MAXYMILLIAN Technologies
1601 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

LETTER OF TRANSMITTAL

Submittal No.:002B

TO: **Ulrick W. Samuel,**
Project Specialist
Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, New York 10003
SAMUELU@coned.com
(718) 204-4010

MT JOB NO. 11025 **Date:** 10/03/11

RE: Former Kent Avenue Generating Station – Closure of Ash Pit No. KA-03-11AP
500 Kent Avenue
Brooklyn, New York

WE ARE SENDING YOU ☒ **Attached** ☒ **Other: As Below**

COPIES		DESCRIPTION *RESUBMITTAL*
1	SPEC:	01410 CONTRACTOR'S HEALTH AND SAFETY PLAN
	Item:	HEALTH AND SAFETY PLAN - *Revised* Includes Matrix, Body, Attachments and Appendices (Word document)
	Author	Maxymillian Technologies, Inc.

THESE ARE TRANSMITTED as checked below:

☐ For approval ☒ For your use ☐ As requested ☐ Return **comments** for distribution

REMARKS:

TRANSMITTED ELECTRONICALLY

cc: *D. Rubin, B. Cohen, M. Lombardi, M. Musto, J. Baratta, S. Ash J. Francescon, D. MacNeal – NYSDEC, MJM, GAH, JS, S. Smith*

SIGNED S Kelley

If enclosures are not as noted, please notify us at once.

Sara Kelley, Project Engineer

COMMENTS BY: **Tom O'Connell** **DATE: 09/29/11**	**01410 HEALTH AND SAFETY** Health and Safety Plan Submittal # 002B	**RESPONSE/CORRECTIONS BY: MT** **DATE 09/30/11**
	(Comment 01) Section 1.1 - Need a statement acknowledging the Con Edison Rules We Live By (CEHSP A32.00), and that these 'Rules' will be adhered to.	Section 1.1 amended – "While on this project, MT will acknowledge Con Edison's "Rules We Live By" (CEHSO A32.00). MT employees will be trained on the applicable Rules We Live By, reporting procedure, and consequences. "Rules We Live By" must be reinforced, when applicable, in job briefings. "Rules We Live By" must be incorporated into the scope of safety field observations and inspections."
	(Comment 02) Section 2.1 - There is no Con Edison specific Hot Work procedure our Contractors need to follow. However, specific items of PPE (FR clothing) is included in CEHSP S05.03…	CEHSP S05.03 was referenced in sections 2.1 and 10.9 and attached in Appendix F.
	(Comment 03) Section 3.2.4 - No, Con Edison will not tell MT who can be a substitute SHSO. We will only let you know if the designated delegate is considered acceptable or not based on review of criteria noted in the Bid Documents.	Removed Statement from Section 3.2.4 and replaced with- " (or qualified alternate)"
	(Comment 04) Figure 4-1 - This looks like the original photo, not the updated photo showing a site cleared of the generating station. Please replace with the updated photo.	Inserted
	(Comment 05) Section 4.3.2.3 - Does this mean a bucket truck will not be used on this project?	No Bucket Truck will be used on-site. 4.3.2.3 was re-written.
	(Comment 06) Table 4-1 (Activity Hazard Anylsis Matrix)- How will divers get in and out of Ash Pit?	Table 4-1 amended – Under Temperature Extremes – "Divers will utilize a ladder to enter and exit the Ash Pit.".
	(Comment 07) Section 8.1.1 - I thought there would be no excavations?	No excavations will be done on-site. Removed Statement from 8.1.1 and replaced with- "High priority areas of monitoring include working near Ash Pit, excavator cabs, and spoils piles"

COMMENTS BY: Tom O'Connell DATE: 09/29/11	01410 HEALTH AND SAFETY Health and Safety Plan Submittal # 002B	RESPONSE/CORRECTIONS BY: MT DATE 09/30/11
	(Comment 08) Section 10.1 - Need to know how the boundaries of these zones will be delineated (construction netting, barrier tape and stations, etc. It's our experience if the zones are not delineated contaminants get tracked out of the zones controlled…	Section 10.1 amended - "This area will be denoted with orange construction fencing and will be reviewed at toolbox safety meetings."
	(Comment 09) Appendix B - MSDS - Only certain Portland Cements are approved for use. We'll need to see which one(s) MT will want to use…	Removed. MSDS will be submitted under separate cover for approval.
	(Comment 10) Appendix B - MSDS - Same comment as above… (as Comment 9)	Removed. MSDS will be submitted under separate cover for approval.
	(Comment 11) Hazard Communication Standard (1.1) - I didn't see a comment that only Con Edison approved chemicals may be brought to the site. Please acknowledge this requirement.	Hazard Communication Standard Section 1.0 amended "Only Con Edison approved chemicals may be brought and used on the jobsite. "
	(Comment 12) Appendix F – Hot Work - We don't have a CEHSP that pertains to Contractors – except that CEHSP S05.03 states what Contractors are to wear during hot work activities.	CEHSP S05.03 was referenced in sections 2.1 and 10.9 and attached in Appendix F.

Health and Safety Plan

For:
Closure of Ash Pit
Former Kent Avenue Generating Station
No. KA-03-11AP
500 Kent Ave
Brooklyn, New York

Perfect Commerce Event # 35481

Prepared For:

conEdison
a conEdison, inc. company

Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, NY 10003

Prepared By

MAXYMILLIAN Technologies

1801 East Street
Pittsfield, MA 01201
MT Project No: 11025

September 2011

Joseph L. Sbarra, CIH

JOSEPH L. SBARRA, C.I.H.
CERTIFIED INDUSTRIAL HYGIENIST
TRC ENVIRONMENTAL CORPORATION

MAXYMILLIAN TECHNOLOGIES, INC.
Reviewed For Submission
Spec Sect # 01410 Trans # 2B
Date: 10/03/11 By: SJK

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LIST OF ACRONYMS AND ABBREVIATIONS

ABIH	American Board of Industrial Hygiene
ACGEI	American Conference of Governmental Industrial Hygienists
CIH	Certified Industrial Hygienist
Con Edison	Consolidated Edison Company of New york, Inc.
CRZ	Contamination Reduction Zone
DOT	Department of Transportation
EPA	U.S. Environmental Protection Agency
EZ	Exclusion Zone, potential contact with contamination area
HASP	Health and Safety Plan
SSHO	MT's Site Safety and Health Officer
LHCP	Licensed Health Care Professional
MSDS	Material Safety Data Sheet
MT	Maxymillian Technologies, Inc.
NYSDEC	NY State Dept. of Environmental Conservation
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyls
PM	MT's Site Project Manager
PPE	Personal Protective Equipment
SS	MT's Site Supervisor
SZ	Support Zone
VOC	Volatile Organic Compound

1.0 PROJECT IDENTIFICATION

Site Name: Con Edison Kent Ave - Ash Pit Remediation Project
Site Location: 500 Kent Ave
Brooklyn, NY

Con Edison Personnel:

Project Manager	David B. Rubin
Construction EH&S	Thomas F. O'Connell
Construction Manager	Michael Lombardi
Project Specialist	Ulrick W. Samuel
Chief Construction Inspector	Mike Musto or Joe Baratta

Maxymillian Technologies, Inc. (MT) Personnel:

Off-Site Project Manager	Matt McCarthy
On-Site Site Supervisor	Jim Smith
Health & Safety Officer	Sarah Smith
Supervisor / Quality Control Engineer	Chris Jones or Dan Dargie
Certified Industrial Hygienist	Joseph L. Sbarra, CIH

1.1 Maxymillian Technologies Commitment to Safety and Health

The MT commitment to safety and health statement is as follows:

The health and safety of MT employees, subcontractors, and the public is our #1 priority. MT has established a goal of **zero incidents** for this project. MT will plan and conduct all tasks and activities focusing on the safety of all personnel involved. MT will exercise all due diligence in identifying any potential hazard specific to this project. All work at the project will be conducted in a manner which minimizes the probability of near misses, equipment/property damage or personal injury. This HASP is a key element in the proper planning of project work, which is necessary to assure that the goal of **zero incidents** is achieved. Prior to project start, MT will communicate each potential hazard to all personnel including measures to reduce or eliminate the hazard. MT and its subcontractors shall review these hazards at the documented daily toolbox meetings. Each person entering the site will be required to acknowledge receipt of this information by signing the HASP. MT will provide a documented verbal full HASP review to all their employees and subcontractors prior to work commencing on site Day 1 and on a monthly schedule after that. These reviews are meant to be complete, one-time, reviews and "piecemeal reviews" are not to be performed. Should new workers come to the site to work they will also be given a verbal full HASP review (or as appropriate for the phase of work the project is in) prior to them starting work on site.

While on this project, MT will acknowledge Con Edison's "Rules We Live By" (CEHSO A32.00). MT employees will be trained on the applicable Rules We Live By, reporting procedure, and consequences. "Rules We Live By" must be reinforced, when applicable, in job briefings. "Rules We Live By" must be incorporated into the scope of safety field observations and inspections.

2.0 INTRODUCTION

2.1 Scope and Application of HASP

The purpose of this HASP is to define the requirements and designate protocols to be followed to protect workers and the public from potential hazards posed during work activities at the site. Applicability extends to contractors, subcontractors, governmental officials, and visitors that enter the site. For the purposes of this HASP, the term "site" shall be used to identify construction and remedial areas associated with this project and under direct control of MT.

During development of this HASP, consideration was given to current standards as defined by OSHA, as well as potential health effects and standards for known contaminants, and procedures designated to account for the potential for exposure to these identified substances. In addition, select Con Edison programs and MT Corporate safety programs are also incorporated into the HASP. Specific reference documents include, but are not limited to:

- 29 CFR Part 1910;
- 29 CFR Part 1926;
- MT Corporate Health & Safety Programs;
- Consolidated Edison (Con Ed) Programs
- Select Con Ed Corporate Environment Health and Safety Procedures (CEHSP). The following are included in Appendix F:
    - CEHSP E08.02 - Noise Construction and Utility Activities;
    - CEHSP S05.03 - Personal Protective Equipment – Protective Clothing;
    - CEHSP S12.00 - Lockout / Tagout Procedures;
    - CEHSP S17.01 - Electrical Enclosed Spaces (as applicable);
    - CEHSP A28.00 - Calling a Time Out,;
    - CEHSP A32.00 - Rules We Live By;

MT and subcontractors must be knowledgeable of the above mentioned Con Edison's "Rules We Live By", reporting procedures and consequences. These procedures establish a consistent approach to communicating and reinforcing the importance of following critical safety work practices designed to protect employees, contractors, and the public.

This HASP will be implemented at a multi-employer work site. Information and references within this plan shall in no way imply or alleviate any site subcontractor from their responsibility to comply with any and all applicable State or Federal statutes or regulations regarding the completion of this project. It is the responsibility of each employer to communicate and coordinate work planning so as to prevent their work activities from becoming a potential hazard to other workers at the project site. Failure to communicate will not alter an employer's responsibilities or obligations for any resulting injuries to their employees. All MT employees

and subcontractors involved in this project shall adhere to this Plan, and to all revisions thereof. This Plan does not supersede any contractor safety and health policies, protocols, or requirements that may be more stringent.

This plan must be verbally given by MT to all project personnel, and an agreement to comply with the requirements contained herein, must be signed by all project personnel and visitors who may enter areas of possible exposure on the site, prior to their commencement of work (HASP Acknowledgement, Attachment 1).

In addition to compliance with this plan, contractors and visitors at this site are expected to comply with all applicable government safety and environmental health regulations as well as Con Edison and MT policies. Applicable standards include, but are not limited to:

- OSHA HAZWOPER (29 CFR 1926.65 and 1910.120);
- OSHA Hazard Communication (29 CFR 1910.1200);
  (See also MT's Program in Appendix C of this HASP)
- OSHA Lockout-Tagout (29 CFR 1910.147);
  (See also MT's Program in Appendix D of this HASP)
- OSHA Construction standards (29 CFR 1926), such as:
  - Fall Protection;
  - Trenching, Shoring and Excavation;
  - Cranes and Derricks.

2.1.1 Changes to the HASP

Although this plan focuses on the specific work activities planned for this site, it must remain flexible because of the nature of this work. Conditions may change and unforeseen situations may arise that require modifications from the original plan. Therefore, MT only makes representations or warranties as to the adequacy of the HASP for currently anticipated activities and conditions. This flexibility allows for modification of the HASP by the Project Manager and Certified Industrial Hygienist.

All changes to procedures in this plan will be documented in writing using the HASP Addendum form provided in Attachment 9. Each Addendum to the HASP shall be submitted to Con Edison for review. Work cannot proceed on the changed condition/added task until Con Edison considers MT's Addendum acceptable. All HASP Addenda will be communicated to the workforce.

2.1.2 Non-Compliance With HASP

Disregard for the provisions of the HASP will be deemed just and sufficient cause for immediate stoppage of work and/or termination of activities without compromise or prejudice.

In the event that any project personnel, visitor, or inspector does not adhere to the provisions of the HASP, he/she will be requested to report immediately to the Site Safety and Health Officer (SSHO). All non-conformance incidents will be recorded in the site log by the SSHO, and will be reported to the owner at the time of incident.

2.2 Applicability to Visitors & Inspectors

All visitors and inspectors entering the site will be required to attend a documented verbal full HASP review (or Sections thereof as applicable) briefing given by MT or their designee and sign a written compliance statement (Attachment 1) stating that they are knowledgeable and will comply with all provisions of this HASP. In addition, visitors will be expected to comply with all OSHA requirements, such as medical surveillance, training, and respiratory protection. MT shall provide and care for all personnel protective equipment used by MT and any other subcontractors. All visitors and inspectors will provide and care for their own protective equipment or arrange to acquire personal protective equipment (PPE) from MT.

All other visitors entering the site, but not performing work will be required to receive an abbreviated HASP briefing covering site specific operational hazards and emergency procedures.

2.3 No Smoking Policy

There will be no smoking allowed anywhere within the fence-line on the project site, including within construction trailers. Signs will be posted throughout the site to notify site personnel of this requirement.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

MT has primary responsibility for supplying personnel and equipment for operations.

Off-Site Project Manager.....Matt McCarthy
On-Site Site Supervisor.....Jim Smith
Health & Safety Officer.....Sarah Smith
Supervisor / Quality Control Engineer .....Chris Jones or Dan Dargie
Certified Industrial Hygienist .....Joseph L. Sbarra, CIH

3.2.1 Off-Site Project Manager

Provides office oversight and project support and responds to Owner and Engineer concerns. Monitors work progress to assure schedule milestones are achieved. Coordinates preparation of pre-construction submittals, execution of vendor and material purchase orders and subcontract

agreements. Assures construction quality control/quality assurance requirements are being performed on-site; attends weekly progress meetings, and all additional meetings requested by the client, or necessary for project success.

3.2.2 Site Supervisor

The MT Site Supervisor (SS) will be responsible for the management of all aspects related to the performance of field work. He will serve as liaison among MT Headquarters, MT Engineering, MT Field Staff, Con Edison, and Shaw. He will coordinate all activities pertaining to the implementation of the project.

The SS will also be responsible for managing all onsite activities during the implementation of the project. In addition, his responsibilities will include the supervision of all project field work including site preparations and site operations.

3.2.3 Certified Industrial Hygienist

The Certified Industrial Hygienist (CIH) will assist in development and implementation of the HASP. The CIH has signed the cover of this plan and his credentials are to be found in Attachment 8, Joseph Sbarra.

3.2.4 Site Safety and Health Officer

The Site Safety and Health Officer (SSHO) will establish and oversee environmental and safety issues for all aspects of the field work. This includes providing training protocols, implementing programs, and documenting programs. He will ensure that all health and safety monitoring is performed in accordance with 29 CFR 1910.120 and that health and safety documents are maintained onsite as required. The SSHO will ensure compliance with all safety requirements of OSHA, EPA, Con Edison, and MT.

The SSHO will be responsible for conducting safety inspections and meetings. He will also conduct daily documented Toolbox Meetings (safety meetings). He will ensure that all health and safety documents are maintained onsite as required. All MT personnel will be required to attend any safety meetings conducted by the SSHO or his appointed delegate.

The SSHO shall at a minimum carry the following responsibility/authority:

- Be present at all times during site operations (or qualified alternate);
- Has authority to stop operations for health and safety issues;
- Determine the merits of health and safety issues identified by operating supervisors and resolving “Time Out’s” if possible;
- Evacuate the site, if necessary;
- Monitoring workers for signs of stress and fatigue;
- Reevaluating site conditions on an on-going basis. Coordinating protective measures/ corrective measures with the SS: including engineering controls, work practices and personal protective equipment;

- Initiating revisions of the HASP as necessary for new tasks or modifications of existing operations and submitting to the Project Safety Manager and CIH for approval;
- Performing air monitoring as required by the Site Specific Health and Safety Plan;
- Assisting the PM and SS in incident investigations;
- Preparing permits for special operations, e.g. hot work, lockout-tagout, etc.;
- Conduct site-specific health and safety training to verbally review the HASP and any HASP Amendments with all site personnel.

3.2.5 Supervisor / Quality Control Engineer (QCE)

The QCE will establish and oversee general constructability issues for all aspects of the field work. This includes crew management and equipment oversight. The CQE will work with the SS to ensure that work is being performed to the project plans and specifications.

3.2.6 Equipment Operators

Equipment Operators will be trained and experienced in the safe operation of construction equipment and will hold valid operating licenses for the piece(s) of equipment they are assigned to operate. They will also be required to participate in site training to ensure compliance with safe practices for working with hazardous materials (if working with them). They will perform any necessary emergency operations as directed by the Project Manager.

