An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

8 If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

9 If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

10 The test conductor will take note of the number of squeezes required to solicit a taste response

11 If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

12 If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

13 Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

14 The nebulizer shall be thoroughly rinsed in water, shaken to dry and refilled at least each morning and afternoon or at least every four hours.

B. Bitrex Fit Test Procedure

1 The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

2 The fit test uses the same enclosures as that described in 4. (a) above.

3 The test subject shall don the enclosure while wearing the respirator selected according to section I.A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

4 A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

5 The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

6 As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and will be instructed to report if he/she tastes the bitter taste of Bitrex.

7 The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

8 After generating the aerosol, the test subject shall be instructed to perform the exercises in section I.A. 14. of this appendix.

9 Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g. 5, 10 or 15).

10 The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

11 If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

A. Irritant Smoke (Stannic Chloride) fit Test Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

a) General Requirements and Precautions

1 The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

2 Only stannic chloride smoke tubes shall be used for this protocol.

3 No form of test enclosure or hood for the test subject shall be used.

4 The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject

5 The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

b) Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

1 The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
2 The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.
3 The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine is he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

B. Irritant Smoke Fit Test Procedure

1 The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).
2 The test subject shall be instructed to keep his/her eyes closed.
3 The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the face piece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.
4 If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.
5 The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.
6 If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being re-tested must repeat the entire sensitivity check and fit test procedure.
7 Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.
8 If a response is produced during this second sensitivity check, then the fit test is passed.

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix or the respirator manufacturers recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

Appendix V – User Seal Check Procedures

I Face Piece Positive and/or Negative Pressure Checks

A Positive pressure check. Close off the exhalation valve and exhale gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal. For most respirators, this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the face piece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

Appendix VI – Medical Evaluation Questionnaire

To the employer: Answers to questions in
Section 1, and to question 9 in Section 2 of Part A., do not require a medical examination.

To the employee:
Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1 Today's date:_____
2 Your name:_____
3 Your age (to nearest year):_____
4 Sex (circle one) Male/Female
5 Your height:_____ft._____ in.
6 Your weight: _____lbs.
7 Your job title: _____
8 A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____
9 The best time to phone you at this number: _____
10 Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
11 Check the type of respirator you will use (you can check more than one category):
a _____ N, R, or P disposable respirator (filter mask, non-cartridge type only).
b _____ other type (for example, half-or full- face piece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12 Have you worn a respirator (circle one): Yes/No
If "yes", what type(s): _____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1 Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No
2 Have you ever had any of the following conditions?
a Seizures (fits): Yes/No
b Diabetes (sugar disease): Yes/No
c Allergic reactions that interfere with your breathing: Yes/No
d Claustrophobia (fear of closed-in places): Yes/No
e Trouble smelling odors: Yes/No

3 Have you ever had any of the following pulmonary or lung problems?
- a Asbestosis: Yes/No
- b Asthma: Yes/No
- c Chronic bronchitis: Yes/No
- d Emphysema: Yes/No
- e Pneumonia: Yes/No
- f Tuberculosis: Yes/No
- g Silicosis: Yes/No
- h Pneumothorax (collapsed lung): Yes/No
- i Lung cancer: Yes/No
- j Broken ribs: Yes/No
- k Any chest injuries or surgeries: Yes/No
- l Any other lung problem that you've been told about: Yes/No

4 Do you currently have any of the following symptoms of pulmonary or lung illness?
- a Shortness of breath: Yes/No
- b Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
- c Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
- d Have to stop for breath when walking at your own pace on level ground: Yes/No
- e Shortness of breath when washing or dressing yourself: Yes/No
- f Shortness of breath that interferes with your job: Yes/No
- g Coughing that produces phlegm (thick sputum): Yes/No
- h Coughing that wakes you early in the morning: Yes/No
- i Coughing that occurs mostly when you are lying down: Yes/No
- j Coughing up blood in the last month: Yes/No
- k Wheezing: Yes/No
- l Wheezing that interferes with your job: Yes/No
- m Chest pain when you breath deeply: Yes/No
- n Any other symptoms that you think may be related to lung problems: Yes/No

5 Have you ever had any of the following cardiovascular or heart problems?
- a Heart attack: Yes/No
- b Stroke: Yes/No
- c Angina: Yes/No
- d Heart failure: Yes/No
- e Swelling in your legs or feet (not caused by walking): Yes/No
- f Heart arrhythmia (heart beating irregularly): Yes/No
- g High blood pressure: Yes/No
- h Any other heart problem that you've been told about: Yes/No

6 Heave you ever had any of the following cardiovascular or heart symptoms?
- a Frequent pain or tightness in your chest: Yes/No
- b Pain or tightness in your chest during physical activity: Yes/No
- c Pain or tightness in your chest that interferes with your job: Yes/No
- d In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
- e Heartburn or indigestion that is not related to eating: Yes/No
- f Any other symptom that you think may be related to heart or circulation problems: Yes/No

7 Do you currently take medications for any of the following problem?
- a Breathing or lung problems: Yes/No
- b Heart trouble: Yes/No
- c Blood pressure: Yes/No
- d Seizures (fits) Yes/no

8 If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9):
- a Eye irritation: Yes/No
- b Skin allergies or rashes: Yes/No
- c Anxiety: Yes/No
- d General weakness or fatigue: Yes/No

e Any other problem that interferes with your use of a respirator: Yes/No

9 Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10 Have you ever lost vision in either eye (temporarily or permanently): Yes/No

11 Do you currently have any of the following vision problems?
a Wear contact lenses: Yes/No
b Wear glasses: Yes/No
c Color blind: Yes/No
d Any other eye or vision problem: Yes/No

12 Have you ever had an injury to your ears, including a broken ear drum: Yes/No

13 Do you currently have any of the following hearing problems?
a Difficulty hearing: Yes/No
b Wear a hearing aid: Yes/No
c Any other hearing or ear problem: Yes/No

14 Have you ever had a back injury: Yes/No

15 Do you currently have any of the following musculoskeletal problems?
a Weakness in any of your arms, hands, legs, or feet: Yes/No
b Back pain: Yes/No
c Difficulty fully moving your arms and legs: Yes/No
d Pain or stiffness when you lean forward or backward at the waist: Yes/No
e Difficulty fully moving your head up or down: Yes/No
f Difficulty fully moving your head side to side: Yes/No
g Difficulty bending at your knees: Yes/No
h Difficulty squatting to the ground: Yes/No
i Climbing a flight of stairs or a ladder carrying more than 25lbs: Yes/No
j Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B. Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1 In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No
If "yes" do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2 At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No
If "yes" name the chemicals if you know them:

_____
_____
_____
_____
_____

3 Have you ever worked with any of the materials, or under any of the conditions listed below:
a Asbestos: Yes/No
b Silica (e.g. in sandblasting): Yes/No
c Tungsten/cobalt (e.g. grinding or welding this material): Yes/No
d Beryllium: Yes/No
e Aluminum: Yes/No
f Coal (for example, mining): Yes/No
g Iron: Yes/No
h Tin: Yes/No

i Dusty environments: Yes/No
j Any other hazardous exposures: Yes/No
If "yes", describe these exposures:

_____
_____
_____
_____

4 List any second jobs or side businesses you have:

_____
_____
_____
_____

5 List your previous occupations :

_____
_____
_____
_____

6 List your current and previous hobbies :

_____
_____
_____
_____

7 Have you been in the military services? Yes/No
If "yes" were you exposed to biological or chemical agents (either in training or combat): Yes/No

8 Have you ever worked on a HAZMAT team? Yes/No

9 Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If "yes" name the medications if you know them:

_____
_____
_____
_____

10 Will you be using any of the following items with your respirator(s)?
a HEPA Filters: Yes/No
b Canisters (for example, gas masks): Yes/No
c Cartridges: Yes/No

11 How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
a Escape only (no rescue): Yes/No
b Emergency rescue only: Yes/No
c Less than 5 hours per week: Yes/No
d Less than 2 hours per day: Yes/No
e 2 to 4 hours per day: Yes/No
f Over 4 hours per day: Yes/No

12 During the period you are using the respirator(s), is your work effort:

a Light (less than 200 kcal per hour): Yes/No
If "yes" how long does this period last during the average shift: _____ hrs. _____mins.

Examples of light work effort are sitting while writing, typing, drafting or performing list assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b Moderate (200 to 350 kcal per hour): Yes/No
If "yes" how long does this period last during the average shift: _____ hrs. _____mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic, standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c Heavy (above 350 kcal per hour): Yes/No
If "yes" how long does this period last during the average shift: _____ hrs. _____mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings;

walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13 Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No
If "yes" describe this protective clothing and/or equipment:

_____
_____
_____
_____

14 Will you be working under hot conditions (temperature exceeding 77° F): Yes/No

15 Will you be working under humid conditions: Yes/No

16 Describe the work you'll be doing while you're using your respirator(s):

_____
_____
_____
_____

17 Describe any special or hazardous conditions you might encounter when you're using your respirator(s) for example, confined spaces, life-threatening gases):

_____
_____
_____
_____

18 Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):
Name of the first toxic substance :

_____
_____

Estimated maximum exposure level per shift:

_____

Duration of exposure per shift :

_____
_____

Name of the second toxic substance :

_____

Estimated maximum exposure level per shift:

_____

Duration of exposure per shift:

_____
_____

Name of the third toxic substance:

_____
_____

Estimated maximum exposure level per shift:

_____

Duration of exposure per shift:

_____
_____

The name of any other toxic substances that you'll be exposed to while using your respirator(s):

_____
_____
_____
_____
_____

19 Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

_____
_____
_____
_____

Appendix VII – Employee Information On Voluntary Respirator Use

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard. You should do the following:

1 Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2 Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health for the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3 Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4 Keep track of your respirator so that you do not mistakenly use someone else's respirator.

SECTION VII

HAZCOM / SDS

Hazard Communication Program

INTRODUCTION

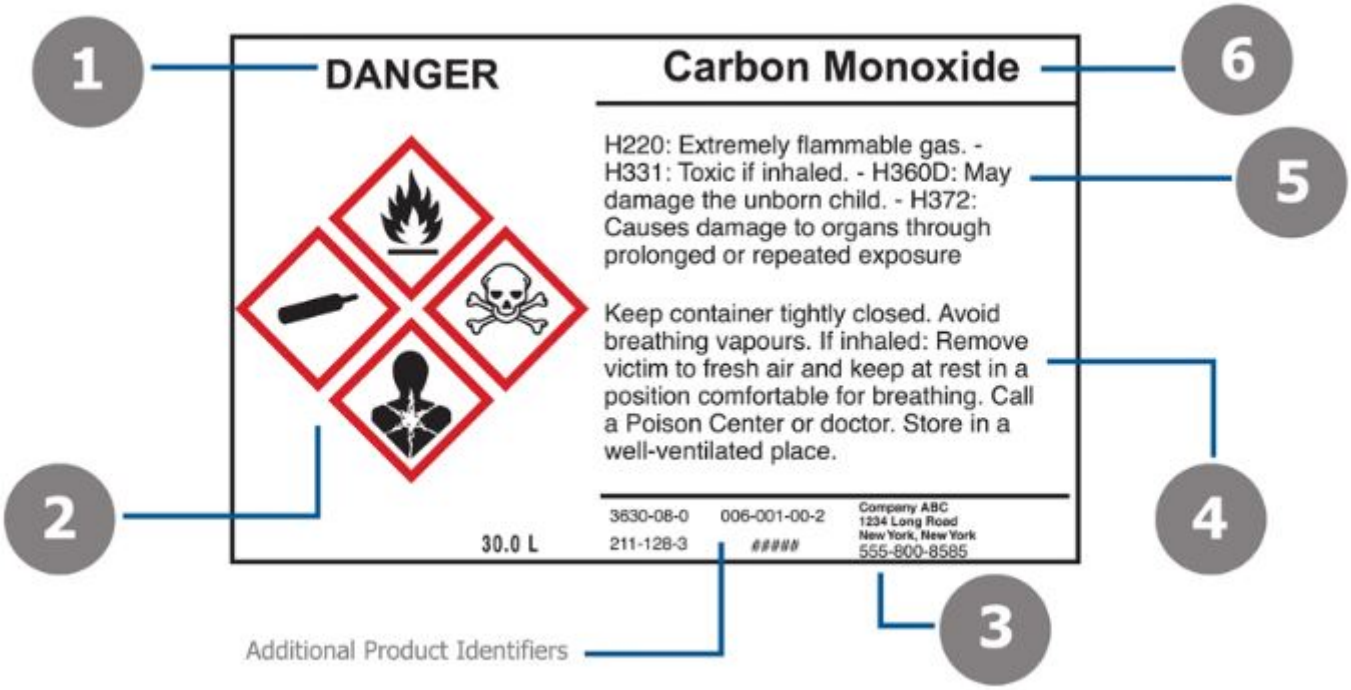
Environmental Air Inc. Hazard Communication Program (HAZCOM) has been developed to assist in providing a safe and healthy working environment for all employees by providing information about chemical hazards and other hazardous substances including controlling hazards located in the workplace. The Hazard Communication Program describes the company's plan to ensure that the container labeling and Safety Data Sheet (SDS) requirements are met. It also describes the activities to ensure that the information and training requirements of the Hazard Communication Program regulations are met. Finally, it describes the methods of informing other persons of the hazardous substances to which they may be exposed while in contact with our products or services.

Questions concerning the Hazard Communication Program should be directed to the Safety Director. The program is intended to meet all requirements of an "Employees Right to Know."

CONTAINER LABELING

ALL CONTAINERS OF HAZARDOUS SUBSTANCES SHALL BE LABELED

Labeling is the cornerstone of GHS compliance. With an emphasis on consistency and comprehension of chemical labels, it is important to know what goes into a GHS label for primary and secondary containers. There are six key elements to a GHS label that you need to know.



The Six Elements of a GHS Label

1. Signal Word. The signal word indicates hazard level. "Danger" is used for the most severe instances, while "Warning" is less severe.
2. GHS Symbols (Hazard Pictograms). These pictograms are used to identify hazardous products and are commonly grouped by chemical/physical risk, health risk and environmental risk. View Brady's GHS pictogram guide.
3. Manufacturer Information. This identifies the manufacturer's company name, address and telephone number.

4. Precautionary Statements/First Aid. These are phrases that are tied to each hazard statement. They describe general preventative, response, storage or disposal precautions. These statements are found on the chemical's Safety Data Sheet. Similar to Hazard Statements, Precautionary Statements can be identified by a P-Code (like P100).
5. Hazard Statements. These are phrases that describe the nature of hazardous products and the degree of hazard. Hazard statements are on the chemical's Safety Data Sheet (SDS) and identified by an H-Code (like H100).
6. Product Name or Identifiers. This identifies the product or chemical name. Additional identifiers can be noted to the right of the Manufacturer's information (#1).

The Safety Coordinator is responsible for ensuring that ALL containers of hazardous materials used in the daily operations of Environmental Air, Inc. shall be labeled, tagged, or marked with the following information.

Primary Containers

Primary chemical containers are the bags, barrels, bottles, boxes, cans, cylinders and drums that are received from the manufacturer. These containers should be labeled following the GHS mandates per the GHS label example above and include all six labeling elements.

When a label is on a container directly from a supplier, this label cannot be removed, altered or defaced. If it needs to be replaced, the new label must contain the same information as the original.

Secondary Container Labeling

Secondary containers are usually smaller than primary containers and could include spray bottles, jugs, or jars. These containers usually hold chemicals that are transferred from a primary container. Secondary containers must comply with GHS labeling requirements except when the following criteria are met:

- The material is used within the work shift of the individual who makes the transfer.
- The worker who made the transfer is in the work area the entire time during use.

- The container stays within the work area and in the possession of the worker who filled the container.

It is the responsibility of each employee to ensure that any secondary container they are using is properly labeled with either a copy of the original manufacturer's label or with a generic label. If the container is not properly labeled, make a label with the required information, or bring the container to the Safety Director so that it may be labeled.

Exception: Labels are not required on portable containers with which hazardous materials are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. In addition, secondary containers that will be filled for only one shift need not be labeled.

HAZARDOUS SUBSTANCES IN UNLABELED PIPES

- All pipes containing hazardous substances will be properly labeled with the pipe content. If any work is to be performed on an unlabeled pipe, contact the Safety Director prior to starting work on unlabeled pipes to receive the following information.
    - What is in the pipe
    - Potential hazards
    - Safety precautions

SAFETY DATA SHEET

The process which ensures hazardous awareness and communication centers on the effective dissemination of appropriate information. The principal vehicle through which this occurs is the manufacturer's Safety Data Sheet (SDS), which is a guide, containing important safety information on hazardous materials. Every foreman is responsible and required to have a Safety Data Sheet (SDS) for every hazardous chemical product in use. Copies of SDS should be kept in a binder and filed in alphabetical order by product name. Read the SDS BEFORE you start a job.

A Safety Data Sheet tells you:

- Detailed information on how to store, handle and use a product in a safe manner
- What to do should an emergency situation occur

- The chemical and physical properties of a product
- All the hazardous ingredients

The following information is a requirement for every SDS:

- Section 1: Identification
- Section 2: Hazard(s) Identification
- Section 3: Composition/Information on Ingredients
- Section 4: First-Aid Measures
- Section 5: Fire-Fighting Measures
- Section 6: Accidental Release Measures
- Section 7: Handling and Storage
- Section 8: Exposure Controls/Personal Protection
- Section 9: Physical and Chemical Properties
- Section 10: Stability and Reactivity
- Section 11: Toxicological Information
- Section 12: Ecological Information (non-mandatory)
- Section 13: Disposal Considerations (non-mandatory)
- Section 14: Transport Information (non-mandatory)
- Section 15: Regulatory Information (non-mandatory)
- Section 16: Other Information

SAFETY DATA SHEET POLICY

The program Safety Director has the overall responsibility for establishing and monitoring the SDS Program. He will ensure that procedures are developed to obtain the necessary SDS's for all substances and chemicals, which are known to pose a health or physical hazard to employees who are exposed to them. He will review all incoming or updated SDS's for new or significant health and safety information and pass it on to affected employees. A master copy of all complete and current SDS's will be maintained and updated as necessary by the Safety Director. The Safety Director will assign responsibilities to appropriate on-site supervisory personnel for SDS maintenance at each jobsite. He will ensure that current SDS's for all chemicals and substances at the site are available to employees. If an SDS is not available upon request, the Program Manager/Coordinator should be contacted. Periodically, site personnel shall check the SDS collection for completeness.

The Safety Director will review incoming SDS for new and significant health and safety information. Any new information shall be passed on to affected employees. The SDS will be reviewed for completeness. If a SDS is missing information or is incomplete, a new SDS will be requested from the manufacturer. If a complete SDS is not received in a timely manner (seven working days) from the manufacturer, OSHA will be notified. (NOTE: A request or written inquiry should be made to the manufacturer or importer of a hazardous substance responsible for the material safety data sheet, asking that the complete material safety data sheet be sent to the employer). SDS must be readily available for all employees to review at any time. If a SDS is not readily available, contact the Safety Director immediately.

