

SITE-SPECIFIC HEALTH AND SAFETY PLAN (SSHASP)

Site: Polychrome West & East

Location: 137-145 & 80-94 Alexander Street, Yonkers, NY

Posillico Job Number: 08018

Date Prepared: April 2018

Prepared By: Alex Gomez

Revision: 1

Project Description: Support of Excavation, Transportation & Disposal of Non-Hazardous Materials from Hot Spot Excavations, In-Situ Solidification (ISS) of Contaminated Material, Installation of ISS Slurry Wall (PC West), Plug/Pile DNAPL Modifications, Installation of CSO Anti-seep collars, Placement & Compaction of Backfill

Potential Chemical Hazards: Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), Trichloroethylene (TCE), Metals (Lead, Mercury, Chromium, Copper, & Arsenic), and Non-Aqueous Phase Liquid (NAPL).

Status: Site is occupied by multiple structures to be demolished by others, perimeter fencing & erosion controls to be installed prior to site mobilization.

SAFETY AND HEALTH POLICY FOR POSILLICO ENVIRONMENTAL

The purpose of this policy is to develop a high standard of safety throughout all operations of Posillico Environmental and to ensure that no worker is required to work under any conditions, which are hazardous or unsanitary.

We believe that each employee has the right to derive personal satisfaction from his/her job and the prevention of occupational injury or illness is of such consequence to this belief that it will be given top priority at all times

It is our intention here at Posillico Environmental to initiate and maintain complete accident prevention and safety training programs. Each individual from top management to the working person is responsible for the safety and health of those persons in their charge and coworkers around them. By accepting mutual responsibility to operate safely, we will all contribute to the well-being of our employees.

APPROVALS

By their signature, the undersigned hereby certify that this Site Specific Health and Safety Plan (SSHASP) has been reviewed, modified for site-specific hazards and approved for use at the Polychrome West & East project.

PREPARER/INDUSTRIAL HYGIENIST

DATE

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POSILLICO SAFETY DIRECTOR

DATE

ALEX GOMEX
POSILLICO PROJECT MANAGER

DATE

POSILLICO PROJECT SUPERINTENDENT
MIKE ROSATO

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AVALON BAY PROJECTION MANAGER

DATE

AKRF ENVIRONMENTAL ENGINEER

DATE

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1.0 INTRODUCTION

1.1 Purpose

This Site Specific Health and Safety Plan (SSHASP) addresses the health and safety practices that will be employed by workers participating in construction activities at the Polychrome West & East sites, located in Yonkers, New York (herein termed the “Site”) (See Appendix A for site location map).

The SSHASP includes procedures to be followed by Posillico Environmental (Posillico), Posillico subcontractors, and all third parties in order to avoid and protect against health and/or safety hazards. Activities performed under this SSHASP will comply with Local City and State regulations as well as applicable parts of OSHA 29 CFR Parts 1910 and 1926 regulations. The control copy of this SSHASP will be maintained on-site for the duration of work.

All workers who may participate in activities at the Site are required to comply with the provisions specified in this SSHASP. All site personnel are required to review and sign this SSHASP. Refusal or failure to comply with the SSHASP or violation of any safety procedures by field personnel and/or subcontractors performing work covered by this SSHASP may result in immediate removal from the site following consultation with the Project Manager (PM), and/or Project Superintendent (PS). Every worker has the authority to stop any specific task or activity that may potentially cause an injury or incident. Posillico encourages its employees and subcontractors to use this policy to mitigate unsafe acts or condition.

1.2 Scope

This SSHASP has been developed to address the health and safety concerns at the Site during closure and remedial actions under the direction of Posillico. Although the SSHASP addresses all activities listed below, work at individual locations may include all, or only some of these tasks.

The SSHASP addresses the following activities:

Mobilization

- Mobilization of equipment and supplies
- Utility connections
- Establishment of site security, work zones, staging areas and surveying

Pre-Construction Activities

- One-call to identify any utility lines within limits of work
- Prepare site facilities and support areas
- Maintain erosion controls and emissions controls

Test-Pit Activities

- Excavation for test pits
- Support for additional waste class characterization (if necessary)

Excavation Activities

- River embankment clearing & grading
- Hot spot excavations/excavation in the ATI peninsula
- Load-out of non-hazardous materials

In-Situ Solidification (ISS)

- In-Situ Solidification of Specified Units
- Installation of ISS Slurry Wall
- DNAPL plug/pile modifications

Site Restoration / Demobilization

- Installation of anti-seep collars along the combined sewer overflow (CSO)
- Installation of demarcation layers
- Backfill of material as directed
- Demobilization of equipment and supplies
- Removal of Temporary Controls
- Decontaminate affected equipment

1.3 Application

The SSHASP applies to all personnel involved in the above tasks that are under the direction of Posillico, who wish to gain access to active work areas, including but not limited to:

- Federal, State or local representatives;
- The Property Owners and their Representatives;
- Visitors to the Site;
- Posillico employees; and
- Posillico subcontractors.

In the event non-Hazardous Waste Operations and Emergency Response (HAZWOPER) trained personnel enter the site for a visit, they will undergo a brief site orientation by the PM or PS and will not be permitted to enter the Contamination Reduction Zone or the Exclusion Zone at location with known contamination. While onsite, non HAZWOPER trained personnel will be escorted by the PM, the PS, and/or Avalon Bay Oversight. If personnel monitoring action levels (outlined in Table 6-1) reach level C Personal Protective Equipment (PPE) requirements, the visitors will exit the work zone until levels permit re-entry.

1.4 SSHASP Changes and Amendments

This SSHASP is a living document. At times throughout the project changes to site operations and conditions may require changes to safety procedures. Any alteration, change or amendment to the SSHASP will be documented, discussed and accepted by Avalon Bay, the Posillico PM, and PS before those changes are implemented. When changes to the SSHASP are completed, they will be discussed with the site crew during the daily safety meetings and these briefings will be documented.

1.5 Site Description

The project site consists primarily of two parcels: *Polychrome West* located at 137-145 Alexander Street & *Polchrome East* located at 80-94 Alexander Street in Yonkers, NY. There is also scope of work on the property adjacent to Polychrome West, known as the ATI peninsula. The site is currently bound to the west by the Hudson River, to the north and south by commercially used parcels, and to the east by the Metro-North railway. The Polchrome West parcel (3.4 acres) & East parcel (2.3 acres) meet at the intersection of Alexander Street & Ashburton Avenue. Contaminants on-site are assumed to be from historical activities on the property, and include but are not limited to: Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), Trichloroethylene (TCE), Metals (Lead, Mercury, Chromium, Copper, & Arsenic), and Non-Aqueous Phase Liquid (NAPL).

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section specifies Avalon Bay, AKRF, and Posillico project organization and responsibilities. All Posillico personnel, including its subcontractors, will be responsible for adherence to the safety procedures during the performance of this project. Deviations from this SSHASP will not be allowed without express consent of the Posillico Safety Director (PSD) and the Avalon Bay Health and Safety Representative. Project management and field supervisors for subcontractors are responsible for ensuring that their personnel will follow the procedures of this SSHASP. Violations of this SSHASP will result disciplinary action up to and including dismissal from site operations.

2.1 Avalon Bay Project Manager – Aaron Levy

The Avalon Bay Project Manager has overall responsibility for achieving project objectives including initiating project activities, monitoring and adjusting efforts and resources as needed to ensure that established schedules and work programs are maintained, communicating with property owners and third parties on technical and administrative matters, and supervising the technical performance of Contractor personnel.

2.2 AKRF Environmental Oversight Engineer (EOE) – Patrick McHugh

The EOE has responsibility for the oversight and documentation of the entire closure project to ensure that the Contractor's work is in compliance with the design plans, construction specifications, SSHASP, and all permits and approvals. AKRF will be responsible for CAMP and provide a technician to perform personal air monitoring during excavation activities. If additional monitoring is necessary, Posillico will supplement personal air monitoring with Posillico staff. The AKRF EOE will also be the direct point of contact with the NYSDEC and any other regulatory agencies regarding all environmental matters.

2.3 Project Manager (PM) – Alex Gomez

The Posillico PM responsibilities include the following:

- Primary point of contact with the owner (or its agents) for site related activities and coordination with project related site operations.
- Implementation of the SSHASP & ensures the SSHASP has all of the required approvals before any site work is conducted
- Participates in incident investigations;
- Ensures the PS, and PSD are informed of project changes which require modifications to the site safety plan.

2.4 Posillico Safety Director (PSD) – Fred Ringler

The PSD responsibilities include the following:

- Assists in the development and approval of the SSHASP;
- Approves revised or new safety protocols for field operations;
- Approves individuals who are assigned Health and Safety responsibilities;
- Coordinates revisions of this SSHASP with field personnel;
- Assists in Coordinating upgrades or downgrades of personal protective equipment with the PS and the site SSO;
- Assists with safety walkthroughs and safety inspections;
- Assists with the implementation of the SSHASP; and
- Assists in the investigation of all accidents/incidents.

2.5 Project Superintendent (PS) –Michael Rosato

The Project Superintendent's responsibilities include the following:

- Ensures that the SSHASP is implemented in conjunction with the PSD and SSO;
- Ensures that work is scheduled with adequate personnel and equipment resources to complete the job safely;
- Ensures that adequate communication between field crews and emergency response personnel is maintained;
- Ensures that site personnel are adequately trained and qualified to work at the site; Record keeping will be performed by the PS. Also in charge of setting up employees for renewals if needed.
- Enforces site health and safety rules;
- Conducts periodic inspections;
- Stops work if necessary;

- Communicates directly with Perimeter Air Monitoring Technician in regard to air monitoring action limits, stopping work if required;
- Reports to the PSD, PM, and SSO to provide summaries of field operations and progress;
- Primary field contact with the owner (or its agents) in regards to erosion control, dust control, noise & odor control matters.
- Acts as the Emergency Coordinator (see Section 12.0)

2.6 Site Personnel

The Site Personnel responsibilities include the following:

- Perform work tasks according to the Posillico Code of Safe Work Practices;
- Report any unsafe or potentially hazardous conditions to the PS and PM;
- Maintain knowledge of the information, instructions and emergency response actions contained in the SSHASP;
- Comply with rules, regulations and procedures as set forth in this SSHASP and any revisions;
- Prevent admittance to work sites by unauthorized personnel; and
- Inspect all tools and equipment, including PPE, prior to use each day.

2.7 Subcontractors

At a minimum, Posillico subcontractors will comply with this SSHASP. If necessary, a SSHASP Addendum or Job Hazard Analysis will be prepared for subcontractor tasks and will be added to this SSHASP to cover additional hazards. Posillico will evaluate the safety performance of its on-site subcontractors in the same manner that it evaluates its own performance. All Posillico subcontractors will be required to sign the SSHASP acknowledgement form located in Section 13.0, sign a letter of intent to comply with all Posillico health and safety policies, attend daily safety meetings and notify the PM and PS of planned operations at the beginning of each day.

Posillico subcontractors will provide:

- A written description of required safety needed for the job;

- Applicable safety training and medical surveillance documentation as well as licenses and certifications; and
- The name and telephone number of the SSO responsible for safety on site.

2.7.1 Truck Driver Policy

All truck drivers will adhere to site traffic rules including: no idling, staying on designated haul roads, adhering to the direction or spotters and following the designated trucking route. There will be a zero tolerance policy for drivers who do not adhere to the site traffic rules. (See Truck Transportation Plan)

When trucks are being loaded with contaminated soils/debris, drivers will be instructed to remain in their cabs with the windows closed. Posillico workers will line truck beds using scaffold or A-framed ladder from the outside to access the inside of the truck bed. Once lined, a Posillico worker will use hand signals to direct truck drivers in and out of work zones. Once the load is covered by an impermeable tarp and the driver is out of the work zone, the driver will be allowed to exit their cab to complete required paperwork.

It is possible that some contaminated soil will be placed and stored in plastic lined dumpsters while characterization analysis are being performed and while adequate volume for shipping is produced. Because of the size and accessibility of dumpsters, it is not anticipated that the dumpster will be considered a confined space.

3.0 POTENTIAL HAZARDS AT THE SITE

This section presents an assessment of the chemical, biological, and physical hazards that may be encountered during the tasks specified under Section 1.2. A Hazard Communication Program is included in Appendix B. The Hazard Communication Program describes the procedures for determining hazards posed by a chemical, providing proper training on those hazards, and transmitting the hazard information to those who could come in contact with the chemical.

3.1 Chemical Hazards

The characteristics of compounds at the Site are discussed below for informational purposes, and are based on the known presence of polycyclic aromatic hydrocarbons (PAHs), common constituents found in historic fill, and potential constituents from third party contamination. Additionally, chemical hazards may potentially be encountered during soil sampling activities. Adherence to the safety and health guidelines in this SSHASP will reduce the potential for exposure. Personnel shall familiarize themselves with the characteristics of the known chemicals and their properties. Listed below is the chemical information regarding exposure for the following chemicals.

3.1.1 Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) are present at the Site in impacted soil and groundwater as a non-aqueous phase liquid (NAPL). These compounds generally have a depressant effect on the Central Nervous System (CNS), may cause chronic liver and kidney damage, and some are suspected human carcinogens. The primary routes of exposure include inhalation, skin absorption or ingestion. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation.

Information on PAH permissible exposure limits (PELs) are located in Table 6.1 (Real Time Air Monitoring Action Levels).

3.1.2 Volatile Organic Compounds (VOCs)

Volatile Organic Compounds (VOC)s may be present as soil and groundwater contaminants. These compounds generally have a depressant effect on the CNS, may cause chronic liver and kidney damage, and some are suspected human carcinogens. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation.

Information on VOC PELs is located in Table 6.1 (Real Time Air Monitoring Action Levels).

3.1.3 Metals

The Site potentially contains elevated levels of metals. The primary routes of this exposure for this contaminant are inhalation and ingestion. Exposure to various metals may cause acute symptoms such as eye irritation, weakness, weight loss, abdominal pain, and anemia. Chronic exposure to lead may result in kidney disease, effects to the reproductive system, blood forming organs, and CNS.

3.1.4 Other Chemical Hazards / Safety Data Sheets (SDS)

Carbon Monoxide (CO) may also be present onsite. CO is a byproduct of petroleum combustion and is present in the exhaust of site machines, vehicles, and equipment. Due to the density of CO being greater than air, the presence of CO in in work areas is likely and will be monitored closely.

Chemicals not identified in this SSHASP may be used during investigation and remediation activities. Prior to the initiation of these tasks, SDSs (See SDS Binder) will be obtained for each of the chemicals to be used and all site workers and visitors who may potentially be exposed will be made aware of these hazards. As part of the hazard communication requirements (Appendix B), a separate SDS binder will be maintained in the Posillico on-site trailer, as per Hazard-Communication Program 29 CFR Subsection 1910.1200.

3.2 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals, insects and plants. Workers will be instructed in hazard recognition, health hazards, and control measures during site-specific training.

3.2.1 Animals

During the conduct of site operations, wild animals such as stray dogs or cats, raccoons, rats, birds and mice may be encountered. Workers shall use discretion and avoid all contact with wild animals. If these animals present a problem, efforts will be made to remove these animals from the site by contacting NYC 311.

3.2.2 Insects

Insects, including bees, wasps, hornets, mosquitoes, ticks and spiders, may be present at the Site making the chance of a bite or sting possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition; any individuals who have been bitten or stung by an insect should notify a supervisor immediately. The following is a list of preventive measures:

- Apply insect repellent prior to performing any field work and as often as needed throughout the work shift.
- Wear proper protective clothing (work boots, socks and light colored pants).
- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible.
- Field personnel who may have insect allergies shall have bee sting allergy medication on site and should provide this information to the PS and SSO prior to commencing work.
- It is recommended that personnel check themselves when in areas that could harbor insects, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetated areas.

3.2.3 Bloodborne Pathogens

The potential contact with bloodborne pathogens exist. This exposure may be through needle sticks, sharps injuries, mucous membranes, and skin exposures. First aid team members, housekeeping personnel in some settings, and nurses are examples of workers who may be at risk of exposure. Workers and employers are urged to take advantage of available engineering controls and work practices to prevent exposure to blood and other body fluids. Bio-Hazard Medical and first aid kits will be available on site. Exposure to bloodborne pathogens may include Hepatitis B, Hepatitis C, and HIV/AIDS. Posillico will follow the bloodborne pathogen training procedures as per OSHAs revised Bloodborne Pathogens Standard, 29 CFR 1910.1030. Additionally, a Bloodborne Pathogen Program can be found in Posillico's Corporate HASP Section 5.0. A bloodborne pathogen kit will be kept alongside a first aid kit, which will be kept within the on-site office trailer.

3.2.4 Bacterial and Viral Pathogens

Bacterial and viral pathogens may be present in unsanitary work areas and are possibly present in sanitary facilities and utilities on site. Such pathogens include, E. Coli, Hepatitis A, and Tetanus. E.Coli and Hepatitis A are commonly associated with raw sewage and are discharged into New York City Water bodies during high rainfall events through combined sewer overflow discharge points. Workers will be instructed to avoid contact with possible pathogen sources and to wear appropriate PPE such as nitrile gloves and Tyvek suits. After PPE is removed, workers must wash with antibacterial soaps and disinfect pathway is through ingestion or skin contact. Acute exposure symptoms include nausea, vomiting, diarrhea, and abdominal cramps.

Tetanus is caused by a bacterial infection associated with rusted metal. The major exposure path way is injection via puncture or scrap equipment with wipes or soap

and water. The main exposure is caused by the puncturing of skin by an infected piece of rusted metal. Workers will be instructed to wear appropriate PPE such as leather and/or cut resistant work gloves when handling rusted metal. If exposed, perform first aid and wash out cut/puncture with antibacterial soap and water. Consult with a physician as a Tetanus shot may be required. Acute symptoms or tetanus include pain in the muscles, muscle spasms, sore neck, and lock jaw.

A medical fact sheet will be kept in all personnel files by the PS. The confidential fact sheet will include information on all allergies, medications, and emergency contact information.

3.3 Physical Hazards/Safety Considerations

A variety of physical hazards may be present during construction activities. The most common anticipated hazards are related to confined space and trench work and include; struck-by/pinch point, overhead loads, slips, trips, and falls; equipment hazards and temperature extreme (cold and heat) stress. Additional specific safety requirements may be covered during safety briefings at the Site.

3.3.1 Cold Stress

At certain times of the year, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia as well as slippery surfaces, brittle equipment, poor judgment and unauthorized procedural changes. The procedures to be followed are found in Appendix C.

3.3.2 Heat Stress

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke. A heat stress prevention program will be implemented as described in Section 6.5. The procedures to be followed and methods for employee physiological monitoring are found in Appendix D.

3.3.3 Noise/Hearing Conservation

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Site workers who will perform suspected high noise tasks and operations for short durations (less than 1-hour) would be provided with hearing protection devices. If deemed necessary the PS and PM will be consulted on the need for additional hearing protection and the need to monitor sound levels for site activities. Posillico's Corporate Hearing Conservation Program will be followed for this project and outlines the means and methods of determining Action Levels and subsequent controls that will be implemented for a variety of different situations. The Program can be found in Section 8.0 of Posillico's Corporate HASP.

3.3.4 Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses with attached side shields, protective toe cap safety work boots, retro-reflective traffic safety vests, and hard hats will be worn by the operating personnel at all times when utilizing hand and power tools and GFI-equipped circuits will be used for all power tools. Face shields will additionally be worn when the hazard of flying debris is present. Tool inspections will be conducted prior to each work shift by labor force that will use the tool. Damaged tools will be tagged out of service and repaired. Additional procedures to be followed when using hand and power tools are attached in Appendix E.

Compressors must be equipped with a safety check valve and airline connections must be secured with a safety chain or other approved method to prevent accidental disconnect. The use of compressed air for personal cleaning is prohibited.

3.3.5 Slips, Trips, and Falls

Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Excavation at the sites will cause uneven footing in the trenches and around the spoil piles. Daily housekeeping inspections of the work areas will be conducted to identify, eliminate, and control slip trip and fall hazards. Leading edges of trenches will be made visible with signage and/or with stanchions and telescoping rails. A guardrail system will be installed around excavations 6' deep or greater. The guardrail will meet the requirements outlined in OSHA 29 CFR 1926 Subpart M.

3.3.6 Fire and Explosion

When conducting demolition and construction activities, the opportunity of encountering fire and explosion hazards exists from electrical strikes, welding, and/or ignitable vapor. Posillico will utilize FDNY-certified fire watch personnel during any welding activities. Before an inactive utility line can be sawed or broken for capping purposes, a Line Break Permit is required to be duly executed by Posillico's PS and reviewed by the SSO. See Appendix F for an example of the Line Break Permit.

It is anticipated that active utilities may be encountered while excavating for foundation work. Hand digging will be used to locate and clear utility lines. Once utilities are located and cleared, soft dig techniques will be used to prevent accidental utility strikes. Soft dig techniques are defined as slow, methodical digging with an excavator bucket as directed by a qualified spotter.

Excavations will be monitored with a gas indicator (CGI)/O₂/H₂S/CO meter and PID/FID, as described in Section 6. Action levels presented in Table 6-1 will be used to determine if a dangerous or explosive atmosphere is present within the work area. If screening indicates that a potentially explosive environment exists within historical tunnel, one or both of the following activities will be taken to mitigate flammable vapors:

- Ventilate the access pit/vault with positive pressure using electric blowers and ducts ; and or
- Inert the utility line with a non-reactive gas (e.g. carbon dioxide or nitrogen) by using a cold cut saw to provide access work areas. Pump the non-reactive gas into the line until the LEL drops below 10%.

Additionally, the use of a diesel engine on excavating equipment could present the possibility of encountering fire and explosion hazards. See Section 8.0 of the most recent edition of the Posillico Corporate HASP for further precautions and procedures in dealing with Fire and Explosions.

In the event that a fire or explosion is serious enough to warrant evacuation or coordinated emergency response; all employees will be instructed to follow the Emergency Response/Contingency Plan in Section 10.0 of this document.

3.3.7 Manual Material Handling

Manual lifting of heavy objects such as demolition debris and/or miscellaneous construction materials may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers will be instructed to use power equipment to lift heavy loads whenever possible and to evaluate loads before trying to lift them (i.e. they should be able to easily tip the load and then return it to its original position).

Loads over 50 lbs. up to 100 lbs. will be lifted utilizing the “Buddy System” or by mechanical means (heavy equipment and nylon lifting slings). Loads >100 lbs. will only be lifted by mechanical means. When lifting loads of any weight, adhere to the following techniques:

- 1) Make sure footing is solid.
- 2) Make back straight with no curving or slouching.
- 3) Center body over feet.
- 4) Grasp the object firmly and as close to your body as possible.
- 5) Lift with legs.
- 6) Turn with your feet, to avoid stress in the lower back.

Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time, and long treatment and recovery

periods. In addition, hand digging for utilities may present lifting/ergonomic hazards.

3.3.8 Heavy Equipment Operations

Large Excavators and loaders will be utilized to provide support during hand digging activities and for material handling and staging. Working with or near heavy equipment poses many potential hazards, including, but not limited to, electrocution, fire/explosion, being struck by or against, or pinched/caught/crushed by, and can result in serious physical harm. Prior to each work shift, operators will inspect their equipment using the Daily Equipment Checklist attached in Appendix G, which also contains information on Motorized Vehicle and Equipment Operation. Dump truck inspections will be conducted and recorded prior to loading soils.

Heavy equipment will be operated under the following conditions:

- The operation of heavy equipment will be limited to authorized personnel specifically trained in its operation. The subcontractor site supervisors must provide this information to the PS and PM.
- The operator will use the safety devices provided with the equipment, including seat belts. Backup warning indicators and horns will be operable at all times.
- While in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
- As per NYC regulations, any heavy equipment will not sit idling for more than 3 minutes after which time the machine will be turned off until it is needed again.
- Swing Radius of the equipment will be coned or caution taped off. Operators will be instructed to keep booms as tight to the machine as possible when rotating.
- Prior to lifting material with heavy equipment, all slings/cables shall be inspected prior to use. Any deformities observed will cause sling/cable to be taken out of service and removed from the site. Qualified rigging personnel will be utilized where applicable.
- While moving materials, if a rubber-tire machine is used wheels shall be chocked where applicable.
- Personnel directly involved in activity will avoid moving in the path of operating equipment or any portion thereof. Areas blinded from the operator's vision will be avoided. Dedicated Spotters will be used when personnel may be in areas where the operator's view is obstructed.

- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose.
- The following hand signals will be used specifically for heavy machinery operation in order to safely move equipment throughout the site:

Hand raised with palm facing forward	Stop vehicle/action
Hand raised and moving towards operator	Back up vehicle
Raising right/left arm	Move vehicle right/left

3.3.9 Vacuum Truck Operations

The use of a vacuum truck poses additional hazards to what is listed in section 3.3.8. A vacuum truck has many moving parts which result in pinch point hazards. Loose clothing or PPE can be caught in the moving parts. Site Personnel will take care when working around the vacuum truck and inspect themselves for items on their body that may contribute to the hazard.

A vacuum truck produces a powerful suction to remove in-situ soils without intrusive measures. This results in a hazard of being caught in the inlet hose of the truck. Site personnel must be mindful when working around the inlet hose and keep appendages away. Prior to work activities, all employees must review the Vacuum excavation AHA and complete a truck walk around with the vacuum truck operator. The purpose of the walk around is for the qualified operator to point out emergency stop buttons located on the truck which immediately cuts the power to the truck, stopping the suction at the inlet.

3.3.10 Lockout/Tagout

The use of power tools and extension cords may pose electrical hazards to workers. Potential adverse effects of electrical hazards include shocks, burns, and electrocution, could result in death. Additionally, uncontrolled release of kinetic energies can result in injuries or death. Examples of this are the loss of hydraulic pressure in dump truck bodies and heavy equipment booms and buckets, clearing of conveyor belts by hand while the unit is still running (e.g. rock crushers), and hatches falling on workers.

Site personnel will assume that all electrical equipment and potential sources of stored kinetic energy (surface, subsurface, overhead, and machinery/equipment) is energized.

In the event that an employee is seriously hurt from electric or kinetic energy; all employees will be instructed to follow Posillico Emergency Response Plan in Section 10.0 of this document.

3.3.11 Activities in Proximity to Underground Utilities

Extreme care will be used during the implementation of the remedial construction activities so as not to damage or interfere with existing utilities. Setbacks for overhead lines for all equipment and personnel are noted in Section 3.3.17.

It is highly likely that there are underground utilities existing surrounding the site. Extreme care will be used during the implementation of the construction activities so as not to damage or interfere with these underground utilities and Posillico shall support and protect these utilities as required. It is assumed that all underground utilities encountered are active. All excavation within the top 5-feet will be conducted using hand or soft dig techniques. The Posillico Underground Utility Safety Procedures can be found in Section 8.23 of the most recent edition of Posillico's Corporate HASP.

3.3.12 Excavation and Trenching

Hazards associated with excavation and trenching includes, but are not limited to, engulfment, entrapment, bank collapse, contact with underground utilities, exposure to hazardous atmospheres, and water infiltration. When working inside an excavation or trench, these hazards need to be considered.

A competent person, as defined by OSHA and approved by the PM, who is capable of identifying existing and predictable hazards and work conditions that are unsanitary, hazardous, or dangerous to employees must determine the safety requirements for each excavation and for the shoring system. The competent person must also have the authorization to take prompt corrective measures to eliminate unsatisfactory conditions.

A more detailed list of Posillico's Trenching and Excavation Procedures are located in Section 8.25 of Posillico's Corporate HASP. Site specific excavation methodology is described further in Posillico's Excavation Support Plan.

3.3.13 Confined Space Entry

Any enclosed areas will initially be considered potential permit required confined spaces. Prior to entry, each potential entry area will be monitored for oxygen content, combustible gases, and toxic gases and vapors. When atmospheric conditions are below action levels and the trained Permit Required Confined Space Supervisor determines there are no other recognized hazards within the space, normal entry will be permitted and atmospheric monitoring will be continued. If action levels are exceeded or other recognized hazards are found to exist or potentially exist within the space, the area will be immediately vacated, and the location will then be re-classified as a Permit Required Confined Space. All entry into work zone classified as a Permit Required Confined Space will be performed

in accordance with Section 8.0 of Posillico's Corporate HASP and Appendix H, Confined Space Entry.

3.3.14 Fall Protection

Posillico requires 100 percent tie-off for working heights 6 feet or more above a working/walking surface. During construction, there is a potential for injuries caused by falls from unprotected leading edges. Posillico shall take precautions to ensure that all leading edges of excavations and trenches are protected in accordance with OSHA 29 CFR 1926 Subpart M. A Guardrail system will be installed during working hours at all trenches or elevated platforms with a height difference of 6' or greater. Posillico's Fall Protection Program is located in Section 8.0 Posillico's Corporate HASP. Additionally, workers performing roofing work or working inside a man-lift will be required to wear harnesses with retractable lifelines. Each harness must be inspected for signs of wear, tearing, etc. prior to use. Body belts are prohibited from use. All open-sided floors, platforms, or runways where a fall of 6 feet or more may occur will have railings and toe boards installed/constructed on all open sides.

3.3.15 Welding and Cutting Safety Rules

Hazards associated with welding and cutting include noxious fumes, potential contact with heated materials, sharp edges, eye retina damage from ultraviolet light, and fire hazards. To mitigate exposure to hazards, all site workers performing welding and cutting on site must adhere to Posillico's Hot Work Safety Rules attached in Appendix I. In addition all site workers must abide by Posillico's Hot Work Program located in section 8.0 Posillico's Corporate HASP. A copy of the Hot Work Permit is also included in Appendix I.

Hot work will not be performed prior to obtaining a FDNY Hot Work Permit. During welding activities, the work zone will be continuously monitored for combustible gases by the SSO who will act as the Environmental Specialist. A FDNY Certificate of Fitness holder for Fireguard (e.g. F60) will be at the work zone during welding activities and stay up to an hour after the welding has ceased.

3.3.16 Equipment Decontamination

Exposure to splashing hazards can occur during Decontamination activities. Decontamination will primarily be performed using shovels and brushes to remove bulk contamination. Washing and scrubbing with a biodegradable detergent (such as Simple Green) followed by rinsing with pressurized water maybe required. During these activities, splashing of contaminates or wash water may occur. Proper PPE will be worn during all decontamination activities including rain gear or Tyvek, hardhat equipped with splashguard with safety glass and attached side shields or safety goggles underneath, and water resistant gloves and boots.

3.3.17 Electrocutation

The use of power tools and extension cords may pose electrical hazards to workers if power cords become damaged, exposing the bare wire. Cords will be inspected prior to use and taken out of commission or repaired if damaged. Additionally overhead or underground electrical lines are of potential concern during excavation and trenching. Site specific precautions will be followed to maintain a safe working distance and to alert all workers to the electrical dangers. Underground utilities will be located (see Section 3.3.10) and surveyed using hand tools and vacuum excavator to safely excavate without severing buried pipes/lines/conduit. Warning signs will also be posted to demarcate the required offsets for the overhead electrical lines. All equipment and personnel will be required to maintain setbacks from energized overhead electrical lines as detailed in the table below. Potential adverse effects of electrical hazards include shocks, burns, and electrocution, which could result in death.