3.2.7 Site Personnel

Site personnel shall be comprised of ALL site personnel inclusive of MT, its subcontractors, the client and/or client representatives. Site personnel will safely complete the on-site tasks required while maintaining compliance with all safety and health procedures, have an awareness of emergency procedures and evacuation routes, adheres to the requirements of the HASP and reports all injuries or unusual events to their supervisor and the SSHO. Any and all personnel on site can call a Time Out if discussions with his/her Supervisor if necessary.

4.0 SITE HISTORY, DESCRIPTION & HAZARD ANALYSIS

This section of the HASP provides an overview of the scope of project activity, as well as a historical analysis of the project areas. The purpose of this section is to review the potential project chemical, physical, and biological hazards to which workers may be exposed during site operations.

4.1 Site Description and History

The former Con Edison Kent Ave Generating Station is located at 500 Kent Avenue, Brooklyn, NY. The site is bounded by Division Ave to the north, Brooklyn Navy Yard to the south, Kent Avenue to the east and Wallabout Channel to the west. The ash pit is located in the northwestern portion of the site, between the former generating station building and Wall about Channel, an inlet to the East River. The pit appears to have been constructed in the late 1920s or 1930s. It is constructed of poured concrete walls underlain by iron reinforcing bars. The dimensions of the pit are approximately 68’ x 27’ x 24’ deep. It is currently filled with sediment/sludge, trash, debris (concrete, rocks, timbers, etc.) and standing water.

FIGURE 4-1 SITE LOCATION MAP
500 Kent Avenue, Brooklyn, NY, 11211

4.2 Scope of Work

The anticipated scope of work for the project is as follows:

- Mobilize to Site
- Utility Markout
- Setup Temporary Utilities and Facilities
- Preconstruction Survey
- Installation of Erosion Controls and Pit Fall Protection
- Construction of Construction Entrance and Sediment Processing Area
- Removal of course debris from the ash pit and adjoining pump house pit;
- Vacuum dredging of the ash pit for sediment removal and processing;
- Excavation of soil and subsurface remnant structures from the ash pit pump house chamber;
- On-site dewatering of the sludge using Smartfeed and Geotube technology (Mineral Processing Services) ;
- Design, installation, operation, and maintenance of an on-site water treatment system (GWTT) to be used (as necessary) to meet NYSDEC discharge criteria;
- Treatment of water contained in the pit and discharge back to the ash pit;
- Subtech Services- Divers
- Inspection, coring, and repair of ash pit
- Disposal of debris and materials from demolition;
- Disposal of decanted sediment to an off-site permitted facility;
- Backfilling of the ash pit and pump house pit with low density cellular concrete; and
- Installation of structural reinforced concrete slab.
- Demobilize from Site

4.3 Chemical, Physical, and Biological Hazards

4.3.1 Chemical Hazards

Data from previous investigations indicates that soils, sediments and groundwater are contaminated with VOCs, SVOCs, Metals, and PCBs.

Additionally, as with any construction site, hazardous materials can be expected to be present in various everyday forms. Some common types may include:

- Fuel and Lubricants (e.g., gasoline, diesel fuel, hydraulic oil);
- Cleaning agents (e.g., detergents, respirator sanitizes, hand cleaners);
- Miscellaneous chemicals (e.g., marking paint, bulk office supplies, SmartFeed and other water filtration media).

A Material Safety Data Sheet (MSDS) is required for all hazardous materials brought on site pursuant to 29 CFR 1910.1200. The SSHO will maintain a central file, accessible to all workers, which contains all Material Safety Data Sheet for any hazardous materials on the site. Appendix B of this plan has some MSDSs for materials expected to be brought to the site by MT.

MSDSs will accompany all chemicals to be brought on site. All chemicals brought onsite must be pre-approved by Con Edison. Chemicals not approved are to be removed from the site immediately, at no cost to Con Edison.

4.3.2 Physical Hazards

Construction sites may present numerous safety hazards. As such, workers must be aware of these hazards and exercise caution at all times. All unsafe conditions must be reported immediately to the SSHO.

4.3.2.1 Noise

Noise is a potential hazard associated with the operation of the heavy equipment, power tools, pumps and generators. Excessive noise presents two potential problems for workers at the site. First, it hinders communication between workers. Second, excessive noise exposures (to both continuous and impact noise) can have adverse effects on a person's hearing. These adverse effects include both temporary and permanent hearing damage. Noise can also become a nuisance for the nearby community. Please see MT's Construction Noise Mitigation Plan under separate cover.

4.3.2.2 Temperature Extremes

As the work is scheduled to take place during the winter months, 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.

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.

4.3.2.3 Slips, Trips, and Falls

Working in and around the site will pose slip, trip, and fall hazards due to uneven terrain, slippery surfaces from rain or ice, open edges of the Ash Pit and bulkhead (if fencing is removed for site work). Potential adverse health effects include falling to the ground and becoming injured or twisting an ankle or falling into the pit or over the bulkhead into Wallabout Channel.

4.3.2.4 Fire and Explosion

When excavating, operating heavy equipment & generators, performing hot work (cutting, welding or brazing), during fueling, the opportunity of encountering fire and explosion hazards exists. During excavation underground utilities could be encountered that could cause an explosion or facilitate an explosion. In addition combustible and flammable liquids are used for equipment and generators; mishandling of these fuels can also present a fire and explosion hazard

4.3.2.5 Manual Lifting

Manual lifting of heavy objects and material handling will be necessary. Failure to follow proper lifting technique can result in back injuries and strains. 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.

4.3.2.6 Working On or Near Water

No planned activities involve work within Wallabout Channel. However, sediment dredging will require work near water. Therefore, there is the potential for slips/trips/falls due to slippery surfaces when performing work adjacent to the Ash Pit. Potential hazards include fractures, twisted ankles, hypothermia, and even drowning.

4.3.2.7 Heavy Equipment Operations/Materials Handling

Heavy equipment and motor vehicle incidents are the number one cause of occupational fatalities, accounting for one in three deaths. Fifty percent or more of vehicle safety incidents occur while backing up. Hazards include being struck by equipment/falling loads or caught in/between; and can result in serious injury or death.

4.3.2.8 Falls from Elevation

Falls can occur when working from heights, specifically when performing work adjacent to the Ash Pit. Falls can also occur when getting in or out of heavy equipment, especially during wet or icy weather conditions. Falls are one of the leading causes of serious injuries and fatalities in construction.

4.3.2.9 Electrical Hazards

Encountering underground utilities during intrusive operations electrical storms, the use of power tools and welders, and use/misuse of extension cords may pose electrical hazards to workers. Additionally, electrical hazards can exist in project trailers, especially if circuits are overloaded. Potential adverse effects of electrical hazards include fires, burns and electrocution, which could result in death.

4.3.2.10 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 tools and equipment 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.

4.3.2.11 Onsite Laboratory

Mineral Processing Services will be utilizing an onsite laboratory. Reference Appendix F for further details on chemical and hazardous exposures.

4.3.3 Biological Hazards

Potential biological hazards on the site are relatively minor yet not insignificant and may include the following: ticks, bees, mosquitoes and other insects which may carry disease; rats/rodents, dogs, or other wildlife may be present posing the potential for bites and disease, such as rabies; poison ivy, oak, or sumac may be found in overgrown areas posing skin hazards.

Bloodborne Pathogens:
Infectious wastes include human waste, animal waste and objects and materials contaminated with blood and body fluids containing disease-causing micro-organisms. Often these biological wastes are contaminated with germs, which can make you ill. Major concerns are the spread of hepatitis B and AIDS.

Tetanus (Clostridium tetani)
Clostridium tetani is one of the most poisonous biological substances known. Clostridium tetani is a disease-causing bacterium primarily found in soil and in animal intestinal tracts, and thus in animal feces.

Clostridium tetani infection causes spastic paralysis, or painful tightening of the muscles. It is commonly called "lockjaw" because it leads to the patient being unable to open his mouth or swallow. Initial symptoms are mild muscle contractions at the location of the wound. Without treatment, spasms become worse and spread throughout the body, including the spine and brain. Tetanus results in death when the respiratory system becomes paralyzed.

People can become infected with Clostridium tetani through a puncture wound, such as a wound that occurs from stepping on a nail, being bitten by a dog or being stabbed with a sharp object. People also can become infected with Clostridium tetani by spores entering the body through a cut, burn or other sore.

Several vaccines are available to prevent tetanus and are typically provided in early childhood in combination with the vaccines for diphtheria and pertussis, in an injection called DTP. A booster shot is recommended every seven to ten years, to prevent this disease from developing. Treatment for tetanus includes antibiotics and an antitoxin.

Mosquito- Borne Disease - West Nile Virus

West Nile encephalitis is an infection of the brain caused by the West Nile virus, which is transmitted by infected mosquitoes. Following transmission from an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of the brain tissue. However, most infections are mild and symptoms include fever, headache and body aches. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and rarely, death. Persons over the age of 50 have the highest risk of severe disease.

To avoid being bitten by the mosquitoes that cause the disease, use the following control measures: If possible, stay inside between dusk and dark. This is when mosquitoes are most active. When outside between dusk and dark, wear long pants and long-sleeved shirts. Spray exposed skin with an insect repellent, preferably containing DEET.

Sun Exposure

Employees are encouraged to liberally apply sunscreen, with a minimum sun protection factor (SPF) of 15, when working outdoors to avoid sunburn and potential skin cancer, which is associated with excessive sun exposure to unprotected skin. Additionally, employees should wear safety glasses that offer protection from UVA/UVB rays.

4.4 Task-Specific Hazard Analysis

The evaluation of potential health and safety hazards related to this project is based upon the knowledge of site background and proposed scope of work. Anticipated risks posed by the specific operations are covered by this HASP.

This section of the HASP provides a breakdown of the hazards and control measures for each principal task. Table 4-2 is the Activity Hazard Analyses (AHA) matrix that identifies hazards associated with each task in the Scope of Work and control measures to be taken to reduce hazards and protect workers. The AHAs will be field checked by the PM, SS and SSHO on an ongoing basis and revised as necessary. All revisions will be communicated to the work crew.

Table 4-1
Activity Hazard Analysis Matrix

Tasks	Hazards (Task # Where Hazards are Present)	Control Measures
1. Mobilize and Demobilize 2. Utility Mark Out 3. Setup Up Utilities/Facilities 4. Pre-Construction Survey 5. Installation of Erosion Controls/Pit Fall Protection 6. Construction of Entrance & Sediment Processing Area 7. Pit Material Removal 8. Materials Management 9. Dewatering (Smartfeed & Geotube) 10. Water Treatment System 11. Diving 12. Concrete Work 13. Transportation/Disposal	Chemical Hazards (7,8,9,10,11,12,13)	• Wear appropriate PPE per Table 6-1; • Practice contamination avoidance; • Conduct real-time air monitoring per Section 8; • Follow proper decontamination procedures; • Wash hands/face before eating, drinking, smoking. • Ref. Appendix F – Mineral Processing Services Chemical Hygiene Plan
	Noise (ALL)	• Hearing protection mandatory at or above 85 dBA (monitoring may be required to determine noise levels); • Instruct personnel how to properly wear hearing protective devices; • Disposable ear plugs or other hearing protection required while around noisy equipment. • Follow Noise Mitigation Plan.
	Temperature Extremes (ALL)	• Drink plenty of fluids; • Train personnel of signs/symptoms of cold/heat stress; • Monitor air temperatures when extreme weather conditions are present; • Stay in visual and verbal contact with your buddy. • Protective clothing, such as insulated coveralls or other winter-weight coveralls, may be used to shield employees from the wind and cold. • Divers: to protect divers from cold water they will use a hot water machine that will provide a constant flow of hot water to the diver. This is used year round. • Divers will utilize a ladder to enter and exit the Ash Pit.
	Slips, Trips, Falls (ALL)	• Maintain alertness to slip/trip/fall hazards; • Maintain good housekeeping; • Walk, do not run;

Tasks	Hazards (Task # Where Hazards are Present)	Control Measures
		• Wear footwear with soles that grip. • Use footings and grips when getting in and out of equipment; • Stay at least 2 ft back from the edge of an excavation or hole, appropriate fall protection controls/PPE when required.
	Fire and Explosion (ALL)	• Find and mark existing utilities prior to intrusive operations; • Use metal detector to screen core screen sampling locations; • No smoking; • Properly store fuels; • Do not fuel equipment while it is running; • All personnel have received fire extinguisher training; • A 10 lb. ABC fire extinguisher located in work area for hot work and in equipment/trailers. • Fire extinguishers shall be serviced annually and shall have a tag indicating this. They will also be inspected monthly by the HHSO while onsite and a date and signature or initial will be written on the tag.. • Refer to Section 10.8 for details on Fire Protection and Prevention. • Refer to Section 10.9 for Hot Work procedures.
	Manual Lifting (ALL)	• Observe proper lifting techniques (lift with your legs, not your back); • Ensure no tripping hazards are present along your route; • Size up the load before making a manual lift, be alert to loads that are unbalanced; Make sure you have a good grip on the load; Obey sensible lifting limits (50 lb. max. per person manual lifting); • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads.
	Working On or Near Water (7, 11,12)	• Stay at least 6 feet from edge of water unless tied-off, within manlift, or using fall protection system; • If the fall to the water is six feet or greater, a temporary guardrail or something similar will be put in place. • Don US Coast Guard Type III Personal Flotation Device where drowning hazard exists; • Ring buoy available when personnel are over water.

Tasks	Hazards (Task # Where Hazards are Present)	Control Measures
		• Ring buoy must have 90' of line attached to it. One ring buoy is required for every 200' linear feet of water exposure. • Rescue ladder fixed to self-rescue location for work to swim toward and affect a self-rescue. • Divers: to protect divers from cold water they will use a hot water machine that will provide a constant flow of hot water to the diver. This is used year round.
	Heavy Equipment/Materials Handling (ALL)	• Wear reflective warning vests when exposed to vehicular/equipment traffic; • Isolate potential equipment swing areas by setting up designated work areas with cones and barriers; • Make eye contact with vehicle operators before approaching/crossing high traffic areas; • Understand and review hand signals; • Use a spotter to direct equipment movement in high traffic areas • Audible back-up alarms on equipment; • Operator inspects equipment daily for safety defects, including the braking system.
	Falls from Elevation (7, 11, 12)	• Fall protection is required over 6 feet; • Install guardrails on top of pit, anchored into concrete.
	Electrical Hazards (ALL)	• Inspect power tools and cords daily for damage; • Use GCFI with all cords; • Do not overload circuits. Extension cords shall not rest or be supported directly on or by electrically-conductive materials, • Extension cords shall not lay in standing water, • All electric panel boxes) must have panels attached isolating the electric conductors from contact with persons, and each circuit must be labeled with the load it serves (i.e., lights, outlets, air conditioner/heater, etc.).
	Hand/Power Tools (ALL)	• Daily inspections will be performed; • Remove broken or damaged tools from service; • Use the tool for its intended purpose;

Tasks	Hazards (Task # Where Hazards are Present)	Control Measures
		• Use in accordance with manufacturer instructions.
	Biological Hazards (ALL)	• Be alert to the presence of biological hazards (especially bloodborne pathogens); • Wear insect repellent; • Inspect for tick bites; • SSHO should be aware of on-site personnel with allergic reactions in insect bites and stings.
	Severe Weather or Electrical Storms (ALL)	• Ensure project trailers are grounded per manufacturer's instructions (for Category 1 Hurricane 10 anchors can withstand 90 mph wind speeds); • For electrical storms, follow procedures in Section 12.10. • All walkways and working surfaces will be cleared of ice and snow prior to performing any work and on an as needed basis throughout the workday. • MT will use sand and/or approved ice melts(or salts) to prevent further icing onsite. • No ice or snow will be placed in the East River

5.0 PERSONNEL TRAINING REQUIREMENTS

5.1 Hazardous Waste Operations

5.1.1 Initial / Pre-assignment and Refresher Training

All workers who may come into contact with the contaminated material associated with this project are required to be trained in accordance with the appropriate safety procedures set forth in OSHA hazardous 40-hour training requirements with current 8-hour refreshers. Training for supervisory personnel (i.e., foremen/superintendents) and the site SSHO will also include 8-hour supervisory training. Prior to arrival on site, each employee must meet the requirements of pre-assignment training, which include Supervisor Training, OSHA 10, and Hazard Communication Training.

5.1.2 Project Activities Prior To and Following Remediation

Workers and subcontractors performing non-intrusive site activities prior to and following remedial activities, such as surveying of "clean" areas, will be exempted from OSHA hazardous 40-hour training requirements. Instead, all such workers will be provided with a documented site orientation and safety overview by the SSHO. Topics covered in this safety briefing will include, but are not limited to, hazard communication (chemical hazards), organizational responsibilities and contacts, emergency preparedness onsite, and general safety hazard prevention for the site. Additionally, they will receive a documented daily pre-job safety briefing.

5.2 Initial Health & Safety Briefing

The SSHO shall conduct a documented site specific Health and Safety briefing for all employees of MT, Subcontractor(s), Con Edison, visitors (e.g., inspectors), or any others who will work on site.

Outlines of the orientation for site workers and visitors are presented below:

SITE WORKERS	VISITORS
• HASP sign off; • Sign in/out procedures; • Site background; • Project Team and Responsibilities; • Rules and regulations; • Personal Protective Equipment/respirator fit test (if applicable); • Emergency Information: – Emergency signal; – Gathering point;	• Sign in/out procedures; • Site Background/ Characterization; • Review of Site map; • Work Zones in progress; • Hazard Communication; • Emergency plan/signals; • Training/medical requirements; • Zones/areas open to visitors.

SITE WORKERS	VISITORS
– Responsibilities/roles; – Emergency phone numbers. • Site Control/Work Zones; • Material Safety Data Sheets (MSDS) [Hazard Communication Program]; symptoms of overexposure; • Fire extinguisher use; • Hazards/AHAs; • Monitoring Program; • Incident Reporting; • Applicable Con Edison Safety Programs (Appendix F).	