SDS REPORT

Insulated Flex

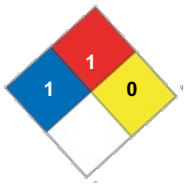
INNOVATIONS FOR LIVING™

Personal Protective Equipment	WHMIS Pictograms	DOT Pictograms
 Protective Gloves Safety Glasses	Not Controlled	Not Regulated

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**Low Density Fiber Glass Insulation/Insulation Board - Unfaced Products**
MSDS Manufacturer Number:	13614-NAM
Synonyms:	Acoustical Backing Board, Attic Door Insulator, Attic Hatch Insulator, Attic Scuttle Insulator, Batts in Bags, Blended Blowing Wool, Cathedral Batt Insulation, Cavity Wall, Cold Storage Wall, Curtain Wall 225, ECOTOUCH™, FDM ARP100, FDM ARP125, Flexible Marine, Flexible Type 75 AF-FDM, HV-24, HV-26, H2V-1000, H2V-2000, Insulation Batts, Manufactured Housing Insulation, Masonry Wall Insulation, Metal Building (all types), Metal Framing Batts, Metal Framing Insulation, Multi-purpose Insulation, Noise Stop Board, Pink® Insulation, Pink Pak, QuietZone® Acoustic Batt, RA Series, Shaft Wall, Sill Sealer, Sonobatts®, Sound Attenuation Batts, Standard Blend, Super Pink R Blowing Wool, ThermaGlas®, Marine Board, ULTRAVANTAGE™ Comfort Touch™, Unfaced Duct Wrap, Warm-N-Dri®, Aislhogar, Aislacustic™, MBI, MBI Certified R, Attic Blanket®, Flexible Duct Media FIBERGLAS® Insulation with PureFiber Technology®, Metal Building FIBERGLAS® Insulation with PureFiber Technology®
Product Use/Restriction:	Insulation
Manufacturer Name:	Owens Corning Insulating Systems, LLC
Address:	One Owens Corning Parkway Toledo, OH 43659
Customer Service Phone Number:	1-800-GET-PINK or 1-800-438-7465
Health Issues Information:	1-419-248-8234 (8am-5pm ET)
Technical Product Information:	1-800-GET-PINK or 1-800-438-7465
Emergency Phone Number:	1-419-248-5330 (after 5pm ET and weekends)
CHEMTREC:	800-424-9300 (24 hours everyday)
Canutec:	(613) 996-6666 (Canada 24 hours everyday)
Website:	www.owenscorning.com
MSDS Creation Date:	December 16, 1997
MSDS Revision Date:	March 01, 2011

NFPA



HMIS

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	X

* Chronic Health Effects

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Ingredient Percent
Cured Binder	N/A	0 - 15 by weight
Fiber Glass (Wool)	65997-17-3	85 - 100 by weight

Non-Hazardous Statement: The remaining components of this product are non-hazardous or are in a small enough quantity as to not meet regulatory thresholds for disclosure. These components contain no substances or impurities which would influence the classification of this product.

SECTION 3 - HAZARDS IDENTIFICATION

Applies to Product

Emergency Overview: Exposure to dust may be irritating to eyes, nose, and throat.

Route of Exposure:	Eye contact Skin contact Inhalation
Potential Health Effects:	
Eye:	May cause slight irritation.
Skin:	May cause slight skin irritation.
Inhalation:	May cause irritation of respiratory tract.
Ingestion:	Ingestion of this product is unlikely.
Chronic Health Effects:	There is no known chronic health effect connected with long-term use or contact with this product.
Carcinogenicity:	This product contains a component which is listed by IARC, OSHA or NTP. See Section 11 for additional information.
Potential Environmental Effects:	There is no known ecological information for this material.
Aggravation of Pre-Existing Conditions:	Chronic respiratory or skin conditions may temporarily worsen from exposure to this product.
OSHA Regulatory Status:	This product is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SECTION 4 - FIRST AID MEASURES

Eye Contact:	Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Do not rub or scratch eyes. If eye irritation persists, consult a specialist.
Skin Contact:	Wash off immediately with soap and cold water. DO NOT use warm water because this will open up the pores of the skin, which will cause further penetration of the fibers. Use a wash cloth to help remove fibers. DO NOT rub or scratch affected areas. Remove contaminated clothing. If irritation persists get medical attention. Never use compressed air to remove fibers from the skin. If fibers are seen penetrating from the skin, the fibers can be removed by applying and removing adhesive tape so that the fibers adhere to the tape and are pulled out of the skin.
Inhalation:	Move to fresh air. If symptoms persist, call a physician.
Ingestion:	Accidental ingestion of this material is unlikely. If this does occur, watch person for several days to make sure intestinal blockage does not occur. Rinse mouth with water and drink water to remove fibers from the throat. If symptoms persist, call a physician.
Note to Physicians:	Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES

Flammable Properties:	Non Flammable.
Flash Point:	None.
Flash Point Method:	Not applicable.
Lower Flammable/Explosive Limit:	Not applicable.
Upper Flammable/Explosive Limit:	Not applicable.
Extinguishing Media:	dry chemical foam carbon dioxide (CO_2) water fog
Protective Equipment:	Wear self-contained breathing apparatus (SCBA) and full fire fighting protective gear.
Unusual Fire Hazards:	Hydrogen chloride to be released from the PVC barrier and vinyl facings during a fire.
Hazardous Combustion Byproducts:	Carbon monoxide. Carbon dioxide. Ammonia. Other undetermined compounds could be released in small quantities.
Universal Fire And Explosion Hazards:	Not available.

NFPA Ratings:

NFPA Health:	1
NFPA Flammability:	1
NFPA Reactivity:	0

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personnel Precautions:	Avoid contact with skin and eyes.
Environmental Precautions:	Prevent further leakage or spillage if safe to do so.
Methods for containment:	This material will settle out of the air. Prevent from spreading by covering, diking or other means.
Methods for cleanup:	Use an industrial vacuum cleaner with a high efficiency filter to clean up dust and fiber contamination. Avoid dry sweeping. Pick up and transfer to properly labeled containers.
Other Precautions:	Does not apply.

SECTION 7 - HANDLING and STORAGE

Handling:	Avoid dust formation. Do not breathe dust. Wear personal protective equipment.
Storage:	Keep product in its packaging until use to minimize potential dust generation. Product should be kept dry and undercover.
Hygiene Practices:	Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION - EXPOSURE GUIDELINES

Engineering Controls:	Provide local exhaust and/or general ventilation to maintain exposure below regulatory and recommended limits. Dust collection system must be used in transferring operations, cutting or machining or other dust generating processes, such as using power tools. Vacuum or wet clean-up methods should be used.
Eye/Face Protection:	Safety glasses with side-shields.
Skin Protection Description:	Protective gloves. Long sleeved shirt and long pants.
Respiratory Protection:	When workers are facing airborne particulate/dust concentrations above the exposure limit they must use appropriate certified respirators. A properly fitted NIOSH approved disposable N 95 type dust respirator or better is recommended.
Other Protective:	When the temperature of the surface being insulated exceeds 250°F (121°C), including initial startup, the binder in these products may undergo various degrees of decomposition depending on the temperature in the application. The need for respiratory protection will vary according to the airborne concentration of the decomposition products released and accumulated in the area. Wear the appropriate respiratory protection according to the conditions and exposure levels in the area.
General Hygiene Considerations:	Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use.

EXPOSURE GUIDELINES

Ingredient	Guideline OSHA	Guideline ACGIH	Ontario Canada	Mexico	
Fiber Glass (Wool)	PEL-TWA: 1 f/cc (Respirable)	TLV-TWA: 1 f/cc (Respirable)	TWAEV-TWA: 0.05 mg/m3 or 1 f/cc STEL: 0.6 mg/m3	TWA: 0.15 mg/m3	

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

Physical State Appearance:	Fibrous.
Odor:	organic
Boiling Point:	No Data
Melting Point:	No Data
Specific Gravity:	No Data

Solubility:	Insoluble in water.
Vapor Density:	No Data
Vapor Pressure:	No Data
Evaporation Rate:	No Data
pH:	No Data
Viscosity:	Not applicable.
Flash Point:	None.
Flash Point Method:	Not applicable.

SECTION 10 - STABILITY and REACTIVITY

Chemical Stability:	Stable under normal conditions.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Conditions to Avoid:	None expected
Incompatible Materials:	No materials to be especially mentioned.
Special Decomposition Products:	See Section 5 of MSDS for hazardous decomposition products during a fire.

SECTION 11 - TOXICOLOGICAL INFORMATION

Applies to Product :

Acute Toxicity: Dusts may cause mechanical irritation to eyes and skin. Ingestion may cause transient irritation of throat, stomach and gastrointestinal tract. Inhalation may cause coughing, nose and throat irritation, and sneezing. High exposures may cause difficulty breathing, congestion, and chest tightness.

Carcinogens:

	ACGIH	NIOSH	OSHA	IARC	NTP	MEXICO
Cured Binder	No Data	No Data	No Data	No Data	No Data	No Data
Fiber Glass (Wool)	A3 Animal Carcinogen	No Data	No Data	Group 3 - Not Classifiable as to its Carcinogenicity to Humans.	RAC - Reasonably anticipated to be a human carcinogen.	A3 Animal Carcinogen

Applies to Product :

Sensitization:	No information available.
Mutagenicity:	No information available.
Reproductive Toxicity:	No information available.
Teratogenicity:	No information available.
Neurological Effects:	No information available.

Cured Binder :

Ingestion: Inhalation - Rat LD50: 7 gm/kg - [Autonomic Nervous System - other (direct) parasympathomimetic Behavioral - muscle weakness Lungs, Thorax, or Respiration - respiratory depression]
Inhalation - Mouse LD50: 7 gm/kg - [Autonomic Nervous System - other (direct) parasympathomimetic Behavioral - muscle weakness Lungs, Thorax, or Respiration - respiratory depression](RTECS)

Fiber Glass (Wool) :

Chronic Effects: In October 2001, the International Agency for Research on Cancer (IARC) classified fiber glass wool as Group 3,""not classifiable as to its carcinogenicity to humans"". The 2001 decision was based on human studies and animal research that have not shown an association between inhalation exposure to dust from fiber glass wool and the development of respiratory disease. This classification replaces the IARC finding in 1987 of a Group B designation ""possibly carcinogenic to humans."".

In May 1997, the American Conference of Governmental Industrial Hygienists (ACGIH) adopted an A3 carcinogen classification for glass wool fibers. The ACGIH A3 classification considers glass wool to be carcinogenic in experimental animals at relatively high doses, by routes of administration, at sites, or by mechanisms that it does not consider relevant to worker exposure. It also reviewed the available epidemiological studies and concluded that they do not confirm an increased risk of cancer in exposed humans. Overall, the ACGIH found that the available medical/scientific evidence suggests that glass wool is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

In 1994, the National Toxicology Program (NTP) classified glass wool (respirable size) as ""reasonably anticipated to be a human carcinogen"". This classification was primarily based upon the 1987 IARC classification. NTP is currently considering reclassifying this material.

SECTION 12 - ECOLOGICAL INFORMATION

Applies to Product :

Ecotoxicity:	This material is not expected to cause harm to animals, plants or fish.
Bioaccumulation:	Not available.
Biodegradation:	Not available.
Mobility In Environmental Media:	Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS

Applies to Product :

Waste Disposal:	Dispose of in accordance with Local, State, Federal and Provincial regulations.
Contaminated Packaging:	Empty containers should be taken for local recycling, recovery or waste disposal.
RCRA Number:	No EPA Waste Numbers are applicable for this product's components.
RCRA Characteristics:	This material is not expected to be a characteristic hazardous waste under RCRA.

SECTION 14 - TRANSPORT INFORMATION

DOT Shipping Name:	Not Regulated.
IATA Shipping Name:	Not Regulated.
Canadian Shipping Name:	Not Regulated.
IMDG Shipping Name :	Not Regulated.
ADR Shipping Name :	Not Regulated.
RID Shipping Name :	Not Regulated.
ICAO Shipping Name:	Not Regulated.
MEX Shipping Name :	Not Regulated.

SECTION 15 - REGULATORY INFORMATION

Inventory Status

	Japan ENCS	EINECS Number	Philippines PICCS	China	South Korea KECL
Cured Binder	Not listed			Listed	KE-35185
Fiber Glass (Wool)	Not listed	266-046-0	Listed	Listed	KE-17630

	Australia AICS	Canada DSL	TSCA Inventory Status		
Cured Binder	Listed	Listed	Listed		
Fiber Glass (Wool)	Listed	Listed	Listed		

Applies to Product :

Canada Reg. Status:	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.
Canada WHMIS:	Not controlled.
CA PROP 65:	The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): WARNING! This product contains a chemical known to the State of California to cause cancer.
SARA:	This product does not contain any chemicals which are subject to the reporting requirements of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III (40CFR, Part 372).
Section 311/312 Hazard Categories:	Acute Health Hazard: Yes

Chronic Health Hazard: Yes
Risk of ignition: No
Sudden Release of Pressure Hazard: No
Reactive Hazard: No

Clean Air Act: This product does not contain any Hazardous Air Pollutants (HAPs).

State Right To Know

	RI	MN	IL	PA	MA
Cured Binder	No Data	No Data	No Data	No Data	No Data
Fiber Glass (Wool)	Listed	Listed	Listed	Listed	Listed

	NJ				
Cured Binder	No Data				
Fiber Glass (Wool)	No Data				

SECTION 16 - ADDITIONAL INFORMATION

HMIS Health Hazard: 1

HMIS Fire Hazard: 1

HMIS Reactivity: 0

HMIS Personal Protection: X

MSDS Creation Date: December 16, 1997

MSDS Revision Date: March 01, 2011

MSDS Revision Notes: Added to the synonyms list

Disclaimer: Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

SDS REPORT

Duct Liner Adhesive

HEALTH	**1**
FIRE	**0**
REACTIVITY	**0**

SAFETY DATA SHEET

Prepared by Duro Dyne August 8, 2016

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade name:	DURO DYNE WATER BASED DUCT LINER ADHESIVE
Product Identifier:	WITLV-AS, BWITLV-AS
Item #:	5106, 5107, 5127, 5128
Supplier Details:	DURO DYNE CORPORATION 81 Spence Street Bay Shore, NY 11706
Information Phone No:	800-899-3876
Emergency Phone No:	800-424-9300 (**CHEMTREC**)

2. HAZARDS IDENTIFICATIONS

Hazardous Classifications HMIS® Rating (product as packaged):	Health: 1 Fire: 0 Reactivity: 0 PPE: B
Canadian WHMIS Classification:	None.
OSHA Hazard Communication Standard (29CFR1910.1200) Hazard Class:	None.
EPA SARA Title III Section 312 (40CFR370) Hazard Class:	None.
EPA SARA Title III Section 313 (40CFR372) Toxic Chemicals Above "de minims" Levels are:	None.
California PROP 65 substances listed by the State of California under the "Safe Drinking Water and Toxic Enforcement Act of 1986":	No such substances are present in reportable amounts for occupational exposure as per OSHA's approval of the California Hazard Communication Standard, Federal Register, page 31159ff, 6 June 1997.
Emergency Overview and Potential Hazards:	This material is not hazardous under OSHA criteria. This material is not hazardous under WHMIS criteria.
Physical Hazards:	No known physical hazards.
Acute Health Effects Route of Entry or Possible Contact:	Eyes, Skin, Inhalation, Ingestion.
Eye Contact:	May cause slight eye discomfort or irritation.
Skin Contact:	Prolonged or repeated contact may cause skin dryness or sensitization.

Inhalation:	No acute toxic respiratory tract effects are expected.
Ingestion:	Ingestion is not expected in industrial use.
Further Information:	
Chronic Health Effects:	Contains chemical(s) present at <0.1% which may cause skin sensitization.
Medical Conditions Which May Be Aggravated by Exposure:	Not established**.**
Carcinogens/Reproductive Toxins:	This material does not contain any reproductive toxins at or above OSHA or WHMIS reportable levels. There are no carcinogenic ingredients present at or over 0.1% in this material. See Section 11 for toxicological information, if any.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Characterization (Preparation):	Compounded Vinyl Acetate based copolymer, Calcium Carbonate (CAS# 1317-65-3) as additives.
Information on Ingredients:	This material does not contain any hazardous substances at or above OSHA and WHMIS reportable levels. Substances listed in the Subsections "HAPS" and California Proposition 65 Carcinogens/Reproductive Toxins" that are not listed in Section 2 are only present at quantities below 0.1% for California Proposition 65 listed toxins or below 1% for non-carcinogens HAPS or they are inextricably bound in the product.

4. FIRST-AID MEASURES

General Information:	Get medical attention if irritation or other symptoms occur. Before seeking medical attention remove contaminated clothing and shoes. Take a copy of the Safety Data Sheet when going for medical treatment.
After Inhalation:	No special measures required.
After Contact with the Skin:	If contact with the skin, wash skin with plenty of water or with water and soap.
After Contact with the Eyes:	If contact with eyes, immediately hold eyelids apart and flush with plenty of water for at least 15 minutes.
After Swallowing:	For ingestion, if conscious, give several glasses of water but do not induce vomiting. If vomiting does occur, give additional fluids. Get medical attention if symptoms occur. Show label if possible.

5. FIRE FIGHTING MEASURES

Flammable Properties: Method:	
Flash Point:	Not applicable.
Boiling Point/Boiling Range:	Approximately 100°C (212°F) at 1013 hPa.
Lower Explosion Limit (LEL):	Not applicable.
Ignition Temperature:	Not applicable.
Fire and Explosion Hazards:	Material does not burn. Dried up material is combustible. This material does not present any unusual fire or explosion hazards.

Recommended Extinguishing Media:	Use extinguishing measures appropriate to the source of fire. Water may be used to cool tanks and structures adjacent to the fire.
Unsuitable Extinguishing Media:	Not applicable.
Special Exposure Hazards Arising From The Substance of Preparation Itself, Combustion Products, Resulting Gases:	At low oxygen level: acetic acid.
Fire Fighting Procedures:	Fire fighters should wear full protective clothing including a self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURE

Precautions:	Wear personal protection equipment (see Section 8). If material is released indicate risk of slipping. HAZWOPER PPE Level: D
Containment:	Prevent material from entering sewers or surface waters. Contain any fluid that runs out using suitable material (e.g. earth). Spills of material which could reach surface waters must be reported to the United States Coast Guard National Response Center's toll free phone number (800) 424-8802.
Methods for Cleaning Up:	Take up mechanically and dispose of according to local/state/federal regulations. For small amounts: Absorb with a liquid binding material such as diatomaceous earth and dispose of according to local/state/federal regulations. Contain larger amounts and pump up into suitable containers. Clean up with plenty of water. Dispose of cleansing water in accordance with local/state/federal regulations.

7. HANDLING AND STORAGE

General Information:	Avoid exposure by technical measures or personal protective equipment.
Handling Precautions for Safe Handling:	Spilled substances increases risk of slipping.
Precaution Against Fire and Explosion:	No special precautions against fire and explosion required.
Storage Conditions for Storage Rooms and Vessels:	Protect against frost.
Advice for Storage of Incompatible Materials:	Not applicable.
Further Information for Storage:	Not applicable.
Minimum Temperature Allowed During Storage and Transportation:	0°C (32°F).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls Ventilation:	Use with adequate ventilation.
Local Exhaust:	No special ventilation required.
Associate Substances with Specific Control Parameters Such as Limit Values, Maximum Airborne Concentrations at the Workplace:	None Known

Personal Protection Equipment (PPE):

Respiratory Protection:	Respiratory protection is not normally required.
Hand Protection:	Recommendation: Any liquid-tight rubber or vinyl gloves.
Eye Protection:	Safety glasses with side shields or chemical safety goggles.
Other Protective Clothing or Equipment:	Additional protective clothing or equipment is not normally required. Provide eye bath and safety shower.

General Hygiene and Protection Measures:	Avoid contact with eyes, skin and clothing. Do not eat or drink when handling. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	
Physical State/Form:	Liquid
Color:	Black or White
Odor:	Slight/Mild
Safety Parameters Method:	
pH-Value:	7.5-9.0
Melting Point/Melting Range:	Approximately 0.00 °C (32°F).
Boiling Point/Range:	Approximately 100º C (212°F) at 1013 hPa.
Flash Point :	Not applicable.
Evaporation Rate:	Less than Ether.
Ignition Temperature:	Not applicable.
Lower Explosion Limit:	Not applicable.
Vapor Pressure:	23 hPa at 20°C (68°F)
Vapor Density:	Heavier than air.
Density:	1.3 g/cm3
Water Solubility/Miscibility:	Dilutable, moderately soluble.
Viscosity (Dynamic):	> 2,000 cP
Weight per Gallon:	9.5 + 0.2 lbs/gallon
Volatile by Weight:	62.5% + 2% (water)
VOC Content:	2.4 g/L (less than 250g/L considered Low VOC, less than 5g/L considered Zero VOC)

10. STABILITY AND REACTIVITY

General Information:	If stored and handled in accordance with standard industrial practices no hazardous reactions are known.
Conditions to Avoid:	None known.
Materials to Avoid:	None known.
Hazardous Decomposition Products:	If stored and handled in accordance with standard industrial practices and local regulations where applicable: none known. At increased temperature: Acetic Acid.
Further Information:	Hazardous polymerization cannot occur.