Voltage (kV)	Minimum Clearance Distance (ft.)
Up to 50	10
Over 50 to 200	15
Over 200 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1,000	45
Over 1,000	Consult with utility owner/operator

3.3.18 Severe Weather

Outdoor operations will cease in the event of severe weather conditions as decided by the PM, or PS. Severe weather may include but not limited to heavy rains, high winds, snow and ice. All heavy equipment use will cease prior to the onset of a thunderstorm regardless of the stage of activity. Work will continue 30 minutes after the last observed lightening or sound of thunder, work continuation after other severe weather will be determined by the PM and/or competent person overseeing operation.

3.3.19 Squatters, Transients and Trespassers

If during the course of work squatters are encountered, the City of New York Police Department will be notified to request the removal of such persons from the Support Area. Workers will be instructed not to confront people found inhabiting the site. Any persons found trying to gain access to the site will be instructed by personnel that the site is private property and that access to the site is restricted. Any continued efforts to access the site will result in the project team notifying the City of New York Police Department. Site will be sectioned off by construction signage and traffic control devices around the perimeter to prevent unauthorized access to



the site. Posillico Personnel will be on site for the duration of each work day to make sure everyone entering the premise has proper authorization to do so.

3.3.20 Work Near Water

The Hudson River is the western border of nearly the entire work site. As such, there is a possibility for workers or equipment to fall into the water and significant injury to occur. In order to mitigate this hazard, Posillico will install temporary signage along the edge of the water body informing personnel and equipment of the hazard. Any employees working near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vests. Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet. Workers will be required to wear U.S. Coast Guard approved life jackets when working on or near the shoreline embankment.

4.0 ACTIVITY HAZARD ANALYSIS

Activity Hazard Analysis (AHAs) are a systematic way of identifying the potential health and safety hazards associated with the activities required for completion of the work and the methods to avoid, control and mitigate those hazards. AHAs provide added details for hazards and controls for specific operations and are an integral part of site safety. The AHAs will be used to train work crews in proper safety procedures during training prior to each phase of work.

As part of this SSHASP, Posillico will develop site specific AHAs for activities related to the demolition, construction and installation phases of this project. As more work activity AHA's are developed, they will be added to the HASP as Addenda in Appendix J.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Specific information on the selection rationale for each activity and storage and maintenance of PPE can be found in Appendix K - Personal Protective Equipment (PPE): Selection and Use. For the purposes of PPE selection, the PM and PS are considered competent persons, as defined by OSHA. The signatures on the front of the SSHASP constitute certification of the hazard assessment. For activities not identified in this SSHASP, the PM or PS will conduct the hazard assessment and select the PPE using the information provided in Appendix K. Prior to any upgrade or downgrade of PPE the Construction Manager will be notified. Instruction will be given by the PS on the proper selection of PPE and this will be followed-up by periodic field inspections.

5.1 PPE Requirements

At a minimum, it is mandatory for all persons entering the Site to wear a Hard Hat, High Visibility Class 2 retro-reflective traffic safety Vest, steel-toe work boots, hearing protection as required, and ANSI approved eyewear with attached side shields.

In addition, Posillico will provide its employees with PPE meeting the following standards:

- Personnel entering within *5 feet of any energized electrical equipment up to 50 kVA or greater OR entering within 10 feet of energized overhead electrical lines up to 50 kVA or greater OR working within 10 feet of equipment with electrical potential that is within 10 feet of overhead lines up to 50 kVA or greater (i.e. excavator bucket)* must be wearing fire resistant clothing as is dictated through OSHA standards: "Apparel which meets the flame resistant clothing requirements of the American Society For Testing and Materials (ASTM) standard, ASTM F1506-1994, is acceptable under all flame and electric arc hazard conditions for compliance with the paragraph 1910.269(l)(6)(iii) standard." This includes long pants and long-sleeved shirts to provide protection from burns in the case of coming in contact with electrical arcing. Shirts will meet FR-1 (with 100% cotton undershirts) and pants will meet FR-2 protection.

Throughout the workday, real time monitoring using portable instrumentation will be performed by a qualified technician, as deemed so by the PM or PS, in order to identify potentially hazardous environments. If an elevated level of contaminant is encountered, appropriate upgrades to PPE will be made (following table 6-1 and Section 6.0 accordingly).

Based on the potential chemical and physical hazards on site, the following personal protective equipment will be used during all work activities or as required depending on the task and hazard.

<u>HEAD PROTECTION</u> HH = Hard Hat <u>HEARING PROTECTION</u> EP = ear plugs EM = ear muffs	<u>EYE/FACE PROTECTION</u> APR = Full Face Air Purifying Respirator MFS = Mesh Face shield PFS = Plastic Face shield SG = ANSI approved safety glasses with side shields	<u>FOOT PROTECTION</u> Neo = Neoprene OB = Over boot Poly = polyethylene coated boot Rub = rubber slush boots STB = Steel-toe leather work boots MG = Metatarsal Guard
<u>HAND PROTECTION</u> Cot = cotton But = Butyl LWG = Leather Work Gloves Neo = Neoprene Nit = Nitrile CR = Cut Resistant Gloves SAG = Shock Absorbing Gloves	<u>BODY PROTECTION</u> Cot Cov = Cotton Coveralls Poly = Polyethylene coated tyvek coveralls Saran = Saranex coated tyvek coveralls Tyvek = Uncoated paper tyvek coveralls WC = Work clothes FP = Fire Protective HVSA = High Visibility Safety Apparel Cold Water Exposure Suits = CWS Rain Gear - RG	<u>RESPIRATORY PROTECTION</u> Level D = No respiratory protection required Level C = Full face air purifying respirator with approved cartridges Level B = Full face air supplied respirator with escape bottle HF = Half Face Respirator with P100 filter

TABLE 5-1

PERSONAL PROTECTIVE EQUIPMENT SELECTION

TASK	HEAD	EYE/FA CE	FEET	HAND S	BODY	HEARING	RESPIRATOR
<u>Mobilization/Demobilization</u>							
Mobilization/demobilization of equipment and supplies	HH	SG	STB	LWG	WC or FP as Required	EP as needed	Level D
Establishment of site security, work zones and staging area	HH	SG	STB	LWG	WC or FP as Required	EP as needed	Level D
Utility Connections	HH	SG	STB, OB	LWG/ Nit	WC and/or FP/Poly as Required	EP as needed	Level D
Site Restoration	HH	SG	STB, OB	LWG	WC or FP as Required	EP as needed	Level D
<u>Pre-Construction and Site Preparation</u>							
Delineate and Protect Utilities	HH	SG	STB	LWG	WC or FP as Required	EP as needed	Level D
Site Preparation	HH	SG	STB, OB	LWG	WC or FP as Required	EP as needed	Level D
Prepare Site Facilities	HH	SG	STB	LWG	WC or FP as Required	EP as needed	Level D

TASK	HEAD	EYE/FA CE	FEET	HAND S	BODY	HEARING	RESPIRATOR
Equipment and Material Handling	HH	SG, APR	STB	LWG, Nit	WC or FP as Required	EP as needed	Level C or D
Construction Activities							
Heavy equipment decontamination	HH	SG, PFS	STB, OB	Nit	WC, Poly, RG, HVSA	EP as needed	Level D
Demolition activities	HH	SG	STB, MG as needed	Cot	WC, HVSA as required	EP as needed	Level D
Utility Hand Clearing and Vacuum Excavation	HH	SG, PFS	STB, OB	Nit, LWG	WC, Poly	EP (during vacuum excavation)	Level C or D
Hot Work	HH	SG, PFS	STB, OB	Nit, CR, LWG	WC, FP as required	EP as needed	Level D
NAPL Barrier Wall Installation	HH	SG	STB, MG as needed	LWG	WC	EP as needed	Level D
Support of Utilities	HH	SG	STB	LWG , Nit	WC and/or FP/Poly as Required	EP as needed	Level D
Backfilling/Compaction	HH	SG	STB	LWG	WC	EP as needed	Level D
Welding/Sealing	HH	SG,PFS	STB	LWG	WC or FP as Required	PFS	Level D

5.2 OSHA Requirements for Personal Protective Equipment

All personal protective equipment used during the course of these work activities must meet the following OSHA standards:

<u>Type of Protection</u>	<u>Regulation</u>	<u>Source</u>
Eye and Face	29 CFR 1910.133	ANSI Z87.1-1968
Respiratory	29 CFR 1910.134	ANSI Z88.1-1980
Head	29 CFR 1910.135	ANSI Z89.1-1969
Foot	29 CFR 1910.136	ANSI Z41.1-1967

ANSI = American National Standards Institute

5.3 Respiratory Protection Program

Any on-site personnel who have the potential to don a respirator must have a valid fit test certification and documentation of medical clearance. The PM will maintain such information on file for Posillico personnel, Posillico subcontractors, and other third party personnel. The PM will obtain such information from the subcontractor's site supervisor prior to the initiation of any such work.

Both the respirator and cartridges specified for use must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.1025; 29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency;
- Poor hazard warning properties;
- IDLH concentrations; and
- If contaminant levels exceed designated use concentrations.

In addition to the above requirements, a respiratory protection program has been developed in order to comply with 29 CFR 1910.134. The Posillico respiratory protection program is attached to this document as Appendix L.

5.4 Respirator Cartridge Change-Out Schedule

A respirator cartridge change-out schedule has been developed in order to comply with 29 CFR 1910.134. The respirator cartridge change-out schedule for this project is, as follows:

- Cartridges shall be removed and disposed of at the end of each shift, when cartridges become wet or wearer experiences breakthrough (the wearer can smell or taste the chemical), whichever occurs first; and

If the humidity exceeds 85% and average PID/FID readings exceeds 10 ppm, then cartridges shall be removed and disposed of after 4 hours of use. The SSO will insure this information is communicated to all respirator users and will insure that the cartridges are changed within the required time period.

Respirators cartridges must be removed from the respirator at the end of the day and disposed. Respirators must be cleaned at the end of each day and placed in a respirator storage bag when dry. Respirators must be stored in a cool, dry location.

The schedule was developed based on the following scientific information and assumptions:

- Analytical data that is available regarding Site contaminants;
- Using the Rule of Thumb provided by the American Industrial Hygiene Association (AIHA);
- Total airborne concentration of contaminants is anticipated to be less than 100 ppm;
- The humidity is expected to be less than 85%; and
- Desorption of the contaminants (including those with poor warning properties, i.e. CO, H₂S) after partial use of the chemical cartridge can occur after a short period (hours) without use (e.g., overnight) and result in a non-use exposure.

6.0 MONITORING

Qualified and trained personnel will perform environmental health and safety monitoring on site in accordance with this section.

This section only applies to monitoring workers and work zones for on-site activities and does not include community air monitoring which is covered in the site Community Air Monitoring Plan (CAMP).

6.1 On-Site Monitoring During Construction Activities

The type of onsite monitoring implemented will be appropriate for the activities performed.

The type of onsite monitoring implemented will be appropriate for the activities performed. The following monitoring instruments may be utilized by AKRF and/or Posillico during field operation as necessary:

- Photoionization Detector (PID), Photovac Microtip with 10.6 eV lamp or equivalent; or
- Dust Meter, MIE Miniram model PDM-3 or equivalent;
- Combustible Gas Indicator (CGI)/Oxygen (O₂) / Lower Explosive Limit (LEL) / H₂S /HCN meter, MSA model 361 or equivalent;
- Draeger pump system and colorimetric tubes;
- Sound Level meter when deemed necessary by the PM, and/or PSD.

The type of monitoring will be appropriate for the activities performed. All air and noise monitoring equipment will be calibrated and maintained in accordance with manufacturer's requirements and the Monitoring Instruments: Use, Care, and Calibration program included in Appendix M.

Organic vapor concentrations shall be measured, logged, and recorded using the PID during excavating and other intrusive activities. Monitoring will be performed when excavation/trench depths reach a minimum of 3' below grade and when potentially impacted soil is encountered. Monitoring will continue throughout work activities if concentration exceed the action limits established in Table 6-1. Posillico will provide Draeger tubes in the event that they are required.

A dust meter shall be used to measure, log and record airborne particulate matter during excavation and/or demolition activities, when dust is visible present. Monitoring will be continuous and readings will be averaged over a 15-minute period for comparison with the action levels given in Table 6-1.



A CGI/O₂ meter shall be used to monitor for combustible gases and oxygen content in trenches, excavations, surrounding areas and elsewhere as necessary. The CGI will also be equipped with a hydrogen sulfide sensor and hydrogen cyanide sensor. H₂S monitoring will be completed every fifteen minutes, or if a sulfur odor is present, monitoring will be continuous. HCN monitoring will be completed every fifteen minutes, or if an almond odor is detected, monitoring will be continuous.

All trenches will be monitored before entry and as required to ensure a safe working atmosphere. A competent person, as defined by OSHA, shall be present during the monitoring.

Guidelines have been established by the National Institute for Occupational Safety and Health (NIOSH) concerning the action levels for work in a potentially explosive environment. These guidelines are as follows: 10% LEL- Cease all activities in order to allow time for the combustible gases to vent.

**TABLE 6-1
REAL TIME AIR MONITORING ACTION LEVELS**

Air Monitoring Instrument	Monitoring Location	Action Level	Site Action	Reason
PID	Breathing Zone	0.5 ppm	Use detector tube for benzene. If levels >1/2 PEL are encountered (taking into account the slow response time of Draeger tubes) personnel will exit work area until detector tubes confirm benzene levels are < 1/2 PEL. Benzene tubes will be sampled at initial detection of >1/2 PEL for 15 minutes and will be checked every 2 hours thereafter or until work activities change.	1/2 of PEL for benzene
PID	Breathing Zone	0 - 25 ppm	No respiratory protection is required if Benzene concentration is <0.5ppm. Use detector tube for benzene. If levels >1/2 PEL are encountered (taking into account the slow response time of Draeger tubes) personnel will exit work area until detector tubes confirm benzene levels are < 1/2 PEL. Benzene tubes will be sampled at initial detection of >1/2 PEL for 15 minutes and will be checked every 2 hours thereafter or until work activities change.	
		25 - 250 ppm	Level C	
		> 250 ppm	Stop work, withdraw from work area; notify SSO.	
Oxygen meter	Breathing Zone	< 19.5%	Stop work; withdraw from work area; notify SSO.	Low oxygen
		> 22%	Stop work; withdraw from work area; notify SSO.	Oxygen enriched atmosphere; explosion hazard
Carbon Monoxide Sensor	Breathing Zone	<10ppm	Continue work operations	
		10-35ppm	Stop work, ventilate area	
Draeger Pump-Benzene	Work Area	<1 ppm	Continue work operations	
		1 ppm sustained for 15 minutes	Upgrade to level C	Short-term exposure limit (STEL)
		>50 ppm sustained for work shift	Stop work – investigate source	

Air Monitoring Instrument	Monitoring Location	Action Level	Site Action	Reason
Combustible Gas Indicator (CGI)	Excavation/ Confined Space	< 10 % LEL	Investigate possible causes, allow excavation to ventilate; use caution during procedures.	Increasing potential for ignition of vapors
		> 10% LEL	Stop work; allow excavation, borehole to ventilate to < 10% LEL; if ventilation does not result in a decrease to < 10% LEL, withdraw from work area; notify SSO.	Potential for ignition of vapors
Dust Meter	Excavation/ Concrete saw cutting	> 1.0 mg/m ³	Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting of soil with water	Potential inhalation source for airborne contaminants adhering to dust
		> 2.0 mg/m ³	Upgrade to Level C PPE	1/2 PEL for nuisance respirable dust

*Based on 15-minute average readings

6.2 Personal Air Monitoring

AKRF will provide a technician to perform personal air monitoring if real time monitoring levels indicate the daily presence of atmospheric hazards. In the event that additional staff is required to monitor multiple areas, Posillico will provide staffing & the required equipment to do so. The results of the air monitoring will be compared to all applicable OSHA Permissible Exposure Limits (PELs).

Worker exposure monitoring will be carried out in accordance with NOISH standardized methods. These methods specify quality assurance/quality control (QA/QC) provisions for maintaining sampling and analytical integrity, precision and accuracy. Samples will be analyzed by a laboratory accredited by the American Industrial Hygiene Association (AIHA).

If necessary, based on the results of the personal air monitoring, Posillico will implement specialized protection programs found in Section 8.0 of the most recent edition of Posillico's Corporate HASP in order to ensure that employee exposure is reduced below permissible limits.

6.3 Data Quality Assurance

6.3.1 Calibration

Instrument calibration shall be documented and included in a dedicated safety and health logbook or on separate calibration pages. All instruments shall be calibrated before each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response. In the case of instrument failure, a backup instrument will be readily available to insure continuity in work.

6.3.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the SSO for reference.

6.4 Noise Monitoring

Work areas or tasks that pose an exposure risk greater than 85 dBA will require hearing protection. If there is a reasonable possibility that workers may be exposed to an 8-hour time-weighted average exceeding 85 dBA, noise monitoring will be conducted by the PM. All monitoring and surveillance equipment will be operated, maintained and calibrated in accordance with the manufacturer's instructions and the established quality assurance procedures. All equipment will be checked daily for proper operation. Field validation logs will be maintained on-site.

6.5 Temperature Extremes Monitoring

A cold stress prevention program will be implemented when ambient temperatures are below 50 F. Posillico's cold stress program can be found Appendix C. Cold water exposure suits will be worn under conditions described in section 3.3.21 of this document.

A heat stress prevention program will be implemented when ambient temperatures exceed 70 F for personnel wearing impermeable clothing and for other personnel when the wet bulb globe thermometer (WBGT) index exceeds the ACGIH TLVs of 86 F for light work, 80 F for moderate work, and 77 F for heavy work. The majority of the work conducted onsite is anticipated to be light work. Heat Stress monitoring will be conducted in accordance with the Heat Stress monitoring program found in Appendix D.

7.0 ZONES, PROTECTION, AND COMMUNICATION

7.1 Site Control/MPT

Site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. Posillico will utilize typical three-zone approach for site control (exclusion zone, contamination reduction zone, and support zone).

If required, MPT will be set up at each work location prior to beginning or continuing work. Traffic control devices will be installed in accordance to a New York City Department of Transportation (NYCDOT) approved MPT Plan and act as control measures to limit access by unauthorized personnel into the work zone.

Work zones will be clearly demarcated and well maintained. If contaminated material is encountered, appropriate signage will be placed in the work zone to warn persons of potential hazards and proper contamination reduction zones outfitted with boot wash stations and other decontamination methods as required will be established outside of the work zone. 6 mil plastic sheeting will be placed on the ground surface of material loading zones but to avoid slip, trip, and fall hazards, no additional plastic sheeting will be placed around the work area, and all employees in the work zone exposed to contaminated material will use the established decontamination area to clean their boots and other clothing as needed.

This project is being conducted under the requirements of 29 CFR 1910.120, and any personnel working in an area where the potential for exposure to site contaminants exists, will only be allowed access after proper training and medical documentation as required by Posillico. These records shall be maintained by the PM, and copies will be provided to the PS and the Avalon Bay Engineer on site prior to mobilization for project activities.

The following shall be used for guidance in revising these preliminary zone designations, if necessary.

Support Zone - The SZ is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

Contamination Reduction Zone - The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for Exclusion Zone entry and egress in addition to access for heavy equipment and emergency support services.

Exclusion Zone - All activities, which may involve exposure to site contaminants, hazardous materials and/or conditions, should be considered an exclusion zone. This zone will be clearly delineated by cones, tapes or other means. The PS may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the site PS allowing adequate space for the activity to be completed, field members and emergency equipment.

7.2 Contamination Control/Waste Management

7.2.1 Decontamination Procedures

Personal and equipment decontamination will take place only in designated areas of the CRZ. Posillico will construct a decontamination area in order to contain all contaminated soils, sediments or water and used PPE. The area will be large enough to accommodate the equipment and personnel to be decontaminated.

Decontamination equipment may include the following:

- Wash Tubs
- Scrub Brushes
- Disposable Towels
- Seating to Facilitate Boot Cleaning
- Decontamination Solution
- Hand Soap
- Skin Wash Water Source
- Garbage Cans

7.2.2 Minimization of Contact with Contaminants

During completion of all site activities, personnel should attempt to minimize the degree of contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. All personnel should minimize kneeling, splash generation, and other physical contact with contamination. This may ultimately minimize the degree of decontamination required and the generation of waste materials from site operations.

7.2.3 Personnel Decontamination Sequence

PERSONAL DECONTAMINATION PROCEDURES FOR LEVEL D PROTECTION

1. Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination. During hot weather operations, cool down stations may be set up within this area.
2. Scrub outer boot covers and gloves with decontamination solution or detergent/ water.
3. Remove outer gloves and deposit in waste container.
4. If clothing has become contaminated, remove it and place it into a poly bag.
5. Remove inner gloves and deposit in container with liner.
6. Wash hands and face if necessary.
7. Re-dress (as necessary) or put on clean clothes.

PERSONAL DECONTAMINATION PROCEDURES FOR LEVEL C PROTECTION

1. Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination. During hot weather operations, cool down stations may be set up within this area.
2. Scrub outer boot covers and gloves with decontamination solution or detergent/ water.
3. Rinse off decontamination solution from Step 2 (above).

4. Remove tape around boots and gloves and deposit in waste container.
5. Remove boot covers and deposit in waste container.
6. Remove outer gloves and deposit in waste container.
7. If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty.
8. Remove safety boots and place in area with plastic liner.
9. With assistance of helper, remove splash suit. Deposit in waste container.
10. Remove respirator. Deposit in container with plastic liner. Avoid touching face with fingers.
11. Remove inner gloves and deposit in waste container.
12. If inner clothing has become contaminated, remove it and place it into a poly bag.
13. Wash hands and face, if necessary.
14. Put on clean clothes.

Note: One to two laborers (the decontamination team) may be used to assist in the decontamination of workers exiting the exclusion zone

7.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination; wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment.

If the injured person can be moved, he/she will be moved to the work zone boundary and decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury) provisions shall be made to ensure that emergency response personnel will be able to respond to victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exist, such as with open excavation, this area will be covered with poly to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent chemical data.

7.2.5 Hand Held Equipment Decontamination

Hand held equipment includes all monitoring instruments, samples, and hand tools. The hand held equipment will be decontaminated within the work zone to eliminate the potential to transport impacted soils onto active right of ways.

To aid in decontamination, monitoring instruments can be sealed in plastic bags or wrapped in polyethylene. This will also protect the instruments against contaminants. The instruments will be wiped clean using wipes or paper towels if contamination is visually evident.

Decontamination procedures for sampling equipment, hand tools, etc., shall include the use of steam cleaning or a detergent wash, as appropriate for the site conditions.

7.2.6 Heavy Equipment Decontamination

Dry decontamination of chemically contaminated heavy equipment will be accomplished using brushes within the work zone. Every effort will be made to remove as much impacted material as possible. Decontamination will be done over 6 mil poly so loose material can easily be collected for disposal. In the Posillico support area or back at the Posillico equipment yard, a thorough decontamination will be performed if needed using high-pressure hoses and detergent. All wet decontamination will be conducted on a pre-built decontamination pad as to collect all impacted soil and water for proper disposal.

7.2.7 Decontamination Water

Clean Construction water will be provided by an on-site fire hydrant with a permit and backflow prevention. Watering generated during demolition/construction activities, equipment decontamination, and during dewatering activities will be stored in temporary polyethylene tanks or an onsite frac tank. Once collected, the water will be treated on-site through the existing water treatment system.

7.3 Communications

The following communications equipment shall be specified as appropriate:

- Telephones - A cellular telephone will be located in the Posillico support area for communication with emergency support services/facilities and the home office. Personnel in the work zone can carry cellular telephones for communication as well if Level D PPE has been determined to be appropriate.
- Hand Signals - Hand signals shall be used by field teams along with the buddy system. The entire field team shall know them before operations commence and their use covered during site-specific training. Please note that these hand signals will be the only hand signals used for non-task-specific work for the site. Typical hand signals are the following:

Signal	Meaning
Hand gripping throat	Out of air, can't breathe
Grip on a partner's wrist or placement of both hands around a partner's waist	Leave area immediately, no debate
Hands on top of head	Need assistance
Thumbs up	Okay, I'm all right, I understand.
Thumbs down	No, negative.

- Two-way radios will also be utilized to enhance communications by field personnel on the ground and heavy equipment operators.

8.0 MEDICAL SURVEILLANCE PROCEDURES

All personnel performing field work where potential exposure to contaminants exists at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f) and, where applicable, expanded health standards.

8.1 Medical Surveillance Requirements

A physician's medical release for work will be confirmed by the PM or PSD before a worker can enter the exclusion zone. The examination will be taken annually at a minimum and upon termination of hazardous waste site work if the last examination was not taken within the previous six months. Additional medical testing may be required by the PSD in consultation with the PM if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other site conditions warrant further medical surveillance. In these cases, the employee will be taken to St. Johns Riverside Hospital in Yonkers. The location and route to St. Johns Hospital can be found in Appendix A.

When personnel need to enter a work zone with potential exposure to impacted soils, who do not have their OSHA 40hr HAZWOPER and/or have completed the medical surveillance requirements, 6 mil plastic sheeting will be placed throughout the entire extent of the work zone to protect personnel from contact with impacted soils. Air monitoring will be conducted to ensure inhalation hazards are not present. In the event air monitoring indicates the presence of inhalation hazards, non OSHA 40hr HAZWOPER trained personnel will be removed from the work zone and the action limits listed in Table 6-1 will be followed for remaining trained personnel.

9.0 DRUG, ALCOHOL AND TOBACCO POLICY

Personnel affected by alcohol or drugs on a construction site are much more likely to cause injuries to themselves or others and damage to equipment or the environment. For this reason, a policy must be in place to ensure safety on our sites. For this policy to work, all parties must accept and fulfill their appropriate responsibilities. Posillico, as the General Contractor, has overall responsibility for the construction sites that are under their care, custody and control and must, therefore, set the standard to be followed. This policy applies not only to our own employees but to our subcontractors and their employees:

- No person under the influence of or carrying alcoholic beverages is to enter or knowingly be permitted to enter the job site;
- No person under the influence of or carrying an illicit drug is to enter or knowingly be permitted to enter the job site;
- The use of alcohol and other drugs (not prescribed by a physician) on a job or during work hours will result in disciplinary action up to and including termination; and
- Smoking is prohibited in areas which are posted as “No Smoking”.

10.0 DISPOSAL PROCEDURES

All discarded materials, waste materials or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard or causing litter to be left on site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary, labeled and segregated for disposal off site. Actual facilities and transporters will be listed in forthcoming work plans for this project. Federal and State laws require that wastes be properly classified and managed as hazardous waste, universal waste, or non-hazardous waste. Waste characterization will determine how to manage the materials. Proper waste management includes characterization, labeling, storage, transportation, disposal, personnel training, reporting, and recordkeeping. All non-contaminated debris shall be removed from site and disposed of at an approved waste disposal site. The site that the waste is taken from must appear on the waste transport ticket.

11.0 EMERGENCY RESPONSE / CONTINGENCY PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures which are addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, and first aid for injuries incurred on-site, record keeping, and emergency site evacuation procedures. Emergency contact information, a list of key site personnel and hospital directions are included in this document in Appendix A.

11.1 Responsibilities

11.1.1 Project Superintendent (PS) – Mike Rosato

The PS oversees and approves the Emergency Response/Contingency Plan and performs audits to determine that the plan is in effect and that all pre-emergency requirements are met. The PS acts as a liaison to applicable regulatory agencies for safety-related issues and notifies OSHA of reportable accidents.

11.1.2 Project Manager (PM) – Alex Gomez

The PM is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The PM is responsible for performing head counts at the rally points after site evacuation. The PM is required to immediately notify the Construction Inspector onsite immediately of any incident, fatalities, or catastrophes (three or more workers injured and hospitalized) so that OSHA can be notified within the required time frame.

11.1.3 Emergency Coordinator

The Project Manager (PM) is the primary Emergency Coordinator. In the event the PM is not onsite or incapacitated, the Project Superintendent (PS) will act as the Emergency Coordinator.

In the event of an emergency, the Emergency Coordinator shall make contact with Local Emergency Response personnel. In these contacts, the Emergency Coordinator will inform response personnel about the nature of work on the Site, the type of contaminants and associated health or safety effects, and the nature of the emergency, particularly if it is related to exposure to contaminants.

The Emergency Coordinator shall review this plan and verify emergency phone numbers and identify hospital routes prior to beginning work on Site. The Emergency Coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator shall implement the Emergency Response/Contingency Plan whenever conditions at the Site warrant such action.

11.1.4 Site Personnel

Site personnel are responsible for knowing the Emergency Response/Contingency Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a Site emergency.

11.2 Communications

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections.

The primary form of communication during an emergency between field groups in the exclusion zone and the Emergency Coordinator will be verbal communications. During an emergency situation, radio frequency communication lines will be kept clear so that all field teams can receive instructions.

11.2.1 Telephone/Radio Communications

A cellular telephone or landline telephone will be available on-site.

11.2.2 Air Horns

Air horns will be used to alert Site personnel of emergencies. The following signals will be used:

- Two short blasts – shut down equipment, await instructions
- Three short blasts – site evacuation
- One continuous blast – injured employee, first-aid providers respond

11.2.3 Hand Signals

Downrange field teams will employ hand signals where necessary for communication during emergency situations. Hand signals are found in Section 7.3.

11.3 Pre-Emergency Planning

Before the field activities begin, the local emergency response personnel will be notified of the schedule for field activities and about the materials that are thought to exist on the site so that they will be able to respond quickly and effectively in the event of a fire, explosion, or other emergency.

In order to be able to deal with any emergency that might occur during remedial activities at the Site, emergency telephone numbers will be readily available in the PS vehicle or Construction Office. These telephone numbers are presented in the Site Specific Emergency Contact Information attached in Appendix A. Hospital route maps and SDS sheets will also be readily available in a separate binder at the Construction Office.

11.4 Emergency Medical Treatment

The procedures and rules in this SSHASP are designed to prevent employee injury. However, should an injury occur no matter how slight, it shall be reported to the PM immediately. The PM must inform the owner's representative immediately and the Avalon Bay Engineer within 30 minutes of the injury. First-aid equipment will be available on-site and within the work vehicles.

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that have been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, shall be followed closely.

11.5 Non-Emergency Medical Treatment

The procedures and rules in this SSHASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it shall be reported to the PM immediately. The PM must inform the owner's representative immediately. First-aid equipment will be available on-site.

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that have been set up. Injured personnel that do not require immediate emergency medical attention but require more care than can be provided by a first aid kit, will be directed to a walk in medical clinic located nearby the site. The name, location and directions of the Posillico approved walk in medical clinic are listed in Appendix A.

11.6 Emergency Site Evacuation Routes and Procedures

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs at the work area, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, immediate evacuation of all personnel is necessary due to an immediate or impending danger. All heavy equipment will be shut down and all personnel will evacuate the work areas. Because the work is located at two different locations, evacuation routes and rally points will be established in the field at each work location, as deemed acceptable by the PM and the PS.

If any task covered under this SSHASP has the potential for significant hazards, evacuation drills will be performed as deemed necessary by the PM, PS, and PSD.