5.3 Tailgate Safety Meetings

Site pre-entry Field Safety Meetings, also called Tailgate Safety Meetings or Toolbox Safety Meetings, will be presented to all site personnel each morning just prior to the onset of work activities. It will be the responsibility of the SSHO to conduct these meetings. All Tailgate Safety Meetings are mandatory for all project personnel. At the conclusion of the meeting, each individual will be required to sign the Safety Meeting Sheet (Attachment 2). Daily sign-in sheets shall include the specific topics discussed each day Late arrivals will see the SSHO for a brief meeting about hazards associated with the day's remaining activities.

The SSHO will determine the topics each morning based on activities to be conducted that day and any incidents or items identified during previous days. These topics shall include, but are not limited to, the day's planned activities, heat/cold stress, PPE requirements, chemical hazards, physical hazards, emergency procedures, and injury or incident analysis, near misses, and any other special considerations.

MT will keep on file, at the job site, records of safety meetings that have occurred, including topics covered; safety related concerns, and action follow-up items coming out of those meetings.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment (PPE) specified in Table 6-1 represents the hazard analysis and PPE selection required by 29 CFR 1910.132. The signatures on the approval page of the HASP constitute certification of the hazard assessment.

PERSONAL PROTECTIVE EQUIPMENT ABBREVIATIONS

HEAD PROTECTION
HH = Hard Hat (Not White or "Con Edison Blue" in color)

HEARING PROTECTION
EP = ear plugs
EM = ear muffs

HAND PROTECTION
LWG = Leather Work Gloves
Neo = Neoprene
Nit = Nitrile
Sur = Surgical

EYE/FACE PROTECTION
PFS =Plastic Face shield
SG = ANSI approved safety glasses with side shields or goggles

BODY PROTECTION
WC = work clothes
Tyvek® = Uncoated Tyvek® coveralls
Poly Tyvek® = Coated Tyvek® coveralls
Vest = Reflective Traffic
FP – Fall Protection (Harness/Lanyard- Full Body)
Safety Vest
Chaps for chain saw use

FOOT PROTECTION
RSTB = Rubberized steel-toed boot
STB = Leather work boots with steel toe
META = metatarsal protection

RESPIRATORY PROTECTION
APR = ½-face air purifying respirator with OV/P-100 cartridges
DM = Dust mask

6.1 Standard Operating Procedures for Personal Protective Equipment

6.1.1 Inspection

Proper inspection of PPE features several sequences of inspection depending upon specific articles of PPE and its frequency of use. The different levels of inspection are as follows:

- Inspection and operational testing of equipment received from the factory or distributor;
- Inspection of equipment as it is issued to workers;
- Inspection before each use;
- Inspection after use, training and prior to maintenance;
- Periodic inspection of stored equipment;
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

TABLE 6-1
PERSONAL PROTECTIVE EQUIPMENT SELECTION

TASK	HEAD	EYE/ FACE	FEET	HANDS	BODY	HEARING	RESPIRATOR
Mobilize & Demobilize	HH +	SG	STB + META	LWG as needed	WC/Vest	EP or EM as needed	DM as needed
Utility Mark Out	HH +	SG	STB + META	LWG as needed	WC/Vest	EP or EM as needed	DM as needed
Setup Utilities/Facilities	HH +	SG	STB + META	LWG as needed	WC/Vest	EP or EM as needed	DM as needed
Pre-Construction Survey	HH +	SG	STB + META	LWG as needed	WC/Vest	EP or EM as needed	DM as needed
Installation of Erosion Controls/Pit Fall Protection	HH +	SG	STB + META	LWG as needed	WC/Vest	EP or EM as needed	DM as needed
Construction of Entrance & Sediment Processing Area	HH +	SG	STB + META	LWG as needed	WC/Vest	EP or EM as needed	DM as needed
Pit Material Removal	HH	SG	STB or RSTB with direct contact	Sur + Nit or Neo	WC + Tyvek or Poly + FP with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO
Materials Management	HH	SG	STB or RSTB with direct contact	Sur + Nit or Neo	WC + Tyvek or Poly with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO
Dewatering	HH	SG	STB or RSTB with direct contact	Sur + Nit or Neo	WC + Tyvek or Poly with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO
Sediment Dredging	HH	SG	STB or RSTB with direct contact	Sur + Nit or Neo	WC + Tyvek or Poly + FP with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO
Water Treatment System	HH	SG	STB or RSTB with direct contact	Sur + Nit or Neo	WC + Tyvek or Poly with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO
Concrete Work	HH	SG	STB or RSTB with direct contact	Sur + Nit or Neo	WC + Tyvek or Poly with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO

TASK	HEAD	EYE/ FACE	FEET	HANDS	BODY	HEARING	RESPIRATOR
Transportation/ Disposal	HH	SG SG + PFS (pressure wash)	STB or RSTB with direct contact + META (pressure wash)	Sur + Nit or Neo	WC + Tyvek or Poly with direct contact per SSHO	EP or EM as needed	½-face APR with OV/ P-100 cartridges as needed per SSHO

The following inspection list for PPE will be in use and should be implemented prior to immediate use and shall be conducted by the user. This ensures that the user has checked out the specific device or article and that the user is familiar with its use.

Before use:

1. Determine that the clothing material is correct for the specified task at hand.

2. Visually inspect for:

    - Imperfect seams;
    - Non-uniform coatings;
    - Tears;
    - Malfunctioning closures;
    - Defects.

3. During the work task, periodically inspect for:

    - Evidence of chemical attack such as discoloration, swelling, stiffening, and softening; Keep in mind, however, that chemical permeation can occur without and visible effects.
    - Closure failure;
    - Tears;
    - Punctures;
    - Seam discontinuities.

6.2 Respiratory Protection

The following defines standard operating procedures for air purifying. For more information, see MT's Respiratory Protection Program (Appendix E).

6.2.1 Air-Purifying Respirators

A NIOSH approved ½-face air-purifying respirator with organic vapor/P-100 cartridges will be used for personnel requiring respiratory protection from chemical contaminants.

6.2.2 Inspection and Cleaning

Respirators shall be checked periodically by a qualified individual and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after each use.

6.2.3 Fit Testing

Annual respirator fit tests are required of all personnel wearing negative-pressure respirators. Qualitative fit-testing shall be performed using an approved OSHA protocol. The fit test must be for the manufacturer/model and size of the respirator to be used. Quantitative fit-testing is required for potential exposure to air-borne particulate levels that exceed 10 times the established PEL or TLV, whichever is the more stringent.

6.2.4 Facial Hair

No personnel who have facial hair which interferes with the respirator's sealing surface will be permitted to wear a tight fitting respirator.

6.2.5 Medical Certification

Only workers who have been certified by a physician, as being physically capable of respirator usage will be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas on site that require respiratory protection. Employees will receive a written physicians opinion that they medically capable of wearing respiratory protection as required by 29 CFR 1910.134.

6.2.6 Cartridge Change-Out Schedule

All cartridges will be changed a minimum of once daily or more frequently if personnel begin to experience increased inhalation resistance or immediately if breakthrough of a chemical warning property (e.g. eye, nose, throat irritation or odor) occurs. The SSHO will review this requirement after monitoring the employee's breathing zone for site contaminants and will revise this schedule as may be necessary to avoid over-exposure. Use of cartridge respirators in environments with actual exposure over an OSHA PEL for a particular substance will require consultation with the CIH to determine specific cartridge change-out schedules.

6.3 Fall Protection Equipment

- Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet (1.8 m) or more above a lower level or water shall be protected from falling by use of at least one of the following means: Guardrail systems Guardrail systems consist of a Toprail (42"), Midrail (21"), and Toeboards (3 ½"). Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard.

Each employee less than 6 feet (1.8 m) above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place.

Guardrail systems used on ramps and runways shall be erected along each unprotected side or edge whenever five feet or more above a lower level, including water.

Lifelines, any safety harness, and lanyards shall be used only for employee safeguarding. Any lifeline, safety belt, or lanyard actually subjected to in-service loading, as distinguished from static load testing, shall be immediately removed from service and shall not be used again for employee safeguarding.

Safety belt lanyard shall be a minimum of 1/2-inch nylon, or equivalent, with a maximum length to provide for a fall of no greater than 6 feet. The rope shall have a nominal breaking strength of 5,400 pounds.

All safety belt and lanyard hardware shall be drop forged or pressed steel, cadmium plated in accordance with type 1, Class B plating specified in Federal Specification QQ-P-416. Surface shall be smooth and free of sharp edges.

All safety belt and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 4,000 pounds without cracking, breaking, or taking a permanent deformation.

7.0 MEDICAL SURVEILLANCE REQUIREMENTS

Workers are to be examined initially upon start of employment, annually thereafter, and may be examined upon termination of employment. Medical monitoring programs are designed to track the physical condition of workers as well as survey pre-employment or baseline conditions prior to potential exposures. All personnel that will wear a respirator on this project will provide proof that they are fit for duty and able to wear respiratory protection prior to reporting to the job site. The Con Edison Construction Inspector on site will receive copies of this "respiratory documentation" prior to any worker wearing a tight-fitting respirator. The medical surveillance program is a part of MT's Health and Safety Program.

7.1 Medical Monitoring

MT site personnel required to work with contaminated material and wear respirators shall participate in a medical surveillance program, as per OSHA regulation 29 CFR 1910.120. The objectives of this program are to ensure site personnel are medically fit to perform their job.

As suggested by NIOSH, OSHA, EPA's Occupational Safety and Health Guidance Manual:

The minimum medical monitoring requirements for work at the site is as follows:

- Complete medical and work history;
- Review of medical history and general exam by a Licensed Health Care Professional (LHCP);

- Determination of fitness for duty.

Additionally, if using respiratory protection:

- Completion of OSHA Respiratory Protection Questionnaire and review by a LHCP. If deemed necessary by the LHCP then the following will apply:

    - Pulmonary function tests;
    - Medical qualification to use a respirator;
    - Respiratory fit test (yearly).

Additionally, if handling or removing hazardous material or wastes:

- Chest X-Ray (every 2 years or as recommended by LHCP);
- Eye examination and visual acuity;
- Audiometry;
- Blood chemistry, including hematology, and serum analyses;
- Tetanus booster.

MT Employees are evaluated at Berkshire Occupational Health by:

Dr. Richard Dodge
610 North Street
Pittsfield, MA 01201
Phone: 413-447-2684
Fax: 413-447-2805

7.2 Medical Data Sheets

Emergency contact information and notification of allergies and/or previous medical conditions will be given to the SSHO prior to work at the site. All site personnel will complete a Medical Data Sheet (Attachment 3) prior to entry into work areas.

Along with the medical data sheets, documentation of medical surveillance and respirator clearance be maintained on site and available for Con Edison review.

7.3 Heat Stress

Temperatures inside protective equipment can be as much as 25% over external ambient temperatures with humidity near 100%. Excessive temperatures and loss of body fluids can result in a range of health conditions ranging from heat rash, cramps, exhaustion, heat stroke and possibly death.

Heat stress can be caused by a number of factors including workload, weather conditions, personal protective equipment, and physical condition of the individual. Work activities related to materials handling will require the use of personal protective equipment, increasing the risk of worker heat stress. Heat stress includes several types of heat related illnesses, each with specific symptoms, listed below:

- Heat rash caused by continuous exposure to heat and humid air. Decreases the body's ability to tolerate heat.

- Heat cramps, caused by excessive perspiring without proper and adequate electrolyte replacement. Symptoms include:
  - pain in the hands, feet, and abdomen;
  - muscle spasms.

- Heat exhaustion, caused from inadequate blood circulation due to cardiovascular dehydration. Symptoms include:
  - pale, cool skin;
  - excessive perspiring;
  - fainting;
  - nausea;
  - dizziness.

- Heat stroke, most serious form of heat stress, body temperature regulation fails and body temperature rises rapidly. Immediate action must be taken to cool the body. Medical attention is required. Symptoms include:
  - red, hot, dry skin;
  - lack of perspiration;
  - nausea / dizziness;
  - rapid pulse;
  - coma.

7.3.1 Heat Stress Management

When necessary, these general controls will be used to control heat stress:

- Workers will be given verbal instructions and reminders during tailgate safety meetings;

- The drinking of water in small volumes (about 1 cup) throughout the day will be encouraged;

- Worker will be allowed to self-limit their exposures if they detect signs and symptoms of heat strain in themselves or others;

- Individuals taking medications which may put them at greater risk, such as for blood pressure, cardiovascular medication, body temperature regulation, renal or sweat gland functions, and those who abuse or are recovering from alcoholism, will be counseled on the dangers. A healthy lifestyle will be encouraged;

- Personnel must be able to recognize signs and symptoms of heat stress and administer immediate attention;

- Work/rest schedules planned according to weather conditions, workload, and level of personal protective equipment;
- Provide shaded rest area on sunny or hot days;
- Allow personnel to become acclimated to site conditions, personal protective equipment, and workload. Rotate teams of personnel in hot weather;
- Utilize cooling devices to assist body cool down (i.e., showers, cooling jackets, etc.);
- Encourage personnel to maintain their physical fitness.

7.4 Cold Stress

Personnel working in extreme cold, even for a short time, may experience severe injury to the surface of the body (frostbite), or profound generalized cooling (hypothermia). Frostbite usually occurs to parts of the body having high surface to volume ratios, such as fingers, toes, ears, and nose. Incipient frostbite is characterized by a blanching or whitening of the skin. Superficial frostbite is characterized by skin with a waxy or white appearance that is firm to the touch, but the skin underneath is resilient. Deep frostbite is characterized by cold pale skin that is solid to the touch.

Systematic hypothermia is caused by exposure to freezing or rapidly dropping temperature. Its symptoms include shivering, apathy, listlessness, sleepiness, unconsciousness, freezing of the extremities, and even death.

The extent of frostbite and hypothermia are influenced greatly by wind speed, wind chill and wetness of the skin. Thus the body can cool rapidly when chemical protective equipment is removed and the clothing underneath is soaked with perspiration. Workers experiencing signs of hypothermia shall be immediately removed from the environment, placed in a warm location, covered with dry blankets and provided with warm liquids. Wet clothing shall be removed and replaced with dry clothing and outerwear. Protective clothing, such as insulated coveralls or other winter-weight coveralls, may be used to shield employees from the wind. To protect divers from cold water they will use a hot water machine that will provide a constant flow of hot water to the diver. This is used year round.

8.0 AIR MONITORING PROGRAM

This section explains the general concepts of air monitoring as they pertain to personal protection and related surveillance activities taking place at the site. The purposes of air monitoring is to:

- Identify the presence (if any) of chemical contaminants;
- Warn of hazardous atmospheres before confined space entry;
- Quantify worker exposures to airborne contaminants;
- Assess whether current levels of personal protection are sufficient;
- Assist in the determination of proper and /or additional levels of protection, when needed.

Direct reading instruments or instantaneous measurement techniques will be used for the assessment of worker exposures to compounds. The types of measurements to be conducted on this project are based upon analysis of the contaminants believed to exist at the site, along with their potentials for exposure.

8.1 Air Monitoring Plan

8.1.1 Direct Reading/ Instantaneous Monitoring

Prior to the start of the work each day, at the discretion of MT's SSHO, all operational work areas will be surveyed with the following instruments. If strong odors are present or if site conditions warrant, more frequent monitoring will be conducted.

- Multi-gas Oxygen/Combustible Gas Indicator (CGI) / Toxic Gas Indicator shall measure the following minimum substances. Results will be compared to the exposure limits listed in Table 8-1 and manufacturer's set alarm standards.

  - % Oxygen;
  - Combustible gases/vapors as % of the Lower Explosive Limit (LEL);
  - Carbon Monoxide (ppm);
  - Hydrogen Sulfide (ppm).

- Total dust will be monitored by a miniRae with PM-10 in order to determine worker exposure to dust, metal compounds, and other contaminants. This result will be compared to the calculated exposure limit for site contaminants.

- Measurements of total volatile organics will be taken using a Photoionization Detector (PID). These measurements also will be compared to exposure limit values listed in the Table 8-1.

Surveys will be repeated at the frequency designated by MT's SSHO and results recorded in the site Air Monitoring Log (Attachment 7). Results will be recorded hourly and will be 15-minute average readings. High priority areas of monitoring include working near Ash Pit, excavator cabs, and spoils piles.

If real time air monitoring in any work area exceeds any action levels found in Table 8-1, the level of protection will be upgraded or actions taken as necessary to ensure that personnel are protected for the worst case contaminant of concern until the presence of that compound can be negated. The Perimeter Air Monitoring Technician (by Con Edison) will notify the MT SSHO if perimeter air action levels are exceeded at any location. Actions will be taken to ensure that personnel in the EZ are protected for the worst case contaminant of concern.

8.1.2 Action Levels

TABLE 8-1
AIR MONITORING WORK ZONE ACTION LEVELS

CONTAMINANT	ACTION LEVEL	ACTION
Oxygen (O_2)	< 19.5 %	• IDLH atmosphere! Evacuate personnel from the EZ. Re-evaluate situation. Notify the Site Supervisor and the MT Project Manager.
	> 22 %	• IDLH atmosphere! Notify SSHO, SS & PM. Evacuate personnel from the EZ. Notify the Construction Supervisor and the MT Project Manager Do not re-enter until cause of high O_2 is found and eliminated.
Lower Explosive Limit (LEL)	5 to < 10%	• Continuous monitoring required.
	10%	• IDLH atmosphere! Evacuate personnel from area immediately and re-evaluate. Notify the Construction Supervisor and the MT Project Manager.
Hydrogen Sulfide	< 5 ppm	• No respirator needed.
	5 ppm or greater	• Stop work. Evacuate personnel from the EZ and re-evaluate. Notify the Construction Supervisor and the MT Project Manager.
Carbon Monoxide	< 35 ppm	• No action required.
	35 ppm or greater	• Stop work. Evacuate personnel from the EZ , ventilate area, and re-evaluate. Notify the Site Supervisor and the MT Project Manager.