11. TOXICOLOGICAL INFORMATION

General Information:	Toxicological testing has been conducted with similar product(s).
Toxicological Data:	Acute Toxicity (LD50/LC50-values relevant to classification): Primary Irritation
Experience with Man:	During manufacturing and use: No information on damage to health.

12. ECOLOGICAL INFORMATION

Information On Elimination (Persistence and Degradability) Biodegradation /further information:	Not readily biodegradable.
Further Information:	Polymer component: Elimination by absorption to activated sludge. Separation by flocculation is possible.
Behavior in Environmental Compartments, Mobility:	Not available.
Further Information:	No adverse effects expected.
Ecotoxicological Effects:	No expected damaging effects to aquatic organisms.
Effects in Sewage Treatment Plants (Bacteria Toxicity: respiration/reproduction inhibition):	According to current knowledge adverse effects on water purifications plants are not expected.
Additional Information/Other Harmful Effects:	Not available.
General Information:	Prevent material from entering surface waters and soil. Only introduce into water purification plants in diluted state. No environmental problems expected if handled and treated in accordance with standard industrial practices and local regulations where applicable. The ecotoxicological result provided were obtained from test with similar products.

13. DISPOSAL CONSIDERATIONS

Product Disposal Recommendations:	Dispose of according to regulations by incineration in a special waste incinerator. Small quantities may be disposed of by incineration in an approved facility. Observe local/state/federal regulations. After chemical deflocculation: Can be stored with domestic waste. Observe local/state/federal regulations.
Packaging Disposal Recommendations:	Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations.
Recommended Cleaning Agent:	Water.

14. TRANSPORT INFORMATION

U.S. DOT & Canada TDG Surface Valuation:	Not regulated for transport.
Other Information:	Protect from freezing.

Transportation by Sea IMDG-Code Valuation:	Not regulated for transport.
Air Transport ICAO-TI/IATA-DGR Valuation:	Not regulated for transport.

15. REGULATORY INFORMATION

U.S. Federal Regulations	
TSCA Inventory Status and TSCA Information:	This material or its components are listed on or are in compliance with the requirements of the TSCA Chemical Substance Inventory.
TSCA 12(b) Export Notification:	This material does not contain any TSCA 12(b) regulated chemicals.
CERCLA Regulated Chemicals:	This material does not contain any CERCLA regulated chemicals.
SARA 302 EHS Chemicals:	This material does not contain any SARA extremely hazardous substances.
SARA 311/312 Hazard Class:	This product does not present any SARA 311/312 hazards.
SARA 313 Chemicals:	This material does not contain any SARA 313 chemicals above de minimum levels.
HAPS (Hazardous Air Pollutants):	108-05-4 Vinyl acetate.
U.S. State Regulations	
California Proposition 65 Carcinogens:	This material does not contain any chemicals known to the state of California to cause cancer.
California Proposition 65 Reproductive Toxins:	This material does not contain any chemicals known to the state of California to cause reproductive effects.
Massachusetts Substance List:	This material contains no listed components.
New Jersey Right-to-Know Hazardous Substance List:	This material contains no listed components.
Pennsylvania Right-to-Know Hazardous Substance List:	This material contains no listed components.
Canadian Regulations:	Not available.

16. OTHER INFORMATION

Glossary of Terms:

ACGIH:	American Conference of Governmental Industrial Hygienists
ppm:	Parts per Million
SARA:	Superfund Amendments and Reauthorization Act
DOT:	Department of Transportation
STEL:	Short Term Exposure Limit
hPa:	Hectopascals
TSCA:	Toxic Substances Control Act
mPa*s:	Milli Pascal Seconds
TWA:	Time Weighted Average
OSHA:	Occupational Safety and Health Administration

WHMIS:	Canadian Workplace Hazardous Materials
PEL:	Permissible Exposure Limit Identification System.
Pressure:	1 hPa*0.75 = 1mm Hg = 1 Torr 1 bar = 1000 hPa Viscosity 1 mPa*s = 1 Centipoise (cP)
Date SDS Prepared:	8/8/16
Hazard Rating:	Health: 1 Fire: 0 Reactivity: 0 PPE: B

SDS REPORT

Duct Sealants

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: September 20, 2018 Revision: November 08, 2019

1 Identification

· **Product identifier**

· **Trade name: Everseal, EzSeal**

· **Other means of identification:** No other identifiers

· **Recommended use and restriction on use**
· **Recommended use:** Sealant
· **Restrictions on use:** No relevant information available.

· **Details of the supplier of the Safety Data Sheet**
· **Manufacturer/Supplier:**
Ductmate Industries, Inc.
210 5th St.
Charleroi, PA 15022
Phone: 800-990-8459

· **Emergency telephone number:**
ChemTel Inc.
(800) 255-3924 (North America)
(801) 1 (813)248-0585 (International)

2 Hazard(s) identification

· **Classification of the substance or mixture**
Repr. 2 H361 Suspected of damaging fertility or the unborn child. Route of exposure: Oral.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms:**

GHS08

· **Signal word:** Warning
· **Hazard statements:**
H361 Suspected of damaging fertility or the unborn child. Route of exposure: Oral.
· **Precautionary statements:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves and eye protection.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Other hazards** There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

(Cont'd. on page 2)

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: September 20, 2018 Revision: November 08, 2019

Trade name: Everseal, EzSeal

(Cont'd. of page 1)

· **Chemical characterization: Mixtures**

· **Components:**		
1317-65-3	Limestone	10-40%
546-93-0	Magnesite	<10%
14807-96-6	Talc (Mg3H2(SiO3)4)	<10%
107-21-1	Ethylene glycol STOT RE 2, H373 Acute Tox. 4, H302	<5%
68412-54-4	Nonylphenol, branched, ethoxylated Eye Irrit. 2B, H320	<1%
14808-60-7	Quartz (SiO2) Carc. 1A, H350	<1%
68610-51-5	Phenol, 4-methyl-, reaction products with dicyclopentadiene and isobutylene Repr. 2, H361	<1%

· **Additional information:**
Non-classification as a carcinogen is based on non-inhalable form of product. IARC listings for quartz note that the substance must be respirable.
For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.
For the wording of the listed Hazard Statements, refer to section 16.

4 First-aid measures

· **Description of first aid measures**
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation is experienced, consult a doctor.
· **After eye contact:**
Remove contact lenses if worn.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
· **Most important symptoms and effects, both acute and delayed:**
Slight irritant effect on eyes.
Nausea in case of ingestion.
Gastric or intestinal disorders when ingested.
· **Danger:** Suspected of damaging the unborn child. Route of exposure: Oral.
· **Indication of any immediate medical attention and special treatment needed:**
No relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
The product is not flammable.

(Cont'd. on page 3)

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: September 20, 2018 Revision: November 08, 2019

Trade name: Everseal, EzSeal

(Cont'd. of page 2)

Use fire fighting measures that suit the environment.
· **For safety reasons unsuitable extinguishing agents:** None.
· **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
· **Advice for firefighters**
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation.
Use personal protective equipment as required.
· **Environmental precautions**
Do not allow to enter sewers/ surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.
· **Methods and material for containment and cleaning up**
Towel or mop up material and collect in a suitable container.
For larger spills, add sawdust, chalk or other inert binding material, then sweep up and discard.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling:**
Use only in well ventilated areas.
Keep out of reach of children.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Requirements to be met by storerooms and receptacles:**
Store in cool, dry conditions in well sealed receptacles.
· **Information about storage in one common storage facility:** Store away from foodstuffs.
· **Specific end use(s)** No relevant information available.

8 Exposure controls/personal protection

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
1317-65-3 Limestone	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction

(Cont'd. on page 4)

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: September 20, 2018 Revision: November 08, 2019

Trade name: Everseal, EzSeal

(Cont'd. of page 3)

REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
546-93-0 Magnesite	
PEL (USA)	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m³ *total dust, **respirable fraction
EV (Canada)	Long-term value: 10 mg/m³ total dust
LMPE (Mexico)	Short-term value: 20 mg/m³ Long-term value: 10 mg/m³ (e)
14807-96-6 Talc (Mg3H2(SiO3)4)	
PEL (USA)	Long-term value: 20 mppcf ppm (containing <1% Quartz)
REL (USA)	Long-term value: 2* mg/m³ *respirable dust; and <1% Quartz
TLV (USA)	Long-term value: 2* mg/m³ *as respirable fraction; E
EL (Canada)	Long-term value: 2 *0.1 f/cc mg/m³ resp. *if contains asbestos : ACGIH A1, IARC 1
EV (Canada)	Long-term value: 2* mg/m³, 2 f/cc ppm *respirable
LMPE (Mexico)	Long-term value: 2* mg/m³ A4, *fracción respirable
107-21-1 Ethylene glycol	
TLV (USA)	Short-term value: 10** mg/m³, 50* ppm Long-term value: 25* ppm *vapor fraction:**inh. fraction, aerosol only
WEEL (USA)	Long-term value: 10 mg/m³
EL (Canada)	Short-term value: 20** mg/m³ Long-term value: 10** mg/m³ Ceiling limit value: 100* mg/m³, 50*** ppm *Aerosol; **Particulate; ***Vapour
EV (Canada)	Ceiling limit value: 100 mg/m³
LMPE (Mexico)	Ceiling limit value: 100* mg/m³ A4, *solo aerosol
14808-60-7 Quartz (SiO2)	
PEL (USA)	Long-term value: 0.05* mg/m³ *resp. dust; 30mg/m3/%SiO2+2
REL (USA)	Long-term value: 0.05* mg/m³

(Cont'd. on page 5)

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: September 20, 2018 Revision: November 08, 2019

Trade name: Everseal, EzSeal

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	*respirable dust; See Pocket Guide App. A
TLV (USA)	Long-term value: 0.025* mg/m³ *as respirable fraction
EL (Canada)	Long-term value: 0.025 mg/m³ ACGIH A2; IARC 1
EV (Canada)	Long-term value: 0.10* mg/m³ *respirable fraction
LMPE (Mexico)	Long-term value: 0.025* mg/m³ A2, *fracción respirable

· **Exposure controls**

· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.
Avoid breathing mist, vapors, or spray.
Avoid contact with the eyes.
Avoid close or long term contact with the skin.

· **Engineering controls:** No relevant information available.

· **Breathing equipment:**
Not required under normal conditions of use.
Use suitable respiratory protective device in case of insufficient ventilation.
For spills, respiratory protection may be advisable.

· **Protection of hands:**

Protective gloves

Gloves are advised for repeated or prolonged contact.
Wear protective gloves to handle contents of damaged or leaking units.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

· **Eye protection:**

Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.

· **Body protection:** Protective work clothing

· **Limitation and supervision of exposure into the environment**
No relevant information available.

· **Risk management measures** No relevant information available.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **Appearance:**

Form: Liquid

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Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

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Trade name: Everseal, EzSeal

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Color:	According to product specification
· **Odor:**	Not determined.
· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Melting point/Melting range:**	Not determined.
· **Boiling point/Boiling range:**	Not determined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Auto-ignition temperature:**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits**	
Lower:	Not determined.
Upper:	Not determined.
· **Oxidizing properties:**	Non-oxidizing.
· **Vapor pressure:**	Not determined.
· **Density:**	
Relative density:	Not determined.
Vapor density:	Not determined.
Evaporation rate:	Not determined.
· **Solubility in / Miscibility with**	
Water:	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Other information**	No relevant information available.

10 Stability and reactivity

· **Reactivity:** No relevant information available.
· **Chemical stability:** Stable under normal temperatures and pressures.
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **Possibility of hazardous reactions** Reacts with strong acids and oxidizing agents.
· **Conditions to avoid** Excessive heat.
· **Incompatible materials** Strong acids
· **Hazardous decomposition products**
Under fire conditions only:
Carbon monoxide and carbon dioxide
Chlorine

(Cont'd. on page 7)

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

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Trade name: Everseal, EzSeal

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11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:** Based on available data, the classification criteria are not met.
· **LD/LC50 values that are relevant for classification:** None.
· **Primary irritant effect:**
· **On the skin:** Based on available data, the classification criteria are not met.
· **On the eye:** Based on available data, the classification criteria are not met.
· **Sensitization:** Based on available data, the classification criteria are not met.
· **IARC (International Agency for Research on Cancer):**
Present in trace quantities: all except quartz.

14808-60-7	Quartz (SiO2)	1
111-42-2	2,2'-iminodiethanol	2B
75-21-8	Ethylene oxide	1
123-91-1	1,4-dioxane	2B
75-07-0	acetaldehyde	2B
140-88-5	ethyl acrylate	2B

· **NTP (National Toxicology Program):**
Present in trace quantities: all except quartz.

14808-60-7	Quartz (SiO2)	K
75-21-8	Ethylene oxide	K
123-91-1	1,4-dioxane	R
75-07-0	acetaldehyde	R

· **OSHA-Ca (Occupational Safety & Health Administration):**
Present in trace quantities.

75-21-8	Ethylene oxide

· **Probable route(s) of exposure:**
Ingestion.
Inhalation.
Eye contact.
Skin contact.
· **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
· **Carcinogenicity:**
Contains known or suspect carcinogens when inhaled. Product is in non-inhalable form and is nonclassifiable as a carcinogen.
· **Reproductive toxicity:** Suspected of damaging fertility or the unborn child. Route of exposure: Oral.
· **STOT-single exposure:** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
· **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity**
Toxic to aquatic life with long lasting effects.

(Cont'd. on page 8)

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Trade name: Everseal, EzSeal

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68412-54-4 Nonylphenol, branched, ethoxylated	
LC50	0.136 mg/l (pimephales promelas)
EC50	0.148 mg/l (daphnia)

· **Persistence and degradability** No relevant information available.
· **Bioaccumulative potential:** No relevant information available.
· **Mobility in soil:** No relevant information available.
· **Additional ecological information**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Can be disposed of with household garbage after solidification following consultation with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

· **Uncleaned packagings**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN3082
· **UN proper shipping name**	
· **DOT**	Environmentally hazardous substances, liquid, n.o.s. (Nonylphenol, branched, ethoxylated)
· **ADR, IMDG**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Nonylphenol, branched, ethoxylated)
· **IATA**	Environmentally hazardous substance, liquid, n.o.s. (Nonylphenol, branched, ethoxylated)
· **Transport hazard class(es)**	

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Trade name: Everseal, EzSeal

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· **DOT, IMDG, IATA**

· **Class**	9
· **Label**	9

· **ADR**

· **Class**	9 (M6)
· **Label**	9
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	III
· **Environmental hazards**	Product contains environmentally hazardous substances: Nonylphenol, branched, ethoxylated
· **Marine pollutant:**	Yes (DOT) Symbol (fish and tree)
· **Special precautions for user**	Warning: Miscellaneous dangerous substances and articles
· **Danger code (Kemler):**	90
· **EMS Number:**	F-A,S-F
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not regulated when carried in single or combination packaging containing a net quantity of 5 L or less for liquids or 5 kg or less for solids per the following: ADR: SP 375 IMDG: 2.10.2.7 IATA: special provision A197
· **DOT**	
· **Remarks:**	Transport labeling is not required for non-bulk single package shipments by motor vehicle, rail car or aircraft. Bulk packaging consists of a maximum capacity of greater than 450L (119 gallons) for a liquid and a maximum net mass greater than 400kg (882 pounds) for a solid.

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

(Cont'd. on page 10)

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· **United States (USA)**
· **SARA**

· **Section 302 (extremely hazardous substances):**
None of the ingredients are listed.

· **Section 355 (extremely hazardous substances):**
None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**	
107-21-1	Ethylene glycol

· **TSCA (Toxic Substances Control Act)**
All ingredients are listed or exempt.

· **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**
Present in trace quantities.

75-21-8	Ethylene oxide	10000
75-07-0	acetaldehyde	10000

· **Proposition 65 (California)**
· **Chemicals known to cause cancer:**
Reference to Crystalline Silica and/or Quartz is based on unbound respirable particles and is not generally applicable to product as supplied.
Present in trace quantities: all except quartz.

14807-96-6	Talc (Mg3H2(SiO3)4)
14808-60-7	Quartz (SiO2)
111-42-2	2,2'-iminodiethanol
75-21-8	Ethylene oxide
123-91-1	1,4-dioxane
75-07-0	acetaldehyde
140-88-5	ethyl acrylate

· **Chemicals known to cause developmental toxicity for females:**
Present in trace quantities.

75-21-8	Ethylene oxide

· **Chemicals known to cause developmental toxicity for males:**
Present in trace quantities.

75-21-8	Ethylene oxide

· **Chemicals known to cause developmental toxicity:**
Present in trace quantities: ethylene oxide.

107-21-1	Ethylene glycol
75-21-8	Ethylene oxide

· **EPA (Environmental Protection Agency):**
None of the ingredients are listed.

· **IARC (International Agency for Research on Cancer):**
Present in trace quantities: all except quartz.