11.7 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the work area. The Emergency Coordinator will then immediately notify the local fire and police departments. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

Adhering to the following precautions will prevent fires:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases away from oxidizers.
- No smoking in **any work area**.
- No hot work without a properly executed hot work permit.
- Shutting off engines to refuel.
- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities.
- Fire extinguishers will be selected and positioned based on the potential type and size of fire that could occur in accordance with OSHA Construction Standard [29 CFR 1910.157\(d\)\(1\)](#), e.g. Class A – 75 feet from work area, Class B – 50 feet from work area.

- Monthly inspections of all fire extinguishers by on site personnel. Annual inspection of fire extinguishers by a qualified vendor.

The person responsible for the maintenance of fire prevention and/or control equipment is the PS.

11.8 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Safety Data Sheet (SDS) will be followed as necessary. If first aid or emergency medical treatment is necessary the Emergency Coordinator will contact the appropriate emergency facilities. A SDS binder will be kept in the office trailer and in the Contamination Reduction Zone.

SKIN AND EYE CONTACT:	Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs.
INHALATION:	Move to fresh air. Decontaminate and transport to hospital or local medical provider.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate and transport to emergency medical facility.

11.9 Decontamination During Medical Emergencies

If emergency life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or postponed. The PS, PM or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away carefully. If the outer contaminated garments cannot be safely removed on site, a plastic barrier between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material, which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

11.10 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on-site with regularly scheduled inspections.

- Industrial first aid kit (2-24 piece kits at a minimum)
- Eye wash Station(s)
- Water gel burn kit
- Fire extinguishers
- 20 gallon Spill Kits
- Harness and lanyards - fall protection and rescue
- Stretcher
- Direct reading instruments (DRI)
- Air Horn

11.11 Emergency Rescue Procedures

A site emergency is considered to be an event that has or threatens to have a detrimental physical impact on facilities, people, or the environment and requires immediate action. The definition applies to work locations and employees as well as the people and property associated with contractors and the community.

11.11.1 Responsibilities

- The PM (Alex Gomez) is responsible for the overall conduct of the emergency procedures. This includes maintaining an orderly succession of supervision; making necessary reports to all concerned parties; ensuring that the incidents are identified and corrected; and ensuring the injured personnel (with or without life threatening injuries) are escorted to a medical treatment by the PM or other supervisory personnel.
- The PS (Mike Rosato) has the responsibility for ensuring that the provisions of the SSHASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection procedures as well as communication of those changed conditions to the workforce. The PS is also responsible for conducting site inspections on a regular basis to ensure emergency readiness. The PS shall be notified of any on-site emergencies and shall ensure that the appropriate procedures are followed.

11.11.2 First Aid

- First Aid and Bloodborne Pathogen Response Kits are located in office trailers, Employee trailers, company vehicles, and the decontamination facility.
- First Aid and CPR trained personnel shall be identified and on site at all times.
- Trained Emergency Responders (Site Specific) shall be identified and on site at all times.
- Emergency eyewash stations and backboard shall be located at the decontamination facility.
- Monitoring Instruments shall be made readily available for real time monitoring of the atmosphere.
- Fire Extinguishers shall be made readily available. Minimum 10 pound ABC rating.

11.11.3 Procedure for Reporting Emergencies

- If your work is involved in an emergency situation STOP WORK IMMEDIATELY!
- Do not enter an area that is not safe to do so. Make call to the local emergency responders.
- Do not pick up anything that you did not drop yourself.
- Ensure the safety of the area and follow coworkers from any imminent danger.
- Report the emergency to your immediate supervisor by word of mouth or phone if at all possible.
- Supervisors and trained responders control hazards as necessary.
- Ensure that injuries are being cared for, assess the injury and seek assistance if necessary.

- Follow all decontamination procedures if injury and time allows.
- Secure the area and ensure that the area (scene) is not further disturbed.
- Position a point of contact at the work zone to direct the Emergency responders to scene.
- For any incidents on site (injuries [OSHA Recordable as well as non-OSHA Recordable], vehicle/equipment accidents, Close Calls, property damage, fires/explosions, spills/releases, all work on the activity that cause the incident must stop. A Root Cause Investigation Report / Preventative Action Plan (RCIR / PAP) will be created and shared with the project team. Work may, however, resume on other activities in other locations on site while these documents are being prepared/reviewed. Once the RCIR / PAP is considered acceptable it will be formatted into a HASP Addendum, and the workforce will be trained on the incident and findings by no later than the start of the next shift.
- Any inquiries by the general public, news media or regulatory agencies will be referred to the Avalon Bay Personnel.

11.11.4 Personnel Injury

- The PS and or PM shall ensure necessary first aid or medical attention is obtained. First aid shall be provided by qualified first aid providers or site Emergency Responders.
- For medical emergencies that are life threatening, the appropriate community emergency services shall be notified and mobilized to the project site. The personnel within the EZ, regardless of level of PPE, will bring the injured person out of the EZ bypassing the decontamination procedures. The injured person will be ready at the CRZ for immediate evacuation by emergency personnel or local ambulance.
- For employees with less serious injuries, trained personnel are responsible for providing first aid care. In more severe cases, the field personnel at the scene will stabilize the injured person as much as possible within the EZ. Emergency response personnel will enter the EZ in appropriate PPE to conduct first aid and or remove the injured person for appropriate medical attention.
- If personnel are in need of medical evaluation, ensure that a safety officer or supervisor is assigned to escort the employee.

11.12 Near Miss/Accident/Incident Reporting

Incident reporting will be done following the guidelines established in the Incident Reporting Program in Section 4.0 of Posillico's Corporate HASP. Written confirmation of verbal reports shall be submitted within 24 hours.

In addition to the incident reporting procedures and actions described in the Corporate HASP, the PM will coordinate with Avalon Bay relative to reporting and notification for all environmental, safety, and other incidents. The Avalon Bay PM will be notified immediately of any accident, incident or near miss (notification will be confirmed by direct contact, no voice mail). Furthermore, a written analysis will be generated and submitted within 24 hours of the accident or incident. A site safety briefing will be held to discuss accidents/incidents and any findings from the investigation of the incident. The SSHASP will be modified with an Addendum pertaining to the Preventative Action Plan going forward by the PSD and the PM.

Additionally, near miss reporting will also be instituted on an as-needed basis. If a near miss occurs, a near-miss report will be completed. The PAP will be converted into a HASP Addendum and will be discussed the following day during the morning safety huddle (daily documented pre-job briefing) talk and during weekly project review meetings to prevent future near miss incidences from occurring. It is understood that in the event that a safety, health or environmental concern arises on a job for which an existing procedure is not in place or clearly understood, contractor employees can call a "Time Out". Calling a "Time Out" effectively stops that aspect of the activity that is in question until counsel or direction can be obtained from the Supervisor or if necessary the Project Manager or other qualified individual.

11.13 Adverse Weather Conditions

In the event of adverse weather conditions, the PM, the PS, and the COE will determine if work can continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds).
- Limited visibility (fog).
- Potential for electrical storms.

- Earthquakes.
- Other major incidents

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The PS and PM will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

11.14 Postings

The following information shall be posted or be readily visible and available at conspicuous locations throughout the site:

- Emergency telephone numbers
- Hospital Route Map
- OSHA Worker's Rights Posters

11.15 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers;
- Refilling medical supplies;
- Recharging eyewashes and/or showers;
- Replenishing spill control supplies; and
- Replacing used air horns.

11.16 Spill Containment

If any vehicle or equipment should experience leaks (whether from refueling, hydraulic line leaks, oil leaks, etc.), a Spill Containment Kit (15 gallons or larger) will be available on site to clean up the spill and prevent the spill from spreading to other areas of the worksite. Spill control and prevention procedures will follow the Spill Prevention and Response Plan.

12.0 TRAINING

12.1 General Health and Safety Training

All Posillico site workers will be required to have received the 10 hour OSHA Construction Occupational Health and Safety training course. Supervisors will be required to have received the 30 hour OSHA Occupational Health and Safety training course.

12.2 Hazardous Waste Operations Training

In accordance with 29 CFR 1910.120, hazardous waste site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations unless otherwise noted in the above reference. At a minimum, the training shall have consisted of instruction in the topics outlined in the standard. Personnel who have not met the requirements for initial training shall not be allowed to work in any site activities in which they may be exposed to hazards (chemical or physical). Proof of training shall be submitted to the PM prior to the start of field activities.

12.3 Annual Eight-Hour Refresher Training

Annual eight-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The training will cover a review of 29 CFR 1910.120 requirements and related company programs and procedures.

12.4 Supervisor Training

Personnel acting in a supervisory capacity shall have received 8 hours of instruction in addition to the initial 40 hours training.

12.5 Site-Specific Training

Prior to commencement of field activities, all field personnel assigned to the project will have completed training (pre-work orientation) that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. It will include site and facility layout, hazards and emergency services at the site, and will highlight all provisions contained within this SSHASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. This full HASP review, to be given by Posillico personnel, will be documented with attendee's signatures and a copy given to the Avalon Bay Construction Inspector on site. For new workers to the site after this initial training has been performed, Posillico will provide similar documented training to them. Personnel that have not received site-specific training will not be allowed on-site.

12.6 Safety Meetings/Job Briefings

For routine work tasks, a task-specific kick-off meeting to discuss safety issues will take place prior to starting fieldwork. This meeting will be held at an office location or occur in the field on the first day of work, depending on the complexity of issues to be discussed. Posillico will prepare and maintain documentation of these meetings.

Topics to be covered at these meetings will include:

- Safety plans and considerations for new job phases.
- Results of safety inspections.
- Review of accident history and the “Report of Accident/Incident” forms.
- Any applicable safety training.

Project personnel and visitors will be given both task-specific and general health and safety briefings daily by the PM to assist site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity to periodically update the crews on monitoring results. A copy of the Daily Safety Huddle (daily documented pre-job briefing) form is provided Appendix N. All workers and site visitors will be required to sign this form after each daily safety meeting to acknowledge their attendance and understanding of the material presented. In addition, once a week a Tool Box Talk will be given to review job specific safety topics in further depth. Revisiting of AHA's will also be incorporated into daily safety huddles to keep key safety components from the AHA fresh site personnel minds.

12.7 First Aid and CPR

The PM and PS will identify individuals requiring first aid and CPR training in order to ensure that emergency medical treatment is available during all work shifts. The training will be consistent with the requirements of the American Red Cross Association or equivalent and will include training on blood borne pathogens. A list of First Aid and CPR trained Personnel will be posted in support and break trailers.

12.8 Respirator Protection Training

In all areas of the site where respiratory protection is required, employees will be required to have completed annual respiratory use and care training. It is also necessary for the employee to meet the medical and fit testing requirements.

12.9 Emergency Evacuation Training

Emergency evacuation training is required for all employees on site in order to inform them of the site emergency evacuation procedure. Employees must know the routes of egress, detailed in Appendix A, as well as the designated assembly area.

12.10 Hazard Communication

Hazard communication training will be provided in accordance with the requirements contained in the Health and Safety Hazard Communication Program in Appendix B. The PSD will conduct the training onsite as required to ensure all site personnel are aware of chemicals onsite.

12.11 Confined Space Training

Posillico will provide training for all personnel whose duties involve entry, support, or supervision for confined space entry. Posillico will rely on the New York City Fire Department (FDNY) for Permit Required Confined Space Rescue. Prior to mobilization, Posillico will contact the FDNY with information about work activities and locations.

13.0 QUALITY ASSURANCE (LOGS, REPORTS, AND RECORD KEEPING)

The following is a summary of required health and safety logs, reports, and record keeping. Posillico will maintain all copies of all required health and safety logs, reports and records on site during field activities.

13.1 Medical and Training Records

Copies or verification of training (40 hour, 8 hour, 10 hour, supervisor, and site-specific training) and medical clearance for hazardous waste site work and respirator use will be maintained by the PM and copies provided to the PSD and Avalon Bay representation on site prior to the initiation of work on-site. All records will be kept by the PM on-site.

13.2 On-Site Log

A log of personnel on-site each day including visitors will be kept by the PS in a logbook or as individual sheets maintained in a file.

13.3 Safety Inspection Logs

Safety inspections will be conducted weekly by the PS in order to maintain safe working conditions (Appendix O). The inspections will serve as a tool in identifying hazards and compliance issues that will be addressed. All deficiencies will be addressed and corrected by the field supervision. Inspection logs will be maintained in the job trailer for the duration of the project. The PS inspection will include, but not limited to, equipment, ladders, scaffolds, fire prevention and protection, harness and lanyards, spill kits, first aid/bloodborne pathogen response kits, excavation and shoring, material handling, construction trailers, and storage, and PPE.

13.4 Safety Equipment List and Log

A safety equipment list/log will be maintained on site by the PS to ensure that adequate safety equipment is maintained on site at all times. Inspections of safety equipment, such as the eye wash station, first aid supplies, spill response equipment, and fire extinguishers, will be conducted and recorded.

13.5 Exposure Records

All personal monitoring results, laboratory reports, calculations and air sampling data sheets will be maintained by the PM during site work. At the end of the project they may be maintained in employee files if deemed necessary by the PSD.

13.6 Accident/Incident Reports and Investigation

The incident reporting and investigation during site work will follow the Incident Reporting Program in Section 4.0 of the most recent edition of Posillico's Corporate HASP. Accident investigations will determine the cause of an accident so that a similar accident will not occur in the future. Posillico will determine the nature of the accident, record the findings and correct the cause.

Additionally, Posillico will actively initiate and manage in any Incident Analysis that may be required. Posillico will also make any subcontractor aware of this issue and they will be obligated to participate as well.

13.7 Hazard Communication Program

Safety Data Sheets (SDSs) will be obtained for applicable substances and included in a separate SDS binder. The hazard communication program will be maintained on-site in accordance with 29 CFR 1910.1200 and the Hazard Communication Program in Appendix B.

13.8 Safety Disciplinary Policy

Posillico Environmental believes that a safety and health Accident Prevention Program is unenforceable without some type of disciplinary policy. Our company believes that in order to maintain a safe and healthful workplace, the employees must be cognizant and aware of all company, State, and Federal safety and health regulations as they apply to the specific job duties required. The following disciplinary policy is in effect for Posillico employees and will be applied to all safety and health violations.

The following steps will be followed unless the seriousness of the violation would dictate going directly to Step 2 or Step 3.

1. A first time violation will be discussed orally between company supervision and the employee. This will be done as soon as possible.
2. A second time offense will be followed up in written form and a copy of this written documentation will be entered into the employee's personnel folder.
3. A third time violation will result in time off or possible termination, depending on the seriousness of the violation.

13.9 Work Permits

All work permits, including confined space entry, hot work, lockout/tagout permits will be maintained in the project files. Copies of all work permits shall also be provided to Avalon Bay's on-site representative.

13.10 Quality Assurance Process

Posillico will maintain a Quality assurance program for the duration of the project in order to ensure that the above noted forms and controls are being properly implemented and utilized. The quality assurance process will include the following:

- The PM will discuss instances of non-compliance with the non-compliant party and the issue will be resolved within 24 hours;
- When the issue becomes resolved, proper documentation will be taken in order to prove that the issue has been closed out;
- The PM will review the daily inspection forms weekly and for accurateness and to ensure that the issues have been resolved and closed out properly. Additionally, the PM will review any related forms or permits (confined space, hot work, injury reports, SDSs, chemical lists etc.) for accurateness. Delinquent items will be addressed as necessary; and
- The PS will perform a weekly visual inspection of the site and including any areas/issues of non-compliance noted by the SR throughout the week.
- The PSD will perform periodic site safety audits to ensure all safety policies and procedures described in this SSHASP and in the most recent edition of the Posillico Corporate HASP are being followed.

APPENDIX A

SITE-SPECIFIC EMERGENCY INFORMATION

EMERGENCY INFORMATION

The appropriate telephone numbers are listed below for medical emergencies. For non-life threatening emergencies, Immedicenters can be used if distance permits.

ANY SERIOUS EMERGENCY - DIAL 911

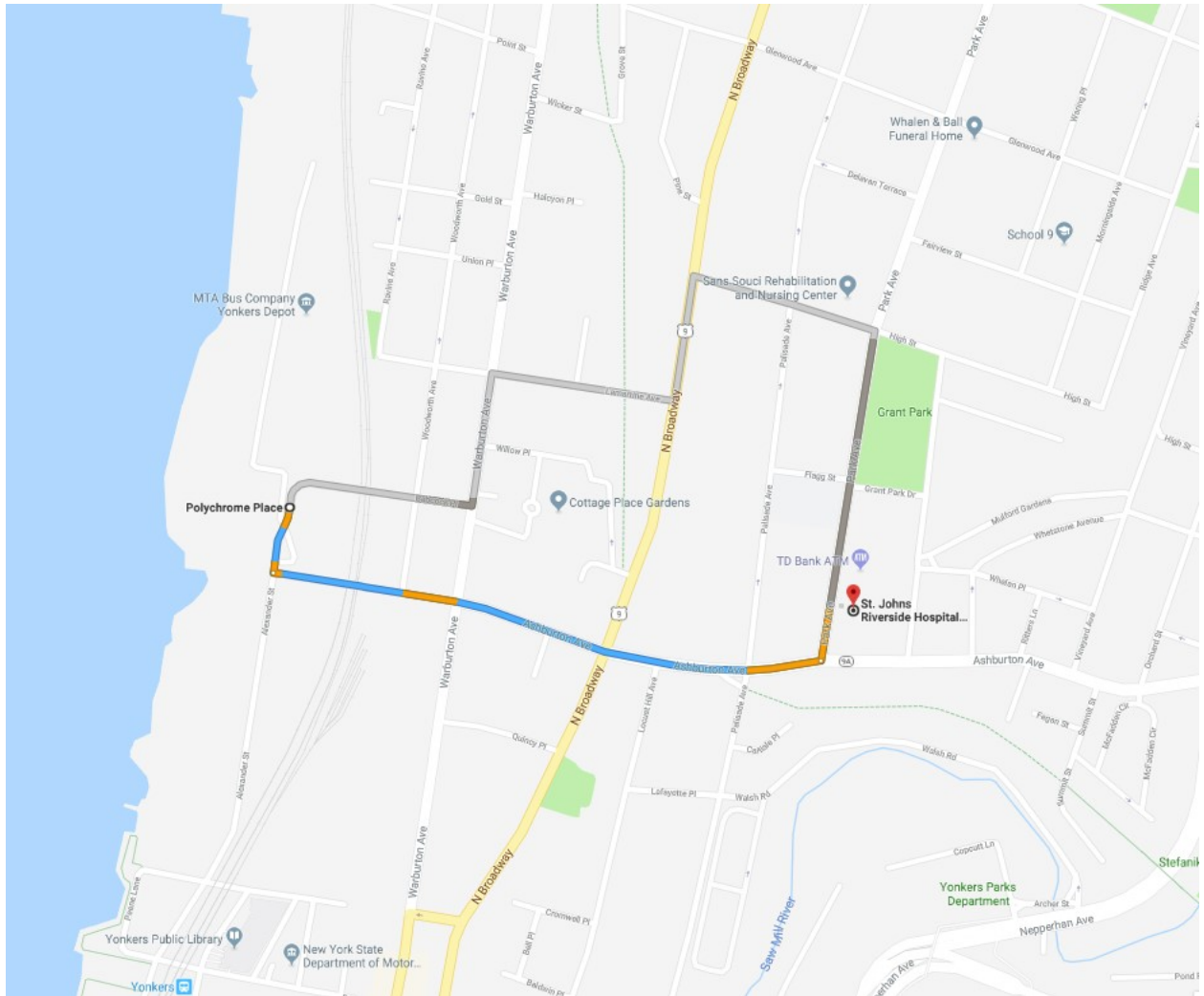
Nearest Hospital: St. Johns Riverside Hospital
2 Park Avenue,
Yonkers, NY 10703
(914) 964-7300

Directions to St. Johns Riverside from Polychrome Site:

Start: Polychrome Place
Yonkers, NY 10701

1. Head south on Polychrome Pl toward Ashburton Ave
(302 ft)
2. Turn left onto Ashburton Ave
(0.5 mi)
3. Turn left onto Park Ave
(240 ft)

End: St. Johns Riverside Hospital
2 Park Avenue, Yonkers NY 10703



APPENDIX B

Hazard Communication Program

Posillico Hazard Communication Program

Introduction

The intent of the Hazard Communication Program is to provide site workers with information about the potential health hazards from exposure to workplace chemicals in accordance with the OSHA Hazard Communication Standard promulgated on August 24, 1987. In order to accomplish its goal of transmitting this information to its site workers, a written hazard communication program specifying how this goal will be achieved has been formulated. This document represents Posillico's Hazard Communication Program (HCP).

Site worker participation is the key ingredient to the HCP. It is extremely important that site workers not only follow the procedures, but also understand the reasoning. The Hazard Communication Program is an integral part of Posillico's effort to provide its site workers with a healthy and safe workplace.

Although most Posillico field projects do not involve the use of hazardous substances it is imperative that all hazardous materials be managed in accordance with this program. This applies to any usage of hazardous materials regardless of volume. Each Office must maintain a copy of this program and review it with affected site workers.

Purpose

To make information available to site workers concerning chemical hazards known to be present in the workplace (i.e., Posillico facilities or client locations) under normal conditions, or in a foreseeable emergency.

Scope

This Hazard Communication Program (HCP) applies to any chemical obtained in excess of retail amounts known to be present in the workplace that site workers may be exposed to under normal conditions of use, or may be exposed to in a foreseeable emergency. The HCP describes procedures for: determining chemical hazards in Posillico operations; providing training on chemical hazards to site workers; and transmitting chemical hazard information through proper labeling and Safety Data Sheets (SDSs). A master compilation of SDSs is maintained at the Posillico Headquarters and copies of applicable SDSs are maintained at each office. Field staff are responsible for keeping SDSs for work performed at each job site. This inventory list is used to conduct annual inventory checks of Posillico's stored chemicals.

Responsibilities

The following individuals and groups are responsible for implementing the Hazard Communication Program (HCP).

1. Health and Safety Assessment Division

- a. Provide general training to all new and existing site workers as appropriate under the HCP. This training will include hazardous material monitoring and recognition, emergency response and understanding labels.
 - b. Maintain documentation for HCP training, inform division/section managers of annual training requirements.
 - c. Periodically update and review Hazard Communication Program.
 - d. Maintain file of current SDSs and arrange for retention of all obsolete SDSs.
 - e. Review operations with division/section managers to determine what jobs require HCP training.
 - f. Obtain all missing SDSs.
 - g. Audit job sites and work areas for compliance with the HCP.
 - h. Annually audit chemical listing to ensure that the most current SDSs are on file and maintain a complete chemical inventory of chemicals in use.
 - i. Act as liaison to outside authorities responding to chemical emergencies or conducting inspections to verify compliance with the HCP.
2. Department/Section Manager
- a. Inventory and compile listing of chemicals used in Department/Section annually and each job site.
 - b. Provide specific training as appropriate for Department/Section/Client location.
 - c. Notify H&S Division of any changes in operations that could affect the way hazardous chemicals are handled.
 - d. Identify all jobs requiring the use or handling of hazardous chemicals.
 - e. Notify H&S Division of site workers requiring hazard specific training.
 - f. Notify H&S Division when new hazards are presented.
 - g. Ensure proper labeling procedures and SDS review is being followed.
3. Site worker
- a. Follow HCP procedures.
 - b. Use PPE as instructed by training procedures.
 - c. Inform division/section manager or H&S Division of:
 - Any symptoms of overexposure that may be related to handling hazardous chemicals.

- Missing or inappropriate labels.
 - Missing or unavailable SDSs.
 - Malfunctioning or unavailable safety equipment.
 - Read, understand and comply with information on labels and SDSs.
 - Leave labels affixed to containers.
 - Use only approved containers for hazardous chemicals.
 - Know the location of emergency equipment on site and in the facility (if applicable).
 - Know your role in contingency plans.
 - Understand all changes in chemical handling and procedures.
 - Attend training sessions as scheduled.
4. Purchasing Department
- a. Request Safety Data Sheets (SDS) from suppliers on each order of a chemical subject to this Program.
 - b. Document the request for an SDS on the purchase order.

Training

1. General Training: Training on this program will be part of Posillico's annual refresher training or supplied on an as-needed basis.

General training will consist of the following items:

- a. Requirement of OSHA HCS (29 CFR 1910.1200)
 - b. Details of Posillico's HCP including:
 - Labeling
 - SDSs
 - How site workers can obtain and use appropriate hazard information.
 - c. Detailed explanation on how to read and interpret an SDS including:
 - Description
 - Sections
 - Explanations of each section
 - Usefulness of each section
 - Applicability of each section
2. Specific Training
- a. Listing of hazardous materials in each department/location/site.
 - b. Location of SDSs in each department/site.
 - c. Written hazard evaluation procedures as referenced in Attachment A – Posillico Hazardous Chemical Label.

- d. Methods and observations to detect hazardous materials in the workplace, including:
 - Exposure monitoring
 - Continuous monitoring
 - Visual inspection
 - Odor
 - Other physical or unusual appearances
- e. Physical and health hazards of chemicals present in the workplace.
- f. Protection measures and procedures:
 - Appropriate work practices
 - Emergency procedures
 - PPE
- g. Field operations where hazardous chemicals are present.

Non-routine Tasks

Posillico typically uses low quantities of hazardous materials on job sites and in the laboratory. Posillico projects that involve large quantities of hazardous materials, extremely hazardous substances or exposure to a client's hazardous materials that are not on Posillico's inventory are to be reviewed on a case by case basis to determine the necessary training to safely work with these materials. Clients regulated under the Process Safety Management program require affected Posillico site workers to attend the Client's site specific safety training program before being allowed access to the site. The Posillico Safety Department will provide training to site workers when client training is not provided. All training will be documented and repeated as necessary. For example, Posillico does provide task specific training to DOT regulated site workers for General Awareness, Shipping and Driving for workers involved in the shipping of hazardous materials and this training is provided every three years. Project Managers will notify the Safety Department when conducting non-routine tasks or when working with extremely hazardous substances in order to properly train site workers before the project commences.

Training, Documentation

1. Record names of attendee(s).
2. Request that site workers initial by their names.
3. Complete training documentation form.
4. Submit copies to H&S Coordinator for site worker training file.

Safety Data Sheets (SDSs)

1. SDS Requirements
 - a. An SDS must be available for each hazardous material used in the workplace. A master compilation of SDSs is maintained at the Posillico Headquarters and copies of applicable SDSs are maintained at each site. Field staff is responsible for keeping SDSs for work performed at each job site. Copies of SDSs can be

obtained by contacting the Safety Department. SDSs for each office should be located near the area where hazardous materials are stored.

- b. The H&S Assessment Division will ensure that all SDSs are complete, legible and in English. Site workers that cannot read or understand English will be provided training as needed in a manner that the site worker can understand.
 - c. A file containing appropriate SDSs for each Posillico facility will be readily available to all site workers.
 - d. A cover sheet will identify all SDSs in the file – Attachment B.
 - e. The H&S Assessment Division will audit the file.
 - f. The Facility Manager will keep a master list of chemicals by department and listed alphabetically, by division.
 - g. The H&S Assessment Division will distribute, to each department, new or updated SDSs as they become available and make changes in the master list.
 - h. Old SDSs will remain on file permanently.
 - i. SDSs must be capable of being cross-referenced to their container labels, where appropriate.
 - j. Where a process or group of hazardous chemicals presents a health hazard greater than or not indicated by the individual SDSs, written operating procedures will also be provided or readily accessible. Standard operating procedures by the manufacturer, job descriptions, etc. may be useful for this information.
2. Procedure for Obtaining SDSs
- a. The Purchasing Department will make an initial request for an SDS from the manufacturer, either by phone, facsimile or mail. A copy of the request will be maintained with the name of the individual contacted and the date and included in the purchase order.
 - b. Site workers who are working at a manufacturing location should request a SDS from the site contact for both raw materials and finished product.
 - c. If SDSs are not received within a reasonable time, approximately 30 days, the H&S Assessment Division or Facility Manager will send a second request to the manufacturer via certified mail, with a return receipt requested.
 - d. If, after the second request, no SDS is sent, the H&S Assessment Division will contact the appropriate local OSHA area office by telephone, informing them of Posillico's inability to obtain an SDS from the manufacturer.
 - e. The H&S Assessment Division will document the following information: date; name; title of OSHA contact; and, summary of conversation.
 - f. A copy of this information will be placed in the master file with the H&S Division for a 30-day period.

- g. If the SDS is not received or OSHA does not contact the H&S Assessment Division within 30 days, H&S Assessment Division will contact the local OSHA area office again.
- h. If the SDS is not received within 60 days, the H&S Assessment Division will contact the regional OSHA office.

3. Labeling

- a. All manufacturers' labels will be left on containers.
- b. All container labels will be legible, prominently displayed, and in English as well as any other prevalent language. Posillico will provide interpretation to site workers who do not read or understand English when necessary.
- c. Minimum label contents include chemical identity; appropriate hazard warnings; and the name and address of the manufacturer.
- d. All labels must contain the information described in Attachment A. Posillico has generated a label for use when portable containers are poured off from the original container to a compatible unlabeled container for field, laboratory or facility use. This label should also be used for samples and mixtures suspected of containing hazardous materials. The appropriate SDS will be referenced in order to complete the "Hazard Warning" portion of the label and determine if the chemical is compatible with the container in which it is being stored.
- e. Posillico uses the International Air Transport Association/Department of Transportation Hazard Classification System for labeling hazardous material shipments by Posillico. Each office that ships hazardous materials must obtain appropriate labels for the shipment and transport of hazardous materials. Copies of the labels for the nine classes of hazardous materials are included in Attachment A.

4. Outside Contractors

- a. Unless required by the nature of services to be provided, Posillico will attempt to restrict contractors from contact with hazardous chemicals on Posillico property or projects.
- b. The Office Manager will notify the H&S Coordinator of all outside contractors on Posillico property or subcontracted to perform on Posillico projects.
- c. The Project Manager will review the work and determine all hazardous chemicals to which the outside contractor's site workers may be exposed.
- d. The Project Manager will provide to the contractor a list of hazardous chemicals to which their site workers may be exposed, and copies of corresponding SDSs.
- e. The Project Manager will inform the contractor of precautionary measures contained within the SDS.

- f. The Project Manager will inform the contractor of the labeling system used in the location of the contractor's work.
 - g. Records will be retained permanently with the H&S Coordinator.
5. References:

29 CFR 1910.1200, Hazard Communication.

OSHA Instruction CPL 2-2.38A, CH-1, July 18, 1986.

ACGIH, Threshold Limit Values and Biological Exposure Indices for 2004.

International Agency for Research on Cancer, *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*, Supplement 7, pgs. 31-32, 41-46.

U.S. Department of Health and Human Services, Fifth Annual Report on Carcinogens, Public Health Service, National Toxicology Program, 1989.

Genium Publishing Corporation, SDS Pocket Dictionary, August, 1988.

National Institute of Occupational Safety and Health, Pocket Guide to Chemical Hazards, June, 2002.

United States Department of Agriculture, Hazard Communication: A Program Guide for Federal Agencies; August, 1987.