CONTAMINANT	ACTION LEVEL	ACTION
Total Dust	< 100 ug/m^3 ave. over 15 min. Dust visible in work zones ≥ 100 ug/m^3 ave. over 15 min. ≥ 150 ug/m^3 ave. over 15 min * 1 mg/m^3 ave. over 5 min ***(See Section 8.1.3)***	• No action required. • Implement dust suppression methods. • Continue dust suppression methods. Check downwind levels. • Stop Work, until issue is resolved. • ½-face APR with OV/ P-100 cartridges. Use dust and vapor control methods.
Volatile Organic Compounds (VOCs)	< 5 ppm 5 to 25 ppm ave. over 15 min. > 25 ppm ave. over 15 min.	• No respirator needed. • ½-face APR with OV/ P-100 cartridges Use vapor control methods. • Stop work. Evacuate personnel from the EZ and re-evaluate.

Breathing zone instrument readings for at least 15 minute averages will determine the need for upgrading/downgrading of PPE and corresponding action level.

PPE requirements will be adjusted based on the above action levels.

All perimeter air monitoring will be completed by Con Edison and results shared with MT, as necessary.

8.1.3 Action Level Discussion - Dust

Action Level Calculation x(y) = PEL

Where: x = Action level (concentration necessary to reach PEL)
y = soil concentration as a percentage (mg/kg(10^(-4))
PEL = 0.5 mg/m^3

x (.00685) = 0.5 mg/m^3
x = 73 mg/m^3

MT will establish an action level of 1 mg/m³as the action level (sustained for more than 5 minutes). When action level is reached, ½-face APR with OV/ P-100 cartridges will be worn and the dust and vapor control methods will be utilized.

8.2 Equipment Calibration

All instrument calibration will be checked in accordance with manufacturer instructions and acceptable industrial hygiene protocol Monitoring equipment will be calibrated at the start of each day and the calibration will be checked prior to work start. In addition, the instrument will be calibrated in the temperature with which it will be used, or the calibration will be corrected mathematically for differences in temperature, humidity and barometric pressure, where appropriate.

The PID will be calibrated per manufacturer's recommendations. The appropriate photosensitivity will be set on the instrument to read benzene throughout this project.

The multi-gas/CGI calibration shall also be per manufacturer's specifications.

No calibrations are necessary for the dust meter. However, the dust meter shall be "zeroed" in accordance with manufacturer instructions on a daily basis before use, and before start of work.

All calibrations required by this HASP will be recorded in writing and will be maintained on site for the duration of the project.

8.3 Dust and Emission (Odor) Suppression Methods

Visible dust may be present in the work area as long as work area dust levels do not exceed work area action levels based on breathing zone monitoring. Visible dust that leaves the exclusion zone (i.e., fugitive dust) is not acceptable and must be controlled. Some methods to reduce these emissions are listed below:

- Limiting the amount of exposed areas, as much as possible;
- Applying water on haul roads;
- Wetting equipment and excavation faces;
- Spraying water on buckets during excavation and dumping;
- Hauling materials in properly tarped or watertight containers;
- Restricting vehicle speeds to 10 mph;
- Covering excavated areas and material after excavation activity ceases. Use of low permeability tarpaulin or suitable means to cover exposed areas and materials as required;
- If directed, Furnish and apply Rusmar Odor Controlling Foam.

Please see MT's Dust Control and Odor Control plans under separate cover.

9.0 CONTROLS AND PROCEDURES FOR LIFTING AND RIGGING

9.1 General Requirements

The employer shall comply with OSHA requirements (29 CFR 1926.1400 Subchapter CC) the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately documented and recorded. Attachments used for lifting shall not exceed the capacity, rating, or scope recommended by the manufacturer.

Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment. Instructions or warnings shall be visible to the operator while he is at his control station.

The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.

A thorough, annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. The owner of the crane shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or other moving parts or equipment shall be guarded if such parts are exposed to contact by employees, or otherwise create a hazard.

No modifications or additions which affect the capacity or safe operation of the equipment shall be made by the employer without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced. The manufacturer will define the weight of the object to be lifted or rigged. Manufacturer information will also be used to identify the capacity of the devices (shackles, sling, lifting beams, etc.) that will be used to lift the material require rigging.

9.2 Electrical Safety

Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded. When working in the vicinity of energized lines, MT will keep a minimum 10 ft clearance (in all directions) plus an additional clearance of 4 inches for every additional 10kV increase for voltages over 50 kV.

10.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program. In addition to the following, all visitors are required to sign in and out of the job site. A Construction Site Logistics Plan showing work zones will be submitted under separate cover.

10.1 Work Zone Definition

The three general work zones established at each work area are the Exclusion Zone (EZ), Contamination Reduction Zone (CRZ), and Support Zone (SZ). The EZ will be located only in those specific areas where potential for over exposure to the identified contaminants exists. Plans in the field office shall be current and personnel shall be briefed on the locations and limits of each zone.

The EZ is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to personnel. This area will be denoted with orange construction fencing and will be reviewed at toolbox safety meetings.

Entry into the EZ requires the use of PPE and proper training. The EZ for this project will be established by the SSHO. No eating, drinking, or smoking will be permitted in this area.

The CRZ is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. This area will be denoted with proper signage and will have a decontamination area set up to dispose of used PPE, and an area to perform any necessary personal hygiene and personal decontamination. This area will be denoted with orange construction fencing and proper signage. Activities to be conducted in this zone will also require PPE and training. No eating drinking or smoking will be permitted in this area.

The SZ is situated outside the EZ and the CRZ in a clean area in which the chance to encounter hazardous materials or conditions is minimal. All external roadways leading to the site, other than those identified as possibly contaminated, are considered to be in the clean zone. The SZ will generally be positioned upwind of the EZ when possible.

10.2 Buddy System

During intrusive activities, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team, each looking out for each other, via voice or visual contact.

10.3 Site Communications

Successful communications between field teams and personnel in the work areas is essential. The following communications systems may be available during activities on the site.

- Two way radios;
- Hand signals;
- Cellular phones.

Table 10-1
Hand Signals

Signal	Definition
Hands clutching throat	Out of air – cannot breathe
Hands on top of head	Need assistance
Thumbs up	OK / I am OK / I understand
Thumbs down	No / Negative
Arms waiving upright	Trouble / Send backup support
Grip partner's wrist	Exit area immediately

10.4 Site Security

All work areas will be secured during off-hours with temporary, locked fencing.

10.5 Site Illumination

If work schedules require work outside of hours of daylight, then portable lights, sufficient to provide adequate lighting, will be provided. "Light Pollution" must not affect any of the neighbors. If necessary, temporary lighting will be supplied with the use of a generator. This will require a NYCDEP After-Hours Noise Permit to be filled out, reviewed/accepted by Con Edison before filing with the appropriate agency.

10.6 Site Sanitation

Portable restrooms sufficient to meet the requirements of 29 CFR 1910.120(n) will be provided. Potable water will be provided for workers at each work area. Hand and face wash as well as respirator sanitizing supplies (if respirators are utilized on site) will be available on site in sufficient quantities for all employees.

10.7 Housekeeping

To minimize potential accidents and cross contamination, the site will be maintained in a generally clean condition. Personal waste materials, such as PPE, paper towels, and respirator cartridges, etc. will be disposed of in waste containers.

This site will be set up so as to be reasonably free from significant safety hazards. Wires and hoses will be positioned so they do not obstruct or present a safety hazard in walkways and evacuation routes. All walkways and working surfaces will be cleared of ice and snow prior to performing any work and on an as needed basis throughout the workday.

10.8 Fire Protection and Prevention

Fire Protection: Access to all available firefighting equipment must be maintained at all times. Firefighting equipment must be maintained in operating condition. Fire extinguishers shall be serviced annually and shall have a tag indicating this. They will also be inspected monthly by the HHSO while onsite and a date and signature or initial will be written on the tag. Defective or exhausted equipment must be replaced immediately. All firefighting equipment shall be conspicuously located and positioned off the ground/floor. Travel distance from any point of the protected area to the nearest fire extinguisher must not exceed 100 ft. Extinguisher exposed to freezing conditions will be protected from freezing. Employees shall not remove or tamper with fire extinguishers installed on equipment or vehicles or in other locations unless authorized to do so or in case of fire. After using a fire extinguisher, it must be recharged or replaced with another fully charged extinguisher. Extinguishers must be selected based on the anticipated fire hazards. To aid in the proper selection of fire extinguishers, the classes of fires are as follows:

- Class A (wood, paper, trash) - use water, dry chemical, or foam extinguisher.
- Class B (flammable liquids, gas, oil, paints, grease) - use foam, carbon dioxide, or dry chemical extinguisher.
- Class C (electrical) - use carbon dioxide or dry chemical extinguisher.
- Class D (combustible metals) - use dry powder extinguisher only.

Fire Prevention: Internal combustion engine-powered equipment shall be located so that exhausts are away from combustible materials. Areas containing Flammable or Combustible material will be conspicuously posted: "No Smoking or Open Flame." Portable battery-powered lighting equipment must be approved for the type of hazardous locations encountered. Combustible materials must be piled no higher than 20 ft (6.1 m). Depending on the stability of the material being piled, this height may be reduced.

Portable fire extinguishing equipment, suitable for anticipated fire hazards on the jobsite, must be provided at convenient, conspicuously accessible locations. Firefighting equipment must be kept free from obstacles, equipment, materials, and debris that could delay emergency use of such equipment. Employees shall familiarize themselves with the location and use of the project's firefighting equipment. All oily rags, waste, and similar combustible materials must be placed in metal containers. Storage of flammable substances on equipment or vehicles shall be prohibited unless such unit has adequate storage area designed for such use.

Flammable and Combustible Liquids - Explosive liquids, such as gasoline, will not be used as cleaning agents. Gasoline and similar combustible liquids must be stored, transported, and handled in approved and labeled containers in well-ventilated areas free from heat sources. Approved wooden or metal storage cabinets must be labeled in conspicuous lettering: "Flammable-Keep Fire Away." Storage in an approved storage cabinet shall not exceed 2.5 gallons.

Fire Extinguishers - Portable fire extinguishers will be provided in adequate number and type (10 lb. or 20 lb. ABC) and will be located throughout the site. Fire extinguishers will be located in readily accessible locations. All extinguishers must be fully charged and in their designated places unless in use. All employees are periodically instructed in the use of extinguishers and fire protection procedures.

10.9 Hot Work

All personnel performing hot work are required to have a Certificate of Fitness issued by the FDNY.

Compressed gas cylinders shall be regularly examined for obvious signs of defects, deep rusting, or leakage. Use care in handling and storing cylinders, safety valves, relief valves and the like, to prevent damage. Precautions must be taken to prevent mixture of air or oxygen with flammable gases, except at a burner or in a standard torch. Only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, manifolds) may be used. Cylinders must be kept away from sources of heat. It is prohibited to use cylinders as rollers or supports. Cylinders, cylinder valves, couplings, regulators, hoses and apparatus must be kept free of oily or greasy substances. Care must be taken not to drop or strike cylinders. Unless secured on special trucks, all regulators must be removed and valve-protection caps put in place before moving cylinders. Before a regulator is removed, the valve must be closed and gas released from the regulator.

The open circuit (No Load) voltage of arc welding and cutting machines must be as low as possible and not in excess of the recommended limits. Under wet conditions, automatic controls for reducing no-load voltage must be used. Grounding of the machine frame and safety ground connections of portable machines must be checked periodically. Electrodes must be removed from the holders when not in use. All electric power to the welder must be shut off when no one is in attendance. Suitable fire extinguishing equipment must be available for immediate use before starting to ignite the welding torch. All connecting cable lengths must have adequate insulation. When the object to be welded cannot be moved and fire hazards cannot be removed, shields must be used to confine heat, sparks and slag.

The Hot Work Permit Procedures will be followed, as required. Firewatchers will be assigned when welding or cutting is performed . All combustible floors must be kept wet, or protected by fire-resistant shields. When floors are wet down, personnel shall be protected from possible electrical shock. When welding is done on metal walls, precautions must be taken to protect combustibles on the other side. Before hot work is begun, used drums, barrels, tanks and other containers must be so thoroughly cleaned that no substances remain that could explode, ignite or produce toxic vapors. Employees exposed to the hazards created by welding, cutting or brazing

operations must be protected with personal protective equipment and clothing. Check for Engineering Controls (e.g. adequate ventilation) where welding or cutting is performed. These controls should be considered before or in conjunction with the use of PPE. When performing hot work, environmental monitoring tests shall be taken and means provided for quick removal of welders in case of emergency. MT will follow Con Edison's CEHSP S05.03.

11.0 DECONTAMINATION PLAN

Decontamination involves the orderly, controlled removal of contaminants. Standard decontamination sequences are presented in the examples below. All site personnel should minimize contact with contaminants, when conceivable, in order to minimize the need for extensive decontamination.

Personnel decontamination will consist of safe work practice, use of disposable PPE, personal hygiene, and personal decontamination before breaks and at the completion of each day. Decontamination for workers using chemical protective clothing is described below. In the case respirators or SCBAs is utilized on the site, specific decontamination procedures will be thoroughly discussed on site prior to donning.

11.1 Routine Personal Decontamination

- All liquid resistant suits will be scrubbed with water and industrial soap solution, if needed, in a total body wash pool with a long handle brush, followed by a fresh water rinse. The boots will be included in this step of the decontamination;
- Disposable coveralls will be removed and placed in a plastic trash bag;
- Disposable gloves will be removed and placed in a plastic trash bag;
- Respirators will be decontaminated with a damp paper towel prior to removal to remove gross contamination as required. Respirators shall be washed in a respirator sanitizing solution, rinsed and then air-dried at least daily;
- Hands, face and any other potentially contaminated area will be thoroughly washed with a water/mild soap solution, rinsed and dried with paper towels;
- Hard hats shall be thoroughly washed with a water/industrial soap solution, rinsed and dried;
- If leather/cotton work gloves are used, they will be removed and stored in the work area.

11.1.1 Chemical Protective Clothing Decontamination

Station 1: Equipment Drop

Deposit equipment used on site (tools, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.

Station 2: Outer Garment, Boots, and Gloves, Wash Rinse
Wash outer boots, outer gloves and splash suit (if being used) with water and detergent solution. Rinse off using large amount of water.

Station 3: Outer Boot and Glove Removal
Remove outer boots and gloves. Place in storage area.

Station 5: Boot, Gloves and Outer Garment Removal
Boots, chemical resistant splash suit (if being used), inner gloves removed and deposited in storage area.

Station 6: Field Wash
Hands and face are thoroughly washed.

11.2 Emergency Decontamination

Should workers be splashed with hazardous chemical contaminants, the worker will immediately be escorted to the field decontamination station and be decontaminated as follows:

- Wash off under pressurized shower or sprayer;
- Remove all contaminated clothing;
- Remove all wet clothing;
- Cover with blanket or dress in clean, dry clothing;
- Transport to hospital, if necessary;
- Sprayer will not be a pressure washer.

11.3 Disposition of Contaminated Wastes

All wash water from the decontamination procedures shall be collected and properly disposed of per the Excavation and Materials Management Plan.

Disposable PPE and decontaminated solids shall be disposed of as other project wastes in a manner acceptable to treatment facility needs.

11.4 Equipment Decontamination

MT will establish a Contamination Reduction Zone to perform controlled decontamination of equipment and personnel as they leave the Exclusion Zone. MT will provide a fresh water supply, pressure washing and/or steam cleaning equipment, and a temporary decontamination pad. The decontamination pad will consist of a 6 mil polyethylene liner, a layer of stone, and earthen berms around the perimeter. MT will setup a sump system to pump out and containerize wash water for offsite disposal. The decontamination pad will be inspected once per day. All equipment will be decontaminated prior to leaving the site. MT will prevent cross contamination between areas in the Exclusion Zone by cleaning heavy equipment as necessary.

12.0 EMERGENCY RESPONSE PLAN

This section describes contingencies and emergency procedures to be implemented at the site. This plan should be coordinated with the local authorities disaster and emergency management plans as appropriate. In addition, meetings or other communication with the local hospital, rescue squad, hazardous materials unit and fire department will occur so as to advise the emergency response representatives of the nature and type of contaminants victims may have been exposed to while on site. Directions to the hospital will be posted on site when this HASP is in effect. Emergency procedures will be posted and covered in daily site briefings.

12.1 Pre-emergency Planning

The PM will ensure that lines of communications have been established with local hospitals, government agencies and other emergency response organization prior to site activities. During the Tailgate Safety Meetings or Toolbox Safety Meetings, information will be presented to all site personnel each morning just prior to the onset of work activities. All personnel will be trained in provisions of the emergency response plan, communications systems, and evacuation routes.

12.2 Emergency Equipment & Facilities

The following emergency equipment will be available at the site:

- First Aid Kit/BBP response kit;
- Fire Extinguisher, appropriate to potential fire hazards;
- Potable Eye Wash, near any areas of chemical use or splashing;
- Emergency Shower, potable water garden hose, or pressurized sprayer;
- Mobile Phone and/or Two-way Radio;
- Chemical/oil Spill Kits and/or absorbents.

Generally emergency equipment will be stored near the work zones. If during operations, in the opinion of the SSHO, it is not feasible to store the emergency equipment in a container close enough to the work, a mobile unit, such as a pickup truck will be employed as the temporary location.

12.3 Personnel Roles and Lines of Authority

The PM / SSHO has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of adjacent personnel. Additionally, they are responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow up reports completed.