14808-60-7	Quartz (SiO2)	1
111-42-2	2,2'-iminodiethanol	2B

(Cont'd. on page 11)

Safety Data Sheet

acc. to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Printing date: September 20, 2018 Revision: November 08, 2019

Trade name: Everseal, EzSeal

(Cont'd. of page 10)

75-21-8	Ethylene oxide	1
123-91-1	1,4-dioxane	2B
75-07-0	acetaldehyde	2B
140-88-5	ethyl acrylate	2B

· **Canadian Domestic Substances List (DSL) (Substances not listed.):**

All ingredients are listed or exempt.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Abbreviations and acronyms:**
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistant, Bio-accumulable, Toxic
vPvB: very Persistent and very Bioaccumulative
OSHA: Occupational Safety & Health Administration
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2B: Serious eye damage/eye irritation – Category 2B
Carc. 1A: Carcinogenicity – Category 1A
Repr. 2: Reproductive toxicity – Category 2
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

· **Sources**
Website, European Chemicals Agency (echa.europa.eu)
Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)
Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6
Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaasen, Curtis D., ed., ISBN: 978-0-07-176923-5.
Safety Data Sheets, Individual Manufacturers

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

SDS REPORT

Duct Liner

SAFE USE INSTRUCTION SHEET

Creation Date 12-Apr-2005 **Revision Date** 21-Jun-2018 **Version** 4

0. GENERAL INFORMATION

This Safe Use Instruction Sheet is the document provided by Owens Corning to communicate recommended safe handling and use instructions for manufactured articles neither regulated by OSHA Hazard Communication Standard, 29 CFR 1910.1200 nor by the Canada Hazardous Products Regulation SOR/2015-17 (WHMIS 2015)

1. IDENTIFICATION

Product Name	Duct Liner
Synonyms	QuietR® AcousticR® Duct Liner, Duraflex® II, QuietR® AcoustiTEX™ Duct Liner, QuietR® Rotary Duct Liner, QuietR® Duct Liner Board
Product Code	OCIS00037
Recommended Use	No information available
Manufacturer Address	Owens Corning Insulating Systems, LLC One Owens Corning Parkway Toledo, Ohio 43659
Company Phone Number	1-800-GET-PINK or 1-800-438-7465
24 Hour Emergency Phone Number	Chemtrec 1-800-424-9300 or 1-703-741-5970 CCN17393
Emergency Telephone	1-419-248-5330 (after 5 pm ET and weekends)
E-mail address	safetydatasheet@owenscorning.com
Company Website	http://owenscorning.com/

2. HAZARDS IDENTIFICATION

Regulatory Status

This product is considered an article. 29 CFR 1910.1200(c) definition of an article is as follows: "Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees

This product is considered an article per the Canadian Hazardous Products Regulation SOR/2015-17 Manufactured articles which meet the definition of the Canadian Hazardous Products Act (any article that is formed to a specific shape or design during manufacture, the intended use of which when in that form is dependent in whole or in part on its shape or design, and that, when being installed, if the intended use of the article requires it to be installed, and under normal conditions of use, will not release or otherwise cause an individual to be exposed to a hazardous product) are not regulated by the Canadian Hazardous Products Regulation SOR/2015-17

Other Information

May cause temporary skin and mucous membranes itching due to the mechanical abrasion effect of fibers

3. COMPOSITION/INFORMATION ON INGREDIENTS

Comments The product contains no substances which at their given concentration, are considered to be hazardous to health

4. FIRST AID MEASURES

Description of First Aid Measures

Eye contact
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
- DO NOT rub or scratch eyes
- If eye irritation persists: Get medical advice/attention

Skin contact
- Wash off immediately with soap and plenty of cold water
- DO NOT use warm water because this will open up the pores of the skin, which will cause further penetration of fibers and dust
- Use a wash cloth to help remove fibers and dust
- DO NOT rub or scratch affected area
- Remove contaminated clothing and shoes
- If skin irritation persists, call a physician
- If fibers are seen penetrating from the skin, the fibers can be removed by applying and removing adhesive tape so that the fibers adhere to the tape and are pulled out of the skin
- Never use compressed air to remove fibers from skin

Inhalation
- Remove to fresh air
- If symptoms persist, call a physician

Ingestion
- Accidental ingestion of this material is unlikely
- Rinse mouth with water and drink water to remove fibers from the throat
- If this does occur watch person for several days to make sure intestinal blockage does not occur
- If symptoms persist, call a physician

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Protective equipment and precautions for firefighters
- As in any fire, wear self-contained breathing apparatus (positive-pressure), MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
- Avoid contact with eyes and skin

Methods for cleaning up
- Use an industrial vacuum cleaner with a high efficiency filter to clean up dust and fiber contamination
- Avoid creating dust
- Avoid dry sweeping
- Pick up and transfer to properly labeled containers
- Use personal protective equipment as required
- Clean contaminated surface thoroughly

7. HANDLING AND STORAGE

Storage Conditions
- Keep product in packaging until use to minimize potential dust generation
- Product should be kept dry and undercover

Incompatible materials • None known based on information supplied

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH REL
Fiberglass wool 65997-17-3	TWA: 1 fiber/cm3 respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination TWA: 5 mg/m³ inhalable particulate matter	-	-

Engineering Controls Provide local exhaust and/or general ventilation to maintain exposure below regulatory and recommended limits
Dust collection system must be used in transferring operations, cutting or other dust generating processes, such as using power tools
Vacuum or wet clean-up methods should be used

Individual protection measures, such as personal protective equipment

Eye/face protection • Wear safety glasses with side shields (or goggles)

Skin and body protection • Wear protective gloves
• Wear long-sleeved shirt and long pants

Respiratory protection • When workers are facing concentrations above the exposure limit they must use appropriate certified respirators in accordance with their company's respiratory protection program, local regulations or 29 CFR 1910.134
• A properly fitted NIOSH approved disposable N 95 type dust respirator or better is recommended

General Hygiene Considerations • Wash hands before breaks and immediately after handling products
• Remove and wash contaminated clothing before re-use

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state Solid
Appearance Fibrous
Odor Organic
Color Black
Water solubility Insoluble in water

10. STABILITY AND REACTIVITY

Possibility of Hazardous Reactions • None under normal processing

Hazardous Decomposition Products • None known based on information supplied

11. TOXICOLOGICAL INFORMATION

Product Information Fiberglass wool may cause temporary skin and mucous membranes itching due to mechanical abrasion effect of fibers

IARC (International Agency for Research on Cancer) In October 2001, the International Agency for Research on Cancer (IARC) classified fiber glass wool as Group 3,"not classifiable as to its carcinogenicity to humans". The 2001 decision was based on human studies and animal research that have not shown an

association between inhalation exposure to dust from fiber glass wool and the development of respiratory disease

NTP (National Toxicology Program) In June 2011, The National Toxicology Program (NTP) removed biosoluble glass wool fibers from its list of possible carcinogens used for home and building insulation

12. ECOLOGICAL INFORMATION

This product is not expected to be hazardous for the environment

13. DISPOSAL CONSIDERATIONS

Disposal should be in accordance with applicable regional, national and local laws and regulations

14. TRANSPORT INFORMATION

This material is not subject to regulation as a hazardous material for shipping

15. REGULATORY INFORMATION

International Inventories This product is classified as an article. Articles are exempted from registration or listing under chemicals inventories like TSCA (USA), DSL/NDSL (CAN), REACH (EU), ENCS (JP), IECSC (CN), KECL (KR), PICCS (PH), AICS (AUS)

California Proposition 65

Warning

This product can expose you to chemicals including those listed below, which is [are] known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Chemical name	California Proposition 65
Formaldehyde 50-00-0	Carcinogen

16. OTHER INFORMATION

Creation Date 12-Apr-2005
Revision Date 21-Jun-2018
Revision Note SUIS Section Updated 2, 3, 15

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safe Use Instruction Sheet

SAFETY DATA SHEET
200000002117

Formaldehyde-free™ Fiberglass Duct HVAC Insulation

Version 2.1 Revision Date 05/20/2019 Print Date 05/20/2019

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : Flex-Glas® EQ, Flex-Glas® PC, Microlite® EQ FSK Duct Wrap, Microlite® EQ PSK Duct Wrap, Microlite® FSK Duct Wrap, Microlite® PSK Duct Wrap, Microlite® Unfaced, Microlite® XG™

Manufacturer or supplier's details

Company : Johns Manville
Address : P.O. Box 5108
Denver, CO USA 80127
Telephone : +1-303-978-2000
Emergency telephone number : +1-800-424-9300 (CHEMTREC)

Company : Johns Manville Canada Inc.
Address : 5301 42 Avenue
Innisfail, AB Canada T4G 1A2
Telephone : +1-303-978-2000
Emergency telephone number : +1-800-424-9300 (CHEMTREC)

Prepared by : productsafety@jm.com

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200 (OSHA HCS 2012) and the Hazardous Products Regulations (WHMIS 2015)

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

Temporary mechanical abrasion (itching) of skin, eyes and respiratory tract may occur upon exposure to fibers or dust during handling of this product and cannot occur unless there is direct contact.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature
Glass Fiber Product.

Hazardous components

Non-hazardous according to 29 CFR 1910.1200 (OSHA HCS 2012) and the Hazardous Products Regulations (WHMIS 2015), when used as intended.

Relevant ingredients

Chemical name	CAS-No.	Concentration (%)
non-biopersistent (biosoluble) glass fibers	Not Assigned	>= 80 - <= 100 %

SECTION 4. FIRST AID MEASURES

General advice	:	Get medical attention if symptoms occur.
If inhaled	:	Move to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Take off all contaminated clothing immediately. If on skin, rinse well with water. Get medical attention if irritation develops and persists.
In case of eye contact	:	In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
If swallowed	:	If symptoms persist, call a physician. Rinse mouth with water to remove dust or fibers and drink plenty of water to help reduce irritation.
Most important symptoms and effects, both acute and delayed	:	None known.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation.
Methods and materials for containment and cleaning up	:	Take up mechanically. Pick up and arrange disposal without creating dust.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Provide appropriate exhaust ventilation at places where dust is formed.
Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.
Conditions for safe storage	:	Keep in a dry, cool place.

Materials to avoid	:	No materials to be especially mentioned.
Further information on storage stability	:	Stable at normal ambient temperature and pressure.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Glass fibers shown to be biosoluble	Not Assigned		1 fibres per cubic centimeter	ACGIH
Inert or Nuisance Dust, Particulates Not Otherwise Regulated (PNOR)	Not Assigned	PEL (total dust)	15 mg/m3	OSHA
		PEL (Respirable fraction)	5 mg/m3	OSHA

As a member of the North American Insulation Manufacturers Association (NAIMA), JM subscribes to the NAIMA Product Stewardship Program (NPSP). Under the NPSP, JM recommends that exposures be limited to the voluntary concentration of 1 f/cc TWA. The NPSP also includes work practice and respiratory protection recommendations. For more information, see NAIMA's Health and Safety Reference Library (website: http://insulationinstitute.org/tools-resources/resource-library/health-safety/) to find the Product Stewardship Program Pocket Folder (N052) and other Fact Sheets.

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hand protection		
Remarks	:	For prolonged or repeated contact use protective gloves.
Eye protection	:	Safety glasses
Skin and body protection	:	Long sleeved clothing
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid
Color	:	white, cream, brown
Odor	:	slight

Odor Threshold	:	No data available
pH	:	Not applicable
Melting point/freezing point	:	Not applicable
Initial boiling point and boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	Not applicable
Lower explosion limit	:	Not applicable
Vapour pressure	:	Not applicable
Relative vapour density	:	Not applicable
Relative density	:	No data available
Density	:	Not applicable
Solubility(ies)		
Water solubility	:	Not applicable
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Thermal decomposition	:	Not applicable
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No decomposition if stored normally.
Conditions to avoid	:	No data available

SECTION 11. TOXICOLOGICAL INFORMATION

IARC	Group 3: Not classifiable as to its carcinogenicity to humans Glass fibers shown to be biosoluble
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Further information

Product:

Remarks: Temporary mechanical abrasion (itching) of skin, eyes and respiratory tract may occur upon exposure to fibers or dust during handling of this product and cannot occur unless there is direct contact.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

No data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information	:	Due to the properties of the product, a hazard to the environment may not be expected.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Disposal of residual product	:	Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

Land transport
USDOT: Not classified as a dangerous good under transport regulations
TDG: Not classified as a dangerous good under transport regulations

Sea transport
IMDG: Not classified as a dangerous good under transport regulations

Air transport
IATA/ICAO: Not classified as a dangerous good under transport regulations

SECTION 15. REGULATORY INFORMATION

TSCA list

TSCA - 5(a) Significant New Use Rule List of Chemicals	:	Not relevant
U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpart D)	:	Not relevant

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : No SARA Hazards

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This product does not require a warning under the California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).

The components of this product are reported in the following inventories:

TSCA	:	On the inventory, or in compliance with the inventory
DSL	:	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Further information
Revision Date : 05/20/2019

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SDS REPORT

Duct Tape

SAFETY DATA SHEET
308, 315, 345, 396, 398, 2280, 2285

1. IDENTIFICATION

Product Name	308, 315, 345, 396, 398, 2280, 2285
Recommended use of the chemical and restrictions on use	
Identified uses	Pressure Sensitive Adhesive
Company Identification	Berry Plastics Corporation 25 Forge Parkway Franklin, MA 02038
Customer Information Number	(800) 248-7659 (Monday – Friday 8:00 am to 5:00 pm) msdstechnical@berryplastics.com
Emergency Telephone Number	
Chemtrec Number	Within USA and Canada: 1-800-424-9300 CCN22955 Outside USA and Canada: +1 703-741-5970 (collect calls accepted)
Issue Date	July 14, 2014
Supersedes Date	January 4, 2012

Safety Data Sheet prepared in accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

2. HAZARD IDENTIFICATION

Hazard Classification
This product is classified as not hazardous in accordance with the Globally Harmonized System of Classification and Labelling (GHS).

Label Elements
Hazard Symbols
None

Signal Word: None

Hazard Statements
None

Precautionary Statements
Prevention
None
Response
None
Storage
None
Disposal
None

2. HAZARD IDENTIFICATION

Other Hazards
None identified.

Specific Concentration Limits
The values listed below represent the percentages of ingredients of unknown toxicity.

Acute oral toxicity	15 - 25%
Acute dermal toxicity	45 - 55%
Acute inhalation toxicity	90 - 100%
Acute aquatic toxicity	90 - 100%

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms:
This product is a mixture.

Component	CAS Number	Concentration
Polymers, Rubbers and Resins	N.A.	25 - 35%
Inorganic Compound(s)	N.A.	15 - 25%
Titanium Dioxide	13463-67-7	0.1 - <1%

4. FIRST- AID MEASURES

Description of necessary first-aid measures
Eyes
Immediately flood the eye with plenty of water. Obtain medical attention if symptoms persist.
Skin
Wash skin thoroughly with soap and water. Obtain medical attention if symptoms persist.
Ingestion
Obtain medical attention immediately.
Inhalation
Remove person to fresh air if symptoms occur. Seek medical attention if symptoms persist.

Most important symptoms/effects, acute and delayed
Aside from the information found under Description of necessary first aid measures (above) and Indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed
Notes to Physicians
Treat symptomatically.

5. FIRE - FIGHTING MEASURES

Suitable Extinguishing Media
Water spray, carbon dioxide and dry chemical.

5. FIRE - FIGHTING MEASURES

Specific hazards arising from the chemical
May release hazardous vapors during a fire.

Special Protective Actions for Fire-Fighters
Wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear appropriate protective clothing.

Environmental Precautions
Prevent the material from entering drains or watercourses.

Methods and materials for containment and cleaning up
Pick up and transfer into suitable containers for recovery or disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Wear appropriate protective clothing.

Conditions for safe storage
Store away from sources of heat or ignition. Storage area should be: cool - dry - well ventilated - out of direct sunlight - away from sources of ignition(heat, sparks, flames, pilot lights) - away from incompatible materials (see Section 10)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Polymers, rubbers and resins
None established
Titanium Dioxide
ACGIH TLV: 10 mg/m^3 TWA
OSHA PEL: 15 mg/m^3 TWA (Total dust)

Appropriate engineering controls
No specific measures necessary. Good general room ventilation is expected to be adequate to control airborne levels.

Individual protection measures
Respiratory Protection
Respiratory protection not normally required.
Skin Protection
Not required under normal conditions of use.
Eye/Face Protection
Safety glasses

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Body Protection
Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State	Solid: Rubber based pressure sensitive adhesive coated on one side of polymer/cloth backing
Color	Backing: Black, white, silver, blue, red, olive drab, yellow, green, brown, or teal Adhesive: Gray
Odor	Slight
Odor Threshold	No data available
pH	Not applicable
Density (g/yd^2)	195 - 340
Boiling Range/Point (°C/F)	Not applicable
Melting Point (°C/F)	Not applicable
Flash Point (PMCC) (°C/F)	Not applicable
Vapor Pressure	Not applicable
Evaporation Rate (BuAc=1)	Not applicable
Solubility in Water	Negligible
Vapor Density (Air = 1)	Not applicable
VOC (%)	0
Partition coefficient (n-octanol/water)	Not applicable
Viscosity	Not applicable
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Upper explosive limit	No data available
Lower explosive limit	No data available
Flammability (solid, gas)	No data available

10. STABILITY AND REACTIVITY

Reactivity
Data is not available.

Chemical Stability
Stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization will not occur.

Conditions to Avoid
Heat, sparks, flames - high temperatures - contact with incompatible materials

Incompatible Materials
Strong acids - bases - oxidizers

Hazardous Decomposition Products
Oxides of carbon - olefinic and paraffinic compounds - organic acids - ketones - aldehydes - alcohols

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Available data indicates this product is not expected to be acutely toxic.

Specific Target Organ Toxicity (STOT) – single exposure
Available data indicates this product is not expected to cause target organ effects after a single exposure.

Specific Target Organ Toxicity (STOT) – repeat exposure
Available data indicates this product is not expected to cause target organ effects after repeated exposure.

Serious Eye damage/Irritation
Available data indicates this product is not expected to cause eye irritation.

Skin Corrosion/Irritation
Available data indicates this product is not expected to cause skin irritation.

Respiratory or Skin Sensitization
Available data indicates this product is not expected to cause skin sensitization.
Available data indicates this product is not expected to cause respiratory sensitization.

Carcinogenicity
Titanium Dioxide: IARC Overall Evaluation is 2B (Possibly carcinogenic to humans) IARC evaluation guidelines consider the generation of tumors, in 2 different studies within the same animal species, to be adequate criteria for an assessment of sufficient evidence. The conclusions of several epidemiology studies on more than 20000 TiO_2 industry workers in Europe and the USA did not suggest a carcinogenic effect of TiO_2 dust on the human lung. Mortality from other chronic diseases, including other respiratory diseases, was also not associated with exposure to TiO_2 dust. Based upon these studies, titanium dioxide is not expected to cause lung cancer or chronic respiratory diseases in humans at concentrations experienced in the workplace.

Germ Cell Mutagenicity
Available data indicates this product is is not expected to be mutagenic.

Reproductive Toxicity
Available data indicates this product is not expected to cause reproductive toxicity or birth defects.

Aspiration Hazard
Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
No relevant studies identified.

Mobility in soil
No relevant studies identified.

Persistence/Degradability
No relevant studies identified.

12. ECOLOGICAL INFORMATION

Bioaccumulative Potential
No relevant studies identified.

Other adverse effects
No relevant studies identified.

13. DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose of in accordance with all applicable local and national regulations.

14. TRANSPORT INFORMATION

DOT CFR 172.101 Data	Not Regulated
UN Proper Shipping Name	Not Regulated
UN Class	None
UN Number	None
UN Packaging Group	None
Classification for AIR Transportation (IATA)	Consult current IATA Regulations prior to shipping by air.
Environmental Hazards	Not a marine pollutant

15. REGULATORY INFORMATION

United States TSCA Inventory
All components of this product are in compliance or are exempt from inventory listing requirements of the US Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

Canada DSL Inventory
All components of this product have not been verified for inclusion or are exempt from listing on the Domestic Substance List (DSL).

WHMIS Classification
None
This product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations and the MSDS contains all the information required by these regulations.

California Proposition 65
The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986.
To the best of the manufacturer's knowledge the products manufactured do not contain Proposition 65 Chemicals at levels which would require warning labels as known to the State of California to cause cancer or reproductive toxicity.

SARA Title III Sect. 311/312 Categorization
None

SARA Title III Sect. 313
This product does not contain any chemicals listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

NFPA Ratings
NFPA Code for Flammability - 0
NFPA Code for Health - 0
NFPA Code for Reactivity - 0
NFPA Code for Special Hazards – None

HMIS Ratings
HMIS Code for Flammability - 0
HMIS Code for Health - 0
HMIS Code for Physical Hazard - 0
HMIS Code for Personal Protection - See Section 8
*Chronic

Legend
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service
ECHA: European Chemicals Agency
IARC: International Agency for Research on Cancer
N/A: Denotes no applicable information found or available
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value

Information Source and References
This SDS is prepared by Hazard Communication Specialists based on information provided by internal company references.

Prepared By: EnviroNet LLC.

The information and recommendations presented in this SDS are based on sources believed to be accurate. Berry Plastics Corporation assumes no liability for the accuracy or completeness of this information. It is the user's responsibility to determine the suitability of the **material** for their particular purposes. In particular, we make NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, with respect to such information, and we assume no liability resulting from its use. Users should ensure that any use **or disposal** of the material is in accordance with applicable Federal, State, and local laws and regulations.

EMERGENCY PROCEDURES

In the event of an overexposure to or spill of any hazardous chemical, Craig R. Neil will be notified at once. The foreman or the immediate supervisors will be responsible for insuring that proper and appropriate emergency response actions are taken. The appropriate material safety data sheet pertaining to that chemical or substance will serve as reference for such actions.

EMPLOYEE INFORMATION AND TRAINING

Information regarding hazard awareness shall be presented to new employees before any work with hazardous substance is performed. The Safety Director is responsible for the effective dissemination of Environmental Air, Inc. employee training and information programs.