ATTACHMENT A

POSILLICO HAZARDOUS CHEMICAL LABEL

HAZARDOUS CHEMICAL

IDENTITY: _____

HAZARD WARNING: _____

MANUFACTURER:

ADDRESS: City _____ State _____

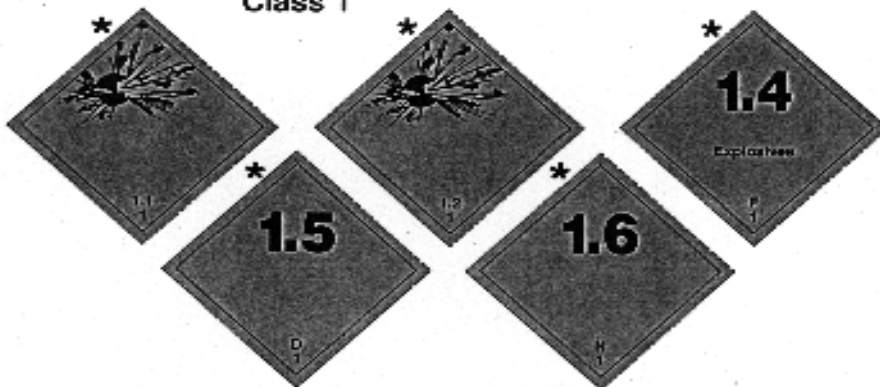
TELEPHONE: _____

IATA/ICAO HAZARD AND HANDLING LABELS

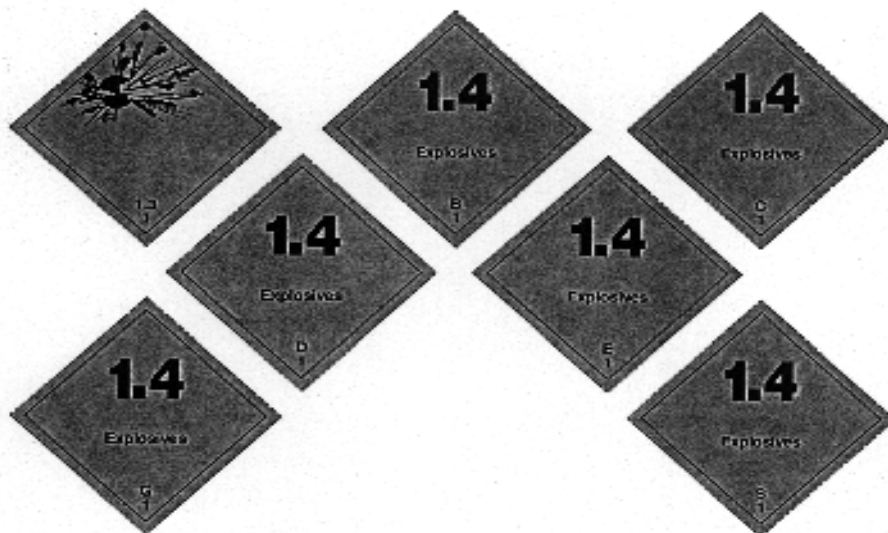
Except for Radioactive and Handling Labels, text indicating the nature of risk on label is optional.

Primary hazard labels

Class 1



* Articles bearing the Explosive labels shown above and falling into Divisions 1.1, 1.2, 1.4F, 1.5 and 1.6 are normally forbidden.



Class 4



Class 2



Class 3



Class 5

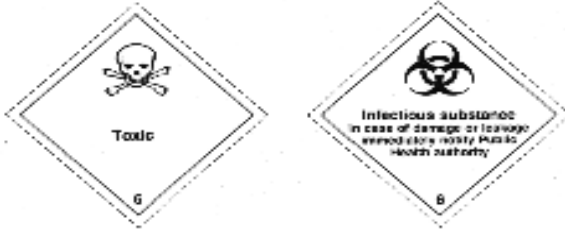


IATA/ICAO HAZARD AND HANDLING LABELS (CONT.)

Except for Radioactive and Handling Labels, text indicating the nature of risk on label is optional.

Primary hazard labels (cont.)

Class 6



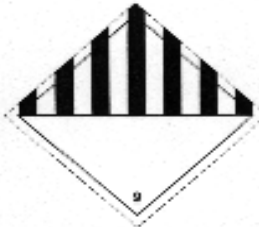
Class 7



Class 8



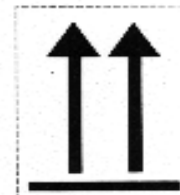
Class 9



Secondary hazard labels



Handling labels



APPENDIX C

Cold Stress Program


STANDARD PRACTICE INSTRUCTION

SUBJECT**Cold Stress****1. Purpose and Introduction**

The purpose of this document is to educate the site worker about exposure to cold environments and the effects of hypothermia and other cold-related injuries. Through proper use of Personal Protective Equipment (PPE), engineering and administrative controls; and education, cold injury, both to the extremities and the body's core temperature can be prevented.

2. Scope

This program is intended for use by site workers engaged in work with the potential for exposure to cold environments. This program will be reviewed annually by the Health and Safety Department. Training will be provided annually to all those potentially affected, and will include this written program.

3. Working in Cold Environments**Metabolic Responses**

The human body is designed to function best at a rectal temperature of 99-100F. The body maintains this temperature in two ways: by gaining heat from food and muscular work; or, by losing it through radiation and sweating. By constricting blood vessels of the skin and/or shivering, the body uses its first line of cold defense.

Temperature control of the body is better understood by dividing the body into two main parts: the shell; and, the core. The shell is comprised of the skin, capillaries, nerves, muscles and fat. Other internal organs such as the heart, lungs, brain and kidneys make up the core.

During exposure to cold, the skin is first affected. Blood in the peripheral capillaries is cooled, sending a signal to a portion of the brain called the hypothalamus. Regulating body temperature is one of the many basic body functions of the hypothalamus. Acting like a thermostat, adjustments are performed in order to maintain normal body temperatures. When a chill signal is received, two processes are begun by the hypothalamus: conserve heat already in the body; and, generate new heat.

Heat conservation is performed through constriction of the blood vessels in the skin (shell), thus reducing heat loss from the shell and acting as an insulator for the core. Sweat glands are also inhibited, thus preventing heat loss by evaporation.

Additional fuel for the body is provided in the form of glucose. Glucose causes the heart to beat faster, sending oxygen and glucose-rich blood to the tissue where needed. In an attempt to produce heat, the muscles rapidly

contract. This process is better known as "shivering", and generates heat similarly to that created by strenuous activity, raising the body's metabolic rate.

During physical activity and fatigue, the body is more prone to heat loss. As exhaustion approaches, blood vessels can suddenly enlarge, resulting in rapid loss of heat. Exposure to extreme cold causes nerve pulses to be slowed, resulting in fumbling, sluggish and clumsy reactions.

4. Cold Injuries

Cold injuries are classified into two categories: local; or, general. Local injuries include frostbite, frostnip, chilblain and trenchfoot. General injuries include hypothermia and blood vessel abnormalities (genetically or chemically induced). Major factors contributing to cold injury are exposure to humidity and high winds; contact with wetness or metal; inadequate clothing; age; and, general health. Allergies, vascular disease, excessive smoking and/or drinking, and certain drugs and medicines are physical conditions that can compound the effects of exposure to a cold environment.

a. Hypothermia

Hypothermia is a condition of reduced body temperature. Most cases develop in air temperatures between 30-50°F, not taking windchill factor in consideration.

Symptoms of hypothermia are uncontrolled shivering and the sensation of cold. The heartbeat slows and sometimes becomes irregular, weakening the pulse and changing blood pressure. Changes in the body chemistry cause severe shaking or rigid muscles; vague or slow slurred speech; memory lapses; incoherence; and, drowsiness. Cool skin, slow irregular breathing, low blood pressure, apparent exhaustion, and fatigue after rest can be seen before complete collapse.

As the core temperature drops, the victim can become listless, confused, and make little or no effort to keep warm. Pain in the extremities can be the first warning of dangerous exposure to cold. Severe shivering must be taken as a sign of danger. At a core body temperature of about 85°F, serious problems develop due to significant drops in blood pressure, pulse rate and respiration. In some cases, the victim may die.

Sedative drugs and alcohol increase the risk of hypothermia. Sedative drugs interfere with the transmission of impulses to the brain. Alcohol dilates blood vessels near the skin's surface, increasing heat loss and lowering body temperature.

Table I, in Attachment A, provides information on the onset of hypothermia and metabolic responses at different body temperatures.

b. Raynaud's Phenomenon

Raynaud's Phenomenon is the abnormal constriction of the blood vessels of the fingers on exposure to cold temperatures, resulting in blanching of the ends of the fingers. Numbness, itching, tingling or a burning sensation may occur during related attacks. The disease is also associated with the use of vibrating hand tools in a condition sometimes called White Finger Disease. Persistent cold sensitivity, ulceration and amputations can occur in severe cases.

c. Acrocyanosis

Acrocyanosis is caused by exposure to the cold and reduces the level of hemoglobin in the blood, resulting in a slightly blue, purple or gray coloring of the hands and/or feet.

d. Thromboangitis Obliterans

Thromboangitis obliterans is clotting of the arteries due to inflammation and fibrosis of connective tissue surrounding medium-sized arteries and veins. This is one of the many disabling diseases that can also result from tobacco use. Gangrene of the affected limb often requires amputation.

e. Frostbite

Frostbite is the freezing of the body tissues due to exposure to extremely low temperatures, resulting in damage to and loss of tissue. Frostbite occurs because of inadequate circulation and/or insulation, resulting in freezing of fluids around the cells of the body tissues. Most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Frostbite can affect outer layers of skin or can include the tissues beneath. Damage can be serious, with permanent loss of movement in the affected parts, scarring, necrotic tissue, and amputation are all possibilities. Skin and nails that slough off can grow back.

The freezing point of the skin is about 30°F. As wind velocity increases, heat loss is greater and frostbite will set in more rapidly.

There are three (3) degrees of frostbite: first degree, freezing without blistering and peeling; second degree, freezing with blistering and peeling; and, third degree, freezing with death of skin tissues and possibly the deeper tissues.

The following are symptoms of frostbite:

- i. Skin changes color to white or grayish-yellow, progresses to reddish-violet, and finally turns black as the tissue dies;
- ii. Pain may be felt at first, but subsides;

- iii. Blisters may appear;
- iv. Affected part is cold and numb.

The first symptom of frostbite is usually an uncomfortable sensation of coldness followed by numbness. Tingling, stinging, cramping and aching feelings will be experienced by the victim. Frostbite of the outer layer of the skin has a waxy or whitish look and is firm to the touch. Cases of deep frostbite cause severe injury. The tissues are cold, pale and solid. The victim is often unaware of the frostbite until someone else observes these symptoms. It is therefore important to use the "buddy system" when working in cold environments, so that any symptoms of overexposure can be noted.

Table II, in Attachment A, describes the cooling power of wind on exposed flesh. This information can be used as a guide for determining equivalent chill temperatures when the wind is present in cold environments.

f. Trench Foot and Chilblains

Trench foot is swelling of the foot caused by long, continuous exposure to cold without freezing, combined with persistent dampness or immersion in water. Edema (swelling), tingling, itching and severe pain occurs, followed by blistering, necrotic tissue and ulcerations. Chilblains have similar symptoms as trench foot, except that other areas of the body are affected.

g. Frostnip

Frostnip occurs when the face or extremities are exposed to a cold wind, causing the skin to turn white.

5. Prevention of Cold Stress

Cold Stress can be prevented through a combination of various factors: acclimation; water and salt displacement; medical screening, proper clothing selection; and, training and education. Through the use of engineering controls, work practices, work/rest schedules, environmental monitoring and consideration of the windchill temperature, the site worker can be protected.

a. Acclimation

Acclimation can be achieved to some degree. Sufficient exposure to cold causes the body to undergo changes to increase comfort and reduce the risk of injury. But, these changes are minor and require repeated exposure to cold and uncomfortable temperatures to induce them.

b. Dehydration

The dryness of cold air causes the body to lose a significant amount of water through the skin and lungs. It is essential that caffeine-free, non-alcoholic beverages be available at the worksite for fluid replacement. Dehydration also increases the risk of injury due to cold and affects blood flow to the extremities.

c. Diet

A well-balanced diet is important for site workers working in cold environments. Diets restricted only to certain foods may not provide the necessary elements for the body to withstand cold stress, leaving the worker vulnerable.

d. Control Measures

When the wind-chill factor results in an equivalent temperature of -26F, continuous exposure of the skin will not be permitted. Any worker exposed to temperatures of 36F or less who becomes immersed in water will be given dry clothing immediately and treated for hypothermia at the local hospital if any symptoms of hypothermia are present. Notification of this incident will be provided to the Health and Safety Division immediately after sending the worker to the hospital.

e. Engineering Controls

The following are some ways that environmental controls can be used to reduce the effects of a cold environment:

- i. General or spot heating should be used to increase temperature in certain areas in the workplace;
- ii. Warm air jets, radiant heaters or contact warm plates can be used to warm the worker's hands if fine work is to be performed with bare hands for 10 to 20 minutes or more;
- iii. Shield the work area if air velocity at the work site is increased by wind, draft or ventilating equipment;
- iv. Metal handles of tools and control bars should be covered with thermal insulating material at temperatures below 30°F;
- v. Unprotected metal chair seats will not be used in cold environments;
- vi. When appropriate and feasible, equipment and processes will be substituted, isolated, relocated, or redesigned;
- vii. Power tools, hoists, cranes or lifting aids will be used to reduce the metabolic workload;

f. Administrative Work Practice Controls

Work practices and guidelines can be designed and developed to reduce exposure to cold stress. Some of these may include:

- i. Work-rest schedules to reduce the peak of cold stress;
- ii. Enforce scheduled breaks;

- iii. Enforce intake of caffeine-free, non-alcoholic beverages;
- iv. Schedule work that has potential exposure to cold stress for the warmest part of the day;
- v. Move work to warmer areas, whenever possible;
- vi. Assign extra workers for high-demand tasks;
- vii. Provide relief workers for other workers needing breaks;
- viii. Teach basic principles of recognizing and preventing cold stress;
- ix. Use the buddy system for work at 10°F or below, and keep within eyeshot;
- x. Allow new site workers to adjust to the conditions before they work full-time in cold environments;
- xi. Minimize sitting and standing in one place for long periods of time;
- xii. Include weight and bulkiness of clothing when estimating work performance requirements and weights to be lifted.

Table III, in Attachment A, provides a work/warm-up schedule for cold environments, with wind chill taken into account.

g. Special Considerations

Older workers and workers with circulatory problems should be extra careful in cold environments. Sufficient sleep and good nutrition are important preventive measures for maintenance tolerance to the cold. Double shifts and overtime work should be avoided when working in cold environments.

If any of the following symptoms are observed on site, the affected worker will immediately go to warm shelter:

- Onset of heavy shivering;
- Frostnip;
- Feeling of excessive fatigue;
- Drowsiness;
- Euphoria.

After entering the warm shelter, the outer layer of clothing should be removed. If the clothing is wet from sweat and perspiration, dry clothing should be provided. If this is not feasible, then the clothing should be loosened to allow sweat to evaporate.

Anyone working in cold environments and on prescribed medication should consult their physician concerning any possible side effects due to cold stress. Those individuals suffering from diseases and/or taking medication that interferes with normal body temperature regulation or reduces the tolerance to cold will not be allowed to work in temperatures of 30F or below.

6. First Aid Measures for Cold Stress Exposure

- a. Call for emergency help. (i.e., Ambulance or Call 911)
- b. Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- c. Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- d. Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. DO NOT rub the person's body or place them in a warm water bath. This may stop their heart.

7. Personal Protective Equipment (PPE)

In choosing PPE for cold environments, it is important to maintain airspace between the body and outer layer of clothing to retain body heat. The more air pockets, the better the insulation. The clothing should also allow for the evaporation of sweat if the skin is wet.

The most important parts of the body to protect are the feet, hands, head and face. Hands and feet become cooled most easily, because of their distance from the heart. Keeping the head covered is equally important. As much as 40% of body heat loss is through the head when it is exposed.

Ideal clothing for exposure to cold environments is made of cotton. Cotton picks up sweat off the body and brings it to the surface. Loosely fitted clothing also aids in sweat evaporation. Recommended clothing may include the following:

- a. Polypropylene under shirt and shorts under thermal underwear (preferably two-piece);
- b. Wool socks;
- c. Wool or thermal pants, lapped over boot tops to keep out snow and water;
- d. Suspenders (belts can constrict and reduce circulation);
- e. Insulated work boots, preferably waterproof. Safety toe, if necessary;
- f. Wool or cotton shirt;
- g. Parka;
- h. Knit cap/hard hat liner;
- i. Wool mittens or gloves (depending on the dexterity required);
- j. Face mask or scarf.

Dirty or greasy clothing loses much of its insulation value. Dirty clothing crushes air pockets, allowing air to escape more easily. Also, denim is not a good protective fabric. It is loosely woven and allows water to penetrate and wind to blow away body heat.

TABLE I
Progressive Clinical Presentation of Hypothermia*

Core Temperature		Clinical Signs
Deg. C	Deg. F	
37.6	99.6	"Normal" rectal temperature.
37	98.6	"Normal" oral temperature.
36	96.8	Metabolic rate increases in an attempt to compensate for heat loss.
35	95.0	Maximum shivering.
34	93.2	Victim conscious and responsive, with normal blood pressure.
33	91.4	Severe hypothermia below this temperature.
32	89.6	Consciousness clouded; blood pressure becomes difficult to obtain;
31	87.8	pupils dilated but react to light; shivering ceases.
30	86.0	Progressive loss of consciousness; muscular rigidity increases;
29	84.2	pulse and blood pressure difficult to obtain; respiratory rate decreases.
28	82.4	Ventricular fibrillation possible with myocardial irritability.
27	80.6	Voluntary motion ceases; pupils non-reactive to light; deep tendon and superficial reflexes absent.
26	78.8	Victim seldom conscious.
25	77.0	Ventricular fibrillation may occur spontaneously.
24	75.2	Pulmonary edema.
22	71.6	Maximum risk of ventricular fibrillation.
20	68.0	Cardiac standstill.
18	64.4	Lowest accidental hypothermia victim to recover.
17	62.6	Isoelectric electroencephalogram.
9	48.2	Lowest artificially cooled hypothermia patient to recover.

* Presentations approximately related to core temperature. Reprinted from the January 1982 issue of American Family Physician, published by the American Academy of Family Physicians.

TABLE II
Cooling Power of Wind on Exposed Flesh as Equivalent Temperature (under calm conditions)*

Estimated Wind Speed (mph)	Actual Temperature Reading (Degrees Fahrenheit)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect).	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 seconds.			
	Trenchfoot and immersion foot may occur at any point on this chart.											

* Developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA

Note #1: Wind speeds greater than 40 mph have little additional effect.

Note #2: Trenchfoot and immersion foot may occur at any point on this chart

TABLE III
Threshold Limit Values Work/Warm-up Schedule for 4 Hour Shift (*)

Air Temp.-Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
°C (approx)	°F (approx)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm. Breaks) 1		(Norm. Breaks) 1		75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20° to -24°	(Norm. Breaks) 1		75 min	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25° to -29°	75 min	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -42°	-40° to -44°	30 min.	5	Non-emergency work should cease							
-43° & below	-45° & below	Non-emergency work should cease									

Notes for TABLE III:

- Schedule applies to moderate to heavy work activity with warm-up breaks of 10 minutes in a warm location. For light to moderate work (limited physical motion), apply the schedule one step lower. For example, at -30F with no noticeable wind (step 4, a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4 hour period.
- The following is suggested as a guide for estimating wind velocity if accurate information is not available: 5 mph, light flag moves; 10 mph, light flag fully extended; 15 mph, raises newspaper sheet; 20 mph, blowing drifting snow.
- If only the wind-chill cooling rate is available, a rough rule of thumb for applying it rather than the temperature and wind velocity factors given above would be: 1) special warm-up breaks should be initiated at a wind-chill cooling rate of about 17 W/m²; 2) all non-emergency work should have ceased at or before a wind-chill of 2250 W/m². In general the warm-up schedule provided above slightly under-compensates for the wind at the warmer temperatures, assuming acclimatization and clothing appropriate for winter work. On the other hand, the chart over-compensates for the actual temperatures in the colder ranges, since windy conditions prevail at extremely low temperatures.
- TLVs apply only for workers in dry clothing.

* Adapted from Occupational Health and Safety Division, Saskatchewan Department of Labor.

APPENDIX D

Heat Stress Program


STANDARD PRACTICE INSTRUCTION

SUBJECT**Heat Stress****1. Purpose and Introduction**

The purpose of this document is to create an awareness among site workers concerning the body's physiologic responses to heat; different types of heat stress that can affect the body; recognition of signs and symptoms; first aid treatment; and, preventive measures.

Heat stress is one of the most common (and potentially serious) illnesses at job sites. Although it is caused by a number of interacting factors, the wearing of PPE puts the worker at a much higher risk during warmer environmental conditions. The results of heat stress range from fatigue to serious illness or death. Through regular fluid replacement and other preventive measures, heat stress can be controlled, leading to increased efficiency and a higher level of safety on the job.

2. Scope

This program is intended for use by site workers engaged in work with the potential for exposure to hot environments. This program will be reviewed annually by the Health and Safety Division. Training will be provided annually to all those potentially affected, and will include this written program.

3. Source of Heat

There are two sources of heat that are important to anyone working in a hot environment:

- Internally generated metabolic heat;
- Externally imposed environmental heat.

4. Physiologic Responses to Heat

The human body maintains a fairly constant internal temperature, even though it is exposed to varying environmental temperatures. To keep internal body temperatures within safe limits, the body must get rid of its excess heat, primarily through varying the rate and amount of blood circulation through the skin and the release of fluid onto the skin by the sweat glands. These automatic responses usually occur when the temperature of the blood exceeds 98.6°F and are kept in balance and controlled by the brain. In this process of lowering internal body temperature, the heart begins to pump more blood, blood vessels expand to accommodate the increased flow, and the microscopic blood vessels (capillaries) which thread through the upper layers of the skin begin to fill with blood. The blood circulates closer to the surface of the skin, and the excess heat is lost to the cooler environment.

If the heat loss from increased blood circulation through the skin is not adequate, the brain continues to sense overheating and signals the sweat glands in the skin to release large quantities of sweat onto the skin surface. Evaporation of sweat cools the skin, eliminating large quantities of heat from the body.

As environmental temperatures approach normal skin temperature, cooling of the body becomes more difficult. If air temperature is as warm as or warmer than the skin, blood brought to the body surface cannot lose its heat. Under these conditions, the heart continues to pump blood to the body surface, the sweat gland pour liquids containing electrolytes onto the surface of the skin, and the evaporation of the sweat becomes the principal effective means of maintaining a constant body temperature. Sweating does not cool the body unless the moisture is removed from the skin by evaporation. In high humidity, the evaporation of sweat from the skin is decreased and the body's efforts to maintain an acceptable body temperature may be significantly impaired. These conditions adversely affect an individual's ability to work in the hot environment. With so much blood going to the external surface of the body, relatively less goes to the active muscles, the brain, and other internal organs; strength declines; and fatigue occurs sooner than it would otherwise. Alertness and mental capacity also may be affected. Workers who must perform delicate or detailed work may find their accuracy suffering, and others may find their comprehension and retention of information lowered.

When temperature differences exist between two or more bodies, heat can be transferred. Net heat transfer is always from the body (or object) of higher temperature to that of lower temperature and occurs by one or more of the following mechanisms:

- **Conduction.** The transfer of heat from one point to another within the body, or from one body to another when both bodies are in physical contact. Conduction can be a localized source of discomfort from direct physical contact with a hot or cold surface, it is normally not a significant factor to total heat stress.
- **Convection.** The transfer of heat from one place to another by moving gas or liquid. Natural convection results from differences in density caused by temperature differences. Thus warm air is less dense than cool air.
- **Radiation.** The process by which energy, electromagnetic (visible and infrared), is transmitted through space without the presence or movement of matter in or through this space.

5. Predisposing Factors to Heat Stress

Factors that may predispose an individual to heat stress vary according to the individual. These factors include:

- Lack of physical fitness;
- Lack of acclimatization;
- Age;
- Dehydration;
- Obesity;
- Drug/alcohol abuse;
- Infection;
- Sunburn;
- Diarrhea;
- Chronic disease.

Predisposing factors and an increased risk of excessive heat stress are both directly influenced by the type and amount of PPE worn. PPE adds weight and bulk, reduces the body's access to normal heat exchange mechanisms (evaporation, convection and radiation) and increases energy expenditure.

6. Forms of Heat Stress and First Aid

(The following excerpts were taken from NIOSH Publication No. 86-112, Working in Hot Environments):

"Excessive exposure to a hot work environment can bring about a variety of heat-induced disorders. Among the most common are heat stroke, heat exhaustion, heat cramps, fainting and heat rash.

a. Heat Stroke

Heat Stroke is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate. The body's only effective means of removing excess heat is compromised with little warning to the victim that a crisis stage has been reached.

A heat stroke victim's skin is hot, usually dry, red or spotted. Body temperature is usually 105°F or higher, and the victim is mentally confused, delirious perhaps in convulsions, or unconscious. Unless the victim receives quick and appropriate treatment, death can occur.

Individuals with signs or symptoms of heat stroke require immediate hospitalization. First aid shall be immediately administered. This includes removing the victim to a cool area, thoroughly soaking the clothing with water, and vigorously fanning the body to increase cooling. Further treatment, at a medical facility, shall be directed to the continuation of the cooling process and the monitoring of complications which often accompany heat stroke. Early recognition and treatment are the only means of preventing permanent brain damage or death.

b. Heat Exhaustion

Heat Exhaustion includes several clinical disorders having symptoms which may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences weakness or fatigue, giddiness, nausea or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated.

In most cases, treatment involves having the victim rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment. Those with severe cases may require extended care for several days. There are no known permanent effects.

c. Heat Cramps

Heat cramps are painful spasms of the muscles that occur among those who sweat profusely in heat, drink large quantities of water, but do not adequately replace the body's salt loss. The drinking of large amounts of water tends to dilute the body's fluids, while the body continues to lose salt. Shortly after, the low salt level in the muscles causes painful cramps. The affected muscles may be part of the arms, legs, or abdomen; but tired muscles (those used in performing the work) are usually the ones most susceptible to cramps. Cramps may occur during or after work hours and may be relieved by taking salted liquids by mouth.

d. Fainting

Fainting occurs in workers not accustomed to hot environments and who stand erect and immobile in the heat.

With enlarged blood vessels in the skin and in the lower part of the body due to the body's attempts to control internal temperature, blood may pool there rather than return to the heart to be pumped to the brain. Upon lying down, the worker should soon recover. By moving around, and thereby preventing blood from pooling, the patient can prevent further fainting.

e. Heat Rash (Prickly Heat)

Heat rash, also known as prickly heat, is likely to occur in hot, humid environments where sweat is not as easily removed from the surface of the skin by evaporation and the skin remains wet most of the time. The sweat ducts become plugged, and a skin rash soon appears. When the rash is extensive or when it is complicated by infection, prickly heat can be very uncomfortable and may reduce a worker's performance. The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin."

7. Additional General First-Aid Measures for Heat Stress Exposure

- a. Call for Emergency help (ambulance or call 911).
- b. Move the affected individual to a cool, shaded area.
- c. Don't leave the individual alone.
- d. Remove any heavy or outer clothing.
- e. Have the individual drink a small cup of cool water every 15 minutes, if they are able.
- f. Try to cool the individual by fanning them.
- g. Cool the skin with a cool spray / mist of water, wet cloth, or wet sheet.
- h. If ice is available, place ice under the armpit and groin areas.

8. Selection of Personal Protective Equipment (PPE)

During work periods where the increased risk of heat stress exists, each item's benefit will be carefully evaluated. Once the PPE is chosen, safe work durations/rest periods will be determined based on the following conditions:

- Anticipated work rate;
- Ambient temperature and humidity;
- Level of protection.

8. Prevention of Heat Stress

Prevention of heat stress will be addressed in the following manner:

- a. Adjustment of work schedules (See Attachment A).
 - i. Modify work/rest schedules.
 - ii. Enforce work slowdowns, as needed.
 - iii. Rotate personnel to minimize overstress or overexertion.
 - iv. When possible, work will be scheduled and performed during cooler hours.
- b. Provide shelter or shaded areas to protect personnel during rest periods.
- c. Maintain worker's body fluids at normal levels.
 - i. Drink approximately 12 to 16 ounces of non-caffeinated liquid (preferably water, Gatorade or equivalent) prior to the start of work. Caffeinated fluids act to dehydrate the worker.
 - ii. Workers will be urged to drink a cup or two every 15 to 20 minutes, or at each break. A total of 1 to 1.5 gallons of water per individual per day are recommended for fluid replacement under heat stress conditions, but more may be required.
- d. Encourage physical fitness among the workers.
- e. Gradually acclimatize workers on site to help build up an "immunity" to the conditions.
 - i. Heat acclimatization can usually be induced in 5 to 7 days of exposure at a hot job. For workers with previous experience with the job, acclimatization will include exposures of 50% for day 1, 60% for day 2, 80% for day 3, and 100% for the remaining additional days.
- h. Provide cooling devices during prolonged work or severe heat exposure.
 - i. Supply field showers or hose down areas.
 - ii. Supply personnel with cooling jackets, vests, and suits.

- i. Train workers in recognition and treatment of heat stress.
- j. Use of the buddy system that depends on the recognition of signs and symptoms of heat stress.
- k. Identification of heat-intolerant individuals through medical screening.

**ATTACHMENT A
HEAT STRESS
WORK / REST REGIMENTS AND MONITORING**

Introduction

Establishing a work/rest regimen that allows work to be completed in a timely manner while providing adequate rest time to prevent heat stress requires involvement of the ESS, FOL, and individuals involved. In many cases, particularly when wearing normal field type clothing (i.e., level D), awareness and communication are the key elements to a successful program. Allowing rest periods on an “as needed” basis while ensuring vigilance for initial symptoms of heat stress, encourages this success.

There are times when this approach is not appropriate. When heat stress contributing protective clothing (e.g., respirators, impermeable coveralls) are worn for extended periods, or when “as needed” work/rest regimens adversely impact either the individuals exposed to the heat source or work completion, a more formal work/rest regimen will be established.

Formal work/rest regimens are based on 1) monitoring ambient conditions (e.g., with a WBGT), estimating workloads and establishing work/rest times, 2) monitoring physiological conditions and adjusting work/rest periods, and 3) using personal heat stress monitors.

The WBGT, physiological monitors, and personal heat stress monitors will be used in accordance with manufacturer’s instructions. Personnel heat stress monitors will be approved for use by the PESM.

I. WBGT Based Work/Rest Regimens**A. Work/Rest Regimens**

The WBGT will be used in conjunction with the work load to determine the appropriate work/rest regimen for personnel wearing regular work clothing or semipermeable disposal coveralls (uncoated Tyvek). Light work examples include sitting or standing or performing light hand or arm work. Moderate work includes walking about with moderate lifting and pushing. Heavy work corresponds to pick and shovel-type work.