12.4 Incident Reports

Notes:

1. Should any unforeseen safety-related factor, hazard, or condition become evident during the performance of the work, MT must immediately take prudent action to establish, maintain, and secure the site the site and working conditions. This shall be followed by immediate notice to the Con Edison on-site representative.
2. If injury, close calls, vehicle/equipment accidents, fires, explosions to a person or damage to property, environment, or natural resources results from an incident the MT shall immediately report the incident to the Con Edison Construction Inspector on site. It is imperative that close calls be reported and investigated in order to prevent injuries and accidents as the conditions for them exist and must be addressed. MT will follow up with an electronic copy of the Con Edison Contractor Injury Report (for all OSHA Recordable and non-Recordable injuries) within 24 hours of the injury/incident. Additionally, for all incidents (OSHA Recordable and Non-Recordable Injuries)/Accidents/Close calls to anyone on site (including Members of the Public)/Fires/Explosions, MT will be required to perform a Root Cause investigation and prepare a Root Cause Investigation Report / Preventative Action Plan (RCIR / PAP) to be considered acceptable by Con Edison before work on that same activity can continue. The Contractor may, however, perform work on all other tasks/activities on the project while awaiting Con Edison's acceptance of the aforementioned documents. Prior to work beginning on site, a full list of Con Edison contacts shall be provided to MT for emergency contact purposes.
3. If the Site Representative is not reachable, the pre-designated alternate will be contacted and notified of the situation.

The notification shall be made as soon as possible and both verbally and in writing when related to unforeseen safety hazard or condition. Written confirmation of verbal reports are to be submitted. The OSHA First Report of Injury Form (Attachment 4) is to be used for this purpose. All Con Edison representatives are to receive a copy of this report. Also, in conjunction with the OSHA First Report of Injury Form, MT must fill out a Con Edison Contractor Injury Report. This report will be submitted within one business day of the injury, electronically. Both forms may be found in Attachment 4 of this Plan.

For reporting purposes, the term accident/incident refers to fatalities, injuries of any type, close calls, spill or exposure to hazardous materials, fire, explosion, property damage, or potential occurrence of the above.

Any information released from the health care provider, which is not deemed confidential patient information, is to be attached to the appropriate form. Any medical information, which is released by patient consent, is to be filed in the individual’s medical record and treated as confidential. Con Edison will be continuously updated with the status of any injured site worker, such as the number of days with a Restricted Duty or Lost Work day injury, and by any status changes from an injury going from First Aid to Medical Treatment (or beyond), Medical Treatment to Restricted Duty (and beyond), and Restricted Duty to Lost Work Day - and downward in classification as well.

12.5 Evacuation Procedures

If anyone discovers a fire, chemical spill or release, or other process upset necessitating emergency action, he or she will immediately notify the PM or SSHO. An immediate decision will be made as to whether to evacuate the site or other actions to be taken. The SSHO is primarily responsible for this decision.

The primary response to any emergency will be to protect the health and safety of employees, contractors and visitors on site, as well as the community and environment. Steps will be taken to identify, contain, treat, and properly dispose of the materials involved as a secondary response.

In the event of an emergency that necessitates an evacuation of the site, the following alarm procedures will be implemented.

12.5.1 Alerting System

Onsite – Utilize air horns or radios as appropriate. Refer to Section 9.3.1 for proper signals. Contact 911, alert office personnel to wait at site entrance to direct emergency response units to the emergency.

Outside of the remediation areas – Contact 911.

When notified to evacuate, all personnel will be expected to proceed to the closest site exit with their buddy, and mobilize to the predetermined safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions. Air horns will be located in the work area near the supervisor's office.

In general, employees should proceed to a designated meeting location that is upwind and uphill from the site or location of the incident, unless otherwise instructed by supervisory personnel. A wind socks and /or flagging will be employed on site to indicate the upwind direction to which evacuation should proceed.

12.5.2 Emergency Contacts & Notification Systems

The following pages provide names and telephone numbers for emergency contact personnel and key project contacts. It will be kept on site for the duration of the project. In the event of a medical emergency, personnel will take direction for the PM/SSHO and notify the appropriate emergency organization. In the event of a fire, the site supervisor will ensure that the appropriate local, state, and federal agencies are notified. Prior to posting, the PM/SSHO shall confirm the appropriate contact names and phone numbers are listed. MT is NOT to contact the Agencies for reporting of spills/releases. Instead, MT is to notify the Con Edison Construction Inspector on site immediately who will initiate spill notification to the Agencies as per Con Edison procedures

12.6 Emergency Medical Treatment

Any person who becomes ill or injured in the work zones must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport to the hospital (see Figure 12-1). If the patient's condition is life threatening, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket. First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must be immediately reported to the SSHO.

Any person being transported to a hospital for treatment will take with them information on the chemical(s) they have been exposed to at the site, along with a copy of the individual's Medical Data Sheet (Attachment 3).

Prior to the start of work, the PM or SSHO shall confirm the nearest hospital's location and phone number. This information along with directions from the site to the facility shall be posted in the office trailer. A map to the closest hospital is displayed on the previous page.

EMERGENCY NUMBERS

POLICE, AMBULANCE, FIRE, HOSPITAL.....911

- Brooklyn Hospital Center.....(718) 250-8000
  121 Dekalb Avenue
  Brooklyn, NY 11201
- EPA National Response Center .....(800) 424-8802
- American Association of Poison Control Centers .....(800) 222-1222
- NY State Dept. of Environmental Conservation..... (718) 482-4900
  Region 2
- NYDEC 24 hour Spill Hotline.....{within NY State} (800) 457-7362
  ..... {outside NY State} (518) 457-7362

PERSONNEL PHONE NUMBERS

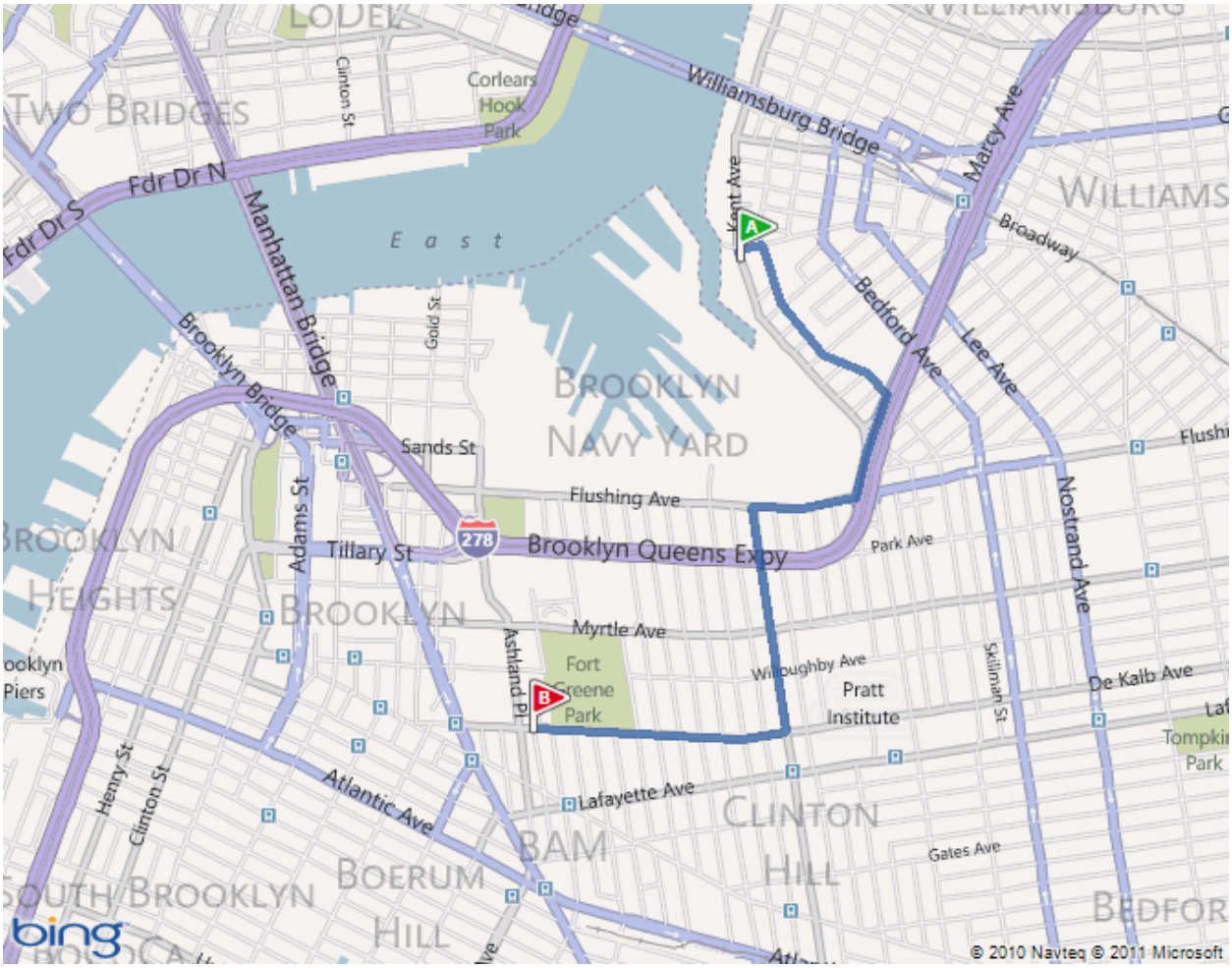
Maxymillian Technologies, Inc. Personnel, subcontracted by MT:

- MT Headquarters (Pittsfield, MA) ..... Office: (413) 499-3050
- Matt McCarthy, Offsite Project Manager ..... Office: (781) 890-8670
- Jim Smith, Site Supervisor (PM): .....Cell: (413) 441-1516
- Sarah Smith, Site Health & Safety Officer (SHSO): .....Cell: (413) 441-2492
- Chris Jones, Supervisor / Quality Control Engineer.....Cell: (413) 447-0332
- Dan Dargie, Supervisor / Quality Control Engineer.....Cell: (413) 822-3569
- Joseph L. Sbarra (CIH) .....Cell: (732) 841-0006
- MT SITE TRAILER ..... Office: TBD

Con Edison Personnel:

- David Rubin, Project Manager ..... Office: (718) 204-4219
- Ulrick W. Samuel, Construction Management..... Office: (718) 204-4010
- Thomas F. O'Connell, Construction EH&S..... Office: (718) 204-4282
- Michael Lombardi, Construction Manager..... Office: (718) 204-4417
- Mike Musto, Chief Construction Inspector ..... Office: (718) 204-4019
- Joe Baratta, Chief Construction Inspector ..... Office: (916) 567-7012

Figure 12-1
Hospital Location Map



Starting Location: 500 Kent Avenue
Brooklyn , NY

Ending Location: Brooklyn Hospital Center
121 Dekalb Avenue
Brooklyn, NY
718-250-8000

Route: **2.3 miles, 8 minutes**

1. Depart Kent Ave toward Division Ave
2. Turn right onto Division Ave, and then immediately turn right onto Wythe Ave
3. Turn right onto Williamsburg St W
4. Turn right onto Flushing Ave
5. Turn left onto Washington Ave
6. Turn right onto De Kalb Ave / Dekalb Ave
7. Arrive at 121 Dekalb Ave, Brooklyn, NY 11201-5425

12.7 Fire & Explosion Procedures

In the event of a fire or explosion, the local Fire Department shall be summoned immediately. Upon their arrival, the Project Manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on site.

If it is safe to do so, site personnel may:
1. Use firefighting equipment available on site to control or extinguish the fire; and
2. Remove or isolate flammable or other hazardous materials which may contribute to the fire.

12.8 Spill & Leak Control

In the event of a spill or leak site personnel will:

1. Inform supervisor and the Con Edison Construction Inspector on site immediately.
2. Terminate work activities (at the discretion of the SSHO).
3. Prevent entry of spill materials into any waterways.
4. Follow site emergency notification and evacuation procedures, when necessary.
5. Locate the source of spillage and stop the flow if it can be done safely.
6. Begin containment and recovery of the spilled materials if it can be done safely.

If the spill or release is expected to pose significant hazards or is beyond the capabilities of the immediate personnel, then the SSHO will be contacted immediately. When contacted, the SSHO will obtain and assess the following information:

1. The material spilled or released;
2. Location of the release or spill;
3. An estimate of the quantity released and the rate at which it is being released;
4. Any injuries involved;
5. Fire and/or explosion or possibility of these events occurring;
6. The area and materials involved in the location of the fire or explosion.

In the event of a chemical spill that is not contained within a dike or bermed area, an area of isolation will be established around the spill and the material(s) involved. When any spill occurs, only those persons involved in the oversight or performance of the emergency cleanup operations will be allowed within the designated hazard area. If possible, this area will be roped or otherwise blocked off.

a. Vehicles/equipment spotted over non-impervious surfaces (e.g., soil, bluestone, vegetation) to be underlain with, minimally, two-layers of six-mil polyethylene sheeting bermed to prevent runoff during times of precipitation,
b. Fueling of vehicles/equipment over secondary containment or having the fueling port ringed with oil-absorbent padding during fueling operations.

12.9 Spill Containment and Clean Up Equipment

In the chance a spill does occur, MT will be equipped with the following spill or containment equipment:

- Loose dry absorbent (i.e., sawdust, vermiculite, multipurpose sorbent);
- Oil containment booms;
- Shovels - wooden handle, steel type;
- Brooms - wooden handle, push type;
- Wrenches and tools for tightening fittings and valves.

See MT's Spill Prevention and Cleanup Plan under separate cover.

12.10 Electrical Storms and Lightning

The procedures provided below will be used to protect site personnel from lightning related injuries due to electrical storms.

12.10.1 Detection of Lightning

The Site Supervisor will be proactive in monitoring conditions that may produce thunderstorms and lightning. The weather forecast will be tracked and communicated to site personnel as often as necessary. When signs of impending storms, i.e., increasing wind, darkening skies, or lightening appear, local weather monitoring will be increased. The National Weather Service (www.nws.noaa.gov/) should be consulted frequently. Personnel will be notified when thunderstorms may impact the site.

The "flash/bang" (f/b) technique of measuring the distance to lightning will be reviewed with all personnel. The f/b technique is defined as: for each five seconds from the time of observing the lightning flash to hearing the associated thunder, the lightning is approximately one mile away.

12.10.2 Suspension/Resumption of Activities

All outside activities will be suspended when a lightning flash is immediately in the area or a f/b of 20 seconds (4 miles away) is noted. Personnel may continue indoor work activities. Outdoor activities will resume when 30 minutes have passed since the last observable f/b is 20 seconds or greater.

12.10.3 Lightning Protection

When notification is given, all outside work activities will stop and personnel will gather in the support zone for a head count and further instructions. Indoor work will continue. When a safe location is not present and personnel are caught by a sudden lightning event, employees should seek the lowest possible area, away from large objects which might attract lightning or fall over, e.g., trees, utility poles. The employee should assume a crouching position with their head

lowered and hands over their ears. AVOID: WATER, HIGH GROUNDS, HEAVY EQUIPMENT AND TALL, ISOLATED OBJECTS.

12.10.4 First Aid

An employee that is struck by lightning needs immediate medical assistance (call 911). The body will not carry an electrical charge, but receives a severe electrical shock and may be burned. Personnel certified in first aid/CPR should inspect for shock and burns around fingers, toes, buckles and jewelry. Stay with the injured employee until medical help arrives.

12.11 Incident Follow-up and Critique

Following all emergency response actions and activation of this plan, the PM will conduct a debriefing session of all key personnel involved. The response will be critiqued, documented, and response plans revised, if necessary. Corrective actions will be listed where procedures were inadequate or need improvement. Responsible persons will be listed and held accountable for follow-up.

13.0 INSPECTION PROGRAM

13.1 Inspections Reporting and Recordkeeping

The Project Manager will coordinate inspections of site operations. Inspections will be conducted according to the schedule outlined in the following sections.

General Facility: Personnel will be observed to ensure compliance with health and safety requirements, in particular the use of personal protective equipment. The availability of usable safety and emergency equipment will be verified.

13.1.1 Safety Inspections

Periodic site safety inspections will be performed by the SSHO during the operational phase of the site. The purpose of these safety inspections is to ensure personnel are performing their duties in the safest manner possible and provide continuing analysis and modification to the safety program.

13.1.2 General Facility Inspections

Inspections of the general facility will focus on the consistent compliance with safety requirements and availability of safety and emergency gear. The focus of these inspections is listed in Table 13-1, General Facility Inspection Schedule. The frequency of these inspections may be altered/amended as deemed necessary by the SSHO.

Table 13-1
General Facility Inspection Schedule

SPECIFIC ITEMS	TYPES OF PROBLEMS	FREQUENCY
Electrical lines	Frays, splices, trip hazards	Weekly
Non-emergency lighting	Bulbs burned out or missing	Weekly
All personnel trained	New workers may not know emergency procedures	Once per work shift
All personnel using appropriate PPE	May not be complying with PPE requirements	Once per work shift
Fire extinguishers	Broken seal, inadequate pressure, access blocked	Weekly/After use and Monthly Signatures
Emergency alarms	Power or battery failure	Weekly/After use
Cartridges, respirators	Inadequate supply of new cartridges, damaged seals or straps	Daily/After use and Weekly if not in use
Face shields, safety glasses	Inadequate supply, damaged or scratched lenses	Daily/As Used Basis
Hard hats, boot covers, construction boots	Inadequate supply, damaged	Daily/As Used Basis
Gloves, glove liners	Inadequate supply, damaged	Daily/As Used Basis
Chemical-resistant suits	Inadequate supply, damaged	As Used Basis
Moisture-proof chemical-resistant suits	Inadequate supply, damaged	As Used Basis
Eyewashes	Low liquid level/non-hygienic condition/freezing	Weekly/After use
First-aid supplies	Low stock/expired items	Weekly/After use
Emergency lights	Battery or bulb failure	Weekly
Lanyards and Harnesses	Damaged	As directed by usage

14.0 SUBTECH SERVICES LLC - Safe Diving Practices

SubTech Services diving protocols are contained in this section. MT protocols found in the rest of the HASP prevail in cases of duplicate information.