Employees will be trained to work safely with hazardous chemicals. Employees training shall include:

- Inform employees of any operation in their work area where hazardous substances are present
- An overview of the requirements contained in the Hazard Communication regulations, including their rights under the regulations
- Location and availability of the written Hazard Communication Program
- Physical and health effects of the hazardous substances
- Methods and observation techniques used to determine the presence or release of a hazardous substance in their work area
- How to lessen or prevent exposure to these hazardous substances through the use of engineering controls, work practices, and/or the use of personal protective equipment
- Steps Environmental Air, Inc. has taken to lessen or prevent exposure to these substances
- Emergency and first air procedures to follow if employees are exposed to hazardous substances
- How to read labels and review SDS to obtain appropriate hazard information
- To receive or have their personal physician or collective bargaining agent receive information contained in the SDS
- That no discriminatory action may be taken against them if they exercise their rights under the act

Every Environmental Air, Inc. employee is required to actively participate in Environmental Air, Inc. hazard communication training program. Contact your supervisor or Safety Director for any questions regarding training.

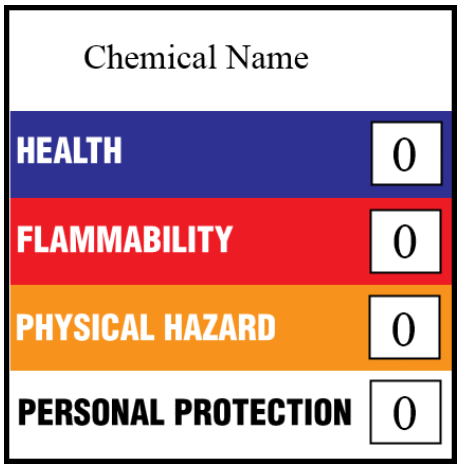
LIST OF HAZARDOUS SUBSTANCES

A hazardous material management program containing information on the hazardous materials located at Environmental Air, Inc. or our job site locations is maintained by the office of the Safety Director.

Hazardous materials are identified by:

- Chemical name
- Location
- Quantity
- Hazard classification
- Chemical properties

And are labeled as follows:



A list of all hazardous substances present at your job site should be maintained and kept in your SDS filing system. Specific information on each substance can be obtained by reviewing the SDS.

HAZARDOUS NON-ROUTINE TASKS

Special Care shall be taken to provide information and training to employees performing non-routine tasks.

Periodically, employees are required to perform hazardous non-routine work. It is Environmental Air, Inc. policy that such operations not be undertaken until the employees have been provided information about hazards to which they may be exposed during such an activity, including:

- Specific Hazards
- Protective and safety measures which must be utilized
- Possible undesirable effects that may arise during such operations.
- Steps that the company is using to reduce the hazards, including the following: ventilation, respirators, presence of another employee and emergency procedures
- When necessary, areas will be posted to indicate the nature of the hazard involved.

INFORMING: MULTI-EMPLOYER JOBSITES

It is the policy of Environmental Air, Inc. to adequately apprise other contractors regarding the hazardous substances to which their employees may be exposed to during the course of day-to-day construction activities. Contractors, whose employees may be exposed to hazardous substances used by Environmental Air, Inc. employees, will be given access to this Hazard Communication Program. This will provide all relevant chemical information necessary to protect their employees.

Contractors should be informed of conditions existing on-site, which necessitate special precautionary measures through weekly safety or toolbox meetings. To ensure the safety of all person(s) in/out of facilities and job sites, the following information will be provided:

- Hazardous substances to which they may be exposed while we are on the jobsite
- Precautions the customer's employees may take to lessen the possibility of exposure by usage of appropriate protective measures
- The on site Foreman is to call the Safety Director for any questions about what information should be provided to customers.
- This information will be provided to the customer during the pre-construction phase of the project

- During construction work the Safety Director will investigate options to minimize possible exposure to hazardous materials by the customer and shall inform the customer of these measures

Other on-site employees working among Environmental Air, Inc. employees are also required to adhere to the provision of the Hazard Communication Standard. They shall make available copies of SDS's for all hazardous materials used by their employees, which can be reviewed by Environmental Air, Inc. employees. SDS's will be provided within a reasonable time period after such a request.

Environmental Air, Inc. is firmly committed to its employees' health and safety, and as such requires all contractors whose employees work around and among Environmental Air, Inc. employees to also be knowledgeable on chemical safety and appropriate working procedures in an effort to reduce and eliminate exposures to themselves, as well as the other craftsmen.

SECTION VIII

NOISE EXPOSURE PROGRAM

NOISE EXPOSURE PROGRAM

PURPOSE AND SCOPE

Environmental Air, Inc, is committed to providing a safe and healthy work environment and to protecting our employees from injury or death caused by uncontrolled hazards in the workplace. It is the policy of Environmental Air, Inc. to protect all personnel from hearing loss resulting from occupational noise exposure through a continuing, effective, and comprehensive hearing conservation program.

The Noise Exposure Program has been established to help protect the safety of Environmental Air employees by establishing appropriate noise exposure and hearing loss prevention procedures.

This program applies to all employees (permanent, temporary and contractors) who complete work in areas where noisy work is taking place. All employees are required to follow the procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Program Administrator. With the exception of requirements for reference and termination audiograms, this program does not apply to personnel defined as deaf in ANSI Standard S3.201973 (R1986) (reference (c)).

PROGRAM RESPONSIBILITIES

Management. The management of Environmental Air, Inc. is committed to the overall safety of its workers and facilities. Management supports the efforts of the Program Administrator by pledging leadership support and financial resources for this program and ensuring the program is being followed.

- Provide policy guidance and coordination on hearing conservation matters.
- Serve as the principal point of contact (POC) with Federal and State regulatory agencies that control occupational exposure to hazardous noise.

Environmental Air, Inc. shall establish and maintain hearing conservation programs to implement this Instruction. Such programs shall encompass the minimum requirements set forth in section E. and shall include provisions to periodically evaluate the effectiveness of their hearing conservation programs.

PROCEDURES

Written plan: Employer shall prepare a written plan for the implementation of a comprehensive hearing conservation program. Such plans shall address occupational noise exposure, monitoring, audiometric testing requirements, hearing protectors, information and training, record keeping, noise exposure computation, methods for estimating the adequacy of hearing protector attenuation, audiometric measuring instruments, audiometric test rooms, and acoustic calibration of audiometers.

Program implementation: Hearing conservation programs shall be implemented, when personnel are exposed to the following:

- Steady noise that has an 8hour time weighted average (TWA) noise level of 85 A weighted decibels (dBA) or above. When appropriate, implementation may also be started regardless of the duration of noise exposure to 85 dBA, or greater. Those criteria apply only to energy in the audible range, up to 16,000 Hertz (Hz).
- Impulse noise of 140 peak decibels (dBA), or greater.

NOISE MEASUREMENTS AND ANALYSIS

- Sound pressure levels shall be measured in all potentially noise hazardous work areas at least once and within 30 days of any change in operations effecting noise levels.
- A TWA noise level shall be established for all employees working in noise hazardous areas at least once and within 30 days of any change in operations effecting noise levels.
- A current inventory of all noise hazardous areas and operations shall be maintained to include, minimally, TWAs, names of employees at risk, and the types of control measures used.
- Only qualified employees shall conduct noise surveys.
- Instrumentation used for those surveys must meet or exceed requirements in ANSI Standard S1.41983. Those instruments must be calibrated and the calibration checked with an acoustical calibrator, accurate to within plus or minus 1 decibel (dB), before and after each day's measurements and must have been subjected to a complete electro acoustical calibration no more than l year before the survey.
- Minimally, steady noise measurements shall be made using "A" weighting, with the meter response set to "slow."

1. When personal noise dosimeters are used for worker exposure measurements, they must integrate all sound levels from 80 dB to 130 dB using a minimum of the OSHA 5 dB exchange rate. Components may use more stringent criteria, i.e. integration of a broader range or exchange rates less than 5 dB.
2. Area monitoring may be used to determine worker exposure. In circumstances such as high worker mobility, significant variations in noise levels, or a significant component of impulse noise, representative personal sampling shall be conducted.

- Worker noise exposure shall be computed, without regard to any attenuation provided by hearing protectors.
- Impulse noise measurements should be made using calibrated sound level meters that meet or exceed specifications in ANSI Standard S1.4 1983, have a peak hold circuit and have a rise time not exceeding 35 microseconds and are capable of measuring peak sound pressure levels in excess of 140 db.
- If sound level meters meeting the requirements, above, are not available, a combination of calibrated instruments having a peak hold circuit and with a rise time not exceeding 35 microseconds and capable of measuring peak sound pressure levels in excess of 140 dB may be used for impulse noise measurements.

SAFETY SIGNS AND LABELS

- All hazardous noise areas must be clearly identified by signs located at their entrances or boundaries.
- Each tool or piece of equipment producing hazardous noise shall be conspicuously marked to alert personnel, except when an entire space is designated a hazardous noise area, and the equipment is stationary. Professional judgment and discretion should be exercised when labeling tools and equipment.
- Signs and decals that describe (verbally or with other visual symbols) the hazard and the protective measures to be taken shall be used to designate hazardous noise areas and equipment; e.g., "DANGER," "Hazardous Noise," "Hearing Protection Required When in Operation."

NOISE ABATEMENT

- Engineering controls shall be the primary means of reducing or eliminating employee exposure to hazardous noise. All practical design approaches to reduce noise levels below hazardous levels by engineering principles shall be explored. Where engineering controls are undertaken, the design objective will be to reduce steady state levels to below 85 dBA without regard to time and to reduce impulse noise levels to below 140 dBP.
- New equipment being considered for purchase shall have the lowest noise emission levels that are technologically and economically feasible and compatible with performance and environmental requirements. The provisions of Section 15 of the "Noise Control Act of 1972", Pub. L. 92574, (reference (g)) applies.
- Acoustics shall be included in specifications for all new facilities and substantial modification projects. The objective shall be to ensure, if feasible, a steady state level of 84 dBA, or less, at all employee locations during normal operation.

PERSONAL HEARING PROTECTORS

- The use of personal hearing protectors to limit noise exposure is considered to be an interim protective measure, while engineering control methods are being explored. Such devices shall constitute a permanent measure, only if engineering controls are not technologically or operationally feasible.
- Employer shall issue personal hearing protectors free to all employees who work in designated hazardous noise areas.
- The hearing protectors provided shall be capable of attenuating worker noise exposure below an 8hour TWA of 85 dBA. If hearing protectors do not provide sufficient attenuation, administrative control of exposure shall be necessary.
- Employees shall be free to choose personal hearing protectors from among those available unless medically contraindicated or inappropriate for a particular hazardous noise exposure. Hearing aids and noise muffs with built-in radios that are designed for recreational listening must not be used in place of, or with, approved hearing protectors.
- Preformed earplugs shall be fitted and issued only under supervision of personnel who have been specifically trained to fit earplugs.
- Employees shall receive adequate and effective training in care and use of personal hearing protectors.

- Employees working in or entering designated hazardous shall carry hearing protectors at all times. When noise sources are operating, employees shall wear their hearing protection devices regardless of exposure time.
- Employer shall assess the adequacy of hearing protectors when used in very high noise environments or for extended exposure periods.
- All levels of supervision and management, by personal example and precept, shall enforce the use of hearing protectors. For noncompliance, management shall consider disciplinary action as a corrective measure against the offender and the supervisor.

EDUCATION

All employees who routinely work in designated hazardous noise areas shall receive annual training on the following: effects of noise on hearing, the purpose of hearing protection the advantages, disadvantages, and attenuation of various:

- effects of noise on hearing.
- the purpose of hearing protection
- the advantages, disadvantages, and attenuation of various hearing protectors
- the purpose of audiometric testing
- explanation of the test procedures.

Also, they shall be encouraged to use hearing protectors when they are exposed to hazardous noise while not at work.

AUDIOMETRIC TESTING

All employees routinely exposed to hazardous noise shall be placed in a hearing-testing program annually. The program shall include pre-placement, periodic (at least once, annually), and termination audiograms. Employees who infrequently or incidentally enter designated hazardous noise areas need not participate in the audiometric testing program.

All audiometric testing shall:

- Be performed by a licensed or certified audiologist, otolaryngologist, or other physician; or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation. A technician who performs audiometric tests shall be responsible to an audiologist, an otolaryngologist, or a physician.
- Transpire in a testing environment with background octave band pressure levels not greater than the following:

500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz

30 dB 30 dB 47 dB 57 dB 62 dB

The test environment shall be resurveyed annually using equipment conforming at least to the Type 2 requirements of ANSI Standard S1.41983 and the Order II requirements of ANSI Standard S1.111986 (references (f) and (i)).

- Include pure tone, air conduction, hearing threshold examinations of each ear at the test frequencies of at least 500, 1000, 2000, 3000, 4000, and 6000 Hz.
- Be accomplished with audiometers that meet the specifications of ANSI Standard S3.61989 (reference (j)).
- Occur on audiometers calibrated per specifications in reference (j).
- Every effort should be made to conduct a reference / baseline audiogram on workers before they are assigned to duties involving hazardous noise exposure. In no case shall a reference audiogram be conducted more than 1 month from the date of a worker's initial exposure to hazardous noise.
- Regardless of the time of initiation, the first valid hearing test administered is the reference audiogram and shall be preceded by at least 14 hours without exposure to workplace noise. The worker shall be cautioned to avoid high levels of non-occupational noise exposure during a 14hour period preceding the examination.
- Employees who continue to work in designated hazardous noise areas shall receive annual audiograms.
- Termination audiogram shall be conducted on each worker about to stop working in designated hazardous noise areas. Employees moving to other jobs involving hazardous noise exposure need not be given a termination audiogram.
- Follow up audiograms shall be conducted when an individual's audiogram shows a threshold shift relative to the original or revised reference audiogram of an average of 10 dB, or more, at 2000, 3000, and 4000 Hz in either ear. The National Institute for Occupational Safety and Health (NIOSH) age corrections may be applied in cases of positive threshold shift (29 CFR 1910.95) (reference (k)). Medical evaluation is required to validate the existence of a permanent noise induced threshold shift and shall be done by an audiologist, otolaryngologist, or physician. Any determination that the noise induced threshold shift is not work related or has not been aggravated by occupational noise exposure shall be made by a physician.

- If the threshold shift is confirmed as permanent, the individual shall be notified in writing within 21 days of such determination, and the condition entered in the individual's medical record.
- The individual shall be refitted with hearing protection, instructed in its care and use, and strongly encouraged to wear the hearing protection.
- A new reference audiogram shall replace the original reference audiogram, when the medical evaluation confirms the threshold shift noted during the annual audiogram is permanent. The original reference audiogram shall be retained in the patient's medical record. A revised reference audiogram should also be established, when the hearing threshold demonstrated in the annual audiogram indicates significant improvement over the existing reference audiogram.

PERSONNEL ASSIGNMENTS

- Environmental Air, Inc. may require personnel under consideration for entry-level employment, in an occupational specialty that involves routine exposure to hazardous noise, to meet minimum pre-selection hearing level criteria. The company may develop minimum pre-selection hearing level criteria and designate applicable occupational specialties.
- Environmental Air, Inc. may establish criteria for permanently excluding personnel with a substantial hearing loss from working in hazardous noise environments. Any exclusion criteria must be applied judiciously to ensure that qualified, trained personnel are not indiscriminately excluded from their career field. Excluding a worker from a career field should be the last resort after repeated attempts to protect the individual's hearing have failed.

ACCESS TO INFORMATION, TRAINING MATERIAL, AND RECORDS

- Environmental Air, Inc. shall make available to personnel copies of the Hearing Conservation Program. In addition, the Occupational Health and Safety Administration
- (OSHA) standard (29 CFR 1910.95) (reference (k)), shall be posted in all industrial noise hazardous areas.
- On request, Environmental Air, Inc. shall provide affected employees with any information type materials on the hearing conservation program that are supplied by the Assistant Secretary of Labor for Occupational Safety and Health.

- On request, Environmental Air, Inc. shall provide personnel, former personnel and representatives designated in writing by the individual employee, with copies of all records pertaining to the audiometric testing and noise exposure to the specific worker.
- On request, Environmental Air, Inc. shall provide representatives of the Assistant Secretary of Labor for Occupational Safety and Health with all records pertaining to the companies hearing conservation program.

RECORDS

- All audiometric testing data shall be maintained for the duration of employment plus 30 years.
- Results of hearing tests performed for hearing conservation, as well as exposure documentation, shall be a permanent part of an individual's health record.
- Noise exposure data shall be kept for a minimum of 30 years and recorded or in the equivalent format of automated measurement equipment or health hazard inventory system that contains at least the mandatory data elements.
- All personnel who routinely work in designated hazardous noise areas shall be identified, and a current roster maintained.

REFERENCES

DoD Instruction 6055.1, "DoD Occupational Safety and Health Program," October 26, 1984

American National Standards Institute (ANSI) Standard S1.41983, "Specifications for Sound Level Meters," June 25, 1985.

Public Law 92574, "Noise Control Act of 1972," October 1972 MILSTD882B, "System Safety Program Requirements," March 30, 1984

American National Standards Institute (ANSI) Standards S1.111986, "Specifications for Octave Band and Fractional Octave Band Analog and Digital Filters," July 16, 1986

American National Standards Institute (ANSI) Standards S3.61989, "Specifications for Audiometers," May 23, 1989

Title 29, Code of Federal Regulations (CFR), Section 1910.95, "Occupational Noise Exposure," current edition

DEFINITIONS

1. Decibel Aweighted (dBA). The standard abbreviation for sound levels measured with an instrument set to the Aweighting network. The Aweighting network reduces the contribution of lower frequencies, which are of less concern for hearing conservation.
2. Decibel (dB). A unit of measurement of sound pressure level. The sound pressure level, in dB, is equal to 20 times the common logarithm of the ratio of the existing sound pressure to a reference sound pressure of 20 micropascals.
3. Decibel Peak (dBP). Standard abbreviation for peak sound level equal to 20 times the common logarithm of the ratio of the highest instantaneous sound pressure to a reference pressure of 20 micropascals. Used in the measurement of impulse noise.
4. Hazardous Noise. Exposure to steady state noise equivalent to 85 dBA for 8 hours. Components may define time intensity trading rates as appropriate for their rest cycle conditions using subsection A.1. of enclosure 3. Exposure to impulse noise levels greater than 140 dBP.
5. Hazardous Noise Area. Any work area where workers are likely to receive a daily total noise dose in excess of that calculated using subsection B., enclosure 3, or where impulse noise levels exceed 140 dBP. For personnel exposed to appreciable noise levels for periods of 24 hours or more, a daily dose of 100 percent can occur at continuous noise levels as low as 79 dBA.
6. Hertz (Hz). A unit of measure of frequency, numerically equal to cycles per second.
7. Impulse Noise. A short burst of an acoustic energy consisting of either a single impulse or a series of impulses. The pressure time history of a single impulse includes a rapid rise to a peak pressure, followed by a somewhat slower decay of the pressure envelope to ambient pressure, both occurring within 1 second. When the intervals between impulses are less than 500 milliseconds, the noise is considered continuous, excepting short bursts of automatic weapons fire, which are considered impulse noise.
8. Presbycusis. Hearing loss due to age.
9. Reference Audiogram. An audiogram free from auditory fatigue and other transient otologic pathology, against which future audiograms are compared.
10. Significant Threshold Shift (STS). The STS is the same as the OSHA standard threshold shift. A STS is present when there is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more a 2000, 3000 and 4000 Hz in either ear.

SAMPLE NOISE EXPOSURE COMPUTATION

When using a 4 dB power-doubling rate, noise dose may be computed from sound pressure level measurements as follows:

When the sound level is constant over the entire work shift, the noise dose, D, in percent, is given by:

D = 100 C/T

where C is the total length of the workday, in hours, and T is the reference duration corresponding to the measured sound level, L, as computed by the equation:

T = 16/(2 exp(L81)/4)

When the work shift noise exposure is composed of two or more periods of noise at different levels, the total noise dose over the workday is given by:

D = 100(C1/T1 + C2/T2 ...Cn/Tn)

where Cn indicates the total time of exposure at a specific noise level, and Tn indicates the reference duration for that level as given by the equation:

Tn = 16/(2 exp(L81)/4)

The TWA may be computed from noise dosimeter readings as follows. The noise dosimeter should be capable of integrating all noise levels from 80130 dBA and using a 5 dB time intensity integration factor or Component exchange rate:

TWA = 85 + Q log (D/100)

where TWA is the 8hour time weighted average sound level; Q is a constant equal to R/log 2; R is the exchange rate per doubling time (not more than 5 dB); and D is the accumulated dose in percent exposure.