The work/rest regimen using the WBGT procedure will be used as a guideline. Table A-1 outlines the work/rest regimen guidelines based upon WBGT temperature and work load. Table A-2 identifies the correction factors. The WBGT temperature will be determined in accordance with Section B of this attachment.

Table A-1. Examples of Permissible Heat Exposure Threshold Limit Values.
(Values are given in °F WBGT)*

Work – Rest Regimen	Light	Workload	
		Moderate	Heavy
Continuous Work	86	80	77
75% Work - 25% Rest, each hour	87	82	78
50% Work - 50% Rest, each hour	89	85	82
25% Work - 75% Rest, each hour	90	88	86

*Notes on Table B-1

- 1) These values are for fully acclimated workers wearing light weight pants and shirts. For conditions other than this use this table with the correction factors from Table B-2.
- 2) These values assume that workers drink frequently and have properly increased salting of food prior to exposure.
- 3) These values are guidelines. Actual levels may be modified based on individual physiological response and actual work and rest conditions.
- 4) These values assume that the rest location is cool enough to alleviate heat load conditions.

Table A-2. Correction Factors for Table B-1 in °F*

Clothing Type	WBGT Correction
Summer work uniform	0
Cotton overalls	-3.5
Winter work uniform	-7
Water barrier, permeable	-11
Condition	WBGT Correction
Unacclimatized worker, moderate work load	-4.5

*To use this table, identify the most restrictive applicable clothing type and whether unacclimatized workers are involved. Add the two. Modify Table B-1 temperatures by this amount. For example, the Table B-1 TLV for continuous work, light workload is 86°F. If cotton overalls (-3.5) are work and acclimatized workers are acclimatized (no additional change) the modified limit is 82.5°F.

B. WBGT Determination

If the Web Bulb Globe Temperature (WBGT) is used to determine if field conditions are conducive to heat stress, the WBGT is determined through the following equations:

(1)

Outdoors with solar load:

$$WBGT=0.7\ NWB+0.2GT+0.1DB$$

(2)

Indoors or outdoors with no solar load:

$$WBGT=0.7\ NWB+0.3GT$$

Where:

- WBGT = Wet Bulb Globe Temperature Index
- NWB = Natural Web-Bulb Temperature
- DB = Dry-Bulb Temperature
- GT = Globe Thermometer Temperature

The factors involved in the above equations can be measured in the following manner:

- Through the use of a direct-reading heat stress monitor capable of measuring all of the individual factors associated with the WBGT equation. For example, the Reuter-Strokes Wibet No. RSS-214 heat stress monitor.
- By measuring the individual factors manually using the following type of equipment

Natural Wet-Bulb Temperature Thermometer
Dry-Bulb Temperature Thermometer
Globe Temperature Thermometer Stand

II. Adjusted Temperature Based Work/Rest Regimens

When wearing impermeable protective clothing, the use of work/rest regimens based on WBGT is not recommended. The WBGT index is designed to account for the effects of evaporative cooling. Vapor barrier clothing impedes the evaporation of sweat and renders the WBGT an inappropriate physiological model. The most important environmental conditions related to heat stress for workers wearing impermeable protective clothing have been suggested to be the ambient dry bulb temperature and the radiant solar heat. These factors are combined into an index called the adjusted temperature using the following formula:

$$T^{\circ} \text{ adjusted} = \text{ambient dry bulb temperature} + (13 \times \% \text{ sunshine})$$

where % sunshine is an estimate of the amount of time the sun is covered by clouds thick enough to product a shadow. The thermometer bulb should be shielded from radiant heat when taking measurements.

The adjusted temperature values are then used to determine the initial work/rest regimen and physiological monitoring frequency. Table B-3 gives the work period and monitoring frequency. Initially, rest periods will be at least 15 minutes. Physiological monitoring that is normally recommended is pulse rate and body temperature. Procedures for each are described below. Initially, both shall be done. Pulse rate monitoring may be discontinued with the approval of the PESM if temperature monitoring proves to be effective.

WORK/REST REGIMENS

A. Pulse Rate Monitoring

When 70°F is reached, a baseline pulse will be recorded. Take the pulse immediately at the start of each rest period (P1). Take the pulse again 2 ½ to 3 minutes into the rest period (P2). If any of the following conditions exist, shorten the next work period by a third:

- P1 > 110 beats per minute (bpm)
- P2 > 90 bpm
- P1 – P2 > 10 bpm

Pulse rates can be taken with an electric pulse meter, or manually with a stopwatch for 30-seconds.

B. Body Temperature

When 70°F is reached, a baseline temperature will be recorded. Body temperature will be taken immediately at each start of the rest period. If the oral temperature exceeds 99.5° shorten the next work period by a third. Do not return the worker to hot work in semipermeable or impermeable clothing until the oral temperature is less than 99.5°F.

Oral temperatures may be taken with disposable oral thermometers or infrared ear drum scanners, such as the Thermoscan. Note: If a Thermoscan unit is purchased, the Pro Model should be selected. The home model available through drugstores cannot be recalibrated.

C. Removal from Exposure

If an individual requires a shortening of the work period on more than two consecutive monitoring periods, or repeatedly over a few days, they should be removed from exposure to hot environments wearing semipermeable impermeable protective clothing until examined and cleared for such work by the consulting physician.

Table B-3. Initial Work Period and Physiological Monitoring Frequency ¹

ADJUSTED TEMPERATURES	SCHEDULE
90°F or above	15 Minutes
87.5° - 90°F	30 Minutes
82.5° - 87.5°	60 Minutes
77.5° - 82.5°F	90 Minutes
70° - 77.5°F	120 Minutes

¹ Schedule is for fit and acclimatized workers in impermeable protective clothing.

APPENDIX E

HAND AND POWER TOOL USAGE

Purpose

The purpose of this program is to establish safe work practices for the use of hand and power tools. Because we are reliant so heavily on this type of equipment and use it frequently, hand and power tools are the direct source of many injuries on our projects.

We must ensure our tools are used correctly, properly maintained and removed from service when no longer suitable for use.

Above all, only qualified and trained personnel will be permitted to use these tools.

Applicable Regulations

OSHA 29 CFR 1926.300

Responsibilities

Project Management shall:

- Purchase all hand and power tools according to company program specific to brand and model;
- Ensure that all tools requiring guards are equipped as such before they are put into service on the job; and
- Develop a procedure for the distribution of abrasive wheels for cutoff and chop saws.

Site workers shall:

- Not remove any guard on a hand or power tool;
- Inspect hand and power tools prior to use to ensure safe operating condition; and
- Tag out, and report any damaged or defective tools to their foremen.

Procedural Overview

General Requirements

- Maintain all hand and power tools and similar equipment in a safe condition;
- When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use. Should the guard obstruct the work, it will not be removed;
- Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by site workers or otherwise create a hazard;
- Impact tools, such as drift pins, wedges and chisels, shall be kept free of mushroomed head; and
- The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.

Power-Operated Hand Tools

- Electric power operated tools shall either be the approved double-insulated type or effectively grounded;

Do not use a power tool with broken or defective insulation on the cord, broken or defective plugs, or loose or broken switches;

The use of electric cords for hoisting or lowering tools is not permitted; and

If the tool is provided with a side-mounted handle, it must remain on the tool to prevent wrist injuries should the tool bind during operation.

Trigger locks must be removed from grinders or made inoperable by a qualified person.

Powder Actuated Tools

Loading

Tools shall not be loaded until just prior to the intended firing time; and

The tool shall be tested each day before loading to see that the safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

Use

A FDNY Certificate of Fitness E21 is required by anyone handling a powder actuated tool within New York City project sites.

Use the lowest velocity on the tool until sufficient penetration is found;

Any tool found not in proper working order, or that develops a defect during use, will be immediately removed from service, tagged out and not used until properly repaired;

Neither loaded nor empty tools are to be pointed at any site workers;

Keep hands clear of the open barrel end;

Do not leave loaded tools unattended;

Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile;

Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side;

No fastener shall be driven into a spalled area caused by a prior unsatisfactory fastening;

Tools shall not be used in an explosive or flammable atmosphere; and

All tools shall be used with the correct shield, guard, or attachment recommended or supplied by the manufacturer.

Charge Storage

Live loads/cartridges must be stored in an approved, locked storage cabinet to meet applicable OSHA regulations. Pick up and dispose of unfired shots, do not throw explosive charges into trash containers or leave them lying around. Return them to your supervisor.

PPE

Personal protective equipment, including eye, ear, head, and hand protection is to be worn by all tool operators.

Training

Only site workers who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool. Users shall possess a qualified operator's card that is issued by the manufacturer's representative.

Air Powered Tools

Hoses

Air hoses will be inspected prior to use looking for bends, kinks, or swelled areas. Hoses that are not in good condition shall be removed from service. DUCT TAPE IS NOT TO BE USED FOR REPAIRS;

Hoses used under compressed air conditions must be a reinforced wire braided type. Hoses used for water service may be standard airline hose;

Hoses will not be placed in access ways or across ladder passage. Where this is unavoidable, lines should be blocked over, or at least flagged;

Whip checks will be used on all airlines and tools to prevent against the hazards when uncoupling occurs. Whip checks shall be positioned on the hose rather than the fitting – if the hose should break, the fitting may stay connected while the hose will whip around. Whip check protection will be provided from compressor to hose, hose to hose, and hose to tool; and

All air hose clamps must be crimped into place. Do not use worn gear clamps to attach couplings and fittings to air hoses.

Chicago or Air King type pneumatic fittings must be pinned.

Use

Air powered tools should be oiled via in-line air oil;

Air powered tools and compressed air create certain health hazards where fine particles of dust, or chemicals are blown into the air. This air contamination should be eliminated by wetting agents, or exhaust ventilation;

Loose clothing, which can get caught in the moving parts of equipment, should not be worn while working with rotary tools;

Compressed air should not be used to clean off clothing. Air pressure against the skin can penetrate causing internal hemorrhaging and intense pain. Air that enters body openings can burst internal organs and lead to death;

When air powered tools create hazards to others, warning signs or placards shall be posted detailing the type of hazard(s) and direction for protection; and

Airlines must be turned off and bled of pressure before connecting/disconnecting an air tool, unless the connector is specifically designed for connection/disconnection under pressure.

PPE

When silica or lead exposures are present when using air powered tools, use appropriate respiratory protection;

Use may require steel-toed boots and/or metatarsal protection (e.g. jack hammer Operator); and

When performing any operation with an air powered tool that produces high vibration levels, carpal tunnel gloves shall be used.

Abrasive Tools

Bench Grinders

Grinders shall be labeled with maximum operation R.P.M.;

Adjustable work rests shall be provided and kept at a distance not to exceed 1/8-inch from the surface of the wheel;

Objects that may kick back must be braced using a clamp or any device that securely holds objects prior to cutting;

Face shields and safety glasses with attached side shields shall be worn while using a bench grinder.

Hand-held Grinders

Guards shall remain in place at all time, or the grinder is not to be used;

Trigger locks must be removed from grinders or made inoperable by a qualified person. A positive pressure switch shall be used;

Many grinders are supplied with handles designed to protect against wrist injuries, as well as support the tool. They shall not be removed, regardless if they interfere with the operation. A substitute tool should be considered;

Arbor on the grinding wheel must be the exact same size as the arbor shaft on the grinder;

Grinders shall be labeled with maximum R.P.M.;

Only abrasive wheels, which are compatible with the rated RPM, will be used;

A face shield must be used when using grinder plus safety glasses; and

When grinders with blades 7' or bigger are used, chaps will be required at the discretion of the Project Management.

Abrasive Blades/Wheels

Only approved blades will be used;

Suitable Abrasive blades shall be used only on designated materials;

Only a qualified person shall mount blades per manufacturer's instructions;

Blades should be stored in a climate-controlled area (avoid freezing, extreme heat, or wet conditions);

Use blades only on designated tool (i.e., do not use chop saw blades on a cut-off saw);

Discard all abrasive blades with illegible/unreadable labels;

Fully inspect all blades prior to use;

The arbor hole shall match the arbor of the tool, use only manufactured arbor adapters;

The RPM of the wheel shall equal or exceed the RPM of the tool;

Blades will be removed from the tool whenever, the tool is transported by vehicle, the tool is being stored, and the condition of the blade is suspect;

Allow newly mounted wheels to run at full RPM for at least 1-minute prior to use; and

Using the side of the "cutting" blade as a grinder is strictly prohibited.

Chainsaws

Equipment

When purchasing chain saws, always buy those with anti-kickback chains. Regular chains should be disposed of and replaced with anti-kickback chains. Anti-kickback chains are designed to skim the surface of the work in the event that the upper part of the chain comes into contact with the work. Older chains have a flat link between each of the raised cutters while newer chains have either a triple thick raker in front of each cutter or an extra raised section between cutters.

All chainsaws shall be equipped with a momentary finger contact or constant pressure “on/off” control switch that will shut off power when the pressure is released;

Chain rotation will stop when saw is in idle;

All saws must have spark-arresting mufflers; and

Electric chain saws shall be approved, double insulated, or effectively grounded.

Inspection and Service

Equipment will be inspected before use for defects and broken or worn chains. Any chain saw that is broken or defective must be taken out of service, tagged and repaired immediately or removed from the job;

Chains shall be kept sharp, well lubricated and properly tensioned at all times. The chain needs sharpening when it must be pushed through to cut or when it throws sawdust rather than wood chips;

Chain saws shall be inspected before each day’s use and during each refueling. Saws that are not in safe operating condition will not be used; and

If electric chainsaws are used, disconnect the power source from the chain saw before making any adjustments or repairs.

Use

Do not walk with a running chainsaw;

Work “down” with the saw whenever possible;

If electric chainsaws are used, never use the cord to hoist or lower the tool;

Before refueling, saws must be cool to the point that spilled gas will not ignite;

Keep the air filter clean and use the correct mixture of fuel and oil;

Fully charged 20lb. ABC fire extinguishers shall be kept at all refueling areas;

Saws must be kept clean of excess oil to prevent slipping or fire hazards. Any spills that occur must be cleaned up immediately;

Chain saws will be carried or moved with the engine in the off position;

When starting a chain saw, place it on the ground, hold the handle with one hand and pull the starter with the other hand. Never start a saw by “drop starting” in the air, or on your leg;

Running saws must be gripped with both hands; and

Maintain a clear work area free of tripping hazards and obtain firm footing before commencing any work. Keep your weight balanced on both feet and do not over reach.

Personal Protective Equipment

Site workers using chain saws are exposed to flying debris, dust and noise. Kevlar fire resistant leg chaps, hard hats, safety glasses and face shields (mesh is acceptable), and gloves are required when working with chain saws. No loose or ragged clothing will be allowed. Additionally, effective hearing protection must be worn.

Training

Always read and become familiar with the manufacturer's instructions before use; and

Operators shall be trained in the safe operation and maintenance of chain saws, proper tree falling procedures and the use of personal protective equipment.

Cut-Off Saws

Inspection

Ensure the guard is installed and functioning as intended by the manufacturer;

Handles are installed and functioning as intended by the manufacturer;

Trigger releases freely when released;

Muffler is installed;

Ensure no bolts are missing and all bolts are tight and functioning as intended by the manufacturer;

The pull cord handle is not broken or cracked;

The RPM of the tool is clearly marked on the tool;

The wheel flanges are clean and straight so the blade will spin true. The wheel flanges are recessed and are of the same diameter;

The wheel flanges are at least one-fourth the size of the blade;

The wheel arbor is the correct size for the blade. Never alter a wheel arbor to force a blade to fit the cut-off saw; and

If there is a blade in the tool, remove the blade and follow blade inspection guidelines.

Personal Protective Equipment

Site workers using cut-off saws will wear a hard hat mounted full-face shield in addition to safety glasses;

Proper, effective, hearing protection;

Proper protection from silica (see Silica Exposure Program);

Kevlar fire resistant leg chaps; and

Suitable, Leather work gloves.

Abrasive Blade Storage

Store blades on a level and firm surface;

Do not subject the blades to heat, moisture, high humidity, rain or snow, freezing, or condensation;

It is recommended that blades be stored in a controlled atmosphere such as the project office or tool crib and that a blade distribution and inventory program be put in place;

Never transport the cut-off saw with the blade mounted; and

Remove blades after each use and if serviceable, return them to a proper storage area. Do not store the cut-off saw with the blade installed.

Abrasive Blade Inspection

Do not use broken, cracked, warped, wet or otherwise damaged blades. Do not use blades if the blade label is unreadable;

Remove the blade from the cut-off saw for inspection. You can not properly inspect a blade while it is mounted; and

Check the maximum operating speed for the blade as indicated on the blade label. The blade's maximum rated RPM must be equal to or greater than the maximum RPM of the cut-off saw.

Diamond Cutting Wheels

The manufacturer's instructions for use of diamond cutting wheels must be reviewed prior to installing the blade;

Following the minimum guidelines established for abrasive blades above to supplement the manufacturer's recommendations;

Diamond cutting wheels are intended for use when cutting concrete, masonry, architectural stones and granite, clay pipe and other materials only as recommended by the manufacturer;

Do not use diamond cutting wheels to cut metal or any other materials not recommended by the manufacturer;

Consider using water when cutting to eliminate silica exposure; and

Check the maximum operating speed for the blade as indicated on the blade label . The blade's maximum rated RPM must be equal to or greater than the maximum RPM of the cut-off saw.

Fueling

Establish a spill prevention barrier when filling on pervious surfaces;

Fuel the saw in a well-ventilated area, outdoors only;

Always shut the engine off and allow it to cool before refueling.

Relieve tank pressure by loosening the fuel cap slowly;

Always use a funnel and avoid over filling the tank;

Select bare-ground for fueling and move at least 10 feet from the fueling spot before starting the engine;

Use the manufacturer's recommended fuel mix of oil and gasoline; and

Have a suitable fire extinguisher ready for instant use.

Starting Instruction

Do not drop start. Place the cut-off saw on level ground and have a firm grip on the handle to pull start the engine;

Never attempt to start a saw that is in a cut, as it may rebound; and

Position your body so that it is clear of the cutting attachment before pull starting. Adjust loose clothing to eliminate entanglement in the cutting attachment.

Cutting Operations

- Review and understand the job hazard analysis, (JHA), prior to using the cut-off saw;
- Check that the wheel arbor matches the blade arbor speed;
- Check that the blade's maximum RPM is equal to or greater than the maximum saw RPM.
 - Select a blade specifically designed for use for the type of material you are going to cut;
- Tighten the wheel flanges to secure the blade;
- Allow the blade to spin freely at operating speed for at least one minute prior to use;
- If you feel unusual vibration, stop the saw, determine the reason for the unusual condition, and correct the problem before using the saw again;
- Maintain balance and solid footing while cutting. Do not over reach or position yourself in any way that could cause you to fall or lose control of the saw, particularly if the saw was to "kick back";
- Adjust the guard to throw sparks away from your body. Remove any flammable items prior to beginning the cut, warn others near-by;
- Do not attempt to cut anything above your shoulder height;
- Let the tool do the work. Do not force the blade into the cut;
- Make sure the blade has stopped spinning before letting go of the handles;
- Carry the saw with the blade to the rear;
- Do not transport the cut-off saw with the blade attached. Do not grind with the side of the cutting wheel. Inspect the tool and the blade before each use; and
- When you are done with the cut-off saw, remove the blade and return the saw, blade and PPE to its designated storage area.

Chop Saws

General

- Use only wheels designed for the saw (RPM rating on blade must meet or exceed that of the saw) and compatible with the material being cut;
- Be sure to follow lock-out/tag-out procedures when changing wheels or performing any repairs; and
- Do not remove the wheel guard.

Cutting Operations

- Make sure the tool is on a solid base and access to the tool is free of debris;
- Use a vice to clamp/hold the work when necessary;
- Never start the tool with a person directly in-line with the wheel, this includes the operator;
- Do not cut masonry or wood with a chop saw, and only use correct blade for the item being cut;
- Do not force the tool through the work; and
- The saw should return to an open position after a cut. If it does not, the spring assembly may need repair.

APPENDIX F

LINE BREAK PERMIT

LINE BREAK PERMIT

Contractor Name _____
 Subcontractor/Lower-tier Name (if applicable) _____
 Project _____ Contract/PO/Release _____
 Location (i.e., building, area, etc.) _____
 Date of Line Break _____ Time _____
 Service Being Broken _____ Line Number _____

Hazards (list all types of potential hazardous energy; also list all hazardous chemicals/material thought to ever have been in the line)

Special Instructions

PROTECTIVE MEASURES

Personal Protective Equipment Required	Check		Date Complete	Other Protection Methods	Check		Date Complete
	Yes	No			Yes	No	
Boots – Rubber	<input type="checkbox"/>	<input type="checkbox"/>		Barricade – Radius (above/below)	<input type="checkbox"/>	<input type="checkbox"/>	
Coveralls – Cloth	<input type="checkbox"/>	<input type="checkbox"/>		Blanks to be Installed	<input type="checkbox"/>	<input type="checkbox"/>	
Coveralls – Tyvek	<input type="checkbox"/>	<input type="checkbox"/>		Block Valve Shut	<input type="checkbox"/>	<input type="checkbox"/>	
Dosimetry – Radiation (specify)	<input type="checkbox"/>	<input type="checkbox"/>		Blower	<input type="checkbox"/>	<input type="checkbox"/>	
Film Badge – Chemical (specify)	<input type="checkbox"/>	<input type="checkbox"/>		Fire Extinguisher	<input type="checkbox"/>	<input type="checkbox"/>	
Gloves – Leather	<input type="checkbox"/>	<input type="checkbox"/>		Grating, Floor Opening Covered	<input type="checkbox"/>	<input type="checkbox"/>	
Gloves – Long	<input type="checkbox"/>	<input type="checkbox"/>		Lockout/Tagout Required	<input type="checkbox"/>	<input type="checkbox"/>	
Gloves – Rubber	<input type="checkbox"/>	<input type="checkbox"/>		Monitoring (specify)	<input type="checkbox"/>	<input type="checkbox"/>	
Goggles	<input type="checkbox"/>	<input type="checkbox"/>		Nonsparking Tools	<input type="checkbox"/>	<input type="checkbox"/>	
Hood – Acid	<input type="checkbox"/>	<input type="checkbox"/>		Piping Support Installed/Needed	<input type="checkbox"/>	<input type="checkbox"/>	
Respirator – Full Face	<input type="checkbox"/>	<input type="checkbox"/>		Pump Locked Out	<input type="checkbox"/>	<input type="checkbox"/>	
Respirator – Half Face	<input type="checkbox"/>	<input type="checkbox"/>		Spark Proof Tiles	<input type="checkbox"/>	<input type="checkbox"/>	
Respirator – Air Supplied	<input type="checkbox"/>	<input type="checkbox"/>		Standby Person (required for <u>first</u> time breaks)	<input type="checkbox"/>	<input type="checkbox"/>	
Respirator – SCBA	<input type="checkbox"/>	<input type="checkbox"/>		System Flushed	<input type="checkbox"/>	<input type="checkbox"/>	
Shield – Face	<input type="checkbox"/>	<input type="checkbox"/>		System Less than 100 °C (212 °F)	<input type="checkbox"/>	<input type="checkbox"/>	
Shield – Special Shielding	<input type="checkbox"/>	<input type="checkbox"/>		System Vented	<input type="checkbox"/>	<input type="checkbox"/>	
Suit – Acid	<input type="checkbox"/>	<input type="checkbox"/>		Valve Locked Out	<input type="checkbox"/>	<input type="checkbox"/>	
Suit – Hot	<input type="checkbox"/>	<input type="checkbox"/>		Ventilation – Exhaust	<input type="checkbox"/>	<input type="checkbox"/>	
Suit – Rain	<input type="checkbox"/>	<input type="checkbox"/>		Ventilation – Dilution/General	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>		Water Hose	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	

It should be noted that no coated line shall be broken into until it has been determined that the coating does not contain asbestos/vermiculite, or that the asbestos/vermiculite coating has been abated previously by a Con Edison approved Asbestos Abatement Contractor.

LINE BREAK PERMIT

PLANNING ITEMS FOR LINE BREAKS

1. Fire Extinguisher Location	
2. Planned Escape Route	
3. Nearest Eyewash Location	
4. Cold Pak Location	
5. Scott Air Pak Location	
6. Other	
7. Other	
8. Other	
9. Other	

SIGNATURES

Posillico Environmental Site Manager	Date		Date
Subcontractor (if applicable)	Date		Date
Health and Safety Supervisor	Date		Date

RELAXING PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

Date	Time
------	------

Personal protective equipment reduced to items listed below following first line break (if applicable)

_____	_____
_____	_____
_____	_____
_____	_____
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It should be noted that no coated line shall be broken into until it has been determined that the coating does not contain asbestos/vermiculite, or that the asbestos/vermiculite coating has been abated previously by a Con Edison approved Asbestos Abatement Contractor.

APPENDIX G

MOTORIZED VEHICLES AND EQUIPMENT

Motorized vehicles and equipment

1. Do not ride on motorized vehicles or equipment unless a proper seat with seat belt is provided for each rider.
2. Always be seated when riding authorized vehicles (unless they are designed for standing).
3. Do not operate any motorized vehicle or equipment unless you are specifically authorized to do so by your supervisor.
4. Always use your seat belts in the correct manner.
5. Obey all speed limits and other traffic regulations.
6. Always be aware of pedestrians and give them the right-of-way.
7. Always inspect your vehicle or equipment before and after daily use.
8. Never mount or dismount any vehicles or equipment while they are still in motion.
9. Do not dismount any vehicle without first shutting down the engine, setting the parking brake and securing the load.
10. Do not allow other persons to ride the hook or block, dump box, forks, bucket or shovel of any equipment.
11. Each operator must be knowledgeable of all hand signals and obey them.
12. Each operator is responsible for the stability and security of his/her load.
13. Any accidents or damage must be reported to your supervisor immediately.
14. The Operator is responsible for the safe operation of the vehicle, machine or equipment they are operating.
15. Do not transport workers and tools in the same compartment, there must be a physical separation to prevent tools and supplies from sliding into or falling on workers.
16. Vehicles or equipment must be physically inspected before being placed into use.
17. Vehicles or equipment will not idle for more than three minutes unless the motor is used to power another tool (e.g. vacuum generation for a vacuum truck).

Operator Qualifications

Any site worker operating heavy equipment (Crane, Derricks) must provide operating license to be copied and placed in personal file before work is performed. A 4 hour OSHA training and card must be provided before work is performed for signal persons assisting operators.

For other rules and regulations regarding motor vehicles, mechanized equipment and marine operations, please refer to OSHA construction Safety Standards.

Posillico | *Equipment / Vehicle Inspection Checklist*

Date: _____ Equipment / Vehicle #: _____

Job #: _____ Location: _____

Operator / Driver's Name (print): _____

PRIOR TO USING MACHINE / VEHICLE INSPECT THESE ITEMS		
Item to Check	OK	Action Needed
Corrections of the following defective items must be made as soon as possible, but you can still use the equipment / vehicle if defects in these items exist.		
1. Engine Oil		
2. Radiator Fluid Level		
3. Condition of Tires		
4. Undercarriage / Tracks		
5. Fire Extinguisher (if equipped)		
6. Cab Housekeeping and Condition		
7. Inspection and Registration		
The following items are considered to be CRITICAL SAFETY ITEMS . No equipment / vehicles can be operated until defects present in any of the following items are repaired.		
8. Wheel Lug Nuts		
9. Hydraulic Leaks		
10. Seat Belts		
11. Warning Lights / Buzzer		
12. Cab Glass		
13. Back-up Horn / Alarms		
14. All Lights		
15. System Air Pressure		
16. Wipers		
17. Parking Brake		
18. Service Brakes		
19. Other:		

Has the Shop been notified of any items requiring repairs? Yes No

Additional Comments: _____

APPENDIX H

CONFINED SPACE

CONFINED SPACE PROCEDURE

1.0 Introduction

Confined spaces are spaces that can be bodily entered but are not meant for human occupancy. They also have limited egress/entry capabilities (e.g. climbing a ladder, crawling under, or bending through a manway, etc.). Confined space hazards exist if the potential for hazardous or explosive atmospheres and/or oxygen deficient hazards exist. Other hazards that could exist include mechanical sources and falls. Two types of confined spaces exist: permit required and non-permit required.

2.0 Purpose

To provide Posillico employees and subcontractors, who oversee confined space entry on projects, with a standard permitting and safety procedure to prevent injury or loss of life and property. To be used as a reference in instances where confined space entry is performed and as a permit procedure in instances where one is not available.

3.0 Scope

This procedure is also to be followed for all confined space entry situations. This procedure will apply to all contractors or subcontractors working under Posillico that do not have an adequate Permitting Procedure in place with the company in which they are currently employed. All workers on site involved with confined space entry will be properly trained for the role and duties performed. Training will consist of hands-on training with Posillico's confined space entry equipment including harnesses, retrieval equipment, air-line respirators and monitoring equipment. Certification that the training was satisfactorily complete will be provided and documentation maintained.

4.0 Procedure

1. Hazard Identification

The Project Manager will determine if a confined space entry is required and determine if the entry requires a permit. Any situation that has the potential to produce hazardous atmosphere, deplete oxygen levels or any potential physical hazards will require a permit.

This information will be included in the Site Specific Health and Safety Plan to be reviewed with the Health and Safety Division prior to starting the project.

The PRCS trained Project Manager shall consult the Health and Safety Division if there is any uncertainty questions on hazard determination. The Project Manager will act as the Entry Supervisor.

The Safety Director will review entry with the Project Manager and review this program at least annually to make sure the Program is effective and enforced. Copies of completed permits will be retained for at least one year.

The permit program will be reviewed to determine if it is adequate for the projects conducted. Incident reports will be reviewed, employee issues raised and entries reviewed. The permit program will be evaluated to determine if all hazards were adequately identified and evaluated. Additional protective equipment will be purchased, if necessary, for future entries if the review process shows that all hazards were not properly controlled. This review will be part of annual confined space training.

2. Area Preparation

- The confined space entry area will be appropriately marked and barricaded to prevent impact from external hazards and vehicles. Ground level entries will be ringed with a toe board to prevent objects from inadvertently being dropped into the space.
- All flammable/combustible materials will be relocated at least 35 feet away from the work area.
- All combustible materials that cannot be reasonably removed from the area will be covered with a fire blanket.
- An appropriate fully charged fire extinguisher and/or charged fire hose will be available at the work area before, during and 1/2 hour after hot work procedures have ended.
- All safety equipment will be on-site and functional.

3. Pre-Work Safety Meeting

- a. The Project Manager will assure that a pre-work safety and confined space competency meeting has been provided to the crew prior to any hot work/confined space entry being performed. Individuals involved with confined space entry will be identified as the authorized entrant(s), attendant and the entry supervisor. Additional individuals may be designated to conduct monitoring for multiple entries. This meeting will include, but not be limited to:
 - Permitting conditions (environmental conditions, type of work to be performed). This would include reviewing the results of the initial monitoring of the test results, ventilation requirements, potential hazards and continuous testing procedures.
 - Personnel authorized to sign-off on the permit. All personnel involved with the confined space entry must sign the permit and acknowledge the hazards expected to be encountered.