14.1 SCOPE

A. *Purpose*
The primary purpose of this Manual is to ensure the safety and well being of the diver and related dive operations personnel.

This Manual sets policy for implementation of the requirements set forth in the OSHA Dive Operation Regulations, Title 29/Part 1910/Subpart T and the Consensus Standards for Commercial Diving Operations established by the Association of Diving Contractor (ADC).

Nothing contained in this Manual shall be construed to take the place of any law, rule or regulation of any governmental agency.

B. *Preservative Acts*
It is expressly provided and declared that in an emergency situation requiring the saving of personnel or prevention of injury, any employee of Sub-Tech Services may act in variance with the recommendations established in this Manual.

14.2 PERSONNEL REQUIREMENTS

A. *General*
Each dive team member shall have the experience and/or training necessary to perform assigned tasks in a safe and healthy manner.

A person lacking the required experience may be assigned limited tasks, under the direction of an experienced and qualified individual, in order to obtain the experience and level of proficiency required.

B. *Personnel Qualifications*
Qualifications shall follow requirements set forth and included in this Manual under OSHA's Dive Operation Regulations and ADC's Consensus Standards for Commercial Diving Operations.

1. All dive team members shall be trained in cardiopulmonary resuscitation and first-aid (American Red Cross Standard Course). Certifications shall be kept current, and copies shall be maintained in the employee's file.

2. The dive team member with the greatest diving experience shall be designated the person in charge of all aspects of the diving operation affecting the safety and health of dive team members. This may or may not be the person designated as team leader.

3. The medical guidelines set forth in OSHA's Commercial Diving Operations and ADC's Consensus Standards for Commercial Diving Operations as modified for applicability to work performed by SubTech shall be adhered to.

14.3 SAFETY PROCEDURES CHECKLIST

(To be followed Prior to Diving Activity, MT's protocols to be utilized)

A. *Safe Practices/Operations Manual*

- Safety Procedure Check List
- Safety Team Member Assignments and Responsibilities
- Equipment Procedures and Check List
- Emergency Procedures for Fire, Equipment Failure, Adverse Environmental Conditions, Medical Illness/Injury
- Available at the dive site to dive team members
- Copy to the Person in Charge of the Vessel or Facility

B. *Emergency Aid*

- Decompression chamber (Jacobi medical: 1400 Pelham Pkys, Bronx, NY, 10461.
- Nearest hospital/medical treatment facility- Brooklyn Hospital Center (ER)
- Air or ground emergency transportation, 911 ambulance
- On call physician/hospital: Jacobi medical
- U.S. Coast Guard Rescue Coordination Centers: RCC Norfolk. Commander. 5th coast guard district, Portsmouth Virginia. Tel.757-398-6232
- Emergency rescue source other than U.S. Coast Guard: NYPD,NYFD, 911
- Two-way communications available on-site and tested to emergency response link

C. *First Aid*

- First Aid Kit
- First Aid Manual
- Bag-type Manual Resuscitator
- Emergency Oxygen Supply

D. *Planning and Assessment*

- Job Hazard Analysis
- Diving mode/equipment/system(s)
- Means of water entry and exit
- Breathing gas supplies including reserves (set up and tested)
- Thermal protection (all dive team members)
- Dive team assignments/briefing and fitness to dive
- Inert gas status of dive team members (repeat designations)
- Decompression and/or treatment procedures (including altitude)
- Communications procedures and methods to all personnel involved in the diving operation
- Emergency Procedures

- Dive station set up
- All necessary modifications to the Safe Practices/Operations Manual
- Written designation of the Team Leader given to the Person in Charge of the Vessel or Facility
- Report on the nature and planned times of the planned diving operation, and the planned involvement of the vessel or facility's equipment and personnel to the Person in Charge of the vessel or facility

E. *Hazards to Diving Operations*

- Surface vessel traffic and/or vehicular traffic
- Overhead crane/gantry operations
- Pedestrian traffic
- Displayed diver signals
- Critical Dive System to Vessel or Platform interfaces tagged and non dive team personnel briefed

F. *Underwater Hazardous Conditions (MT programs prevail)*

- Diver fouling and/or entrapment
- Intakes/Outfalls locations
- Differential pressures
- Lockout/Tagout
- Contaminated/toxic liquid
- Limited access
- Use of explosives or seismic activities
- Underwater sonar
- Cathodic protection

G. *Record Keeping (Following Each Diving Activity)*

- Project description/accomplishment records completion
- Diving and treatment records, accident reports
- Individual dive logs entry completions
- Van/Boat operational logs

14.4 ASSIGNMENTS AND RESPONSIBILITIES

A. *Team Leader*

A qualified person shall be designated in writing, to be in charge of each diving operation.

The Team Leader is in charge of the planning and execution of the diving operation, including the responsibility for the safety and health of the dive team. In carrying out these responsibilities, his duties shall include but not necessarily be limited to the following:

- Be fully cognizant of all relevant governmental regulatory agency regulations that apply to the diving operation and the diving mode employed, and the employer's Basic Safe Practices/Operations Manual. See that all rules and regulations are followed.

- While actually on duty be in immediate control and available to implement emergency procedures. The Team Leader is not permitted to dive unless another qualified supervisor or lead diver is present who has also been appointed and designated to assume responsibility.
- Ensure that, prior to diving, all persons responsible for tasks affecting the diving operation are briefed on all safety and implementation procedures. This can include but is not limited to masters of craft, pilots of submersibles, harbormasters, managers of offshore installations, pipelines, civil engineering sites and inland waterways.
- Provide a copy of the Safe Practices/Operations Manual to the person in charge of the vessel or facility, with written modifications necessitated by specific operating conditions.
- Ensure diving operations are carried out from a suitable and safe location on the surface.
- Develop or modify and produce pre- and post-dive checklists for the operation.
- Develop and implement emergency/contingency procedures.
- Be aware procedures for obtaining medical support in the event of an accident, either diving or non-diving related. Ensure a two-way communication system is available at the dive location to obtain emergency assistance.
- Perform a Job Hazard Analysis for each task undertaken.
- Establish a dive plan ensuring that sufficient breathing mixtures, supplies and proper equipment are available for safe and timely completion of the job task.
- Personally verify that all personnel in the dive team are qualified and physically able to perform tasks assigned. He must make an assessment of the physical condition of the divers prior to each dive to determine if any physical impairment is present which would be detrimental to their health and safety in the water or under hyperbaric conditions.
- Assign the duties of all members of the dive team and personally direct them throughout the diving operations.
- Ensure that the diving equipment designed for use is:
    a. suitable for the planned diving operation
    b. sufficient to regulatory requirements for the diving mode used
    c. inspected prior to each dive and in good working condition
- Ensure that all relevant operating instructions, manuals, decompression tables, treatment schedules, and regulatory publications are available at the dive location and are maintained to reflect current changes and/or developments.
- Ensure the detailed briefing of the diving team and support personnel including:
    a. tasks to be undertaken
    b. unusual hazards or environmental conditions
    c. modifications to standard procedures or safety procedures necessitated by the specific diving operation
- Maintain a depth, bottom time and breathing mix profile at the dive location for each diver during the dive.
- Ensure that each diver is continuously tended while in the water.
- Ensure the dive is terminated when:
    a. The diver requests termination.
    b. The diver fails to respond to communication or communication is lost between the diver and dive team members at the dive location.

c. Communication is lost between the Boat Operator and the Team Leader during live boating operations.
d. The diver begins to use his diver-carried reserve breathing gas supply.

- Ensure after every dive:
  a. The physical condition and well being of the diver is checked by visual observation and verbal questioning.
  b. The diver is instructed to report any physical problems or symptoms of decompression sickness or arterial gas embolism.
  c. The diver is advised of the location of the nearest operating decompression chamber.
  d. The diver is acquainted with the dangers of flying after diving or traveling to altitudes higher than the dive site.

- Report all accidents or incidents involving personnel as required by employer rules and relevant governmental regulations.
- Maintain and submit reports required by employer and relevant governmental regulations concerning diving operations and equipment maintenance, testing or repair.

B. *Diver*

- The diver is assigned by the Team Leader to perform specific tasks underwater and topside.
- A diver shall be at least 18 years old, be medically certified "fit to dive", have a knowledge of diving theory and practice, a full understanding of the diving equipment in use, and of the tasks assigned. All divers should be in possession of an up-to-date diver's log book which can be used to establish levels of experience.
- Each diver, in the carrying out of his duties and responsibilities, shall:
- Accomplish all tasks assigned by the Team Leader. In the event he is assigned a task for which he does not consider himself qualified, either by training and/or experience, he shall immediately inform the Team Leader.
- Read, understand and comply with all policies and applicable governmental regulations of an employer as they relate to his qualifications or performance while engaging in diving operations.
- Maintain a high level of physical fitness.
- Immediately obey all commands or instructions from the Team Leader to return to the surface, first decompression stop, or bell.
- Ensure that the deepest depth of his dive has been established before his ascent.
- Safely move from the water to the decompression chamber without available delay.
- Act as a standby diver when directed to do so. While acting as standby diver, the diver shall:
  a. be dressed sufficiently to allow immediate entry into the water, and to stay at depth as long as circumstances require.
  b. remain at his station throughout the entire dive and in-water decompression.
  c. monitor the dive radio to constantly remain abreast of events of the dive.
- Not be assigned any tasks that might interfere with his duties as standby diver while a diver is in the water.

- Comply with regulations or instructions concerning the use, maintenance, repair and testing of all diving equipment provided by the operation.
- Report to the Team Leader any recent medical treatment or illness so that a proper determination can be made concerning his fitness to dive.
- Immediately report all symptoms or suspected symptoms as early and accurately as possible.
- Report to the Team Leader any defect or malfunction of the diving equipment provided for the diving operation.
- Follow safe diving practices at all times during the diving operation whether on deck or in the water. Bring to the attention of the Team Leader any questionable items. Be alert for the safety of others as well as himself.
- Assist in the training of new personnel or tenders.
- Remain awake and in the vicinity of the decompression chamber for at least one hour following treatment or a hyperbaric exposure outside the no decompression limits.
- Follow safe diving practices at all times during the diving operation whether on deck or in the water. Bring to the attention of the Team Leader any questionable items. Be alert for the safety of others as well as himself.
- Know and observe the rules for flying after diving or traveling to altitudes higher than the dive site.
- Ensure that the diving equipment has been correctly maintained, prepared and tested before each dive. This requirement should never be delegated to others.
- Maintain a diver's logbook which details all dives, medical examinations, courses taken, and personnel equipment maintenance.
- Ensure that medical certificates are up-to-date and recorded in the diver's logbook. Present the logbook to the Team Leader on every job.
- Maintain certification in First Aid and CPR.

C. *Tender*

The tender is assigned by the Team Leader to continuously tend a diver. He shall devote his full time and attention to tending the diver he is assigned to from the preparation of the dive until its completion, including any in-water decompression required. He shall not be assigned any other task while the diver is under water. He should further:

- Assist the diver in dressing and undressing, and confirm that the diver's equipment is functioning properly.
- Tend to the diver's umbilical and be aware of the diver's depth and location at all times.
- Set up and operate all equipment as directed by the Team Leader or his representative.
- In the event he is assigned a task for which he does not consider himself qualified either by training and/or experience, he shall immediately inform the Team Leader or his representative.
- Perform routine maintenance on diving equipment.
- Repair such equipment as he is qualified and checked out to repair.
- Assist in topside work as required or directed.
- Be alert for and immediately report conditions which may be hazardous or unsafe.
- Maintain certification in First Aid and CPR.
- Before being exposed to hyperbaric conditions, the tender must be medically certified "fit to dive".

- Perform limited tasks as a diver when directed by the Team Leader. A tender that dives shall be subject to the duties and responsibilities of a diver within the limitations of his assignments.

14.5 EQUIPMENT PROCEDURES CHECKLIST

(Equipment Logs to be Kept Current with Date of Last Maintenance and Description of Maintenance Performed)

A. *Equipment Preparation*

1. Assemble and lay out all dive equipment, both primary equipment and spares for divers, including all accessory equipment and tools.

2. Check all helmets and masks.

B. *General Equipment*

1. Check that all accessory equipment (tools, lights, special systems, spares, etc.) are on site and in working order.

C. *Preparing the Breathing Gas Supplies*

1. Check that a primary and suitable back-up supply is available with capacity in terms of purity, volume, content and supply pressure to completely service all divers, including decompression, recompression and accessory equipment throughout all phases of the planned operation.

2. Verify that all breathing gas supply systems have suitable volume tank installed in the air supply line between the supply source and diver's hose connection. A filtration system must be installed between the volume tank and the diver umbilical.

3. Verify that all supply hoses running to and from the compressor have proper leads, do not pass near high-heat areas such as steam lines, are free of kinks and bends, and are not exposed on deck in such a way that they could be rolled over, damaged or severed by machinery or other means.

4. Verify that all pressure supply and interface hoses have safety lines and strain reliefs properly attached.

5. Compressors

- Determine that sufficient fuel, coolant, lubricants and anti-freeze are available to service all components throughout the operation. All compressors should be fully fueled, lubricated and serviced (with all spillage cleaned up completely).
- Verify that oil in the compressor is an approved type. Check that compressor oil does not overflow Fill Mark; contamination of air supply could result from fumes of oil mist.

- Check that compressor exhaust is vented away from work area and specifically does not foul the compressor intake.
- Check that compressors are not covered during operation.
- Check all filters, cleaners and oil separators for cleanliness.
- Bleed off all condensed moisture from filters and from the bottom of volume tanks. Check all manifold drain plugs. In cold weather, this must be performed several times throughout the day to prevent the formation of ice plugs in the whips and umbilicals.
- Check that all valves are properly aligned.
- Check that all belt-guards are properly in place on drive units.
- Check all pressure-release valves, check valves and automatic unloaders.

D. *Activate the Breathing Gas Supplies*

1. Compressors

- Ensure that all warm-up procedures are completely followed.
- Check all petcocks, filler valves, filler caps, overflow points, bleed valves and drain plugs for leakage or malfunction of any kind.
- Leak check all valves and connections.
- Verify that there is a properly functioning pressure gauge on the air receiver and the compressor is meeting its delivery requirements.

2. Cylinders

- Check all cylinders to determine proper gas being used (compressed air, 02)
- Check all cylinders for proper pressure. Mark empty cylinders to prevent reuse.
- Verify availability and suitability of reserve cylinders.
- Check all manifolds and valves for operation.
- Activate and check delivery.
- Release pressure from regulators prior to detaching from cylinder.

E. *Breathing Gas Hoses*

1. Ensure all hoses have a clear lead and are protected from excessive heating or physical damage.
2. Check breathing gas hoses and fittings for leaks and flow.
3. Umbilicals

- Armored communication wire to be stressed before making up a hose.
- Air supply hose to be pressurized to working pressure when making up a hose.
- Secondary strength member to extend at least 100’ back from the divers end.
- D-Ring will be spliced into the end of the secondary strength member and seized to the common-wire (primary strength member).
- Divers Air Supply hose to be seized to the communication wire every 15” for at least 20 feet back from the divers end.
- Hose will be taped every 15 inches with at least five turns. The tape should be secured to one of the members before wrapping the entire umbilical to prevent slippage. Alternate members of attachment as the taping continues.
- Band fittings on all hoses used for life-support. No reusable fittings.
- Hose ends will be taped up when not in use.
- Coiled hoses will be tied with at least two lanyards when not in use.

- Umbilical marked every 10 feet for the first 100 feet, every 50 feet thereafter.

F. *Test of Equipment with Activated Breathing Gas Supply*

1. Blow out all hoses for approximately 15 seconds to make sure no condensation or debris in hose.

2. Check all exhaust and non-return valves.

3. Hook up all breathing gas hoses to helmets, masks and chamber; make connection between back-up supply and primary supply manifold.

4. Ensure breathing gas mixture is suitable for depth and diving mode used.

5. Verify flow to helmets and masks. Normally the "dial-a-breath" will have been dialed out to relieve tension on the spring. This will cause the hat to free flow excessively unless it is dialed in at this time.

6. Hook up and test all communications.

7. Check breathing gas flow from both primary and back-up supplies to chamber.

G. *Final Preparations*

1. Verify that all required records, logs and timesheets are on the diving station.

2. Check that appropriate decompression and treatment tables are readily at hand.

14.6 EMERGENCY PROCEDURES

A. *Loss of Breathing Media*

1. Re-establish breathing media supply by:
   - Activate topside secondary breathing media supply, or
   - Put breathing media to diver's pneumo hose and have diver insert pneumo hose into helmet/mask.
2. Alert standby diver.
3. Diver goes to bell/stage (if applicable).
4. If required, send standby diver to diver's assistance.
5. Terminate dive.

B. *Loss of Communications*

1. Attempt to establish line-pull signals.
2. Put air to diver's pneumo.
3. Alert standby diver.

4. Diver proceeds to downline/bell stage (if bell, attempt to use bell communications, if applicable).
5. Bring diver to first stop once line-pull signals are established (decompression diver).
6. If required (unable to establish any form of communications with diver), send standby diver to diver's assistance prior to bringing diver to his first stop. If standby diver is used, standby diver shall follow the diver's umbilical to diver location. By no means is the standby diver to let go of the umbilical or diver till the diver is safe of all hazards or the standby diver is put in an unsafe condition (decompression diver).
7. Terminate dive.

C. *Fouled or Entrapped Diver*

1. Avoid panic and ensure diver does not ditch equipment.
2. Diver informs topside.
3. Alert standby diver.
4. Diver determines extent of entrapment.
5. Diver attempts to free himself.
6. If required, send standby diver to diver's assistance.
7. When diver is free, if shaken, or standby diver was required to go to his assistance, terminate dive.