When exposures to steady state noise, including impulse noise below 130 dBP, occur simultaneously with or within the same 24hour period as exposure to impulse noise above 130 dBP, the hazard criteria shall be applied to separately (i.e., the allowable exposure to steady state noise shall not be reduced because of exposure to impulse noise).

SECTION IX

SUBCONTRACTOR SELECTION AND SAFETY

SUBCONTRACTOR SELECTION

INTRODUCTION

Environmental Air Inc. values the importance of subcontractor selection. As such, we choose to evaluate our subcontractor partners reviewing the following criteria:

1. Safety Records EMR / OSHA Logs / Safety Records
2. Evaluation of written Safety Standards
3. Previous work experience
4. Proven ability to timely and promptly pay suppliers and vendors

Questions concerning subcontractor selection should be directed to the Vice President/Safety Director.

SUBCONTRACTOR QUALIFICATION EVALUATION

- Each prospective subcontractor will need to provide their most current OSHA 300 & 300A logs (for a 3 year period). We will review the incidents and incident rates.
- Each prospective subcontractor will need to maintain an EMR of less than 1.0 for each year
- Each prospective subcontractor must be willing to comply with and meet all safety standards, safety training requirements, and jobsite safety and training requirements
- Environmental Air's on-site job Foreman will conduct subcontractor safety and work orientation prior to start of work. Any job specific site hazards will need to be reviewed and discussed prior to start of work. Job Site Hazard analysis Worksheets should be completed and filed with the Safety Director, if required
- Subcontractor employees will be required to attend and participate in any jobsite safety training meetings / Toolbox Talks
- Each prospective subcontractor must submit their written safety manual for review for compliance
- Once a subcontractor partnership is established, a yearly review of work experience, performance, and adherence to the criteria above will be conducted

SECTION X

POWERED INDUSTRIAL TRUCK SAFETY PROGRAM

POWERED INDUSTRIAL TRUCK SAFETY PROGRAM

INTRODUCTION

Environmental Air, Inc.'s Powered Industrial Truck Safety Program (PIT) applies to all employees who operate powered industrial trucks. Powered industrial trucks include forklifts, platform lift trucks, motorized hand trucks and other specialized industrial trucks powered by electric or internal combustion engines. The Occupational Safety and Health Administration (OSHA) and National Fire Protection Agency (NFPA) have established rules and guidelines for the protection of workers and facilities relating to powered industrial trucks in 29 CFR 1910.178 Powered Industrial Trucks; and NFPA 505 Fire Safety Standard for Powered Industrial Trucks including Type, Designation, Areas of Use, Conversions, Maintenance and Operations, which are incorporated into this plan.

This program has been established to:

- Ensure the safe operation of powered industrial trucks.
- Ensure that work units understand and comply with safety standards related to powered industrial trucks.
- Assign responsibilities to personnel which are necessary for successful implementation.

SCOPE

This program applies to all employees operating powered industrial trucks at Environmental Air, Inc. property.

RESPONSIBILITIES

Management

- Ensure that responsibilities assigned within this program are carried out within their administrative departments.
- Designate employees responsible for the implementation of this program within their department.
- Actively support this program to demonstrate overall safety culture development.
- Ensure adequate funding is available to support this program.

Safety Manager

- Assist departments with implementing a regulatory compliant powered industrial truck program.
- Assist with powered industrial truck training.
- Periodically review and update the powered industrial truck written program.
- Periodically evaluate the work site usage of powered industrial trucks.
- Investigate powered industrial truck usage injuries and damage.

Supervisors

- Designating and identifying personnel authorized to operate powered industrial trucks (do not allow unauthorized use of the equipment).
- Ensuring authorized operators have received proper training and certification (every 3 years) prior to operating a powered industrial truck. Review and ensure understanding of this program and its applicability to your department.
- Ensure all safety and manufacturer regulations and instructions are followed.
- Ensure powered industrial trucks are maintained in proper working order and repaired when necessary.
- Ensure employees comply with all provisions of this program.
- Ensure employees receive training appropriate to their assigned tasks and maintain documentation.
- Ensure employees are provided with and use appropriate personal protective equipment (PPE).
- Take prompt action including disciplinary action when unsafe conditions or acts are observed.
- Investigate powered industrial truck injuries and damage. Ensure periodic maintenance is performed on the powered industrial truck.

Authorized powered industrial truck operators

- Attending and passing classroom and evaluation of competence training prior to operating a powered industrial truck.
- Performing and documenting powered industrial truck pre-use inspections.
- Reporting all vehicle maintenance issues to his/her supervisor and removing the equipment from service if necessary.

- Operating and maintaining equipment in a safe manner at all times.
- Adhere to owner's manual and all provisions in this program.
- Consult with supervisor and/or Safety Manager regarding any unusual hazards.

DEFINITIONS

Authorized Person (Repair)

- Someone with training and experience on the brands/models being serviced. There are specific safety considerations that are unique to forklift trucks, thus the training must be specific to the brands/models being serviced.

Certified Operator:

- Certification of a PIT operator at Environmental Air is a three-step process consisting of classroom instruction, hands-on training and hands-on evaluation. Once the employee has successfully completed all three steps they are considered to be a certified operator.

Competent Trainer:

- An employee who has successfully completed a Train–the– Trainer or equivalent type of training program and is familiar with the type of PIT in their work unit. A contractor or equipment vendor who has experience training PIT safety and operation and is familiar with the equipment is also permitted to be a Competent Trainer.

Competent Evaluator (Hands-on):

- An employee in the department/work unit who is experienced and competent with the PIT. An employee must be familiar with the equipment and its safe operation. In order to be considered competent in regards to conducting the evaluation portion of the PIT training, an employee must have successfully completed the classroom portion of PIT training. This employee could be but is not limited to a certified operator, supervisor/manager or safety officer.

Fixed Jacks:

- Devices which hold one end of a trailer to avoid the possibility of the trailer being "up-ended" in the course of PIT operations. The word "fixed" indicates that such jacks are

not temporary in nature but are an integral part of the trailer frame. They are folded up and under the trailer after loading or unloading activities have been completed and the trailer is reattached to its tractor.

Powered Industrial Truck:

- Vehicles which are commonly called “forklifts” or “lift trucks” and are used primarily to move materials. They can be used to move, raise, lower, or remove large objects or a number of smaller objects on pallets or in boxes, crates, or other containers. Powered industrial trucks can be ridden or controlled by a walking operator. Earth moving and over the road haulage trucks are not included in this definition.

GENERAL REQUIREMENTS

- Operators shall review and follow the manufacturer’s operating manual. A copy of the manual must be located on the equipment.
- Only certified operators shall operate a PIT.
- Operators shall follow safe work practices when operating a PIT.
- If a PIT is not equipped with a seatbelt the work unit must contact the manufacturer or forklift repair vendor to determine if a seatbelt can be retrofitted onto that PIT. If a PIT can be retrofitted with a seatbelt, it must be installed. If a seatbelt cannot be retrofitted, then the work unit must keep the documentation from the manufacturer.

VEHICLE REQUIREMENTS

All powered industrial trucks must be designed and constructed to meet minimum American National Standards Institute (ANSI) requirements established in the “American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1- 1969”.

All powered industrial trucks should be marked with a nameplate identifying its approval under ANSI B56.1-1969.

Additional information on the nameplate should include the designation of the powered industrial truck as outlined in Table 1.

Table 1 – Designation of Powered Industrial Trucks

Designation	Description
D	Diesel engine powered
DS	Diesel engine powered with additional safeguards to the exhaust, fuel and electrical systems
DY	Diesel engine powered with the safeguards of the DS units AND do not have any electrical equipment and are equipped with temperature limitation features
E	Electrically powered
ES	Electrically powered with additional safeguards to prevent emission of hazardous sparks
EE	Electrically powered with the safeguards of ES units AND all electrical equipment is completely enclosed
EX	Electrically powered with the safeguards of ES and EE, AND are constructed to be used in atmospheres containing flammable vapors or dusts
G	Gasoline engine powered
GS	Gasoline powered with additional safeguards to the exhaust, fuel and electrical systems
LP	Liquefied petroleum gas powered
LPS	Liquefied petroleum gas powered with additional safeguards to exhaust, fuel and electrical systems

If a powered industrial truck is to be used in an area containing potentially hazardous atmospheric conditions, it is the responsibility of the operator and supervisor to ensure the correct forklift designation is available for use. Any operation of a forklift in a potentially hazardous atmosphere should be approved by the Safety Manager.

TRAINING

Initial Training:

Supervisors must ensure all operators are adequately trained prior to operating a powered industrial truck. Training must consist of both formal instruction and practical evaluation.

Formal instruction includes lecture, discussion, online, video, and or written training and must consist of the following elements, when applicable:

- Specific operating instructions, warnings, limitations, and precautions specific to the type of powered industrial truck to be utilized by the operator;
- Differences between the powered industrial truck and a vehicle;
- Equipment controls and instrumentation including their location and proper operation;

- Operating the motor/engine;
- Steering and maneuverability;
- Visibility, including limitations when loading/unloading;
- Fork use and attachment adaptation, operation and limitations (when applicable);
- Vehicle capacity and stability limitations;
- Completing equipment pre-use inspections;
- Refueling and/or battery changing/charging; and
- Specific workplace operation of the powered industrial truck including the following:
    - Handling loads specific to the operation of the powered industrial truck;
    - Operating in narrow aisles and/or around pedestrian traffic;
    - Operating on sloped surfaces;
    - Ventilation while using powered industrial trucks; and
    - Use restrictions based on hazardous locations.

Practical evaluation: Includes demonstration performed by the trainer and practical exercises performed by the trainee in order to ensure competence by the operator when utilizing a powered industrial truck.
Practical evaluation should be conducted utilizing the powered industrial truck(s) to be used by the operator.

Practical evaluation should simulate typical work to be conducted with the powered industrial truck and may consist of the following:

- Performing pre-use inspections
- Safe operation of the industrial truck
- Handling a load
- Maneuverability

Refresher training: Refresher training may be necessary due to certain circumstances as follows and will be offered annually, at a minimum:

- The operator is observed operating the vehicle in an unsafe manner;
- The operator is involved in an accident or near-miss incident;
- The operator receives an evaluation revealing unsafe practices;
- There is a change in workplace conditions affecting operation of an industrial truck;

- There is a change in the type of industrial truck being utilized in the workplace.

Certification: Powered Industrial Truck operators shall be certified prior to operating a powered industrial truck. This certification must be documented and include the following.

- Operator name
- Date of training
- Date of evaluation
- Trainer name.

NOTE: Powered Industrial Truck operators must be recertified every 3 years.

PRE-SHIFT POWERED INDUSTRIAL TRUCK INSPECTIONS

Daily, or at a minimum prior to each use of a powered industrial truck by an operator, a pre-use inspection must be completed to ensure safe operation of the equipment at all times.

Pre-use applies to each shift when multiple shifts are in place utilizing the equipment. The pre-use inspection checklist must include the following general items:

- Identification of the powered industrial truck.
- Name of person conducting the inspection.
- Date/time of inspection.
- Inspection of equipment condition when not powered on.
- Inspection of equipment operation and controls when powered on.

Appendix A provides a pre-shift inspection checklist for use on powered industrial trucks.
If at any time a deficiency is noted during the pre-shift inspection, the powered industrial truck must be removed from service and repaired by an authorized mechanic prior to being placed back into operation.

Appropriate methods for removing a powered industrial truck from service can be found in the EAI Lockout/Tagout Policy.

Inspection documents should be maintained by the department supervisor, or their designee, for recordkeeping purposes.

MAINTENANCE OF FORKLIFTS/INDUSTRIAL TRUCKS

- Any powered industrial truck found not safe for operation must be immediately removed from service under the Lockout/Tagout program.
- Maintenance to be conducted on any powered industrial truck shall not be performed in a hazardous location (Class I, II, and III) as outlined in Table 2

Table 2-Summary Table on Use of Industrial Trucks in Various Locations

Classes	***Unclassified***	***Class I locations***	***Class II locations***	***Class III locations***
Description of classes	Locations not possessing atmospheres as described in other columns	Locations in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures	Locations which are hazardous because of the presence of combustible dust	Locations where easily ignitable fibers or flying's are present but not likely to be in suspension in quantities sufficient to produce ignitable mixtures.

- Utilize Lockout/Tagout procedures to control hazardous energy sources during maintenance operations.
- All repairs shall be made by an authorized service technician.
- Powered industrial trucks shall be deemed safe for operation following all maintenance activities.

FUEL/BATTERY HANDLING, STORAGE AND FILLNG

Charging Batteries:

- Charging is permitted only in designated areas.
- Warning signs shall be posted at battery charging locations that state "Caution-battery charging station, No Smoking or Open Flames" (or equivalent).
- Adequate ventilation must be available to avoid the build-up of hydrogen gas during battery charging.
- A 10 lb. ABC fire extinguisher must be located within 20 feet.
- A means to protect charging apparatus from damage from trucks must be provided.

Filling Batteries:

- When filling batteries with water, the following personal protective equipment (PPE) at a minimum must be worn: Safety goggles or face shield w/ safety glasses, acid resistant gloves and acid resistant apron.
- A properly equipped battery filling station shall have:
- An eyewash able to provide a 15 minute flow. The eyewash shall be located within 10 seconds walking distance of all battery filling areas.
- A phone or other means of communication in the event of an emergency.

Fueling (Liquid Petroleum, Gasoline, Diesel, etc.):

- Signs shall be posted at fueling locations that state: “Danger – Propane, No Smoking or Open Flames” (or equivalent).
- Liquid petroleum (LP) cylinders shall only be stored outside in a secured and protected designated rack or storage area.
- When removing and attaching the connection to the LP cylinder the following PPE at a minimum must be worn: Safety glasses and work gloves (leather or equivalent).
- LP cylinders shall be secured to the forklift before operating.
- LP cylinder connections shall be checked for leaks by using liquid soap to detect the site of the leak.

RECORDKEEPING

Department supervisors shall maintain documentation of the following:

- Training certifications for all powered industrial truck operators including names and dates of training; and the equipment they are certified to operate.
- Pre-use inspection checklists.
- Maintenance records for each powered industrial truck.
- Accident reports involving powered industrial trucks.
- A copy of the Powered Industrial Truck Safety Program.

CONTRACTORS

Contractors are required to follow all applicable OSHA powered industrial truck regulations and manufacturer’s instructions. Contractors are not permitted to use Environmental Air, Inc. owned PITs.

SAFE OPERATION, TRAVELING AND LOADING

- Operation of a powered industrial truck must be done in a safe manner to prevent injury to the operator or pedestrians in the area; and to prevent damage to property during operation. Safe operation of a powered industrial truck includes the following practices.
- Trucks shall not be driven up to anyone standing in front of a fixed object.
- Passing under a raised load or other elevated portion of a truck is prohibited.
- Unauthorized persons shall not “ride” on a powered industrial truck unless the powered industrial truck is equipped with a proper passenger area.
- Operators must keep hands and feet inside the powered industrial truck at all times.
- When left unattended, forklift load engaging means (forks) shall be in the lowered position, controls neutralized, power shut down, and brakes set. If parked on an incline, wheels shall be blocked.
    - A powered industrial truck is considered unattended when the operator is 25 feet, or more, away from the truck or whenever the truck is not in direct view of the operator.
    - If an operator dismounts a powered industrial truck and remains within 25 feet or the truck, the forks shall be lowered, controls neutralized, and brakes set to prevent movement.
- Maintain a safe distance from edges of ramps or platforms.
- Forks shall not be used for purposes other than those specified by the truck manufacturer such as opening doors, raising persons to elevated areas, etc.
- Ensure sufficient head room under overhead installations such as lights, sprinklers, pipes, etc.
- An overhead guard shall be in place on the truck to provide protection against falling objects.
- Only approved powered industrial truck shall be used in hazardous locations.
- Ensure aisles, passage ways, and access to fire equipment and emergency exits remains clear at all times.
- If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck must be immediately taken out of service until it is restored to safe operating condition.
- Lighting shall be sufficient to ensure safe operation of a powered industrial truck.

- If general facility lighting is insufficient (less than 2 lumens per square foot) auxiliary lighting must be provided on the powered industrial truck.
- Ventilation shall be sufficient to prevent the accumulation of gases from petroleum powered industrial trucks.

Safe traveling while operating a powered industrial truck is essential to maintaining a safe workplace. The following traveling safety points shall be implemented to the operation of trucks:

- Observe all traffic regulations while operating a powered industrial truck including speed limits.
- The right of way shall be yielded to ambulances, fire trucks or other emergency vehicles.
- Other trucks shall not be passed when traveling in the same direction.
- When approaching an intersection at aisles and other locations, the operator shall slow down, sound the horn, and ensure no pedestrians or other trucks are in the area.
- Powered industrial trucks shall be driven forward unless the load being carried obstructs the view, in which case the forklift shall be driven in reverse.
- Cross railroad tracks diagonally.
- Always ascend/descend grades slowly.
- If traveling on an incline greater than 10%, the load shall be maintained upgrade to prevent tipping.
- When traveling with a load, the forks shall be tilted back and raised only enough to provide clearance in the direction of travel.
- Stunt driving and horseplay is prohibited.
- Maintain a safe operating speed at all times including when operating on wet/slippery floors, while negotiating turns; and when operating around other trucks/pedestrians.
- Ensure no debris or loose objects are in the path of travel.
- Dockboards/bridge plates shall be secured in place prior to traveling over them.
    - Portable dockboards must be strong enough to carry the load being imposed on them; secured in position by anchors or other devices to prevent slipping; and be equipped with handholds or other effective means to permit safe handling.

    - Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202-56 (1961) “Industrial Lifts and Hinged Loading Ramps” published by the US Department of Commerce.
- Caution must be taken when loading and unloading trucks/trailers with powered industrial trucks. The following precautions should be taken to prevent accidents, injuries, and/or property damage during loading and unloading events.
    - Loads to be handled must be stable and safely arranged to permit safe handling.
    - Ensure the rated capacity of the powered industrial truck is not exceeded by the load to be handled.
    - When picking up a load, the load engaging means (forks) shall be placed under the load as far as possible and the mast tilted backward to stabilize the load.
    - Use extreme care when tilting loads backward and forward, especially during high tier movement and/or storage.
    - When loading/unloading trucks/trailers, ensure the truck/trailer brakes are set and wheels blocked to prevent movement. Fixed jacks may be necessary to support trailers not connected to trucks/tractor.
    - The flooring within trailers shall be sufficient to support the loads as well as the powered industrial truck being utilized to load/unload the trailer.

Appendix A: PRE-SHIFT POWERED INDUSTRIAL TRUCK INSPECTIONS

PRE-SHIFT POWERED INDUSTRIAL TRUCK INSPECTION FORM

Instructions: Follow the below guidelines to complete a hands-on lift inspection. Sign and date acknowledging you have completed the inspection. Deficiencies noted on the inspection form SHALL be corrected prior to operation. If the deficiencies cannot be corrected, the aerial lift SHALL not be used and lockout/tag-out procedures initiated.