- Location of the permit. (Must be conspicuously posted.)
 - Type of monitoring required. Employees involved with the entry may request additional monitoring or increasing monitoring frequency at any time.
 - Designation of attendant and discussion of duties.
 - Return completed permit to Project Manager or client when work is complete and project has concluded.
- b. During the pre-work safety meeting the authorized entrants will be identified and the entry procedure reviewed. The attendant will be specified and the monitoring and communication procedures reviewed. The entry will be reviewed with the designated entry supervisor before entry. The attendant will be responsible for conducting the air monitoring during the entry and providing results to the entrants and entry supervisor. The designated positions will be posted on the entry permit.
 - c. The entry supervisor will be responsible for meeting with the client prior to entry to identify if other contractors or client personnel will be working in close proximity to the confined space entry. The entry supervisor will coordinate entry activities in order to make sure the other work does not impact the entry or endanger entry personnel. The entry supervisor will attend scheduled project meetings with the client and other contractor representatives in order to properly coordinate the entry with other projects.
 - d. Initial air-monitoring results will be reviewed with the entry supervisor and the authorized entrants prior to entry. Air-monitoring procedures and alarm levels will also be reviewed. If pre-entry air monitoring show unacceptable levels, ventilation of the space will be initiated before entry and periodic monitoring conducted prior to entry to verify the ventilation is adequate. Monitoring will be performed throughout entry by the attendant.
 - e. The Project Manager will manage both entry and non-entry rescue operations. The Project Manager will discuss rescue procedures with representatives of the rescue operation and allow the rescue team to examine the area, practice the rescue and decline to act as the rescue team if they feel they are not adequately staffed or equipped. The entry cannot be conducted until adequate rescue services are provided.
 - f. The Project Manager will meet with the client to discuss other projects or contractors that could interfere with Posillico's confined space work. Posillico will coordinate the entry to have minimal impact on other contractors in the area and to make sure Posillico personnel are not endangered by other contractors work.

4. Permit Completion

The Confined Space Work Permit (see Attachment A) will be completed by the Project Manager prior to beginning work each day. The permit will not be considered valid until all personnel involved with the entry have reviewed and signed the entry permit. The entry

supervisor will review each permit at the completion of the entry to determine if monitoring and safety procedures are adequate for this project. The permit will be modified if appropriate. The permit will be conspicuously posted at the site of the work.

5. Attendant

A designated Attendant will be present to observe the confined space operation. The Attendant will maintain contact with personnel and conduct air monitoring. The Attendant will oversee safety retrieval systems and initiate the alarm if rescue is necessary. The Attendant will not perform entry rescue or enter the confined space unless relieved of duty by another authorized Attendant and is equipped with a full face SCBA with an escape bottle. The Attendant will monitor only one confined space entry at one time.

6. Entrant

Entrants will be identified on the permit and instructed on the purpose for the entry of the confined space. Entrants are responsible for adhering to the permit requirements and communicating with the Attendant. Once work tasks are completed the Entrant is responsible for removing equipment, sampling devices and exiting the confined space safely.

7. Atmospheric Monitoring

- a. When cutting, grinding, heating or welding surfaces coated with epoxy finishes or paint, or when cutting certain metals with a welding torch, toxic fumes or vapors can be emitted in the process. In these instances, monitoring may be required under the OSHA Standard. Therefore, it is the responsibility of the Project Manager to notify the Health and Safety Coordinator of these coatings and have them sampled (if unknown) to determine what type of monitoring will be required.
- b. Occasionally, a "liner" will be adhered to the inside of a metal duct or tank. When hot work will be performed on such material, the liner will be removed at least 4 inches to each side of the cut to prevent toxic vapors from being emitted, or fire from occurring.
- c. After moving all flammable materials out of the work area, the area will be monitored with a Combustible Gas Meter immediately before hot work takes place. LEL readings at or above 5% will necessitate that the area be ventilated before hot work operations begin. **Hot work should not proceed if readings of five percent or below cannot be achieved.**
- d. All area monitoring must be performed a minimum of once every 10 minutes when the hot work area is located in a low lying area down slope from a storage area containing flammable and/or combustible liquids.
- e. Hot work performed in confined spaces requires that contaminant specific air monitoring be performed. Contact the Health and Safety Division to determine the type of air monitoring required for the contaminant.
- f. Hot work performed on containers that previously contained flammable liquids (i.e. underground storage tanks) will not be performed until the Health and Safety Division has been contacted and has approved the work to be performed. Posillico's Site

Specific Health and Safety Plan for Flammable and Combustible Underground Storage Tank Removals contains detailed procedures for cleaning, inerting and cutting these types of containers.

- g. Entrants and the attendant will continuously evaluate the permit-required space to determine if additional monitoring or more frequent monitoring is necessary. The permit may be revoked or modified accordingly. All entrants will leave the space if unsafe conditions are observed or measured. The permit will be invalidated and reviewed with the supervisor before re-entry is allowed. Additional monitoring will be performed at the request of employees or attendants.

8. Prohibitive Circumstances

- a. Hot work will be prohibited if any of the following conditions exist:

- Oxygen levels greater than 21%.
- LEL greater than 5%.
- Organic vapor concentration greater than Permissible Exposure Limits depending on contaminant (ventilation may reduce this hazard).
- Confined space entry will not be permitted if oxygen levels are below 19.5% or if the LEL is >10%. Individual hazardous constituents will be monitored and appropriate levels of respiratory protection will be issued.

9. Conditions of Permit Validity

- a. A permit is not valid unless all necessary inspections and air monitoring (if required) have been performed and all required signatures appear on the permit.
- b. Work permits will be judged as valid for the following time durations:
 - Shift or significant change in personnel.
 - Duration of the hot work.
 - When atmospheric changes dictate ceasing the operation, abate the hazard and reinspect the work area before completing another permit.
- c. Permits are valid up to one day and new permits must be completed each day or whenever the permit conditions change.
- d. The local Fire Department will be contacted prior to entry into confined spaces. They will be notified of the reason for entry and be requested to be available for rescue and administering first aid. If emergency rescue cannot be provided within three minutes Posillico will not conduct the entry. The permit program will be reviewed to determine if it is adequate for the projects conducted. Incident reports will be reviewed, employee issues raised and entries reviewed. The permit program will be evaluated to determine if all hazards were adequately identified and

evaluated. Additional protective equipment will be purchased, if necessary, for future entries if the review process shows that all hazards were not properly controlled. This review will be part of annual confined space training.

- e. Posillico will coordinate the entry with client and/or other contractors present at the job site. Work will be evaluated to determine the impact by non-Posillico staff on the work being conducted.
- f. If conditions change and Posillico employees are at risk the permit will be considered invalid.
- g. The permit will be canceled once the project is complete or conditions change that warrant leaving the site. A new permit will be issued for future entries once a permit has been canceled.

10. Training and Program Review

All workers involved with confined space entry will receive training relative to their role on the project. Since Posillico conducts confined space entry infrequently, training will be conducted prior to each project in order to refresh Posillico employees on the use of the equipment, monitoring procedures and the confined space entry program. The program will be reviewed annually or when new equipment is acquired. All completed permits will be reviewed and critiqued at the completion of each entry. The entrants and attendants will be interviewed after entry to determine if there were significant problems or concerns.

5.0 Definitions

Fire Blanket: Blanket made of fire-resistant material, such as NOMEX or KEVLAR (**not asbestos**), or treated wool, which can be used to cover combustible materials to prevent their ignition from sparks, flames or heat during hot work.

Attendant: Person who is trained in Permit Required Confined Spaces, observes the confined space activities/hot work to ensure that ignition of the surrounding material does not occur. The Attendant will be equipped with a fully charged, suitable fire extinguisher and/or charged fire hose at the work area at the time of the hot work. The Attendant will not be assigned to any other duties.

PRCS training documentation for Supervisors, Attendants and all Entrants will be provided to the Con Edison Construction Inspector on site prior to making a confined space entry.

Confined Space: Spaces that can be bodily entered but are not meant for human occupancy. These spaces have a limited means of access and egress.

Entrant: Person who is trained and authorized to enter a confined space. Entrants are required to review air-monitoring data prior to entry into a PRCS and understand the hazards.

APPENDIX I

HOT WORK SAFETY RULES

HOT WORK SAFETY RULES

Introduction

Welding, cutting, brazing, generating sparks, and other hot work operations are a necessary part of the industrial world, both in manufacturing and construction. Too often, the people who hire, use, or supervise the use of these processes don't understand the hazards behind them, which can result in loss of life, property, or both, by fire and explosion.

Any material that is combustible or flammable is susceptible to ignition by heat-producing activity. Common materials such as floors, partitions, roofs, wooden members, paper, textiles, plastics, chemicals, flammable liquids and gases, and grass or brush are very likely to become involved in fire during hot work operations if adequate precautions are not taken.

Hot work is any work that requires the use of tools/equipment that have the potential to produce temperatures which could reasonably be expected to ignite flammable/combustible material or atmospheres in the vicinity of the work area. These tools/equipment have the capability of producing sparks, open flames, heat, or an electrical arc during use. Hot work is not limited to just welding, cutting and brazing, but also grinding, sawing (metal to metal) and chipping operations.

When working on a project located within New York City, a FDNY-certified certificate of fitness holder (e.g. F60) will be required to act as fire guard during any hot work to be performed. As stated in the current FDNY Fire Code for Fire Watch FC 2604.2, "a fire watch shall be maintained and fire guards provided in accordance with FC2604.2.1 through 2604.2.7.1 when required. A fire watch shall be maintained during hot work operations. The fire watch shall continue for a minimum of 30 minutes after the conclusion of the work. The commissioner, or the responsible person implementing a hot work program, may extend the duration of the fire watch based on the hazards of the work performed."

Purpose

To provide Posillico employees and subcontractors, who oversee or perform hot work on projects, with a standard permitting and safety procedure to prevent injury or loss of life and property. To be used as a reference in instances where hot work is performed and as a permit procedure in instances where one is not available.

Scope

This procedure will apply to all Posillico employees and subcontractors who oversee or perform hot work on projects utilizing welding, cutting, brazing, grinding, chipping, portable heaters, and other potential heat producing equipment for field/facility activities. This procedure will apply to all contractors or subcontractors working under Posillico that do not have an adequate Permitting Procedure in place with the company in which they are currently employed.

Procedure

1. Hazard Identification

- The Project Manager will identify all work that requires tools, equipment, or operations that may produce sparks or temperatures that are sufficient to ignite flammable/combustible materials or atmospheres.
- The Project Manager will determine if the work can be performed without the use of hot work, i.e. alternative method to reduce the hazard. If hot work is determined to be required, a hot work permit must be completed prior to the start of any burning, cutting, welding, etc. Appendix A of this document shows an example of a hot work permit.

2. Area Preparation

- The following preparation for the work area will be made once it is determined that hot work is necessary:
 - All flammable/combustible materials will be relocated at least 35 feet away from the work area.
 - All combustible materials that cannot be reasonably removed from the area will be covered with a fire blanket.
 - An appropriate fully charged fire extinguisher and/or charged fire hose will be available at the work area before, during and 1/2 hour after hot work procedures have ended.
 - All safety equipment will be on-site and functional.
1. Always follow the manufacturer's recommendations for setting up and operating equipment, selection of tip size, and gas cylinder-operating pressures.
 2. Always use a regulator to reduce gas cylinder pressure to the operating pressures recommended by the equipment manufacturer. All piping and equipment must meet the standards of the Compressed Gas Association.
 3. Always ensure that all connections are leak tight. Each time connections are loosened and retightened each connection shall be checked with a soap and water solution (oil free soap). Do not check with a flame.
 4. Before "lighting up" clear out each line by letting a small amount of gas flow (separately) to remove any mixed gases that might be in the lines.
 5. Never use defective, worn or leaky equipment. Repair it or take it out of service.
 6. Never use acetylene in excess of 15-psi pressure. Higher pressures with acetylene are dangerous. If the cylinder is not fitted with a hand wheel valve control, any special wrench required must be placed on the cylinder while the cylinder is in service. On manifolds, one wrench for each manifold will suffice.

7. Always have an appropriate fire extinguisher in good operating condition readily available when operating welding or cutting equipment. The fire extinguisher must be rated at least a 2-A:20-B:C as per NYC Rules Section 2605-01.
8. Never perform welding, cutting, brazing, or heating operations in a poorly ventilated area. Avoid breathing fumes from these operations at all times, particularly when zinc, cadmium, or lead coated metals are involved.
9. Never perform welding or cutting operations near combustible materials (gasoline cans, paints, paper, rags, etc.).
10. Always protect yourself, others present, welding hoses, gas cylinders, and flammable materials in the area from hot slag and sparks from the welding and cutting operations.
11. The welder and spectators must always wear goggles to protect the eyes from injurious light rays, sparks and hot molten metal during welding, cutting, and heating operations. Eye protection must comply with the established ANSI Standards. Welding screens shall be used at all times to prevent others on site from looking into the rays..
12. Always wear clean, oil free clothing during welding and cutting operations. Protect the hands with leather welding gloves to avoid burns from radiation and hot molten slag. Low cut shoes and trousers/shirts with cuffs or open pockets should not be worn.
13. Never use a match or cigarette lighter to light a cutting or welding torch. Always use a spark igniter. Fingers are easily burned by the igniting gas when a match or cigarette lighter is used.
14. Ensure that the material being welded or cut is secure and will not move or fall on anyone.
15. Never use a welding, cutting, or heating torch on a container that has held a flammable liquid. Explosive vapors can accumulate and linger in closed containers for extended periods of time.
16. Never use a regulator for gasses other than those for which it was designed for by the manufacturer since the diaphragm and seat materials may not be compatible with other gasses.
17. Never attempt to adapt and use a fuel gas or inert gas regulator on an oxygen cylinder. A special protective device is incorporated on the oxygen regulator to harmlessly dissipate the heat caused by the recompression when the cylinder valve is quickly opened. Such a protective device is not furnished on fuel gas and inert gas regulators.
18. Never tamper with the safety devices on cylinders, fuse plugs, safety discs, etc. and do not permit torch flames or sparks to strike the cylinder.
19. Always refer to the various gasses by their proper names. (Do not refer to oxygen as “air” or acetylene as “gas”.)
20. **All cylinders**, particularly acetylene and Oxygen, should be restrained **securely** in an upright position to prevent accidents. A non-vertical position for an acetylene cylinder in use would allow the discharge of acetone through the regulator and into the cutting torch, clogging the mixer passages and creating a fire hazard. It would reduce the efficiency of

the flame and contaminate the weld area. It also can cause voids in the porous material inside the cylinder, which can lead to acetylene explosions.

21. During use, acetylene and oxygen tanks shall be secured on a welding cart with metal brackets or chains as per NYC Rules Section 2605-01.
22. Store all gas cylinders not in use away from excessive heat sources, such as stoves, furnaces, radiators, the direct rays of the sun, and the presence of open flames. Cylinders in storage shall always be **secured** in an upright position. Acetylene tanks will be stored at a minimum of 25 feet away from oxygen tanks. All tanks, empty or full, shall be stored off the ground within a lockable cage or on a built-up platform (to prevent cylinder corrosion).
23. Keep all burning or flammable substances away from the oxygen or fuel gas storage area (at least 20 feet) and post “No Smoking” signs.
24. Upon completion of a welding, heating, or cutting operation immediately inspect the surrounding areas for smoldering embers. Allow at least one half hour to elapse before leaving the area and conduct another thorough inspection just before leaving. Also alert other personnel of fire possibilities.
25. Always have the properly fitted wrench to fasten a regulator to a cylinder. Never tighten the regulator by hand.
26. Always leave the fuel gas cylinder valve wrench in place when the cylinder valve is open so that it can be closed quickly in an emergency. Do not open acetylene valves more than one-quarter (1/4) turn.
27. Before connecting a regulator to a gas cylinder, open the cylinder valve for a moment. Called cracking the cylinder valve, this will blow out any foreign material that may have lodged in the valve during transit. Do not stand in front of the valve when “cracking”.
28. After attaching a regulator to a gas cylinder, be sure the regulator adjusting screw is fully released (backed off in a counter clockwise direction so that it swivels freely) before the cylinder valve is opened. Never stand in front of a regulator when you are opening a cylinder valve.
29. Always open the cylinder valve slowly so that gas pressure will build up slowly in the regulator (particularly in the oxygen cylinder). Quick opening of the cylinder valve causes a buildup of heat due to recompression of the gas. When combined with combustible materials, ignition and explosion may result.
30. If a leak develops in a fuel gas cylinder that cannot be stopped by closing the valve, immediately place the cylinder outside of the building away from possible fire or ignition sources in a location that is free from wind currents that might carry the gas to an ignition source.
31. Never attempt to mix gasses in a cylinder or fill an empty one from another (particularly oxygen cylinders). Mixture of incompatible gasses and/or heat caused by recompression of the gas or gasses may result in ignition and fire. Only the owner of a cylinder may mix gasses in it.

32. When a gas cylinder is ready for return to the supplier, be certain the cylinder valve is closed to prevent internal contamination and the shipping cap is in place to protect the cylinder valve. Identify empty cylinders properly.
33. Never use oxygen or other gasses as a substitute for compressed air in operation of air-operated tools, blowing off parts, or for ventilation purposes. The only exception to this rule is where oxygen is used to blow out port passages and talcum powder or dust from welding hoses when setting up new or old “dusty” equipment.
34. Do not attempt to do your own repair on welding equipment. Equipment that is improperly repaired can cause leaks and other hazardous conditions. Qualified repair personnel must perform repairs.
35. Never repair welding hose with tape. Use of tape and many hose splices can reduce the pressure to the torch and can cause hazardous conditions. Welding hose must meet the specifications of the Compressed Gas Association.
36. Use the shortest length of hose possible. Longer hoses require higher gas pressures and can be hard to handle.
37. Never use oil or grease on any part of welding or cutting equipment and never let it come into contact with oil or grease. This includes gas cylinders, workbench, regulators, torches, tips, threads on bottles, and clothes that are worn, such as jackets, gloves, and aprons. Oxygen and oil or grease can cause explosions and fire.
38. Never use a hammer on the valve cover caps to loosen them. Use a piece of wood to soften the impact and prevent sparks and damage to the cap.
39. When moving gas cylinders always roll them on their bottom edges or in a cart designed for their movement. Sliding or dragging them or rolling causes excessive wear and may weaken their walls by metal erosion. Slings and electromagnets are not authorized when transporting cylinders.
40. Never use cylinders as rollers to move material. Do not let them bump into each other or let them fall.
41. Fuel gas and liquefied fuels must be stored and shipped valve end up.
42. Do not hammer on any cylinder. Do not tamper with the relief valves. If you have trouble, contact the supplier for assistance.
43. Suitable eye protection must be worn for all welding and cutting operations.
44. Cylinders must be secured. Valves must be closed when unattended and caps must be on the cylinders when the regulators are not on the cylinders (i.e. at the end of the shift).
45. Cylinders must be upright when they are transported in powered vehicles.
46. All cylinders with a water weight of over 30 lbs. must have caps or other protection.
47. All fuel gases must be used through a regulator on cylinder or manifold.

48. Compressed gas cylinders must be upright except for short periods for transportation.
49. Repair work on gauges and regulators must be done by qualified personnel.
50. Only 4 inches of hose per foot may be covered with tape. Defective hoses must be removed from service.
51. Oxygen must not be used for ventilation.
52. Oxygen regulators must be marked "Use No Oil". Regulators and fittings must meet the specifications of the Compressed Gas Association.
53. Union nuts on regulators must be checked for damage.
54. Before removing a regulator, shut off cylinder valve and release gas from regulator. Equipment must be used only as approved by the manufacturer.
55. Caps must be on cylinders unless they are transported on a special carrier.
56. Hot warnings on materials are required.
57. Fire is the biggest hazard in welding. The area should be cleared for a radius of 35 feet. Fire shields shall be used. The area shall be monitored for 30 minutes or more after end of work to ensure there is no delayed ignition.
58. Proper personal protective equipment must be worn by all welders and assisting personnel.
59. All welding personnel shall be advised of the hazards from heating zinc, lead, cadmium, and any other substances that could cause health problems from the welding activity.

(The following apply to arc welding)

60. Chains, wire ropes, hoists, and elevators must not be used to carry welding current.
61. Leather capes should be used for overhead welding.
62. The neck and ears must be protected from the arc.
63. Conduits with electrical conductors in them must not be used to complete a welding circuit.
64. Welding shields must be used to protect other workers from injurious light rays.
65. Welding leads must be inspected regularly for damage to insulation. Only proper splicing will be authorized. There should be no splices in stinger lead within 10 feet of the stinger and the leads should never be wrapped around the body.
66. A designated, competent person must inspect welding equipment and gas cylinders.
67. Output lugs on welders require the protective boots to be in place.

ATTACHMENT A
HOT WORK PERMIT

HOT WORK PERMIT

Permit Number:

Site Name:

Site Location:

Permit Issue Date:

Permit Expiration Date:

Describe work to be performed and location where activity will be conducted:

Laborers use Oxygen and Acetylene torch to heat up metal at the water treatment system

SAFETY ZONE for work established by (circle or hi-lite all items that apply).

Traffic cones; Caution Tape; **Natural Barrier**; Welding Screen; Building; Other: **Worn others working in the area.**

Notify personnel working in your work area and workers nearby.

SAFETY REQUIREMENTS (circle or hi-lite all items that apply). YES or NO

Fire Extinguisher properly rated **YES** NO Fire watch present **YES** NO

Combustibles covered within 50 feet **YES** NO Work area clean **YES** NO

Cables, **Hose lines, Check Regulator, Check Cylinder**, Electric sources, all items checked
YES NO

SAFETY EQUIPMENT (circle or hi-lite all items that apply) Respirator; Welding mask;

Burning goggles; Face shield ;Leather work gloves; Welding gloves; Safety glasses with side shields; Ear protection.

Are Special Fire Protection procedures being implemented? (**YES** describe below):

The Fire watch must remain one half hour after burning and cutting activities.

Site Supervisor Signature : _____

Site Safety Officer Signature: _____

Fire Watch Signature : _____

APPENDIX J



Activity Hazard Analysis

APPENDIX K

**PERSONAL PROTECTIVE EQUIPMENT (PPE)
PROGRAM**

PERSONAL PROTECTIVE EQUIPMENT (PPE) PROGRAM: SELECTION AND USE

Purpose

This program has been written to help the worker choose the correct Personal Protective Equipment (PPE) for the job. Familiarity with the different levels of protection that are reasonably anticipated to be used on site (C and D) will help speed up the selection process. Careful selection and use of adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body and hearing. Posillico site workers may work at a variety of job sites and locations which may require different types of protective equipment. Client specific requirements will always be adhered to (CEHSP S05.03). Posillico will supply all PPE or reimburse the site worker for the costs of PPE if the PPE is required as part of the project.

Scope

This program establishes criteria for the selection, use, donning and doffing, inspection, maintenance, storage, decontamination of PPE, and evaluation. This information is general, and specific PPE use is included in the site-specific health and safety plan (SSHSP) portion of this entire document.

OSHA Requirements (29 CFR 1910.120)

A written personal protective equipment program, which is part of the employer's safety and health program and also part of the site-specific health and safety plan, has been established. The PPE program addresses the elements listed below.

- PPE selection based upon site hazards;
- PPE use and limitations of the equipment;
- Work mission duration;
- PPE Maintenance and storage;
- PPE decontamination and disposal;
- PPE training and proper fitting;
- PPE donning and doffing procedures;
- PPE inspection procedures prior to, during and after use;
- Evaluation of the effectiveness of the PPE program; and
- Limitations during temperature extremes, heat stress, and other appropriate medical considerations.

Due to the variety of job sites and situations that Posillico personnel may be involved in, it is important that Posillico maintain a consistent approach in complying with health and safety procedures. The project manager and/or site supervisor are responsible for ensuring that all personnel wear the appropriate PPE. Failure to comply with these requirements may result in disciplinary action. Site worker safety is a paramount concern for all Posillico managers and site workers. We all must make every effort to protect ourselves and each other from harm. These procedures will now require the following:

1. Protective footwear must be worn by all field personnel working in the field. Footwear must at a minimum include steel toe and shank protection. Protective footwear must meet ANSI Z41-1991. Additionally, chemical protective footwear may also be required if the potential for contaminated materials exists. This type of protection will be required on a site-specific basis.
2. Eye protection must be worn by all personnel, subcontractors and visitors at all times. Eye protection shall be in place as the job site is entered and remain on until the work area is exited. Eye protection does not have to be worn inside **enclosed** cabs, automobiles or job trailers. Eye protection must include side shields. Prescription lenses worn as eye protection and other protective eyewear must meet ANSI Z87.1.
3. Hardhats are to be worn by all field personnel when in the field. New hardhats must meet ANSI Z89. Hard hats cannot be white or “Con Edison blue” in color.
4. High-visibility, ANSI Class II retro-reflective vests are to be worn at all times. Vests shall be closed in front and back.
5. Hand protection is to be worn on a site-specific basis. The hand protection must be selected based on the physical and/or chemical hazards expected to be encountered. Posillico maintains a stock of a variety of gloves including, but not limited to:
 - Nitrile Gloves
 - Leather Work Gloves
 - Anti-Vibration Gloves
 - Rubber Coated Knit Gloves
 - Dyneema® Cut-Resistant Gloves
 - Welding Gloves

Additionally, insulated electrical gloves with outer leather gloves shall be worn when working around high-voltage systems. These gloves shall be dielectric tested and stamped with the expiration date.

Posillico is responsible for supplying all personal protective equipment required for Posillico's projects

Work Mission Duration

Before donning any PPE ensembles, workers will estimate their anticipated work duration. There are several limiting factors that affect the length of work time. These factors must be addressed:

- Air supply consumption
- Permeation and penetration of the Chemical Protective Clothing/ensemble;
- Ambient temperature; and
- Coolant supply (ice or chilled area to keep the worker's body temperature at a normal temperature).

Level of Protection

The following section describes the different levels of protection (C and D) that are reasonably anticipated to be used based on the hazards anticipated to be encountered on site. Each level is described in the following manner: the protection provided; when this particular level of protection should be used; recommended and optional equipment; and, any limiting criteria.

1. Level C

a. Protection provided:

- Level C provides the same level of skin protection as Level B, but a lower level of respiratory protection.

b. Shall be used when:

- The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin;
- The types of air contaminants have been identified, concentrations measured, and a canister/ cartridge is available that can remove the contaminant; and
- All criteria for the use of air-purifying respirators are met.

c. Recommended equipment:

- Full facepiece or half facepiece air-purifying negative pressure respirator;
- Chemical-resistant clothing;
- Inner and outer chemical-resistant gloves;
- Chemical-resistant safety boots and shoes;
- Disposable boot covers;
- Hard hat; and
- Two-way radio communications.

d. Optional equipment:

- Coveralls;
- Face shield;
- Escape bottle; and
- Long cotton underwear.

e. Limiting criteria:

- Atmospheric concentration of chemicals must not exceed IDLH levels; and
- The atmosphere must contain at least 19.5% oxygen.

2. Level D

a. Protection provided:

- No respirator protection and minimal skin protection.
- b. Shall be used when:
- The atmosphere contains no known hazard; and
 - Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.
- c. Recommended equipment:
- Coveralls;
 - Safety boots/shoes;
 - Safety glasses or chemical splash goggles; and
 - Hardhat.
- d. Optional equipment:
- Gloves;
 - Escape bottle; and
 - Face shield.
- e. Limiting criteria:
- This level should not be worn in the exclusion zone; and
 - The atmosphere must contain at least 19.5% oxygen.

Level of Protection Utilized

Due to the nature of our work, it can be reasonably expected that personnel will not be performing any work that will require the use of Level A protection. Posillico will not directly undertake assignments and Posillico does not generally train or equip its personnel to handle circumstances involving Level A protection. If Posillico is working on a site and Level A is deemed necessary, the work will be subcontracted to a qualified firm. Posillico personnel shall not directly undertake these tasks.

Sites where Posillico is working often require the use of Level C or D, with Level B equipment available on-site for emergency rescue. Any questions concerning the level of protection necessary to complete a certain task will be directed to the Health and Safety Assessment Division before setting up the job.

Types of PPE to be Potentially Utilized by Posillico

The following list contains types of PPE utilized by Posillico and their uses on the job, as they may apply to a specific site.

1. Respiratory Equipment:

- a. SCBAs:
 - Used for emergency rescue and exposures greater than maximum use concentration limits set for canister/cartridge type negative pressure respirators.
 - b. Supplied-air respirators:
 - MSA Premaire system.
 - c. Negative pressure respirators:
 - Half face and full face, used for exposure to certain types of acid gases, organic vapors and particulates not greater than the canister/cartridge maximum use concentration limit.
2. Chemical protective apparel suits:
- a. Polycoated Tyvek, Saranex, Chemrel and Tyvek (porous). Provide protection against certain liquid chemicals.
 - Tyvek provides protection against particulates only.
 - b. Fire/flame retardant coveralls:
 - Provide protection against flash fires.
3. Insulated clothing (Provides protection against exposure to the cold:
- a. Chemical resistant gloves:
 - Provide protection for the hands against chemical splashes.
 - b. Disposable boot covers:
 - Protect safety boots from contamination and feet from contact with chemicals.
4. Eye protection:
- a. Safety glasses and chemical splash goggles.
 - Safety glasses protect the eyes against large particles and projectiles.
 - Chemical splash goggles protect the eyes against vaporized chemicals, splashes, large particles, and projectiles.
 - b. Vented goggles do not provide protection against vapors and are not adequate for splashes, as material may seep inside the goggles.
5. Hard hat:

- a. Provides protection against blows to the head. When worn with a liner, provides protection against the cold.
6. Construction safety boots:
 - a. Steel-toe and shank construction boots with chemically resistant soles protect the feet from heavy and sharp objects, and contact with chemicals.
7. Safety harnesses and lifelines:
 - a. Enable the individual to work in elevated areas or enter confined spaces to prevent falls and aid in rescue. The correct harness for the situation shall be selected by the SSO and will be worn by all site workers.
8. Hearing protection:
 - a. Provides protection against physiological damage and psychological effects.
9. Canvas work gloves:
 - a. Provide protection for the hands against abrasions and slivers.

Selection of Chemically Protective Clothing

1. Chemically-protective clothing (CPC) will be chosen in the following manner:
 - a. Determine what chemicals are present on the site.
 - b. CPC chosen must be resistant to permeation, degradation and penetration of the chemical(s).
 - Permeation - Process by which a chemical dissolves in and/or moves through a protective clothing material on a molecular level.
 - Degradation - The loss of or change in the fabric's chemical resistance or physical properties due to exposure to chemicals, use or ambient conditions (e.g., sunlight).
 - Penetration - The movement of chemicals through zippers, stitched seams or imperfections (e.g., pinholes) in CPC.
 - c. Review manufacturer's permeation data to determine the performance characteristics of the material to the specific chemical.
 - d. Select CPC that protects against the greatest range of chemicals on the site and has the longest breakthrough time.
 - e. Discuss choice of CPC with the Health and Safety division prior to setting up the job.