D. *Injured Diver in Water*

1. Diver informs topside and dive is aborted.
2. Alert standby diver.
3. Diver determines nature and extent of injury.
4. If required, send standby diver down to assist diver, administer first aid, and evaluate injury. Standby diver should remain with diver.
5. Standby diver assists injured diver to surface, following proper decompression procedures, except when severity of injury indicates a greater risk than omitting decompression.
6. Request required medical assistance and emergency evacuation (if required).
7. Monitor breathing. If breathing stops, overpressure diver's regulator, if possible.

E. *Severance of Diver's Umbilical - Gas Hose Only*

1. Put breathing media to diver's pneumo hose.
2. Alert standby diver.
3. If required, diver inserts pneumo hose inside helmet/mask.
4. Diver returns to bell/stage (if applicable).
5. Diver activates and uses emergency breathing media on bell/stage (if applicable).
6. Terminate dive and follow proper decompression procedure.
7. If required, send standby diver down with additional bail-out bottle or hose.

F. *Severance of Complete Umbilical*

1. Alert standby diver.

2. Diver returns to bell/stage (if applicable).
3. Diver activates and uses emergency gas on bell/stage (if applicable).
4. If umbilical severed on deck and the end of the umbilical is still on deck, send standby diver down umbilical with new hose/bail-out bottle. Otherwise, send diver down downline or bell stage cable.

5. Terminate dive and follow proper decompression procedure.

G. *Fire in Equipment*

1. Extinguish fire; secure equipment.
2. Determine damage and effect on diver.
3. If required, terminate dive; commence decompression.
4. Each chamber must have a means of extinguishing a fire in the interior.

H. *Blow Up or Emergency Ascent*

1. Diver should forcibly exhale all the way to the surface.
2. Take up slack on the lines.
3. Remove the diver from the water.
4. Check for embolism.
5. If diver is asymptomatic and decompression was omitted, treat for omitted decompression in accordance with I, below.

I. *Omitted Decompression*

1. If the diver has omitted any decompression, immediately recompress him. If there is no chamber on site, administer oxygen and transport to the nearest chamber.

2. Take diver to depth as appropriate for recompression treatment Table 5 or 6. In the event oxygen is not available, Use Table 1A.

3. If there are no ill effects, decompress diver in accordance with selected treatment table.

4. Any decompression sickness development during or following this procedure should be considered a recurrence.

J. *Equipment Failure - Diver In the Water*

1. Evaluate effect on diver.
2. Inform diver of problem and action planned.
3. Alert standby diver.
4. Alert deck crew.
5. Diver informs topside of his readiness.
6. Activate plan, terminate dive.

K. *Bends in Water/Chamber*

1. Diver informs topside.
2. Diver descends 10 feet deeper than stop at which bend was noticed, or consider surfacing the diver and commencing treatment immediately.
3. Continue in-water decompression increasing stop times by 1½ times.
4. Inform Safety Department immediately and follow their instructions.
5. Be prepared to treat on Table 6 or extended treatment tables.
6. Medical evaluation.

L. *Bends Following Decompression*

1. Diver reports to Team Leader.
2. Do neurological exam if serious symptoms are not apparent or until detected.
3. Recompress and treat according to the following:
   * Pain only bends on Table 6.
   * Serious symptoms on Table 6 - consider more aggressive therapy.
   * Gas embolism on Table 6A.
   * Reoccurrence on Table 6.
4. Notify Safety Officer immediately.
5. Notify diving doctor.

M. *Gas Embolism*

1. Diver reports symptoms, or crew observes signs, or diver is discovered unconscious following a dive.
2. Elevate feet, administer oxygen, and transport to chamber.

N. *Emergency Evacuation*

1. Notify diver of emergency and terminate dive.
2. Decompress diver according to proper decompression procedures. If not possible, follow omitted decompression procedures.
3. Evacuate all unnecessary personnel to safe platform.
4. Contact management and inform them of conditions as soon as possible. Additional emergency procedures should be developed as needed, possibly including but not limited to:
   - Loss of power supplies.
   - Adverse environmental conditions, including but not limited to:
   - Weather
   - Sea State

ATTACHMENT 1

HASP Acknowledgment

On Site Personnel Health and Safety Plan Compliance Agreement

I have been given a verbal full HASP review by MT personnel of the MT Health and Safety Plan for activities at the site. My signature indicates that I have been notified of the on-site location of the above stated Plan, have been provided the opportunity to review the contents of the Plan and have been provided with on-site training, which includes a verbal review of the contents of this HASP by MT personnel. I will comply with the requirements and protocols outlined in the HASP when working at or visiting the site.

Employee Name [print]	***Employee Signature***	***Date***

On Site Personnel Health and Safety Plan Compliance Agreement, cont.

I have been given a verbal full HASP review by MT personnel of the MT Health and Safety Plan for activities at the site. My signature indicates that I have been notified of the on-site location of the above stated Plan, have been provided the opportunity to review the contents of the Plan and have been provided with on-site training, which includes a verbal review of the contents of this HASP by MT personnel. I will comply with the requirements and protocols outlined in the HASP when working at or visiting the site.

Employee Name [print]	*Employee Signature*	*Date*

On Site Personnel Health and Safety Plan Compliance Agreement, cont.

I have been given a verbal full HASP review by MT personnel of the MT Health and Safety Plan for activities at the site. My signature indicates that I have been notified of the on-site location of the above stated Plan, have been provided the opportunity to review the contents of the Plan and have been provided with on-site training, which includes a verbal review of the contents of this HASP by MT personnel. I will comply with the requirements and protocols outlined in the HASP when working at or visiting the site.

Employee Name [print]	***Employee Signature***	***Date***

On Site Personnel Health and Safety Plan Compliance Agreement, cont.

I have been given a verbal full HASP review by MT personnel of the MT Health and Safety Plan for activities at the site. My signature indicates that I have been notified of the on-site location of the above stated Plan, have been provided the opportunity to review the contents of the Plan and have been provided with on-site training, which includes a verbal review of the contents of this HASP by MT personnel. I will comply with the requirements and protocols outlined in the HASP when working at or visiting the site.

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Employee Name [print]	***Employee Signature***	***Date***

On Site Personnel Health and Safety Plan Compliance Agreement, cont.

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Employee Name [print]	***Employee Signature***	***Date***

ATTACHMENT 2

Safety Meeting Report

MAXYMILLIAN Technologies
1601 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

SAFETY MEETING REPORT

LOCATION: CON EDISON KENT AVE SITE BROOKLYN, NY	**JOB NO: 11025**
SAFETY TOPIC:	**REPORTED BY:**
MEETING DATE:	**TIME:**

PERSONNEL ATTENDING

1.	**9.**
2.	**10.**
3.	**11.**
4.	**12.**
5.	**13.**
6.	**14.**
7.	**15.**
8.	**16.**

TOPICS COVERED:	**COMMENTS:**

MAXYMILLIAN Technologies
1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

SAFETY MEETING REPORT

LOCATION: CON EDISON KENT AVE SITE BROOKLYN, NY	**JOB NO: 11025**
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PERSONNEL ATTENDING

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TOPICS COVERED:	**COMMENTS:**

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SAFETY MEETING REPORT

LOCATION: CON EDISON KENT AVE SITE BROOKLYN, NY	**JOB NO: 11025**
SAFETY TOPIC:	**REPORTED BY:**
MEETING DATE:	**TIME:**

PERSONNEL ATTENDING

1.	**9.**
2.	**10.**
3.	**11.**
4.	**12.**
5.	**13.**
6.	**14.**
7.	**15.**
8.	**16.**

TOPICS COVERED:	**COMMENTS:**

ATTACHMENT 3

Medical Data Sheets

Medical Data Sheet

A Medical Data Sheet, such as that provided below, will be completed by all onsite personnel and will be kept in the Support Zone during site operations. It is in no way a substitute for the Medical Surveillance Program requirements consistent with the Health and Safety Program for Hazardous Waste Sites. This data sheet will accompany any personnel when medical assistance or transport to hospital facilities is required. If more information is required, the back of this sheet may be used.

Project: _____

Name: _____

Address: _____

Home Phone: Area Code: _____

Date of Birth: _____ Height: _____ Weight: _____

In case of emergency contact: _____

Name

Address: _____

Telephone: Area Code: _____

DO YOU WEAR CONTACT LENSES? YES NO

Allergies: _____

List Medications taken regularly: _____

Particular sensitivities: _____

Previous/recent illnesses or exposures to hazardous chemicals: _____

_____

Name of Personal Physician: _____

Telephone: Area Code: _____

Medical Data Sheet

A Medical Data Sheet, such as that provided below, will be completed by all onsite personnel and will be kept in the Support Zone during site operations. It is in no way a substitute for the Medical Surveillance Program requirements consistent with the Health and Safety Program for Hazardous Waste Sites. This data sheet will accompany any personnel when medical assistance or transport to hospital facilities is required. If more information is required, the back of this sheet may be used.

Project: _____

Name: _____

Address: _____

Home Phone: Area Code: _____

Date of Birth: _____ Height: _____ Weight: _____

In case of emergency contact: _____

Name

Address: _____

Telephone: Area Code: _____

DO YOU WEAR CONTACT LENSES? YES NO

Allergies: _____

List Medications taken regularly: _____

Particular sensitivities: _____

Previous/recent illnesses or exposures to hazardous chemicals: _____

_____

Name of Personal Physician: _____

Telephone: Area Code: _____

ATTACHMENT 4

OSHA First Report of Incident Form

Consolidated Edison First Report of Incident Form

OSHA's Form 301
Injury and Illness Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by _____

Title _____

Phone (____) ____ - ____ Date ____/____/____

Information about the employee

1) Full name _____

2) Street _____

City _____ State _____ ZIP _____

3) Date of birth ____/____/____ > (Office Use)

4) Date hired ____/____/____

5) ☐ Male
☐ Female

Information about the physician or other health care professional

6) Name of physician or other health care professional _____

_____

7) If treatment was given away from the worksite, where was it given?

Facility _____

Street _____

City _____ State _____ ZIP _____

8) Was employee treated in an emergency room?
☐ Yes
☐ No

9) Was employee hospitalized overnight as an in-patient?
☐ Yes
☐ No

9a) Was there any blood or body fluid?
☐ Yes (Anyone exposed to blood should file a
☐ No report with the field coordinator immediately)

Information about the case

(Office Use)

10) Case number from the *Log* _____ *(Transfer the case number from the Log after you record the case.)*

11) Date of injury or illness ____/____/____

12) Time employee began work _____ AM / PM

13) Time of event _____ AM / PM ☐ Check if time cannot be determined

14) ***What was the employee doing just before the incident occurred?*** Describe the activity, as well as the tools, equipment, or material the employee was using. Be specific. *Examples:* "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."

15) ***What happened?*** Tell us how the injury occurred. *Examples:* "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."

16) ***What was the injury or illness?*** Tell us the part of the body that was affected and how it was affected; be more specific than "hurt," "pain," or "sore." *Examples:* "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) ***What object or substance directly harmed the employee?*** *Examples:* "concrete floor"; "chlorine"; "radial arm saw." *If this question does not apply to the incident, leave it blank.*

18) ***If the employee died, when did death occur?*** Date of death ____/____/____

CONSOLIDATED EDISON COMPANY OF NEW YORK
CONSTRUCTION EH&S
CONTRACTOR INJURY REPORT

Injury Date: _____ *Time of Injury:* _____ *Work Location:* _____

Date Reported: _____ *Time Reported:* _____

Name of Injured: _____ *Contractor Co:* _____

Home Address: _____

Date of Birth: _____ *SS# (Last 4 digits):* _____ *Length of Svce:* _____

Supervisor: _____ *Phone:* _____ *Shift:* _____

PART OF BODY
Be as specific as possible (e.g. right index finger, left foot, etc.)

____	1. Head	____	15. Chest
____	2. Nose	____	16. Abdomen
____	3. Ears	____	17. Back
____	4. Eyes	____	18. Hip
____	5. Mouth	____	19. Knee
____	6. Face	____	20. Ankle
____	7. Jaw	____	21. Leg
____	8. Neck	____	22. Foot
____	9. Shoulder	____	23. Toe
____	10. Elbow	____	24. Body
____	11. Wrist	____	25. Heart
____	12. Arm	____	26. Lungs
____	13. Hand	____	27. Skin
____	14. Finger	____	28. Throat

NATURE OF INJURY / ILLNESS

____	1. Laceration	____	9. Burns
____	2. Puncture	____	10. Shock
____	3. Contusion / Bruise	____	11. Inhalation
____	4. Sprain / Strain	____	12. Infection
____	5. Fracture / Dislocation	____	13. Hernia
____	6. Concussion	____	14. Skin Disorder
____	7. Amputation	____	15. Irritation
____	8. Foreign Matter	____	16. Unconsciousness

INJURY CLASSIFICATION

Medical Treatment ____
Restrictions (if yes, please describe): _____
Lost Time ____
First Aid ____
Non-recordable (FYI) ____

TYPE OF INCIDENT

____	1. Animal	____	10. Falling Objects	____	19. Stepped In	____	28. Steam
____	2. Insect	____	11. Gas / Fumes	____	20. Caught Between	____	29. Heat
____	3. Electric flash	____	12. Handling Objects	____	21. Altercation	____	30. Sun
____	4. Electric contact	____	13. Pushing Objects	____	22. Improper Body Pos	____	31. Chemicals
____	5. Burns (Other)	____	14. Pulling Objects	____	23. Vehicle Accident	____	32. Plants
____	6. Slip	____	15. Lifting Objects	____	24. Improper Tool Use	____	33. Carrying Obj
____	7. Trip	____	16. Striking Objects	____	25. Flames	____	34. Hearing Loss
____	8. Fall	____	17. Struck By Objects	____	26. Smoke	____	35. Repetitive Motion
____	9. Flying Objects	____	18. Stepped On	____	27. Vapors	____	36. Other

Describe nature, extent and type of injury (if not listed abov _____

Describe fully how injury was sustained

_____

Witnesses (Name & Address): 1) _____
2) _____

Hospital: _____ Address: _____

Physician: _____ Admitted to Hospital: ____ YES ____ NO

Treatment Received: _____

Report Prepared By: _____ Emp #: ____ Phone: _____ Date: _____

CCI / Supervisor: _____ Emp #: ____ Phone: _____

EH&S Rep: Thomas F. O'Connell Emp #: 85425 Phone: (718) 204-4282

PO # _____

If you cannot e-mail the form, then you may fax it to: Construction EHS&T at 917-534-4490

ATTACHMENT 5

MT Site Visitor Log

MAXYMILLIAN Technologies
1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

BROOKLYN, NY

CON EDISON KENT AVE

MAXYMILLIAN TECHNOLOGIES PROJECT NO. 11025

2011

VISITOR SIGN-IN SHEET

Date	Name	Company	Time In	Time Out

MAXYMILLIAN Technologies
1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

BROOKLYN, NY

CON EDISON KENT AVE

MAXYMILLIAN TECHNOLOGIES PROJECT NO. 11025

2011

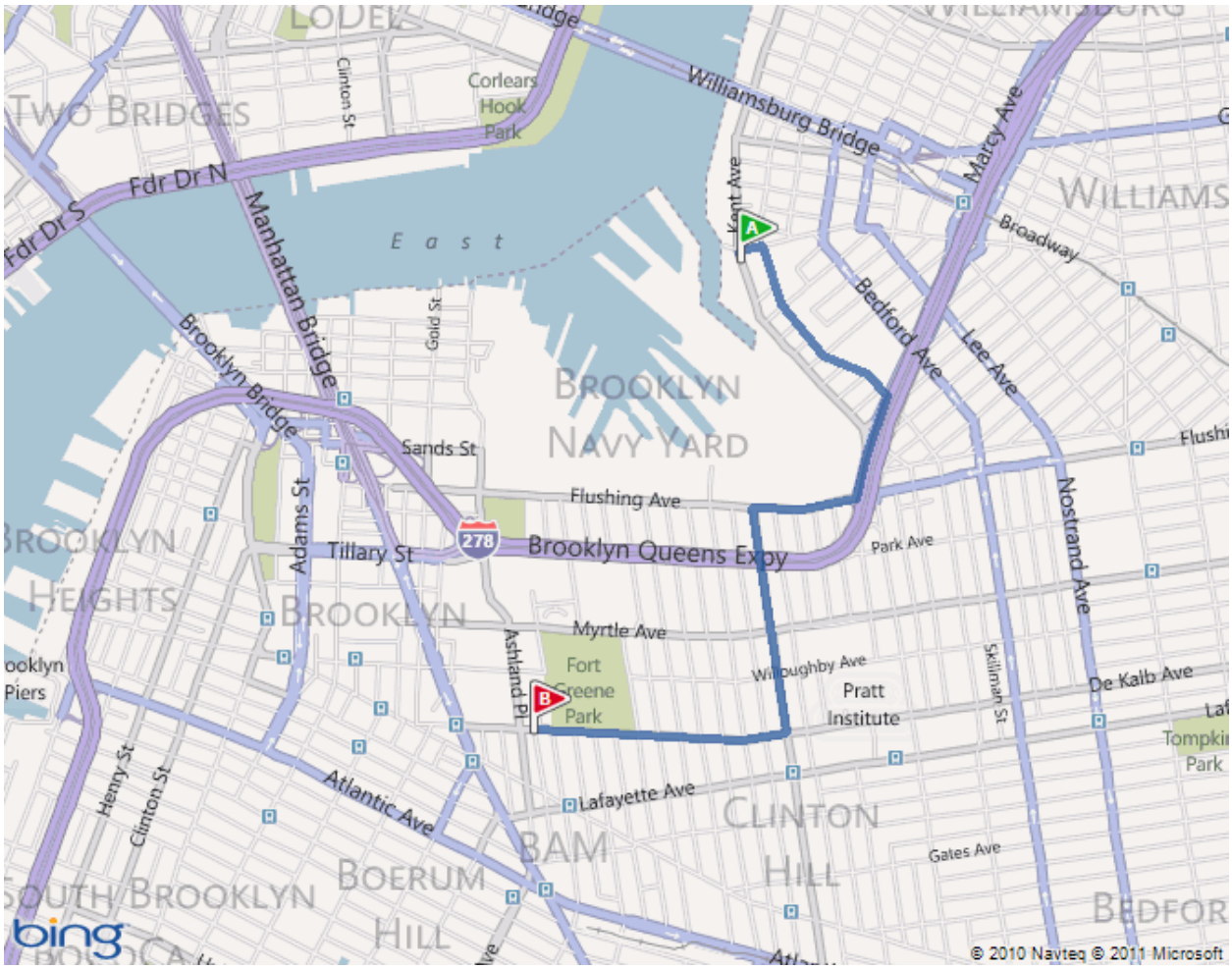
VISITOR SIGN-IN SHEET

Date	Name	Company	Time In	Time Out

ATTACHMENT 6

Hospital Route
&
Emergency Phone List

Hospital Location Map



Starting Location: 500 Kent Avenue
Brooklyn , NY

Ending Location: Brooklyn Hospital Center
121 Dekalb Avenue
Brooklyn, NY
718-250-8000