Equipment Make/Model: _____ Serial Number: _____ Date completed: _____
Hour Meter Reading: Start _____ End _____ Attachments: _____
Operator Print Name and Sign: _____

Ok = √	Not Ok = X	Not Applicable = N/A

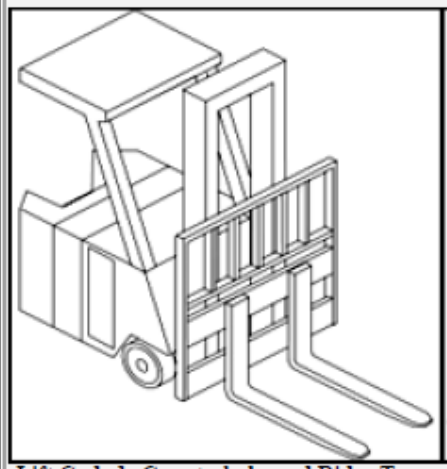
Pre-Shift Safety Inspection	Visual	Comments	Initials
1. Obvious damage of loose parts			
2. Overhead guard			
3. Bridge and mast			
4. Forks and locking pins			
5. Chains			
6. Tires			
7. Fuel			
8. Wires, hoses, cables and belts			
9. Fire Extinguisher			
10. Engine fan belts and wiring			
11. Data plate and load limitations			
12. Placards or warnings			
13. Falling Object Protective Structure Rollover Protective Structure			
14. Outrigger			
15. Hazards			
16. Boom extension			
17. Attachments			
18. Grab handles and steps			
19. Seat belts			
20. Steering			
21. Mirrors			
22. Operating manual			
23.Controls			
24. Gauges			
25. Operation of lift			
26. Unusual noises			
27. Fluids under truck			
28. Brakes			
29. Horn			
30. Lights			

NOTE: This form must be kept on file for 1 year and is subject to review by the Environmental Health and Safety Office. Documentation of repairs shall be maintained with the powered industrial trucks preventive maintenance records

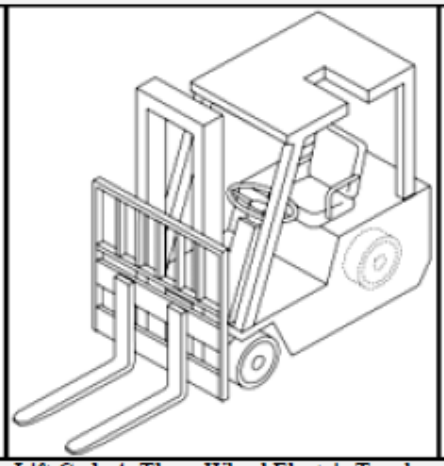
Appendix B: CLASSES OF POWERED INDUSTRIAL TRUCKS

Class I: Electric Motor Rider Trucks

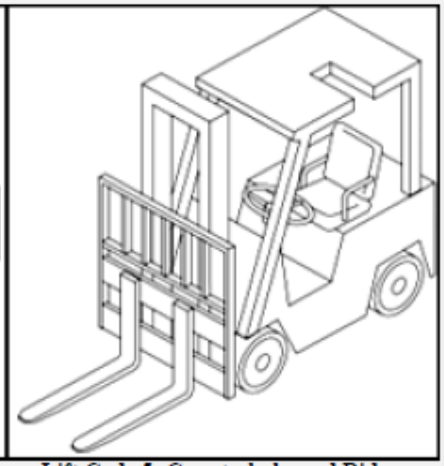
The following are examples of Class I powered industrial trucks.



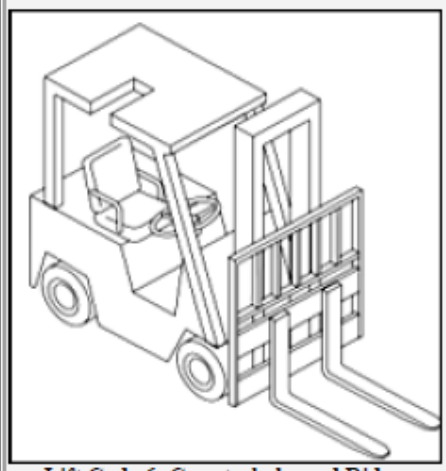
Lift Code 1: Counterbalanced Rider Type, Stand Up.



Lift Code 4: Three Wheel Electric Trucks, Sit Down.



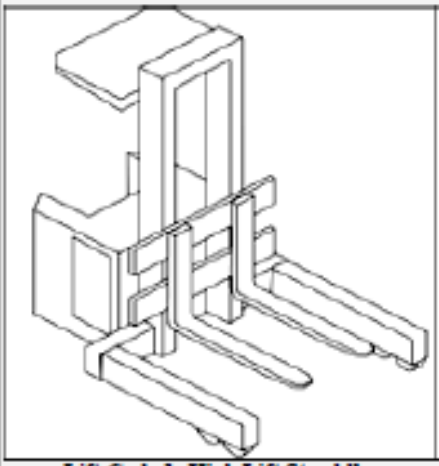
Lift Code 5: Counterbalanced Rider, Cushion Tires, Sit Down.



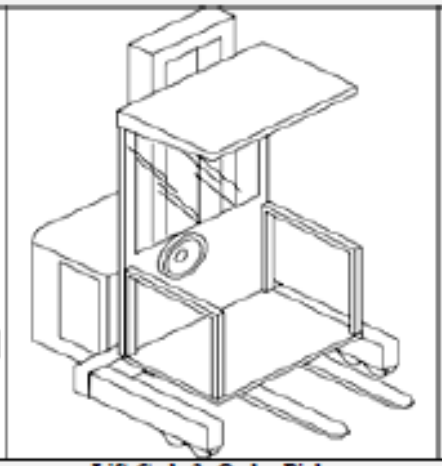
Lift Code 6: Counterbalanced Rider, Pneumatic or Either Type Tire, Sit Down.

Class II: Electric Motor Narrow Aisle Trucks

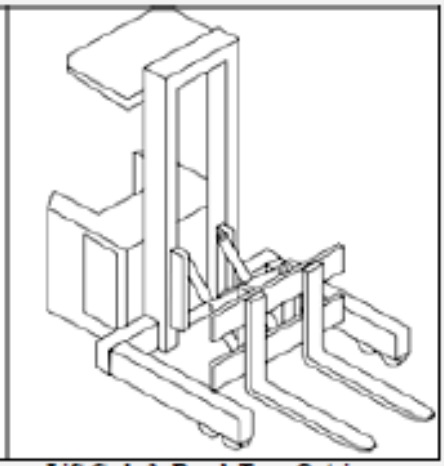
The following are examples of Class II powered industrial trucks.



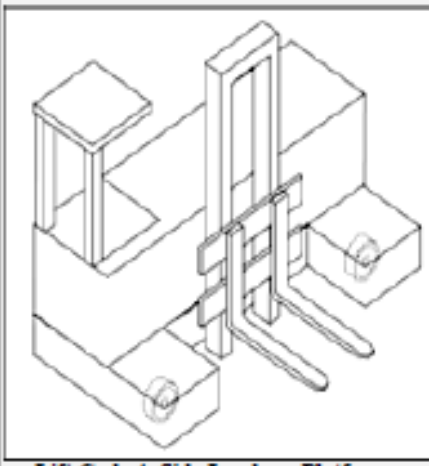
Lift Code 1: High Lift Straddle.



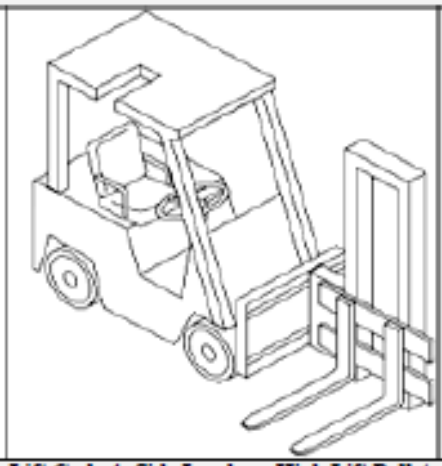
Lift Code 2: Order Picker.



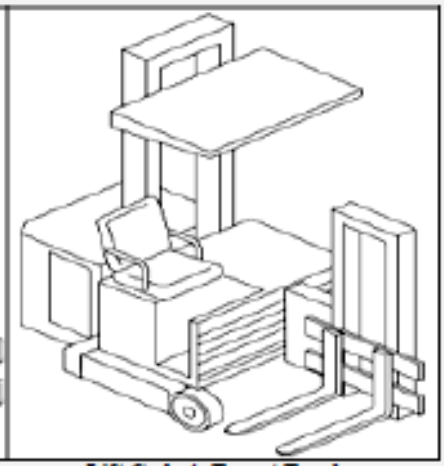
Lift Code 3: Reach Type Outrigger.



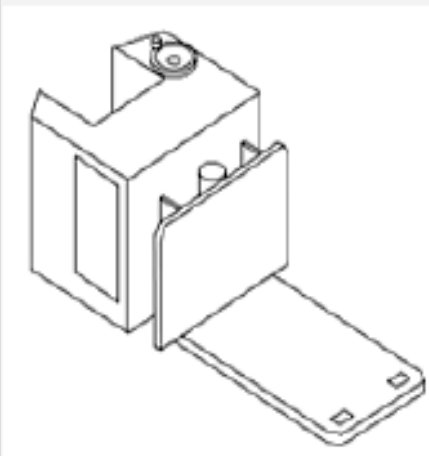
Lift Code 4: Side Loaders: Platforms.



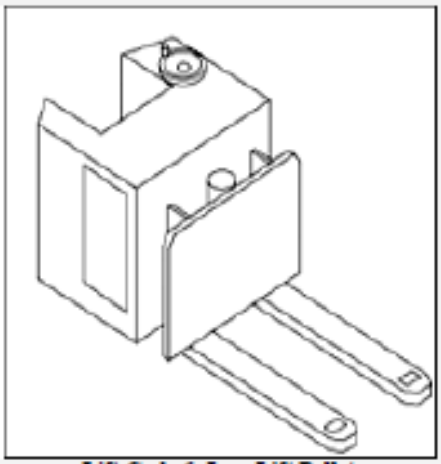
Lift Code 4: Side Loaders: High Lift Pallet.



Lift Code 4: Turret Trucks.



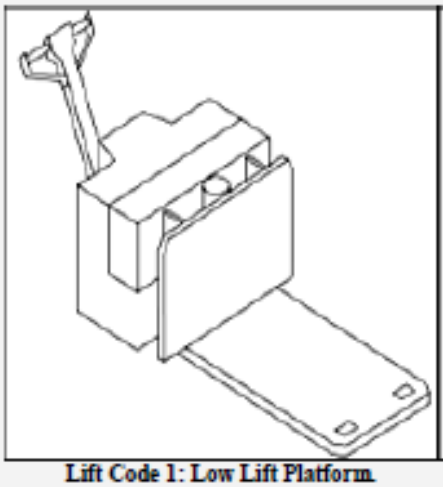
Lift Code 6: Low Lift Platform.



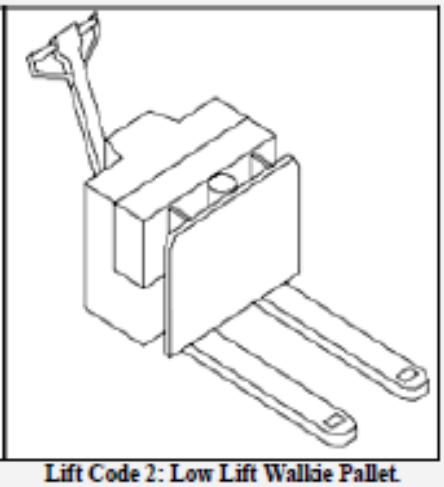
Lift Code 6: Low Lift Pallet.

Class III: Electric Motor Hand Trucks or Hand/Rider Trucks

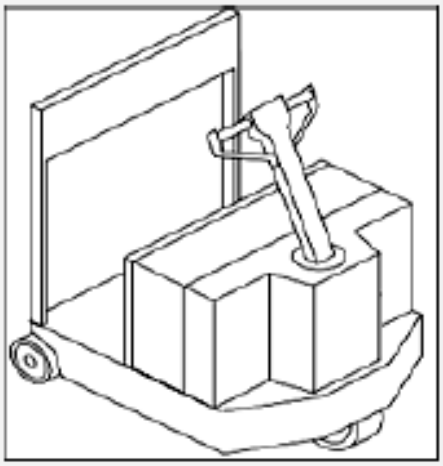
The following are examples of Class III powered industrial trucks.



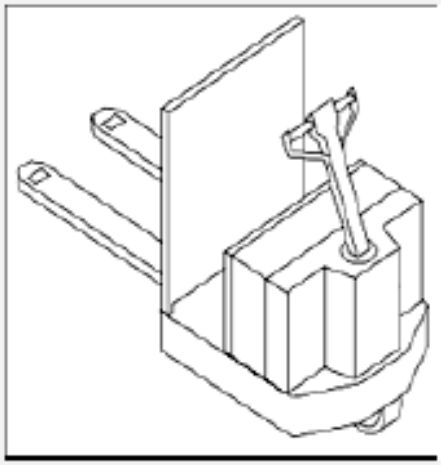
Lift Code 1: Low Lift Platform.



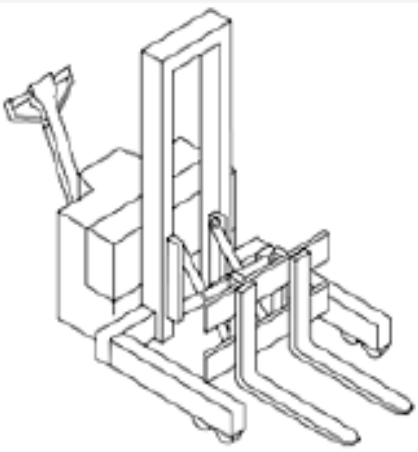
Lift Code 2: Low Lift Walkie Pallet.



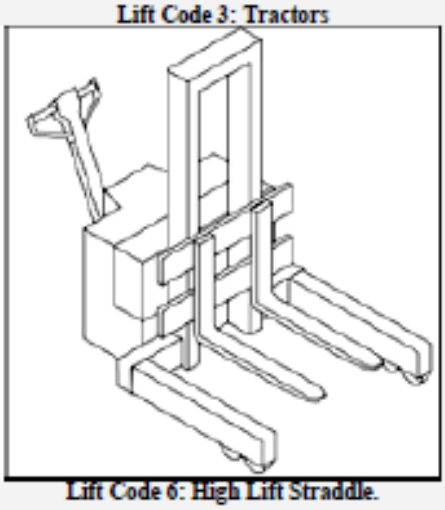
Lift Code 3: Tractors



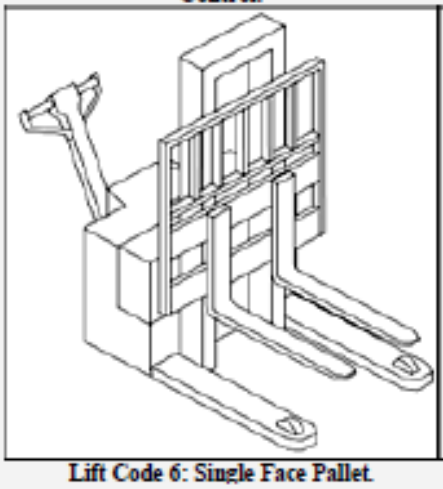
Lift Code 4: Low Lift Walkie/Center Control.



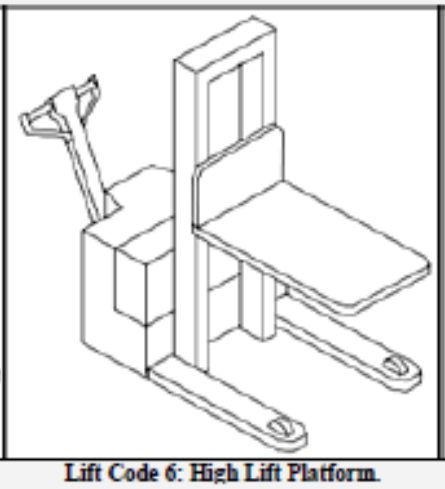
Lift Code 5: Reach Type Outrigger.



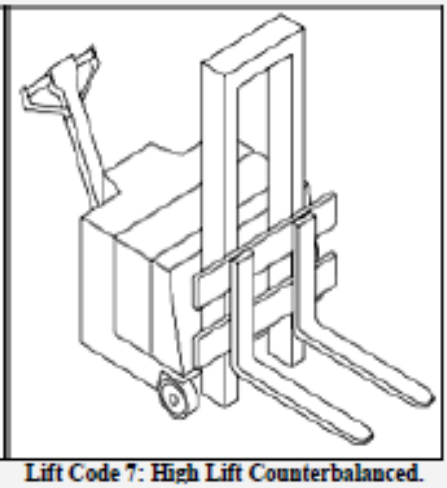
Lift Code 6: High Lift Straddle.



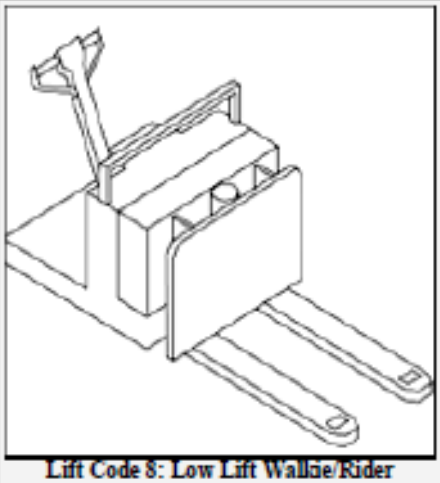
Lift Code 6: Single Face Pallet.



Lift Code 6: High Lift Platform.



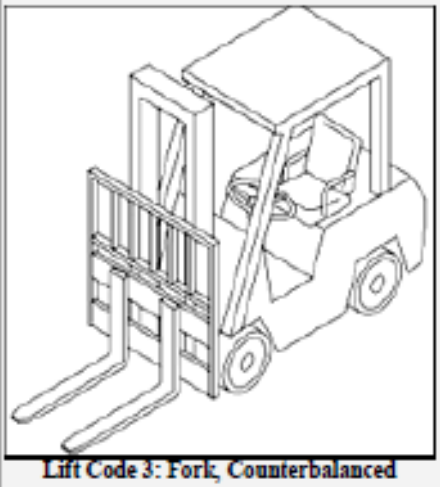
Lift Code 7: High Lift Counterbalanced.



Lift Code 8: Low Lift Walkie/Rider Pallet and End Control.

Class IV: Internal Combustion Engine Trucks (Solid/Cushion Tires)

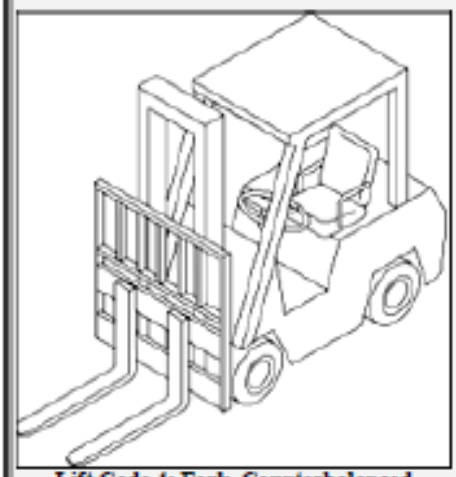
The following are examples of Class IV powered industrial trucks.



Lift Code 3: Fork, Counterbalanced (Cushion Tire).

Class V: Internal Combustion Engine Trucks (Pneumatic Tires)

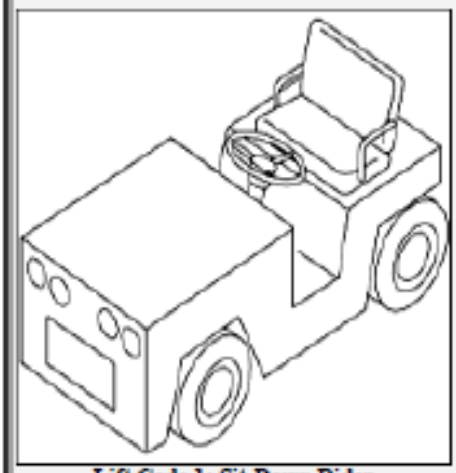
The following are examples of Class V powered industrial trucks.