Donning and Doffing Procedures

The following procedures will be used by Posillico site workers and Posillico subcontractors for donning and doffing PPE at protection Levels C and D (modified). Donning and doffing will be performed with the assistance of an individual(s) located in the Support Zone and Contamination Reduction Zone, respectively. This individual will help the worker tape up and adjust PPE for proper fit, as well as remove PPE after decontamination.

1. Donning PPE

- a. Inspect the clothing and respirator before donning.
- b. Unzip the suit.
- c. Step into the legs of the suit, slipping the feet through the legs. Push arms through the sleeves.
- d. Pull leg cuffs over the feet.
- e. Put on chemical-resistant safety boots over the feet. Tape the leg cuff over the tops of the boots.
- f. Pull over chemical-resistant boot covers and tape over the leg cuff.
- g. If suit contains protective feet, wear chemical-resistant safety boots inside the suit with chemical-resistant boot covers over the suit and taped securely to the leg.
- h. If wearing a SCBA, don the facepiece and adjust it to be secure, but comfortable. Do not connect the breathing hose. Open valve on the air tank.
- i. If wearing a negative pressure respirator, pull hood over the head and perform positive and negative pressure facepiece seal test (procedures are written in the Posillico's Respiratory Protection Program).
- j. Pull on chemical protective inner gloves.
- k. Pull on chemical protective outer gloves and tape securely to the sleeve of the suit.
- l. Securely tape the suit to protect all exposed skin around the neck area, and if wearing a full facepiece, tape around the edge of the hood-to-facepiece junction.
- m. Put on hardhat and tape securely on top of head so that the hard hat does not slide off.

2. Doffing PPE

- a. Doffing of PPE will not take place until the individual has been properly decontaminated by a suitably attired assistant. Both the worker and assistant will make every effort to avoid any direct contact with the outside of the suit.

- b. If the individual is wearing a SCBA, the hose connection to the diaphragm will be disconnected, leaving the facepiece on the wearer. The remainder of the unit will be removed and decontaminated before proceeding further.
- c. If the individual is wearing a half-face or full-face negative pressure respirator, she/he will be instructed to leave it on until the doffing procedure is complete.

NOTE: Decontamination is to be performed in accordance with the Site-Specific Health and Safety Plan for the site.

Decontamination of PPE

Whenever possible, disposable PPE will be used on-site. Disposable PPE includes the following:

- Chemical protective suits;
- Gloves; and
- Chemical protective boot covers.

After decontaminating the worker, PPE is disposed of on-site in labeled disposal containers. Complete procedures for the decontamination, cleaning, inspection, maintenance and storage of respiratory equipment is covered under Posillico's Respiratory Protection Program. All PPE must be cleaned and properly stored. If Posillico-owned PPE cannot be cleaned or disinfected or is damaged it will be replaced by Posillico.

Inspection of PPE

PPE will be inspected prior to, during and after each use according to the procedure outlined below.

1. Prior to use (Reusable and Disposable PPE):
 - a. Through reviewing available literature, determine that the clothing material is correct for the task.
 - b. Visually inspect for:
 - Imperfect seams;
 - Non-uniform coatings;
 - Tears or holes; and
 - Malfunctioning closures.
 - c. Hold up to the light and check for pinholes (inflate gloves and check for leaks).
 - d. Flex and check for:
 - Cracks; and
 - Shelf deterioration.
 - e. If previously used, check for:

- Discoloration;
- Swelling;
- Stiffness and cracking; and
- Holes and tears.

2. During use (Reusable and Disposable PPE), check for:

- Evidence of chemical attack.
- Discoloration, swelling, stiffening, softening and/or cracking.
- Tears.
- Punctures.
- Seam discontinuities.

Note: Report any sense of breakthrough to the Health and Safety Assessment Division. Medical monitoring may be necessary to determine the extent of exposure.

3. After use (Reusable PPE), check for:

- Malfunctioning parts.
- Evidence of chemical attack.
- Punctures.
- Tears.
- Cracks.

Note: Posillico's Respirator Protection Program addresses complete inspection procedures and will be consulted for inspection of all respiratory equipment.

Maintenance and Storage of PPE

PPE, other than respiratory equipment (covered under Posillico's Respiratory Protection Program), will be maintained and stored in accordance with the manufacturer's recommendations at a minimum to prevent damage due to exposure to dust, moisture, sunlight, chemicals, temperature extremes and sudden impact.

PPE will be stored in Field Operations Equipment bags. Before and after each use, the PPE will be inspected to determine whether or not it is still "field worthy". Any PPE found to be defective will be reported to the Health and Safety Assessment Division and either discarded or repaired, as appropriate. Under no circumstances will defective PPE be used in the field.

- The Health and Safety Assessment Division will periodically inspect PPE issued for individual use.
 - Unless the equipment can be repaired, any PPE found to be defective will be removed from service and discarded immediately.
 - Repairable PPE will be tagged, returned to the Facility Manager and sent out for repair.

Training

Posillico will provide the proper equipment to site workers and train them on the proper use. At a minimum, each site worker using PPE must know:

- When PPE is necessary
- What PPE is necessary and which PPE has been selected for each process the site worker operates
- How to properly put on, take off, adjust and wear PPE
- The limitations of PPE
- How to determine if PPE is no longer effective or is damaged
- How to get replacement PPE
- How to properly care for, maintain, store and dispose of PPE

After site workers have been trained, periodic assessment of the process/equipment will be conducted ensure that the PPE is adequate and training is appropriate.

Retraining site workers will occur whenever:

- Changes in the workplace render the previous training obsolete
- Changes in the type of PPE render previous training obsolete
- Employer observed inadequacies in an site worker's knowledge or use of assigned PPE indicates that an site worker has not retained the necessary understanding or skill

Posillico verifies that each site worker who is required to use PPE has received and understood the required training. Training is confirmed by written certification which included the site worker name, the dates of training, and the certification subject.

Evaluation Of PPE Program

Posillico's Personal Protection Equipment Program will be reviewed annually by the Health and Safety Assessment Division. Any program deficiencies that are identified by a Posillico site worker will be reported to the Health and Safety Assessment Division, so that changes will be made immediately. All site workers affected by the change(s) will be notified in writing.

Review of the PPE Program will include, but not be limited to, the following:

- Accident and illness experience on various job sites.
- Type and degree of exposure.
- Adequacy of equipment selection process.
- Degree of fulfillment of program objectives.
- Site worker acceptance.
- Coordination with overall health and safety program elements.
- Recommendations for program improvements and modifications.
- Adequacy of program records.

Site worker Owned Equipment

Posillico does not allow the use of site worker-owned equipment on job sites.

APPENDIX L

RESPIRATORY PROTECTION PROGRAM

Respiratory Protection Program

Purpose:

The purpose of the Respirator Program is to ensure that all site workers are protected from exposure to respiratory hazards. Engineering controls such as ventilation and substitution of less toxic materials are the first line of defense. However, engineering controls are not feasible for some operations or do not completely control the identified hazards. In these situations, respirators and other protective equipment must be used. Respirators are also utilized for protection during emergencies.

Procedure:

This program applies to all site workers who are required to wear respirators during normal work operations and during certain non-routine or emergency operations. Site workers participating in the respiratory protection program do so at no cost to them. The expense associated with medical evaluations, training, and respiratory protection equipment will be borne by the company.

- Respirator equipment is required in areas where health hazards may exist due to accumulations of dusts, fumes, mists or vapors. If your job requires the use of a respirator see your supervisor for training and the proper respirator for the working conditions at hand.

Site workers who voluntarily choose to use a cartridge style respirator when the respirator is not required are subject to the medical evaluation, cleaning, maintenance, and storage elements only of this program. These individuals will also receive training covering proper procedures for cleaning, maintenance and storage of their respirators.

Posillico has a full written Respiratory Program as listed below.

Respiratory Protection

Purpose

The purpose of this program is to establish, implement and maintain an appropriate Respiratory Protection Program to protect site workers from respiratory hazards on our jobsites. Respiratory Protection is an area of Safety and Health that Posillico Inc. takes extremely seriously.

Through education and training, we believe that working in and around respiratory hazards and environments can be managed safely and effectively. As a company, we believe in engineering out or administratively controlling respiratory hazards and environments. When these controls cannot be instituted, we will use appropriate respiratory protection. Posillico Inc. shall ensure that respiratory hazards within our sites are evaluated and that information concerning these hazards is transmitted to all affected site workers through our construction planning process.

Applicable Regulations

OSHA 29 CFR 1910.134

Responsibilities

The Posillico Safety Director is responsible for respiratory protection program and has the authority to make necessary decisions to ensure its implementation and maintenance. The Safety Director has the authorization to halt any company operation where there is danger of serious personal injury or unnecessary exposure;

A corporate respiratory program administrator shall be appointed and shall approve all site specific respiratory programs prior to implementation at the site, and thereafter review as required;

The program shall be reviewed and evaluated on an annual basis, or when changes occur to 29 CFR 1910.134, that prompt revision of this document or when facility operational changes occur that require a revision to the program;

The corporate respiratory program administrator shall conduct routine evaluations to ensure the written program is being followed. Topics to be considered during the evaluation shall consist of: respirator fit, selection, maintenance, interference with job performance, discomfort, site worker concerns; and

Provide a database of Medical Evaluation Questionnaire and Fit Test results of each site worker required to wear respiratory protection.

Project Management shall:

Evaluate work activities for the presence of respiratory hazards and prepare construction plans for each activity;

Institute engineering and administrative controls, as a first line of defense against respiratory hazards;

Shall appoint a qualified individual (the SSO) to be the Site Respiratory Program Administrator who shall prepare the **Work Site Respiratory Programs (WSRP)** for each substantially unique airborne exposure at the jobsite. The Site Respiratory Program Administrator / SSO shall submit the WSRP(s) to the Corporate Respiratory Program Administrator for approval before the use of respirators begins. And shall ensure the successful implementation of the WSRP(S) on the jobsite;

Purchase suitable, effective, respirators to protect site workers from respiratory hazards;
Ensure each site worker wearing respiratory protection has the required medical clearance and fit test record prior to wearing the respirator;

Train site workers in topics identified in this program; and

Effectively enforce the use of respirators.

Site workers shall:

Correctly wear respirators in accordance with instructions and training during operations designated by their supervisor;

Not have facial hair of any type that interferes with the correct fit of a respirator;

Properly clean, store and maintain respirators according to the direction of the manufacturer or their supervisor; and

Guard against damage to the respirator and shall immediately replace suspect respirators and shall report such damage or malfunction of the respirator to their supervisor.

Procedure

Site-Specific Respiratory Protection Program

In addition to meeting the requirements of this program, all projects that use respirators will be required to have a site-specific respiratory protection program;

In order to have an effective program, address the following questions in the development stage:

- Who is the program administrator?
- What procedures are used to select respirators for use in the workplace?
- Who will be doing the medical evaluations for the site workers (which facility or facilities)?
- What are the fit testing procedures for tight fitting respirators?
- What are the procedures for proper use of respirators in normal and foreseeable emergencies?
- What are the procedures and schedules for cleaning, disinfecting, storing, inspection, repairing, discarding and otherwise maintaining respirators?
- What are the procedures to ensure adequate air quality, quantity and flow of breathing for atmosphere supplying respirators?
- What are the methods to be used to ensure that the site workers are trained in respiratory hazards to which they are potentially exposed during routine and emergency situations?
- What are the methods of training site workers in the proper use of respirators including, donning and removing a respirator, cleaning, positive/negative pressure fit testing, limitations of their use and maintenance and cleaning of a respirator?
- What are the procedures of regularly evaluating the effectiveness of a program?
- When respirator use is not required, but are provided at the request of the site workers or permit site workers to use their own respirators, the following criteria will be met:
 - Determine that such respirator use does not create a hazard;
 - Review 29 CFR 1926.134; and
 - Training on cleaning, storage and maintenance of the respirator to prevent it from being a hazard.

Surveillance of Work Area Conditions

As each activity progresses, surveillance of work area conditions and degree of site worker exposure or stress shall be monitored and measured;

The site Safety Representative will make a reasonable estimate of site worker exposure by conducting a hazard evaluation for each operation, process, or work area where airborne contaminants may be present in routine operations or during an emergency.

The evaluation may include:

- Identification and review of a list of hazardous substances used in the work area;
- Review of work processes to determine source of potential hazardous substances;
- Review of process records;
- Site worker interviews;
- Air Monitoring (mandatory for any contaminant where there is a Permissible Exposure Limit [PEL]);
- Published studies by safety associations, manufacturers, historical data;
- Mathematical approaches using physical & chemical properties of the contaminant;
- If a reasonable estimate cannot be obtained then IDLH atmosphere must be assumed; and
- The site Safety Representative will revise and update the hazard assessment as needed.

Air Sampling will be conducted as per the requirements in this section.

Air Sampling Procedure

Baseline sampling shall commence at the beginning of each operation, which is identified as a potential for airborne exposure. Historical data from similar operations producing airborne exposure can be used as baseline exposure monitoring, when feasible, but must be evaluated according to activity, length of operation, conditions in which the samples were taken, etc; Personal air sampling shall always be the first method to determining actual site worker exposure. Area monitoring shall be used to supplement personal air sampling but shall not be the only method of determining exposure;

Air Sampling will be representative of the exposure that the site worker is exposed to throughout his daily shift;

An Air Monitoring Worksheet shall be completed for each sample taken on any given day. If several different samples are taken on the same day then one Air Monitoring Worksheet can be filled out providing the conditions for each site worker are the same, otherwise a separate worksheet is required;

A Chain of Custody will be completed for each batch of samples that are to be sent to the Laboratory for analysis, along with the Air Monitoring Worksheet. Both these documents are to remain with analysis received back from the Laboratory;

If the initial baseline results demonstrates site worker exposure to be below the action level, then; Personal and Area Air Sampling will take place thereafter on at least three consecutive measurements taken at least seven (7) days apart;

Air Sampling Frequency

Results will be dealt with as follows:

- Where results demonstrate that the site worker exposure is below the action level, monitoring shall be continued until sampling shows no exposure on at least three consecutive measurements taken at least seven (7) days apart;
- Where results demonstrate that the site worker exposure is above the action level, but below the permissible exposure limit, monitoring shall be repeated at least every 6 months. The monitoring shall continue until at least two consecutive measurements, taken at least 7 days apart, are below the action level, at which time the monitoring for that site worker or operation may be discontinued; and
- If the initial monitoring reveals that site worker exposure is above the permissible exposure limit, the monitoring shall be repeated quarterly. The monitoring shall continue until at least two consecutive measurements, taken at least 7 days apart, are below the permissible exposure level, at which time the monitoring for that site worker or operation may be discontinued.

Whenever there has been a production, process, control or personnel change which may result in new or additional exposure to any contaminant, or whenever Posillico Inc. has any reason to suspect a change which may result in new or additional exposures, additional monitoring shall be conducted; and

The Corporate Respiratory Program Administrator shall supervise air monitoring results and exposure assessment.

Medical Evaluation

Persons shall not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and effectively use the equipment;

The Corporate approved physician(s) will be used in all instances for medical evaluate and clearance for respirator use;

Prior to work commencing, each required site worker shall complete a **Medical Evaluation Questionnaire (MEQ)** in accordance with CFR 1910.134. This shall be sent to the approved physician for clearance;

The examining physician will then evaluate the site worker, based on their answers, and certify clearance for respirator use under any conditions that they see fit. This may involve clearance by MEQ alone, consultation with the Physician and/or a medical examination;

This clearance will be forwarded to the Corporate Respiratory Program Administrator and the Site Respiratory Program Administrator for processing and record keeping. Any conditions stated on the clearance will be followed; and

Additional medical evaluations shall be provided when:

- An site worker has any change in medical status;
- An site worker reports medical signs or symptoms that are related to ability to use a respirator; and
- The physician states that the site worker needs to be re-evaluated.

Fit Test Procedure

The procedures in Appendix A in section 29 CFR 1926.103 are to be followed. A medical evaluation needs to be completed prior to fit testing an site worker;

Fit testing will be performed using Quantitative Fit Testing measures. If this is not available, then qualitative means may be used until the quantitative means are available;

Select respirators from a sufficient number of respirator models and sizes to assure that the respirator is acceptable to, and correctly fits, the user;

Fit tests will be done before using the respirator in the field and will be repeated annually, when a different type or brand of respirator is worn or when there is a significant physical difference in the site worker such as body weight, facial scarring, dentures, broken jaw;

The absence of one or both dentures can seriously affect the fit of a face piece. The worker's diligence in observing these factors shall be evaluated by periodic checks;

To assure proper protection, each wearer will complete positive and negative checks to ensure seal;

Hair. Fit testing shall not be conducted if there is any hair growth between the skin and the facepiece seal surface.

Respiratory Difficulty during Tests. If an site worker exhibits difficulty in breathing during the tests, she or he shall be referred to a physician trained in respiratory diseases or pulmonary medicine to determine whether the test subject can wear a respirator while performing her or his duties;

Respirator Use Determination. The test subject shall be given the opportunity to wear the assigned respirator for one week. If the respirator does not provide a satisfactory fit during actual use, the test subject may request another fit test, which shall be performed immediately;

Filter Replacement. Filters used for qualitative or quantitative fit testing shall be replaced weekly, whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media. Organic vapor cartridges/canisters shall be replaced daily or sooner if there is any indication of breakthrough by the test agent.

Because the sealing of the respirator may be affected, quantitative fit testing shall be repeated immediately when the test subject has a:

- Weight change of 20 pounds or more;
- Significant facial scarring in the area of the facepiece seal;
- Significant dental changes; i.e., multiple extractions without prosthesis, or acquiring dentures;
- Reconstructive or cosmetic surgery; and
- Any other condition that may interfere with the facepiece seal.

Fit Test Record keeping Requirements. A summary of all test results shall be maintained for 3 years. The summary shall as minimum include:

- Name of test subject;
- Date of testing;

- Name of the test conductor; and
- Fit factors obtained from every respirator tested (indicate manufacturer, model, size and approval number).

Selection of Respirators

Dust masks are not permitted for use as a respirator on any project under any circumstances;

The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed;

All filter cartridges and canisters shall be labeled with the appropriate NIOSH approval label that has been certified under the NIOSH 42 CFR Part 84. This label is not to be removed, obscured, or defaced while in service. Only series 100 filters certified under 42 CFR Part 84 shall be used when HEPA filters are called for;

Gas or Vapor protection – If a respirator with an End of Service Life Indicator (ESLI) is not available; a change-out schedule will be specified on a site-specific basis. Every effort will be made to obtain objective information and data to assure that the cartridges are changed out prior to end of service life;

Respirators will be selected based on the specific hazard involved and shall be selected in accordance with the manufacturer's instructions or other related requirements (OSHA or ANSI Standards, NIOSH, etc.). The criteria specified in the following table shall be used:

Hazard	Respirator*
Oxygen Deficiency	Self-contained breathing apparatus. Hose mask with blower. Combination airline respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Gas & Vapor (Contaminants immediately dangerous to life and health)	Self-contained breathing apparatus. Hose mask with blower. Air purifying full-face piece respirator with chemical canister (gas mask). Self rescue mouthpiece respirator (for escape only). Combination airline respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.

Gas & Vapor (Contaminants NOT immediately dangerous to life and health)	Airline respirator. Hose mask without blower. Air purifying half-mask or mouthpiece respirator with chemical cartridge.
Particulate Contaminants (Contaminants immediately dangerous to life and health)	Self-contained breathing apparatus. Hose mask with blower. Air purifying full-face piece respirator with chemical canister (gas mask). Self rescue mouthpiece respirator (for escape only). Combination airline respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Particulate Contaminants (Contaminants NOT immediately dangerous to life and health)	Air-purifying half-mask or mouthpiece respirators with filter pad or cartridge. Airline respirator. Airline abrasive-blasting respirator. Hose mask without blower.
Combination Gas, Vapor & Particulate (Contaminants immediately dangerous to life and health)	Self-contained breathing apparatus. Hose mask with blower. Air purifying full-face piece respirator with chemical canister (gas mask with filter). Self rescue mouthpiece respirator (for escape only). Combination airline respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Combination Gas, Vapor & Particulate (Contaminants NOT immediately dangerous to life and health)	Airline respirator. Hose mask without blower. Air purifying half-mask or mouthpiece respirator with chemical cartridge and appropriate filter.

* For the purpose of this part, “Immediately Dangerous to Life and Health”, (IDLH), is defined as a condition that either poses an immediate threat to life and health or an immediate threat of severe exposure to contaminants, such as radioactive materials, which are likely to have adverse delayed effects on health.

Use of Respirators

The correct respirator shall be specified for each job, the respirator type shall be specified in the site specific respiratory plan, by the Site Safety Representative or designated individual, who supervises the respiratory protection program. This shall be specified through each and every Construction Plan.

Each site worker will be assigned his or her own respirator. Sharing respirators is not permitted.

Dangerous Atmospheres. Written procedures and/or checklists for specific routine tasks/jobs shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies:

- In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional person shall be present. Communications (visual, voice, or signal line) shall be maintained between both individuals present. Planning shall be such that one individual shall be unaffected by any likely incident and have the proper rescue equipment to be able to assist other(s) in case of an emergency; and
- When a self-contained breathing apparatus (SCBA) or hose masks with blowers are used in atmospheres immediately dangerous to life or health (IDLH), standby personnel must be present with suitable rescue equipment.

Respirators shall not be removed while inside a work area that requires respiratory protection. Site workers shall be permitted to leave the work area to maintain, clean, change filters, replace parts, or to inspect their respirator if it is impeding their ability to work or if the respirator stops functioning as intended. Site workers shall notify supervisor of when leaving the work area.

To assure the continuing respirator effectiveness, appropriate surveillance shall be maintained of the work area conditions and the degree of site worker exposure or stress. This shall include a fit check evaluation to assure proper protection. The Site Safety Representative shall accomplish this.

Hair / Apparel. If hair growth or apparel interferes with a satisfactory fit, then they shall be altered or removed so as to eliminate interference and allow a satisfactory fit before the worker is allowed to proceed with work utilizing a respirator;

Corrective Vision. If an site worker wears corrective glasses or goggles or other personal protective equipment. A check shall be made to ensure that such equipment when worn does not interfere with the seal of the face piece to the face of the user. If the site workers wear other safety equipment with their respirators, the site worker must pass an appropriate fit test while wearing the equipment to determine a correct seal.

Corrective vision requirements (Full-Face Respirators). Full-Face respirators having provisions for optical inserts shall be reviewed. These inserts when used shall be used according to the manufacturer's specification. The face piece and lenses shall be fitted by qualified individuals to provide good vision, comfort and a satisfactory face seal.

Conventional eyeglasses shall not be used with full-face respirators. A proper seal cannot be established if the temple bars of eyeglasses extend through the sealing edge of the full face piece.

Contact lenses shall not be used with full-face respirators. Wearing contact lenses in contaminated atmospheres with a respirator shall not be allowed.

Identification of chemical cartridges is by means of its label. The secondary means is by color code. All cartridges purchased or used shall be properly labeled and/or color-coded in accordance with 29 CFR 1910.134 before they are placed into service. The labels and colors shall be properly maintained at all times until disposal.

Color-coding. Each cartridge is painted a distinctive color or combination of colors indicated in Table 1-1 below. All colors used are such that they are clearly identifiable by the user and clearly distinguishable from one another.

TABLE I-1 from 29 CFR 1910.134

ATMOSPHERIC CONTAMINANT(S)	COLOR(S) ASSIGNED
Organic vapors	BLACK
Acid gases	WHITE
Organic vapors/acid gases	YES
Ammonia/methylamine	GREEN
Multi-gases/vapors	OLIVE
P100 particulate	MAGENTA
Organic vapors/P100	MAGENTA & BLACK
Acid gases/P100	MAGENTA & WHITE
Organic vapors/acid gases/P100	MAGENTA & YELLOW
Ammonia/methylamine/P100	MAGENTA & GREEN
Multi-gases/vapors/P100	MAGENTA & OLIVE

NOTE: GRAY is not assigned as the main color for a canister designed to remove acids or vapors.

NOTE: ORANGE is used as a complete body or stripe color to represent gases not included in this table. The user shall need to refer to the canister label to determine the degree of protection the canister shall afford.

Identification of Particulate Filters

The 42 CFR Part 84 standards create three new series of particulate filters (“disposable”) designated by NIOSH as **N**, **R**, and **P**. The N series is tested against sodium chloride (NaCl) and is limited to use in atmospheres containing non-oil based particulates. Both the R and P series are tested against dioctyl phthalate (DOP) and are intended for filtering any solid or oil-based liquid particulates.

<u>FILTER SERIES</u>	<u>FILTER TYPE DESIGNATION</u>	<u>MINIMUM EFFICENCY</u>
“N” Series: Non-oil	N95	95%
	N99	99%
	N100	99.97%
“R” Series: oil-Resistant	R95	95%
	R99	99%
	R100	99.97%
“P” Series: oil-Proof	P95	95%
	P99	99%
	P100	99.97%

Air Quality

Compressed air, compressed oxygen, liquid air and liquid oxygen used for respiration shall be of high quality/Purity;

Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen;

- Cylinders of purchased breathing air shall meet at least the requirements of the specification for Type 1 – Grade D breathing air as described in Compressed Gas Association Commodity Specifications G-7.1-1989;
- Cylinders of purchased breathing air should have certificate of analysis from the supplier that the breathing air meets the requirements of Type 1 – Grade D air;
- Compressed oxygen shall not be used;
- Oxygen must never be used with airline respirators. Breathing air may be supplied to respirators from cylinders or air compressors;
- Cylinders shall be tested and maintained as prescribed in the shipping Container Specification Regulations of the Department of Transportation (49CFR PART 173 and 178);
- Oxygen concentrations greater than 23.5% are to be used only in equipment designed for oxygen service distribution;
- Moisture content in the cylinder shall not exceed a dew point of -50 degrees F at 1 atmosphere;
- Supplied Air compressors purchased or rented by Posillico Inc. for supplying air shall be equipped with the necessary safety and standby devices. A breathing–air type compressor shall be used. The type compressor used shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable inline air purifying absorbent beds and filters installed to further assure breathing air quality. The filter panel must have a tag indicating the last absorbent bed, filter change out and PM work, as well as the signature of the person authorized to perform the change. A receiver of sufficient capacity to enable the respirator wearer to escape from the contaminated atmosphere in the event of compressor failure, and alarms to indicate compressor failure and overheating shall be installed in the system. If an oil-lubricated compressor is used, it shall have a high-temperature or carbon monoxide alarm, or both. If only a high temperature alarm is installed in the system, the air from the compressor shall be frequently tested for carbon monoxide to ensure that levels are below the exposure limit for carbon monoxide (currently 10 ppm);
- Air-line couplings used shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air-line respirators with non-respirable gases or oxygen;
- Compressor shall be set up to minimize moisture content; and
- Breathing gas containers shall be properly marked and stored in accordance with NIOSH respirator certification standard 29 CFR 1910.101.

Cleaning and Disinfecting

- Respirators shall be regularly cleaned and disinfected using the procedures in Appendix B-1 of the Respirator standard or in accordance with the manufacturers written instructions
- Respirators are required to be cleaned prior to each use, and thereafter as required;
- Respirators used in fit testing and training shall be cleaned and disinfected before and after each use.

Respirator cleaning will take place prior to the shift ending.

All cleaning supplies will be provided.

The following procedure is recommended for cleaning and disinfecting respirators:

- Remove any filters, cartridges or canisters;
- Wash face piece and breathing tube in cleaner-disinfectant or detergent solution (see following paragraphs). Use a hand brush to facilitate removal of dirt;
- Rinse completely in clean, warm water;
- Wipe off excessive water, then air dry in a clean area;
- Clean other respirator parts as recommended by manufacturer;
- Inspect valves, head straps and other parts, replace with new parts if defective;
- Insert new filters, cartridges or canisters, make sure seal is tight; and
- Place in a sealable plastic bag or container for storage.

Cleaner-disinfectant solutions shall be used to effectively clean respirators. The respirator should be immersed in the solution, rinsed in clean, warm water and air-dried; and

Strong cleaning and disinfecting agents can damage respirator parts. Temperatures above 185 degrees Fahrenheit and vigorous mechanical agitation should not be used. Solvents, which affect elastomer or rubber parts, should be used with caution.

Storage

Respirators shall be stored in a convenient, clean and sanitary location;

After inspection, cleaning and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals;

Respirators placed at stations and work areas for emergency use should be stored in weather tight compartments built for the purpose, be quickly accessible at all times and be clearly marked;

Respirators should not be stored in such places as lockers or toolboxes unless they are in carrying cases or cartons;

Respirators should be packed or stored so that the face piece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position;

Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid; and

Emergency use respirators placed at stations and work areas for emergency use shall be immediately accessible at all times and shall be stored in compartments built for the purpose and in accordance with the manufacturer's recommendations. These compartments shall be clearly marked. Instructions for proper storage of emergency

respirators, such as gas masks and SCBA, can be found in use and care instructions typically mounted inside the carrying case lid.

Routine Inspections

All respirators shall be inspected routinely before and after each use. The manufacturer's inspection criteria shall be used as the basis for the inspection.

Emergency escape respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in working condition. Emergency escape only respirators shall also be inspected before being carried into the work area. The respirator manufacturer's inspection criteria shall be used as the basis for the inspections. A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. It shall be determined that the regulator and warning devices function properly.

Respirator inspection shall include a check of the tightness of connections and the condition of the face piece, headband, valves, connecting tube and canisters;

Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage;

Random inspections shall be conducted to assure that respirators are properly selected, used, cleaned and maintained. The respirator manufacturer's inspection criteria shall be used as the basis for inspections. Each jobsite will identify and document the site workers who will perform random inspections; and

Replacement or repair. Only the site Safety Representative or designated individual, with NIOSH approved parts designed for the respirator, shall do replacement or repairs. No attempt shall be made to replace components or make adjustments or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair. Respirators that have failed inspection will be taken out of service.

Training

General

For safe use of any respirator, it is essential that the user be properly instructed in his/her selection, use and maintenance and use.

Training shall be provided to each affected site worker:

- Before the site worker is first assigned duties that require respiratory protection and at a minimum, annually thereafter;
- Before there is a change in assigned duties;

- Whenever there is a change in operations that present a hazard for which an site worker as not previously been trained;
- Whenever there is a reason to believe that there are deviations from established respiratory procedures required by this instruction or inadequacies in the site worker's knowledge or use of these procedures; and
- The training shall establish site worker proficiency in the duties required by this instruction and shall introduce new or revised procedures, as necessary, for compliance with this instruction or when future revisions occur.

Training topics shall include, as a minimum:

- Respiratory Protection Program;
- The OSHA Respiratory Protection standard;
- Respiratory hazards encountered within the scope of work and their health effects; whether acute, chronic or both, and an honest appraisal of what may happen if the respirator is not used;
- Need for respiratory protection and the consequences of improper fit, use, or maintenance;
- Proper selection and use of respirators;
- Inspection and seal checking of respirators;
- Limitations and capabilities of respirators;
- Respirator donning and user seal (fit) checks;
- Emergency use procedures; Classroom and field training to recognize and cope with emergencies. This will include situations where the respirator malfunctions;
- Maintenance and storage procedures;
- Medical signs and symptoms limiting the effective use of respirators;
- Explanation of why more control that is positive is not immediately feasible. This shall include recognition that every reasonable effort is being made to reduce or eliminate the need for respirators; and
- Fit Evaluation: the wearer shall be trained how to check the facepiece's fit each time they put on the respirator by conducting a positive/negative pressure seal check as specified In appendix B -1 of the respiratory protection standard.

Record keeping

The following records shall be kept at the jobsite:

- Medical Evaluation Questionnaire result(s);
- Fit Test Records;
- Air Sampling Worksheets for each sample;
- Chain of Custody for each sample;
- Laboratory sample analysis for each sample;

Calculations of exposure;
Site worker exposure notification records; and
Training records.

The following records shall be kept at the Corporate Safety and Environmental Department:

Medical Evaluation Questionnaire result(s);
Fit Test Records;
Air Sampling Worksheets for each sample;
Chain of Custody for each sample;
Laboratory sample analysis for each sample; and
Calculations of exposure.

APPENDIX M

**MONITORING INSTRUMENTS: USE, CARE, AND
CALIBRATION**

MONITORING INSTRUMENTS: USE, CARE, AND CALIBRATION

Introduction

Prior to beginning any work at Posillico sites, a preliminary site evaluation must be conducted to identify the hazards or suspected hazards of the site. Through area and personal monitoring with direct-reading instruments and personal sampling pumps, hazardous conditions can be evaluated, and the proper level of protection chosen for the specific type of work activity. Monitoring equipment used by Posillico personnel includes the following: Noise monitoring meters, Noise Dosimeters, Sound Level Meters, Photoionization Detectors (PID); Personal Sampling Pumps; and, Colorimetric Tubes. This program contains a description of each type of monitoring equipment; hazards for which it can be used to monitor; Applications; Care and Maintenance; Limitations; and, Calibration.

Scope

This program covers the use, application, care and maintenance, limitations and calibration of PIDs, Personal Sampling Pumps and Colorimetric Tubes used by Posillico employees in hazardous materials operations. Posillico employees engaged in activities involving hazardous materials includes the Hazardous Waste Division and the Air Division.

Instrumentation

1. Photoionization Detectors (PIDs)

Introduction

PIDs measure a variety of gases in many industrial, as well as hazardous material, operations. These analyzers employ the principle of photoionization, which is the absorption of ultraviolet light by molecules, for detection.

The sensor consists of a sealed ultraviolet light. The energy ionizes many trace species (particularly organics) but does not ionize the major components of air, such as O₂, N₂, CO, CO₂, or H₂O. A chamber adjacent to the ultraviolet source contains a pair of electrodes. When a positive potential is applied to one electrode, the field created drives any ions, which are formed by absorption of the UV light, to the collector electrode, where the current (proportional to the concentration) is measured.

To minimize absorption of various sample gases, the ion chamber is made up of an inert fluorocarbon material, located at the sampling point, and a rapid flow of sampling gas is maintained through the small ion chamber volume.

The analyzer will operate either from a rechargeable battery for up to 10 hours, or continuously from the AC battery charger.

The useful linear range of the instrument is from a fraction of a part per million to about 2000 PPM.. A Summary of relative FID responses can be found in Attachment B. Calibration logs are in Attachment A.

Theory

Posillico utilizes the MiniRAE meter or equivalent as its PID. The MiniRAE is a portable, non-specific vapor/gas detector. The MiniRAE employs the principle of photoionization to detect a variety of chemical compounds, both organic and inorganic.

The MiniRAE contains an ultraviolet light source within its sensor chamber. Ambient air is drawn into the chamber with the aid of a small fan or positive displacement pump. If the ionization potential (IP) of any contaminant present in the ambient air is equal to or lower than the energy of the UV light source, ionization will take place, causing a deflection in the meter.

Response time for the MiniRAE is approximately 90% at 3 seconds. The meter reading is expressed in parts per million (PPM) relative to the calibration gas. All readings must be stated as equivalent readings that depend on the calibration gas being used to calibrate the MiniRAE. The calibration gas used is Isobutylene. Formerly, benzene was used as the calibration gas, but due to its hazard it is no longer used. Isobutylene, used as an equivalent in place of benzene, allows the instrument to provide results in benzene equivalents.

A list of IPs for various gases is provided in the latest edition of the NIOSH Pocket Guide to Chemical Hazards.

Basic Operation of the MiniRAE

A sample of air is drawn through a chamber and an ultraviolet light causes certain contaminants present to be broken apart into positive and negative charged particles. These charged particles are passed between electrodes and converted into an electrical impulse displayed on the readout.

Field Applications/Limitations

- a. The MiniRAE will only detect organic materials with an ionization potential less than 10.2eV, unless a greater voltage lamp is used (e.g. 10.6 eV).
- b. It is a non-specific detection device, but provides continuous information on airborne concentrations.
- c. It will not respond equally to all contaminants, and does not detect methane.
- d. High humidity will cause the instrument to give lower readings than the actual airborne concentration.
- e. Transfer of the instrument from a cold to a warm environment may cause condensation to form on the UV light source window, causing erroneous results.
- f. The readout may also be affected by electrical power lines or power transformers.
- g. Total concentrations are relative to the calibration gas used (isobutylene). Therefore, true concentrations cannot be identified. And, while the instrument scale reads 0-2000 ppm, response is linear (to isobutylene) from 0-600 ppm.

- h. Wind speeds of greater than 3 mph may affect the pump and readings, depending on the position of the probe relative to wind direction.

Calibration Procedure

Calibration Checklist: MiniRAE; Span gas (HNU Manufactured); Regulator; Tygon tubing.

Cleaning and Calibration Checklist: Same materials as above; MiniRAE cleaning compound; Fine screwdrivers, flat and Phillips head; Sonnicator; Drying/Toaster oven.

Inventory Items: Battery; Lamp; ION chamber; O-Rings; Screws.

- a. Obtain calibration gas, Isobutylene at Span 9.8 with 10.2 eV, manufactured by MiniRAE.
- b. Connect the calibration gas to the end of the probe extension. Open the gas flow valve.
- c. Turn the selection knob to the 0-200 range and observe the meter needle. The concentration should read the same as that listed on the cylinder. If not, the span should be adjusted until the meter reads accurately.
- d. The above procedure can be used until the span reading is approximately 5. At this time, the meter needs to be cleaned and internally calibrated. See Step 5.
- e. For cleaning and internal calibration:
 - Disassemble the probe, carefully removing the lamp.
 - Clean the lamp.
 - Clean the ION chamber and probe extension.
 - Remove the instrument from its housing to expose the calibration screw, located on the side of the instrument.
 - Once the probe parts have cooled (assuming it has been used), assemble the probe and connect it to the instrument.
 - Connect the calibration gas to the end of the probe extension and open the gas flow.
 - Turn the selection knob to the 0-200 range and observe the needle. The concentration should read the same as the concentration listed on the cylinder. If not, then the calibration screw must be adjusted with a fine screwdriver.

Maintenance and Calibration Records

- a. Protect the instrument from excessive abuse, such as moisture, shock, vibration, etc.
- b. Maintenance and calibration records will be recorded in a logbook specific to the MiniRAE meter. See PID Calibration Log in Attachment A.

Troubleshooting

Below are some points that should be considered if the instrument is not running appropriately:

- a. Check the battery condition. Recharge it if necessary.
- b. If unstable readings are obtained, a faulty probe cable or electrical connection could be the problem. To check this, hold the probe normally and flex the cable firmly. Watch the meter needle for fluctuations as the cable is flexed. Individual wires in the readout can be checked in a similar way.
- c. Check the coaxial connector on the amplifier board in the probe for any separation.
- d. Determine whether or not the meter is being used in close proximity to AC power lines or power transformers. This can cause the instrument to read erroneously. To check for this interference, zero the instrument in an electrically quiet area in the standby position, and then move the instrument into the area in question. If AC pick-up is a problem in the area, then the meter will indicate the magnitude of the problem.
- e. No response on any setting may mean that the meter movement is broken. Tip the instrument from side-to-side. The needle should move freely and return to zero.
- f. No response may mean that the electrical connection to the meter is broken. Check all wires leading to the meter and clean the contacts of the quick-disconnects.
- g. No response may mean that the battery is completely dead. Disconnect the battery and check the voltage with a volt-ohm meter. Also check the 2-amp fuse.
- h. If the meter responds in the BATT CHK mode, but reads zero or near zero for all other modes, the power supply may be defective.
 - Replace the power supply.
 - Check the input signal connection, which may be broken in the probe or readout.
 - Check the input connector on the printed circuit board inside the probe. It should be firmly pressed down.
 - Check the components on the backside of the circuit board. All connections should be solid and no wires should touch any other object.
 - Check all wires in the readout for solid connections.
- i. When the instrument responds appropriately in the "BATT CHK" and "STANDBY" positions, but not in the measuring mode, check to see that the light source is on.
- j. If the instrument responds correctly in all settings, but the signal is lower than expected:
 - Check the span setting.
 - Clean the window of the light source.
 - Check the fan for proper insertion.

- k. If the instrument response is slow and/or not reproducible, either the fan is operating improperly (check the fan voltage), or the instrument needs to be recalibrated.
- l. A low battery indication comes on if the battery charge is low. It will also come on if the ionization voltage is too high.

2. Colorimetric Indicator Tubes

Colorimetric indicator tubes are used to measure concentrations of specific gases and vapors, both organic and inorganic. When used appropriately, an indicator tube specific to a certain compound will produce a stain in the tube. The length of the stain (or color change) is proportional to the compound's concentration. Minimal operator training and expertise is required to operate this type of sampling instrument.

Limitations

Colorimetric indicator tubes are cross-sensitive, meaning that other compounds may trigger a similar response, which will give the user a false reading. The user must take this fact into account when he/she dealing with a situation containing unknowns.

Other limitations include individual interpretation concerning the length of the stain, the limited accuracy of the tube, and use in high humidity. The greatest sources of error occur in different interpretations that are obtained between individuals as to how far the stain has gone on the tube, and the tubes limited accuracy. Users must remember that the tubes are **25% accurate**. A simple calculation will tell the user the range in which the correct reading could possibly occur.

With this in mind, any discoloration on the tube should alert the user as to the appropriate protection required for the site. High humidity also affects the readings. Use in humid environments tends to clog the filtering medium, not allowing the gases or vapors to be drawn properly through the tube.

Maintenance and Calibration

Posillico utilizes the Draeger Model 31 Bellows-type pump for colorimetric tube sampling. General maintenance for this type of instrument includes: avoiding rough handling which may cause channeling; performing a leakage test before sampling each day (including documentation); calibrating the unit at least quarterly; providing an inventory of tubes, with expiration dates; and, appropriate storing.

Rough handling of this instrument may cause erroneous results due to channeling (leakage). Therefore, the unit must be handled carefully and not be stored outside of its protective carrying case when not in use.

It may be necessary to clean the rubber bung (tube holder) if a large number of tubes have been taken with the pump. A mild soap and water solution can be used.

Leak Test

Before each day's use, the user will perform a leak test on the instrument. This is a simple test and includes the following:

- a. Squeeze the bellows of the pump and insert an unopened detector tube, attempting to draw 100 ml of air.
- b. After a few minutes, examine the bellows for any expansion. Document the findings in the Site Monitoring Log Book. If the pump does not pass the leak test, it will be removed from service immediately and returned to the Facility Manager, to be sent out for repair.

Calibration Test

At least quarterly, the instrument will be calibrated for proper volume measurement. Equipment needed for the calibration test is: 100 ml burette and ring stand; stopwatch; soap solution; detector tube with both ends broken off; and, tygon tubing.

The calibration test is performed as follows:

- a. Break both ends of a colorimetric tube and connect it in-line with the pump.
- b. Connect the instrument directly to a bubble burette, and create a bubble inside the burette by touching the bottom of the burette to the soap solution.
- c. Squeeze the bellows to exhaust all the air out of the unit.
- d. Release the bellows and wait 5 minutes for the full volume of air to be drawn into the bellows. The bubble should stop between the 95 and 105 cc marks. Errors of $\pm 5\%$ are permissible; if the error is greater than 5%, return the pump to the Facility Manager, to be sent out for repair.

Inventory and Storage Requirements

To inventory the tubes, check the expiration date marked on the storage container. No tubes will be allowed for use past the manufacturer's expiration date. A listing of tubes that are readily available will be maintained by the Health and Safety Coordinator. This list will contain the name of the tube and the expiration date of those available. The list will be updated monthly and provided to the Facility Manager and each Field Division. All colorimetric tubes will be stored in the refrigerator in the Chemical Storage Area. Refrigeration helps to maintain shelf life. Any tubes that have been previously opened and inadvertently stored in the refrigerator will not be used in the field. Colorimetric tubes are not reusable, and any reuse will result in erroneous results.

3. Personal Monitoring Pumps

Personal monitoring involves the collection of an air sample by a sampling device worn by the worker. The sampling device is worn as close as possible to the breathing zone of the individual so that the data collected closely approximates the concentration inhaled. Personal monitoring pumps are used when it is necessary to monitor the workers' exposure to air contaminants.

Personal monitoring pumps can be classified into three basic categories:

- a. Low-Flow Pumps (0.5 - 500 ml/min);
- b. High-Flow Pumps (500 - 4500 ml/min);
- c. Dual Range Pumps.

Low-flow pumps are used for gas and vapor sampling. For example, the common flow rate for organic vapors is 200 ml/min.

High-flow pumps are used for particulate sampling as well as gas and vapor sampling. A common flow rate for fumes or dust sampling (i.e. zinc fume or asbestos) is 2 L/min.

Limitations

The major disadvantage in personal monitoring is the lag time between sampling and obtaining analysis results, which may take weeks, days or months if a remote laboratory is used. If a situation requires an immediate decision concerning worker safety, this can be a serious problem. Therefore, personal monitoring is rarely used for site characterization. Its main purpose is to assure effectiveness of work practice and engineering controls.

A second disadvantage is that multiple exposures may require the use of a variety of sampling media. Unfortunately, workers cannot carry multiple sampling media because of the added strain. Also, it is not usually possible to draw air through different sampling media using a single, portable battery operated pump. Several days may be required to measure the exposure of a specific individual to the variety of chemicals on site. Alternatively, if workers are in teams, a different monitoring device can be assigned to each team member.

Calibration

The following procedure will be used for calibration with a primary calibration source for all personal monitoring pumps used by Posillico. It has been taken from OSHA Instruction CPL 2-2.20B, Appendix 1-C, Manual Bubble Meter Technique.

Electronic bubble meters are also used as primary calibration sources. These meters have a digital read-out and the ability to give a printed copy for documentation of the pump flow rate. Posillico uses a Spectrex Model BFM-4000 for this purpose.

NOTE:

When calibrating with a bubble meter (either manual or electronic), the use of adapters can cause moderate to severe pressure drop in the sampling train, which will affect the calibration result. If adapters are used for sampling, then they should be used when calibrating.

- a. Connect the collection device, tubing, pump and calibration apparatus (see figure 4.1).
- b. Conduct a visual inspection on all tygon tubing connections.
- c. Wet the inside of a one-liter burette with a soap solution.
- d. Turn on the pump and adjust the pump rotameter to the appropriate flow rate setting.
- e. Momentarily submerge the opening of the burette in order to catch a film of soap.
- f. Draw 2 or 3 bubbles up to the burette in order to insure that the bubbles will complete their run.
- g. Visually capture a single bubble and time the bubble from 0 - 1000 ml for high flow pumps or 0 - 100 ml for low flow pumps.

- h. The timing accuracy must be within ± 1 second of the time corresponding to the desired flow rate.
- i. If the time is not within the range of accuracy, adjust the flow rate and repeat steps g and h until the correct flow rate is achieved.
- j. While the pump is running, mark the pump or record on the air sampling worksheet the position of the center of the float in the pump rotameter as a reference.
- k. Repeat bubble timing for 3 times. Calculate the average time given by these measurements.
- l. Calculate the flow rate as follows:
(NOTE: 1L = 1000 ml)

$$\frac{\text{Measured Volume (L)}}{\text{Average Seconds}} \times \frac{60 \text{ Seconds}}{1 \text{ Min}} = \text{L/min}$$

For Example:

$$\frac{1 \text{ L}}{38 \text{ sec}} \times \frac{60 \text{ Sec}}{\text{min}} = 1.6 \text{ L/min (round to m)} \\ \text{2 digits)}$$

Repeat the procedures for all pumps to be used for all calibrations involving the same sampling method.

Different contaminants have different sampling protocols, which may result in different calibration protocol. Contact the Posillico Certified Industrial Hygienist or Health and Safety Coordinator for chemical-specific calibration protocols.

Checklist for Using Personal Monitoring Pumps

- a. Look at measurement method in NIOSH Pocket Guide to Chemical Hazards (Latest edition).
- b. Calibrate with a primary calibration source, as described in the calibration procedures.
- c. Record information of air sampling worksheet and calibration logbook.
- d. Make sure battery is fully charged. Air pumps have NiCd battery, which creates a memory. Care needs to be used so as to not recharge a battery that has been used for only a few hours. Recharge a battery only if it has been used for at least 8 hours. There are chargers which will completely discharge a battery before recharging; or, the pumps can be left running until the battery is rundown completely and then recharged to eliminate this memory, also.
- e. Check sample requirement sheet or NIOSH method to see the minimum time/volume for the sample. An 8-hour sample period would allow for the best measure, giving an 8-hour TWA exposure.

4. Dust Monitoring Equipment

Dust in remediation sites tends to be quite unavoidable, especially in dry season or climate, considering that, by design, this industry creates ground disturbance. Drilling, blasting, loading, hauling, conveying rocks, crushing and screening them and finally transporting the final product outside the site are all dusty activities.

Several techniques have to be applied in parallel so the quantification of this phenomenon can be optimum.

- a. Visual monitoring of dust at site boundaries.
- b. Air sampling
- c. Dust monitoring equipment that might be configured to use the GSM data network to notify the management in charge of any exceedance.

Automatic weather stations may be installed to provide:

- a. Real time information about wind strength, wind direction and ground level moisture
- b. Long-range weather forecast so the quarrying activities can be scheduled accordingly

Dust Mitigating Techniques

- a. Watering of haul roads, benches, stockpiles: the quarry operators must be aware when hot, dry and windy conditions are likely to occur and they must take appropriate action in deploying water sprays before such conditions arise so as to prevent dust emissions. Surfactants usage allow the water to spread more effectively though being sometimes considered as environmental non-friendly.
- b. Limiting dust through technology (crusher enclosure, wet drilling, automatic sprinklers at strategic points, etc.).
- c. Re-scheduling, as far as possible, the operations that would be most likely to cause excessive dust emissions, especially in case of adverse ground moisture level or wind strength or direction.
- d. Understanding the prevailing wind direction by season and plan operations accordingly. Locate stockpile function of dominant wind in the area.
- e. Implementing speed restrictions within the quarry based on ground moisture level.
- f. Sealing roads. EPA has found that dust generated from unpaved haul roads accounts for over 75% of the industry total dust emissions. Cement, bitumen or polymers can be used to reduce or suppress dust.

A Dust Monitoring and Remedial Action Plan will be annually revised in consideration of operational experience gained and any verified complaints regarding dust emissions.

Residents will be informed when clearing; overburden removal or excavating operations are planned.

ATTACHEMENT A
PID CALIBRATION LOGS

APPENDIX N

DAILY SAFETY HUDDLE FORM



DAILY SAFETY HUDDLE FORM

Date:

Job Number:

Job Name:

Person Conducting Huddle:

Topics Discussed:

Identified Hazards:

Controls:

Sign In:

(Print)

(Sign)

Supervisor Signature:

Date:

APPENDIX O



SITE SAFETY AUDIT FORM

WEEKLY CONSTRUCTION SAFETY AUDIT

DATE OF INSPECTION: _____

PROJECT NAME: _____

INSPECTOR: _____

PROJECT NO: _____

CONSTRUCTION SAFETY CHECKLIST

	OK	Action Needed		OK	Action Needed
FIRST AID AND EMERGENCY			LADDERS AND SCAFFOLDING		
First aid supplies/eye wash	<input type="checkbox"/>	<input type="checkbox"/>	Proper Construction/Condition	<input type="checkbox"/>	<input type="checkbox"/>
Certified First Aiders/CPR	<input type="checkbox"/>	<input type="checkbox"/>	Proper placement & Secured	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Numbers Posted	<input type="checkbox"/>	<input type="checkbox"/>	Guardrails/ Toeboards/Screening	<input type="checkbox"/>	<input type="checkbox"/>
Access to site Clear	<input type="checkbox"/>	<input type="checkbox"/>	Working areas free of Debris	<input type="checkbox"/>	<input type="checkbox"/>
HOUSEKEEPING AND SANITATION			HOISTS, CRANES, AND DERRICKS		
Work Areas/Passageways Clear	<input type="checkbox"/>	<input type="checkbox"/>	Adequate Clearances	<input type="checkbox"/>	<input type="checkbox"/>
adequate and Clean	<input type="checkbox"/>	<input type="checkbox"/>	Load Capacity & Proper Usage	<input type="checkbox"/>	<input type="checkbox"/>
Available	<input type="checkbox"/>	<input type="checkbox"/>	Clearances to Energized Equipment	<input type="checkbox"/>	<input type="checkbox"/>
Provided & Used	<input type="checkbox"/>	<input type="checkbox"/>	Hand/Voice Communications	<input type="checkbox"/>	<input type="checkbox"/>
FIRE PREVENTION & PROTECTION			Swing Radius Protected	<input type="checkbox"/>	<input type="checkbox"/>
Fire Hazards Analyzed	<input type="checkbox"/>	<input type="checkbox"/>	Annual Inspection Current	<input type="checkbox"/>	<input type="checkbox"/>
Fire Extinguishers Maintained	<input type="checkbox"/>	<input type="checkbox"/>	EXCAVATION & SHORING		
Adequate Fire Extinguishers	<input type="checkbox"/>	<input type="checkbox"/>	Competent Person designated	<input type="checkbox"/>	<input type="checkbox"/>
Fire Extinguishers Inspected	<input type="checkbox"/>	<input type="checkbox"/>	Shoring for Soil & Depth	<input type="checkbox"/>	<input type="checkbox"/>
Proper Flammable Storage/ Use	<input type="checkbox"/>	<input type="checkbox"/>	Spoil Bank & Equip. Distances	<input type="checkbox"/>	<input type="checkbox"/>
No Open Flames	<input type="checkbox"/>	<input type="checkbox"/>	Access Provided	<input type="checkbox"/>	<input type="checkbox"/>
Gas Cylinders- Use & Storage	<input type="checkbox"/>	<input type="checkbox"/>	Water Controlled	<input type="checkbox"/>	<input type="checkbox"/>
Regulators not damaged	<input type="checkbox"/>	<input type="checkbox"/>	Equipment Ramps Adequate	<input type="checkbox"/>	<input type="checkbox"/>
Caps on while in storage	<input type="checkbox"/>	<input type="checkbox"/>	Utility Markout Completed	<input type="checkbox"/>	<input type="checkbox"/>
Cylinders secured	<input type="checkbox"/>	<input type="checkbox"/>	Utility Markout Maintained	<input type="checkbox"/>	<input type="checkbox"/>
PERSONAL PROTECTIVE EQUIPMENT			HANDLING AND STORAGE OF MATERIALS		
Hard Hats Worn at All Times	<input type="checkbox"/>	<input type="checkbox"/>	Proper Material Handling	<input type="checkbox"/>	<input type="checkbox"/>
Protection Worn at All Times	<input type="checkbox"/>	<input type="checkbox"/>	Stacks Secure/Neat/Protected	<input type="checkbox"/>	<input type="checkbox"/>
Protection as Required	<input type="checkbox"/>	<input type="checkbox"/>	No Excessive Heights	<input type="checkbox"/>	<input type="checkbox"/>
Required	<input type="checkbox"/>	<input type="checkbox"/>	Stored Away From Openings	<input type="checkbox"/>	<input type="checkbox"/>
and Fit Tested	<input type="checkbox"/>	<input type="checkbox"/>	Rigging inspected by competent person	<input type="checkbox"/>	<input type="checkbox"/>
the Site Plan	<input type="checkbox"/>	<input type="checkbox"/>	Proper Rigging selected/used	<input type="checkbox"/>	<input type="checkbox"/>
worn	<input type="checkbox"/>	<input type="checkbox"/>	Items stacked/racked or cribbed	<input type="checkbox"/>	<input type="checkbox"/>
Fit Tested	<input type="checkbox"/>	<input type="checkbox"/>	Rigging done by qualified person	<input type="checkbox"/>	<input type="checkbox"/>
checked daily	<input type="checkbox"/>	<input type="checkbox"/>	Rigging stored properly	<input type="checkbox"/>	<input type="checkbox"/>
ELECTRICAL INSTALLATIONS			MOTOR VEHICLES / HEAVY EQUIPMENT		
Electrical Dangers Posted	<input type="checkbox"/>	<input type="checkbox"/>	Brakes/ Lights/ Warning Devices	<input type="checkbox"/>	<input type="checkbox"/>
Lighting Adequate	<input type="checkbox"/>	<input type="checkbox"/>	Traffic Controllers as Required	<input type="checkbox"/>	<input type="checkbox"/>
Adequate Wiring	<input type="checkbox"/>	<input type="checkbox"/>	Heavy Equipment Wheels Chocked	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Safe/ Sufficient # of Outlets used properly	<input type="checkbox"/>	<input type="checkbox"/>	Seat Belts Used	<input type="checkbox"/>	<input type="checkbox"/>
tools inspected daily	<input type="checkbox"/>	<input type="checkbox"/>	Daily inspection of all mobile equip.	<input type="checkbox"/>	<input type="checkbox"/>
labeled	<input type="checkbox"/>	<input type="checkbox"/>	Spotter for backing vehicles	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	Cabs clean of trash & debris	<input type="checkbox"/>	<input type="checkbox"/>

Construction Safety Checklist

	OK	Action Needed		OK	Action Needed
TOOLS, HAND & POWER			MISCELLANEOUS		
Proper Tool For Each Job	<input type="checkbox"/>	<input type="checkbox"/>	Safe Entrances/ Exits Provided	<input type="checkbox"/>	<input type="checkbox"/> Daily
Inspection and Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	OSHA Act & Warning Signs Posted	<input type="checkbox"/>	<input type="checkbox"/> Proper
Instruction In Use	<input type="checkbox"/>	<input type="checkbox"/>	Task Safety Training Provided	<input type="checkbox"/>	<input type="checkbox"/> All
Required Guards In Place	<input type="checkbox"/>	<input type="checkbox"/>	Public & Property Protected	<input type="checkbox"/>	<input type="checkbox"/> GFCI's
used on all power cords	<input type="checkbox"/>	<input type="checkbox"/>	Proper Welding & Cutting	<input type="checkbox"/>	<input type="checkbox"/>
BARRICADES AND RAILINGS			Proper & Safe Demolition	<input type="checkbox"/>	<input type="checkbox"/>
Floor Openings Protected/marked	<input type="checkbox"/>	<input type="checkbox"/>	Spill Containment kits on-site	<input type="checkbox"/>	<input type="checkbox"/>
Midrails & Toeboards in place	<input type="checkbox"/>	<input type="checkbox"/>	Safety Nets/Catch Platforms	<input type="checkbox"/>	<input type="checkbox"/>
Open Sided Floors Protected	<input type="checkbox"/>	<input type="checkbox"/>	Stairway Railings/ Stairs Fille	<input type="checkbox"/>	<input type="checkbox"/>
Trenches/ Excavations Protected	<input type="checkbox"/>	<input type="checkbox"/>	Lock Out/ Tag Out as Required	<input type="checkbox"/>	<input type="checkbox"/>
Guardrails withstand 200lb force	<input type="checkbox"/>	<input type="checkbox"/>	Conveyor Belts, Inspected,	<input type="checkbox"/>	<input type="checkbox"/>
Scaffolds checked daily-Competent Per .	<input type="checkbox"/>	<input type="checkbox"/>	Impalement Hazards Protected	<input type="checkbox"/>	<input type="checkbox"/>
			Required Rebar caps in place	<input type="checkbox"/>	<input type="checkbox"/>
			Mobile Equipment secured on barges	<input type="checkbox"/>	<input type="checkbox"/>

	OK	Action Needed	POWDER-ACTIVATED TOOLS	OK	Action Needed
TRAFFIC MAINTENANCE			Laws and ordinances complied with	<input type="checkbox"/>	<input type="checkbox"/>
Cones/Barrels/Barricades in proper position	<input type="checkbox"/>	<input type="checkbox"/>	Operators qualified – vendor trained	<input type="checkbox"/>	<input type="checkbox"/>
Cones/Barrels/Barricades in good condition	<input type="checkbox"/>	<input type="checkbox"/>	Controlled storage	<input type="checkbox"/>	<input type="checkbox"/> Signs
Signs mounted properly	<input type="checkbox"/>	<input type="checkbox"/>	Competent instructions & supervision	<input type="checkbox"/>	<input type="checkbox"/> Lane
visible and in good condition	<input type="checkbox"/>	<input type="checkbox"/>	Inspection & maintenance	<input type="checkbox"/>	<input type="checkbox"/> Night
markings visible and in proper position	<input type="checkbox"/>	<input type="checkbox"/>	Protection of other workers	<input type="checkbox"/>	<input type="checkbox"/> Arrow
lighting adequate for safe operations	<input type="checkbox"/>	<input type="checkbox"/>	Safety goggles or face shield	<input type="checkbox"/>	<input type="checkbox"/> Work zones
boards working properly and secured	<input type="checkbox"/>	<input type="checkbox"/>	Licensed for each type of tool used	<input type="checkbox"/>	<input type="checkbox"/>
secure to unauthorized entry	<input type="checkbox"/>	<input type="checkbox"/>			

CONFINED SPACE PROCEDURE

PILE DRIVING

Confined Space entry training conducted	<input type="checkbox"/>	<input type="checkbox"/>	Proper storage of piles	<input type="checkbox"/>	<input type="checkbox"/> Signs
posted to identify confined spaces	<input type="checkbox"/>	<input type="checkbox"/>	Material handling controlled	<input type="checkbox"/>	<input type="checkbox"/> Personal
protective equipment specified	<input type="checkbox"/>	<input type="checkbox"/>	Equipment inspected and maintained	<input type="checkbox"/>	<input type="checkbox"/> Standby person
<input type="checkbox"/> <input type="checkbox"/> Piledriving rigs properly supported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Emergency equipment for standby person	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Ladders on frames and stirrups used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Permit required precautions taken	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Cofferdams maintained and inspected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> All required signatures for entry/testing	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Adequate water pumping available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Permits posted prior to start of work	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Tag lines used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Permits retained a minimum of two years	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Safety harnesses and lifelines used	<input type="checkbox"/>	<input type="checkbox"/>	Proper signaling	<input type="checkbox"/>	<input type="checkbox"/>
			Barricaded as required	<input type="checkbox"/>	<input type="checkbox"/>
			Ear protection area posted	<input type="checkbox"/>	<input type="checkbox"/>

ITEMS NOTED/REMARKS:

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Was Subcontractor's work also inspected?	YES	NO
Did subcontractor participate in inspection?	YES	NO
Are any items found to be "Imminent Danger"?	YES	NO

Inspector's Signature

Project Manager's Signature

Area Manager's Signature