Lift Code 4: Fork, Counterbalanced (Pneumatic Tire).

Class VI: Electric and Internal Combustion Engine Tractors

The following are examples of Class VI powered industrial trucks.



Lift Code 1: Sit-Down Rider (Draw Bar Pull Over 999 lbs.).

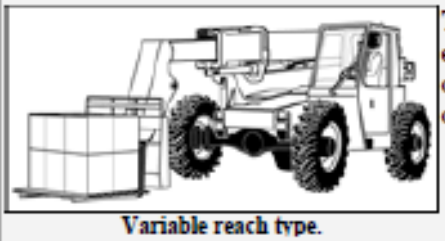
Class VII: Rough Terrain Forklift Trucks

Class VII – Rough terrain forklift is a generic term used to describe forklifts typically intended for use on unimproved natural terrain and disturbed terrain construction sites. However, the term "rough terrain" does not imply that the forklift can be safely operated on every conceivable type of terrain.

There are three basic types of rough terrain forklift:

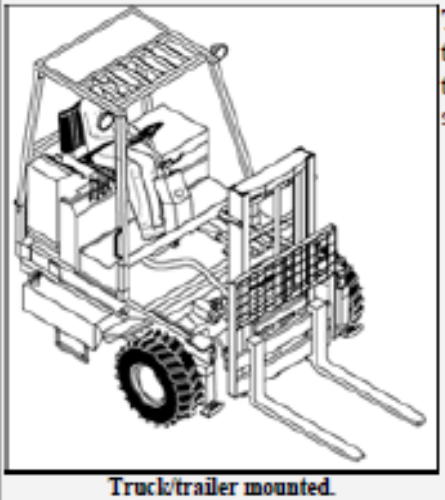
Vertical mast type.

This is an example of a ruggedly constructed forklift and is designed to be used primarily outdoors.



Variable reach type.

This is an example of a vehicle equipped with a telescoping boom, which enables it to pick and place loads at various distances and lift heights in front of the machine. The ability to reach out in front of the forklift allows the operator flexibility in the placement of a load.



Truck/trailer mounted.

This is an example of a portable self-propelled rough terrain forklift that is typically transported to the job site. It is mounted on a carrier to the back of a truck/trailer and is used to unload heavy items from the truck/trailer at the job site. Note that not all truck/trailer mounted forklifts are rough terrain forklifts.

SECTION XI

HOT WORK SAFETY PROGRAM

HOT WORK SAFETY PROGRAM

PURPOSE AND SCOPE

Environmental Air, Inc, is committed to providing a safe and healthy work environment and to protecting our employees from injury or death caused by uncontrolled hazards in the workplace. We recognize the potential for fire from hot work operations. The Hot Work Program has been established to help protect the safety of Environmental Air employees and property by establishing appropriate hot work procedures and designated areas for hot work operations.

This program applies to all employees (permanent, temporary and contractors) who complete hot work or work in areas where hot work is taking place. All employees are required to follow the procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Program Administrator.

PROGRAM RESPONSIBILITIES

Management.

The management of Environmental Air, Inc. is committed to the overall safety of its workers and facilities. Management supports the efforts of the Program Administrator by pledging leadership support and financial resources for this program and ensuring the program is being followed.

Program Administrator.

The Program Administrator reports directly to upper management and is responsible for developing and implementing the Hot Work Program. The Program Administrator is responsible for:

- Developing safe usage protocols for all heat, flame and spark-producing equipment
- Providing appropriate training to all employees of Environmental Air, Inc. that perform or authorize hot work activities
- Establishing designated hot work areas
- Establishing procedures and a permit system for performing hot work in non-designated areas

- Designating individuals on all shifts who can approve hot work activities and issue permits in non-designated areas
- Identifying the proper personal protective equipment (PPE) needed during the hot work procedures
- Completing air monitoring in the event a potentially explosive atmosphere is identified
- Providing outside contractors working on Environmental Air, Inc. premises with training and information on the Hot Work Program and procedures
- Retaining records of training and all hot work permits
- Reviewing program at least annually, and when changes are needed or new equipment is added

Supervisors. Supervisors are responsible for:

- Ensuring that only qualified and trained authorized employees perform hot work activities
- Ensuring that employees who are found to have insufficient skills or understanding of hot work procedures do not perform hot work activities and receive retraining before conducting any hot work procedures
- Ensuring employees comply with all procedures described in this program
- Ensuring all hot work activities are approved prior to being performed in both designated and non-designated areas
- Completing hot work permit requests when necessary
- Identifying dangerous situations, not suitable for hot work
- Designating a fire watch employee for all hot work performed in a non-designated area during and for no less than 30 minutes after work is completed
- Conducting final inspections after a fire watch period has concluded
- Inspecting designated hot work areas after each shift to ensure no smoldering materials are present
- Providing information to the Program Administrator regarding needed improvements to this program
- Hot Work Approver. A hot work approver is an employee who has been trained to approve hot work. Duties of the hot work approver include:
- Determining if the work can be completed or moved to a designated hot work area

- If the work cannot be moved, ensuring all combustible materials in the vicinity are removed
- If all combustible materials cannot be removed, ensuring that guards are in place to confine the heat, sparks and slag.
- Inspecting hot work areas and reviewing planned safety precautions before hot work operations begin
- Communicating to employees regarding hot work activities to ensure their safety
- If approval for hot work is granted, issuing and posting hot work permits which list all required precautions
- Establishing a fire watch during and for no less than 30 minutes after completion of the hot work

Authorized Personnel.

Authorized personnel includes employees or contractors who are trained to perform hot work activities including soldering, welding, pipe-cutting, heat-treating, grinding, thawing pipes, hot riveting, torch-applied roofing and any other application involving heat, sparks or flames. Duties of authorized personnel include:

- Completing all required hot work training
- Seeking approval and/or a permit to perform hot work prior to beginning operations
- Performing hot work activities and procedures in accordance with this program
- Inspecting designated hot work areas for combustibles and other hazards prior to beginning hot work
- Inspecting hot work equipment to ensure it is in safe operating condition before beginning work
- Retaining control of the equipment while hot work is in progress

Fire Watch Personnel.

A fire watch is a designated employee who monitors the hot work area for fires while work is being performed and for 30 minutes after its completion. Duties of the fire watch personnel include:

- Maintaining continuous watch over hot work activity during and for 30 minutes after work has been completed

- Monitoring adjacent areas for fires
- Extinguishing small, controllable fires with extinguishing equipment available in hot work area
- Activating fire alarm if an uncontrollable fire occurs
- Signing the hot work permit 30 minutes after the work is complete and re-posting signed permit in hot work area
- After the hot work and mandatory 30 minute monitoring period is complete, periodically returning to the area where the hot work was completed to check for fires for three hours
- Ensuring that the supervisor has conducted a final inspection after the fire watch period has concluded and signs off on the permit
- Having a supervisor find another trained person to relieve him/her if the designated individual must leave for any reason

Other Personnel.

This includes employees or contractors who are neither authorized personnel nor fire watch personnel but are still exposed to areas where hot work is performed. Other personnel should not perform any hot work activities. Duties include wearing proper personal protective equipment when in a 35 foot radius of hot work.

HOT WORK DESIGNATED AREAS

The following areas have been designated as approved hot work areas. Hot work may be performed in these areas without the issuance of a hot work permit. Even though a permit is not required in these areas, authorized personnel must inspect the area for combustibles and other hazards before beginning hot work operations. All combustible material are to be removed from the area where hot work is being performed.

- Blue Building Sheet Metal Shop welding booth

Authorized personnel must be certain that a functioning fire extinguisher appropriate for the type of potential fire is present at all times while hot work is being performed in designated areas. At the end of each shift, a supervisor or the hot work approver on duty must inspect each designated hot work area to ensure no smoldering materials are present and all hot work equipment is properly shut off and stored.

HOT WORK NON-DESIGNATED AREA PROCEDURES

Basic Precautions.

At a minimum all of the following precautions must be met to perform hot work in a non-designated area.

- Building fire sprinkler system is operational at the hot work location. (if applicable)
- All combustible materials within 35 feet of the hot work shall be moved to a safe distance or other location.
- If combustible materials cannot be moved, they are protected by fire retardant covers or they are shielded with fire retardant or metal guards.
- Appropriate PPE is provided to employees performing hot work based upon a hazard assessment.
- A fire watch is initiated during and for 30 minutes after all hot work has stopped.
- The hot work approver has inspected the hot work area prior to beginning work.
- The hot work approver has issued and posted a hot work permit (Appendix A)

Special Precautions.

Where any of the following conditions exist additional precautions shall also be taken above the basic precautions. The final protection measures will be determined by the hot work approver prior to beginning work.

Floor Openings/Coverings – The floors shall be protected from exposure to flames, sparks, slag or other hot materials whenever there are combustible floors or materials on the floor, floor openings or cracks in the floors. Protections may include:

- Fire-resistant shields or material
- Wetting down floors
- Covering floors with damp sand
- Sweeping combustibles from floor
- Additional protections deemed necessary by the hot work approver

Wall Openings –The walls shall be protected from exposure to flames, sparks, slag or other hot materials whenever there are combustible walls, wall openings, pipe penetrations or ducts. Protections may include:

- Fire-resistant shields or materials

- Shutting dampers
- Separate fire watch on the other side of the walls
- Additional protections deemed necessary by the hot work approver

Potentially Explosive Atmospheres – If there is a potential for mixtures of flammable gases, vapors, liquids or dust in the air, no hot work will be conducted until the Program Administer has completed a review and air monitoring has confirmed that there is no danger of an explosion.

Containers – No hot work will be performed on used drums, barrels, tanks or other container until they have been cleaned thoroughly. The hot work approver must determine that no flammable materials and no substance such as greases, tars, acids or other material which might produce flammable or toxic vapors if exposed to heat are present.

OUTSIDE CONTRACTORS

Whenever outside contractors perform any hot work activity they will be informed of the Environmental Air, Inc. Hot Work Program and procedures by the Program Administrator or the hot work approver. All outside personnel are required to obtain a permit (Appendix A) from the hot work approver. All appropriate safety information will be communicated to the contractor(s) before work begins.

PROTECTION OF PERSONNEL

General.

All personnel conducting hot work or assisting with hot work on elevated platforms, scaffolds or runways will be protected from falling. The fall protection system will consist of either full railings or a fall arrest system with a full body harness, lanyard and approved connection point. Hot work personnel will position all cables, hoses and other equipment out of passageways and emergency egress paths whenever possible.

PPE.

All personnel conducting hot work or assisting with hot work must wear the appropriate personal protective equipment. The appropriate protection is determined by the Personal

Protective Equipment Program survey and outlined in the PPE Program document. Do not begin any hot work operations without obtaining and wearing the required protection.

Welding, cutting, heating and brazing. The following PPE must be worn when completing this type of hot work.

- Eye and face protection
    1. Helmet with filter lens and cover plate that complies with ANSI Z87.1
    2. Safety glasses with side shield under helmet
- Head and ear protection
    1. Fire-resistant welder's cap under helmet
    2. Approved ear-plugs or muffs
- Foot Protection
    1. Leather, steel-toed, high-topped boots in good condition and that meet the requirements of ASTM F2412 and ASTM F2413
    2. Do not wear pants with cuffs. The bottoms of pants should be worn over the tops of the boots
- Hand Protection
    1. Dry, hole-free, insulated and flame-resistant welding gloves
- Body Protection
    1. Oil-free protective clothing made of wool or heavy cotton
    2. Clothing should allow for freedom of movement and should prevent skin exposure
    3. Leather aprons, leggings, capes and sleeves as needed

<u>Equipment.</u>

All tools and equipment used to perform hot work operations will be inspected prior to use. No person should use any tool or equipment unless trained. All safety precautions as outlined in the Welding and Cutting Safety Program will be followed at all times.

PERMIT SYSTEM

In order to ensure adequate controls and safety precautions are being used in non-designated hot work areas, a hot work permit system will be used.

Procedures.

1. Authorized person or supervisor will complete and submit hot work permit request (Appendix A) to hot work approver.
2. Hot work approver will review planned safety precautions and inspect the hot work site using the hot work permit checklist (Appendix A) within 1 hour of receiving the request.
3. Hot work approver will inform employees in the immediate area that hot work is going to be conducted and to avoid the area.
4. Hot work approver will communicate any additional special precautions that need to be taken prior to beginning operations.
5. If all necessary precautions have been taken and work can proceed, the hot work approver will complete the hot work permit and post the warning sign in a highly visible area.
6. Copies of all hot work permit information will be sent to the Program Administrator.
7. Upon completion of the hot work operations and the 30 minute fire watch, the hot work approver will inspect the completed job and ensure the area is clear and ready to return to normal operations.
8. Hot work approver will inform the employees in the immediate area that work is completed to return to normal operations.

Voiding Permits.

Hot work permits will be void and all hot work must not begin or must be immediately stopped if any of the following occur:

- Fire alarm sounds
- Work has not begun within 60 minutes of approved time
- Work has been suspended for more than 60 minutes
- A work shift ends or there is a change in authorized or approval personnel
- At any time the authorized employee, supervisor or hot work approver detects a danger or uncontrolled hazard

Whenever a hot work permit is voided, a new permit must be issued to begin or continue hot work operations.

EMPLOYEE TRAINING

Hot Work Approvers / Authorized Personnel / Supervisors.

Before any employees designated as hot work approvers, authorized personnel or supervisors are allowed to perform any hot work operations, they must first receive training. Periodic retraining will occur if an employee has a lack of knowledge, uses equipment improperly or if work tasks change. At a minimum, the training will include the following subjects:

- Fire prevention and protection
    - Basic precautions
    - Special precautions
- Employee classifications and responsibilities
    - Hot work approver
    - Authorized personnel
    - Supervisors
    - Fire watch personnel
- Designated hot work areas
- Non-designated hot work procedures
- Protection of personnel
- Hot work permit system
- Handling and storage of hot work materials
- PPE selection and use

PERIODIC PROGRAM REVIEW

All hot work procedures will be reviewed at least annually by an authorized employee who does not regularly work with the hot work procedure or by the Program Administrator. If any inadequacies are identified, the Program Administrator will update the procedures and program. The annual review will include a discussion between the reviewer and each authorized employee to determine if he/she understands their responsibilities under the program. Annual inspections are documented in the form found in Appendix B.

RECORD RETENTION

Written training records, which include trainee names, the type of training provided and the dates when training occurred, will be kept by the Program Administrator for 2 years (Appendix C)

The Program Administrator will maintain the hot work permits for 5 years and the annual program review documents indefinitely.

Appendix A – Hot Work Permit

ENVIRONMENTAL AIR HOT WORK PERMIT REQUEST

Before beginning hot work, ask yourself, "Can this job be avoided? Is there a safer way?"

Hot work permits are required for any operation involving open flame, sparks or any heat-producing process. This includes, but is not limited to, brazing, cutting, drilling, welding, grinding, soldering and torch work.

The person performing the hot work must fill out this form in its entirety and submit it to the safety director for approval prior to beginning the project.

General Information

Company: _____

Responsible person: _____ Phone number: _____

Date work to be performed: _____ Start time: AM / PM _____

Building: _____

Room number/area/equipment: _____

Type of work to be performed: _____

_____

_____

☐ Welding ☐ Cutting ☐ Grinding ☐ Soldering ☐ Drilling ☐ Pipe thawing

☐ Brazing ☐ Torch-applied roofing ☐ Electric tools ☐ Other heat-producing process

Planned Safety Precautions

☐ Perform fire watch. (List designated person.) _____

☐ Remove flammable and combustible materials within 35 ft. of work zone.

☐ Guard flammable and combustible materials that cannot be removed.

☐ Maintain appropriate and adequate fire extinguishers.

☐ Sweep floors within 35-ft radius of work zone.

☐ Protect floors within 35-ft radius of work zone by wetting, covering with damp sand or by using fire-resistant shields.

☐ Protect or shut down ducts and conveyors.

☐ Protect walls, partitions, ceilings and roofs with fire-resistant shields or guards.

☐ Other

ENVIRONMENTAL AIR HOT WORK PERMIT

A completed and signed hot work permit is required before any hot work process can begin. Both pages of this permit and the warning page are required to be posted at the work area during the hot work process or for the approved permit period.

Hot Work Safety Checklist

- ☐ Hot work process is located in the safest location possible or in an approved area.
- ☐ Precautions are in place to protect floors, walls, open doorways or open windows within a 35-ft radius of the work zone.
- ☐ Suitable fire extinguishing devices are available at the hot work site.
- ☐ If the worksite is inside a building equipped with a sprinkler system, the system is operational.
- ☐ If the worksite is inside a building equipped with a sprinkler system, the sprinkler heads within a 3-ft radius of hot work operations have been covered with a wet rag to prevent unwanted alarms.
- ☐ If the worksite is inside a building equipped with smoke detectors, the smoke detectors within a 3-ft radius of hot work operations have been covered to prevent unwanted alarms
- ☐ Hot work equipment is in good repair.
- ☐ Fire watch personnel are trained on the proper use of extinguishing equipment and alarm operation.
- ☐ Fire watch is posted and will remain for at least 30 min after all hot work has been completed.
- ☐ No flammable or combustible fibers, dust, vapors, gasses or liquids are in the area.
- ☐ Floors are swept clean within a 35-ft radius of the work zone.
- ☐ Combustible floors are wet, covered with damp sand or protected by fire-resistant shields.
- ☐ Combustible materials are relocated at least 35 ft away from the work zone.
- ☐ Immovable combustibles are protected with flameproof covers or otherwise shielded with metal guards.
- ☐ Ducts and conveyors are protected or shut down.
- ☐ Combustible walls, partitions, ceilings and roofs are protected with fire-resistant shields or guards.
- ☐ No danger exists from conduction of heat through noncombustible walls, partitions, ceilings and roofs.
- ☐ There is adequate clearance between combustible material and pipes and other metals.
- ☐ There is adequate ventilation to remove smoke, vapor and dust from the work zone.
- ☐ All required lockout/tagout procedures are in place.
- ☐ Hot work operators are adequately trained.
- ☐ Contractors are advised about all hazardous materials and conditions they may encounter.
- ☐ Supervisors and employees are notified of nearby hot work operations.

ENVIRONMENTAL AIR HOT WORK PERMIT

Authorization

I have personally inspected the location where the above work is to be done, have checked for compliance with safety precautions listed on this permit and authorize the work to be performed.

Name: _____

Title: _____

Signature: _____ Date: _____

Permit #: _____

Authorized duration of permit: _____ To: _____
Date and Time Date and Time

This permit is only valid as long as the working conditions existing at the time of issuance are maintained. The permit will automatically and immediately expire when any change in conditions adversely affects the safety of the work area while hot work is in progress. After a change occurs, another hot work permit must be issued before work can resume.

This permit and associated warning sign must be posted near the hot work site during all hot work.

WARNING

HOT WORK IN PROGRESS

WATCH FOR FIRE

Stop work immediately if an emergency alarm signals an emergency situation in or near your work area.

If you have questions about these hot work operations:

Contact: _____
(Safety Director)

Phone number: _____

WARNING

Appendix B – Annual Evaluation Report

Date of Evaluation:	Evaluated By (list all present):
Written Program Reviewed: Yes No	
Comments on Written Program:	
The following specific procedures have been reviewed:	
The following specific procedures were modified:	
The following specific procedures were added:	
A review of the Environmental Air, Inc. incident reports were made: Yes No	
The following injuries/fires resulted from failure to use correct hot work procedures:	
Comments:	

Appendix C - Personnel Training Record

This is to certify that the undersigned received training in Environmental Air, Inc.'s Hot Work Program.

Print Name	Hot Work Program Role	Sign Name

Print Instructor's Name	
Instructor's Signature	
Instructor's Title	
Date of Training	

SECTION XII

SMACNA TRAINING SUPPLEMENTS

Attendance List **Company Name** **Date** _____

	Printed Name	Initials
1		
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Attendance List **Company Name** **Date** _____

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