Route: **2.3 miles, 8 minutes**

7. Depart Kent Ave toward Division Ave
8. Turn right onto Division Ave, and then immediately turn right onto Wythe Ave
9. Turn right onto Williamsburg St W
10. Turn right onto Flushing Ave
11. Turn left onto Washington Ave
12. Turn right onto De Kalb Ave / Dekalb Ave
7. Arrive at 121 Dekalb Ave, Brooklyn, NY 11201-5425

EMERGENCY NUMBERS

POLICE, AMBULANCE, FIRE, HOSPITAL 911

- Brooklyn Hospital Center.....(718) 250-8000
  121 Dekalb Avenue
  Brooklyn, NY 11201
- EPA National Response Center ..... (800) 424-8802
- American Association of Poison Control Centers ..... (800) 222-1222
- NY State Dept. of Environmental Conservation..... (718) 482-4900
  Region 2
- NYDEC 24 hour Spill Hotline ..... {within NY State} (800) 457-7362
  ..... {outside NY State} (518) 457-7362

PERSONNEL PHONE NUMBERS

Maxymillian Technologies, Inc. Personnel, subcontracted by MT:

- MT Headquarters (Pittsfield, MA) .....Office: (413) 499-3050
- Matt McCarthy, Offsite Project Manager .....Office: (781) 890-8670
- Jim Smith, Site Supervisor (PM): .....Cell: (413) 441-1516
- Sarah Smith, Site Health & Safety Officer (SHSO): .....Cell: (413) 441-2492
- Chris Jones, Supervisor / Quality Control Engineer .....Cell: (413) 447-0332
- Dan Dargie, Supervisor / Quality Control Engineer .....Cell: (413) 822-3569
- Joseph L. Sbarra (CIH) ....Cell: (732) 841-0006
- MT SITE TRAILER ....Office: TBD

Con Edison Personnel:

- David Rubin, Project Manager.....Office: (718) 204-4219
- Ulrick W. Samuel, Construction Management .....Office: (718) 204-4010
- Thomas F. O'Connell, Construction EH&S .....Office: (718) 204-4282
- Michael Lombardi, Construction Manager .....Office: (718) 204-4417
- Mike Musto, Chief Construction Inspector.....Office: (718) 204-4019
- Joe Baratta, Chief Construction Inspector .....Office: (916) 567-7012

ATTACHMENT 7

MT Air Monitoring Log

MAXYMILLIAN Technologies

1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

BROOKLYN, NY

CON EDISON KENT AVE SITE

MAXYMILLIAN TECHNOLOGIES PROJECT NO. 11025

2011

Air Monitoring Log

Date: ______________________ **Weather:** ______________________________

Ludlum Multi-Meter S/N: ______________________ **Temp:** ______________________________

VOC - OVM S/N: ______________________

O_2 - Scott Alert S/N: ______________________

Location	Type of Air					Wind Direct	Time	Comments
	O_2	VOC	Dust					

1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

BROOKLYN, NY

CON EDISON KENT AVE SITE

MAXYMILLIAN TECHNOLOGIES PROJECT NO. 11025

2011

Air Monitoring Log

Date: ____________________ **Weather:** ____________________

Ludlum Multi-Meter S/N: ____________________ **Temp:** ____________________

VOC - OVM S/N: ____________________

O_2 - Scott Alert S/N: ____________________

Location	Type of Air					Wind Direct	Time	Comments
	O_2	VOC	Dust					

1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

BROOKLYN, NY
CON EDISON KENT AVE SITE
MAXYMILLIAN TECHNOLOGIES PROJECT NO. 11025
2011

Air Monitoring Log

Date: ______________________ Weather: ______________________

Ludlum Multi-Meter S/N: ______________________ Temp: ______________________

VOC - OVM S/N: ______________________

O_2 - Scott Alert S/N: ______________________

Location	Type of Air					Wind Direct	Time	Comments
	O_2	VOC	Dust					

MAXYMILLIAN Technologies
1801 EAST STREET
PITTSFIELD, MA 01201
413 499-3050
Fax 413 443-0511

BROOKLYN, NY
CON EDISON KENT AVE SITE
MAXYMILLIAN TECHNOLOGIES PROJECT NO. 11025
2011

Air Monitoring Log

Date: ______________________ **Weather:** ______________________________

Ludlum Multi-Meter S/N: ______________________ **Temp:** ______________________________

VOC - OVM S/N: ______________________

O_2 - Scott Alert S/N: ______________________

Location	Type of Air					Wind Direct	Time	Comments
	O_2	VOC	Dust					

ATTACHMENT 8

Triangle Health and Safety Personnel Qualifications

CIH: **Joseph L. Sbarra, CIH**

STAFF RESUME

Joseph L. Sbarra, CIH

EXPERIENCE SUMMARY

Twenty eight years of comprehensive occupational health and safety experience for private industry, consulting, and government. Mr. Sbarra has managed and conducted audits of comprehensive health and safety programs, construction sites, and hazardous waste sites. He has supervised project environmental, health and safety staff, as well as governmental enforcement staff. He has performed industrial hygiene surveys involving asbestos, lead, heat stress, indoor air quality, metals, noise, silica dust, and volatile organic compounds. Mr. Sbarra has conducted health and safety training programs for construction safety, air monitoring, asbestos, lead, hazardous waste, and respiratory protection.

PROFESSIONAL AFFILIATIONS

American Industrial Hygiene Association - National
American Academy of Industrial Hygiene

REGISTRATIONS/CERTIFICATIONS

Certified in Comprehensive Practice for Industrial Hygiene by ABIH, No. 5826
-01/01/09-12/31/13
Authorized OSHA Construction Outreach Trainer- 1998 (authorization updated through 7/2013)
Approved EPA Asbestos Inspector- 2006
Approved EPA Asbestos Management Planner- 2006
Completed Certified Microbial Consultant Course- 2004
Completed New Jersey Lead Inspector/Risk Assessor Course- 1997
Certified NIOSH 582 Asbestos in Buildings: Air Sampling and Analysis - 1995

EDUCATION

BS / Environmental Science / Cook College, Rutgers University / 1983

TRAINING

40-Hour OSHA Hazardous Waste Health and Safety Training - 1987
8-Hour OSHA Hazardous Waste Health and Safety Refresher & Supervisor Training – Current

Triangle Health & Safety Solutions

Hightstown, NJ; 7/01 – Present

President - Triangle Health & Safety Solutions provides comprehensive industrial hygiene and safety consulting services. A summary of the services includes: Program Development, Health and Safety Training, Incident Analysis, Loss Prevention and Control, Evaluation of Programs/Auditing; Indoor Air Quality Evaluation and Control, Exposure Assessment, Asbestos, and Lead Management Services, Construction Site Services, Hazardous Waste Site Services, Safety Incentive Program Development, Ergonomic Assessments, and Regulatory and Litigation Support Services.

Notably, Mr. Sbarra was the health and safety manager for the World Trade Center (WTC) Phase II (2006-2007) and Phase III (2010) Search for Potential Human Remains. Mr. Sbarra also served as CIH/Site Safety Officer for NYCDEP remediation of Paerdagat Basin (2010-2011).

PREVIOUS EXPERIENCE SUMMARY

Foster Wheeler Environmental Corporation
Livingston, NJ; 3/87 – 7/01
Health and Safety Manager - Responsible for management of health and safety staff, development and auditing of comprehensive health and safety programs, and oversight of subcontractor health and safety programs. Instructor in corporate health and safety training programs; including hazardous waste operations, hearing conservation, bloodborne pathogens, confined space entry, excavation and trenching, temperature extremes, back safety, ergonomics, and more.

New Jersey Department of Labor
Office of Asbestos Control and Licensing
Trenton, NJ; 10/85 - 3/87
Occupational Health Consultant - Supervised the field staff who conducted inspections to enforce the New Jersey Asbestos Control and Licensing Act. Duties included determining whether contractors seeking licensure had adequate work practices and an adequate respiratory protection program. Other duties included developing and administering a respiratory protection program for the field staff and providing consultation to the public on all matters pertaining to asbestos.

New Jersey Department of Health
Occupational Health Program
Trenton, NJ; 10/83 – 10/85
Program Specialist - Conducted investigations to identify, measure and evaluate employee exposures to potentially harmful agents and preparing industrial hygiene reports containing findings, conclusions and recommendations. Participated in training programs for employees and health professionals on occupational health matters. Other duties included repair, maintenance and calibration of equipment utilized for workplace monitoring.

Johnson and Johnson Products
North Brunswick, NJ; 6/82 – 12/82
Industrial Hygiene Technician - Identified, measured and evaluated employee exposures to potentially harmful agents, and prepared industrial hygiene reports. Responsible for the maintenance and calibration of instruments employed for workplace monitoring and preparation of samples for laboratory analysis.

Ethicon
Somerville, NJ; 1/81 – 9/81
Industrial Hygiene Technician - Assisted the industrial hygienist in identifying, measuring and evaluating employee exposures to potentially harmful agents. Other duties included maintenance and calibration of instruments employed for environmental monitoring, preparation of samples for laboratory analysis, and maintenance of employee exposure records.

PROJECT EXPERIENCE SUMMARY

- **Rail Experience-** Mr. Sbarra is the certified industrial hygienist (CIH) for an on-going client project with the LIRR since 2005. This project has involved exposure monitoring, confined spaces, hazard communication, noise monitoring, training program development, and indoor air quality.

- **Auditing Experience-** Mr. Sbarra has provided general safety and industrial hygiene audits for several clients over a wide range of operations. These include: utility companies, insurance companies, and engineering firms. These audits were comprehensive in nature and included loss control as well as regulatory compliance. Audits also included written reports with recommendations. Often recommendations included helping the client develop written corporate procedures and training programs.

- **Construction Experience-** Mr. Sbarra has more than twenty years of experience in construction for a variety of clients, predominately in New York and New Jersey. A wide variety of services have been provided including: safety plan development, training, auditing, site safety officer/manager, and construction oversight. Mr. Sbarra has a broad variety of experience with projects including steel erection, scaffolding, excavation, cranes, and fall protection. Mr. Sbarra is also an OSHA approved Construction Outreach trainer and has conducted numerous courses.

  Mr. Sbarra was the health and safety manager for the World Trade Center (WTC) Search for Potential Human Remains being conducted by the Office of the Chief Medical Examiner. He has developed 5 different safety plans for the project from the excavation at the haul road, to the two different sifting operations, and the removal of materials from subterranean structures. He supervised the site safety officers and performed monthly safety management/oversight of the operations.

- **HAZWOPER Experience-** Mr. Sbarra has twenty three years experience in hazardous waste operations for governmental (EPA, NJDEP, NYCDEP and DOD), public (multiple utility clients), and private entities. He has developed site-specific health and safety plans and programs, and served as site safety officer and/or health and safety manager for more than 100 projects, predominately in New York and New Jersey. Projects have ranged from remedial investigation work to large scale remediation projects. Notable projects include: Paerdegat Basin in Brooklyn, NY, Wells G&H in Woburn, MA, the Times Beach dioxin remediation in Eureka, MO, and Bridgeport Rental and Oil Services remediation in Bridgeport, NJ.

- **Asbestos Experience-** Mr. Sbarra has extensive asbestos experience with asbestos projects from working for NJ Asbestos Control and Licensing to having personally inspected more than 100 abatement projects in New Jersey and New York. He has also developed and reviewed many project specifications and conducted several asbestos awareness courses. Mr. Sbarra is also an EPA approved management planner and inspector.

- **Bridge Experience-** Mr. Sbarra has worked on bridge projects, most extensively on the Manhattan Bridge renovation project in New York City. This project involved providing consulting services for the bridge inspectors who were overseeing the renovation/lead abatement activities. Areas of responsibility included: fall protection, scaffolding, stairways/ladders, hand/power tools, lead abatement, hearing conservation and respiratory protection. Mr. Sbarra has also worked on some other smaller bridge projects involving lead abatement and general safety.

- **Utility Experience-** Mr. Sbarra has worked with several utility companies in the New York and New Jersey area: Con Edison, Keyspan Energy, Niagara Mohawk, PSE&G, and GPU Energy. This work has been on active power plants, substations, and former MGP sites. He has provided a wide variety of services including: general construction safety, exposure monitoring, confined spaces, hazard communication, HAZWOPER, and compliance with facility procedures for electrical safety and confined space entry.

- Mr. Sbarra wrote the city-wide H&S Plan for NYC at the Steam Explosion in that occurred in July of 2007. This city-wide health and safety plan included asbestos hazard control, emergency planning, construction safety and hazard assessment for a multitude of NYC agencies as well as Con Edison.

- Mr. Sbarra also provided site safety services for a 3-mile high pressure gas pipeline installation construction project in New Jersey for Transco-Williams for six months in 2007/2008.

- **Indoor Air Quality-** Mr. Sbarra has conducted numerous indoor air quality assessments for private clients (including hotels, day care centers, and client office buildings), government clients (including the U.S. Postal Service and Long Island Railroad), as well as in residential settings. Mr. Sbarra has also been involved in oversight of mold remediation projects for these clients. Mr. Sbarra also completed the Certified Microbial Consultant Course in 2004.

ABIH

american board of industrial hygiene®

organized to improve the practice of industrial hygiene
proclaims that

Joseph Lawrence Sbarra

having met all requirements through
education, experience and examination,
is hereby certified in the

COMPREHENSIVE PRACTICE
of
INDUSTRIAL HYGIENE

and has the right to use the designations

CERTIFIED INDUSTRIAL HYGIENIST

CIH

Certificate Number: 5826 CP

Awarded: December 7, 1992

Expiration Date: June 1, 2014

Chair ABIH

Executive Director ABIH

ATTACHMENT 9

Health and Safety Plan Amendment Form

HEALTH AND SAFETY PLAN ADDENDUM

Addendum No. _____ Date: _____
Reason for Addendum: _____
_____
_____
_____

Note: If Addendum is due to a new task, then an Activity Hazard Analysis is required to be included in the Addendum.

Addendum Revises Section(s): _____
_____

Text of Addendum (attach separate sheets as necessary): _____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Prepared by: _____ _____
Print Name Signature

Approvals:

Project Manager

_____ _____
Print Name Signature

Certified Industrial Hygienist

_____ _____
Print Name Signature

Appendix A

Maxymillian Technologies Inc.

Checklists and Inspection Forms

Safety and Emergency Equipment Checklist
Form A-1

Inspector:_____ **Date:**_____

Title:_____ **Time:**_____

Equipment	Types of Problems	Status	Remedial Actions
Fire extinguisher	seals, pressure, access	_____	_____
Alarms	horn damage	_____	_____
SCBA	air supply, damaged	_____	_____
Respirators	cartridges, damaged	_____	_____
Face shields, goggles, glasses	low stock, damaged	_____	_____
Hard hats	low stock, damaged	_____	_____
Boots	low stock, damaged	_____	_____
Gloves	low stock, damaged	_____	_____
Protective clothes	low stock, damaged	_____	_____
Eyewash stations	low liquid	_____	_____
First Aid kits	low stock	_____	_____
Emergency lights	battery or bulb failure	_____	_____

Safety Inspection Checklist

Form A-2

Item	Satisfactory	Not Satisfactory
Personal protective equipment		
Safety glasses/goggles/face shields		
Gloves		
Boots		
Respirators		
Protective clothing		
Life Jackets/Buoyant Vests		
Safety Equipment		
Eye protection		
Hearing protection		
Head protection		
Foot protection		
Skin protection		
Respiratory protection		
Fall protection		
Life Saving Skiffs		
Electrical		
Lighting		
Grounding		
Insulation		
Loose wires		
Emergency lighting		
Makeshift wiring		
Approved equipment for hazardous classification		
First Aid		
Eyewash station		
First Aid kit		
Adequately trained personnel		

Item	Satisfactory	Not Satisfactory
Employee Instruction		
Protective equipment	_____	_____
Proper lifting procedures	_____	_____
Smoking area	_____	_____
Evacuation procedures	_____	_____
Decontamination	_____	_____
Horseplay	_____	_____
Rest area	_____	_____
Lunch area	_____	_____
Material Handling Equipment		
Cables, ropes, chains, etc.	_____	_____
Front-end loader	_____	_____
Crane	_____	_____
Crusher/Shredder	_____	_____
Screen	_____	_____
Handling Building	_____	_____
Barge	_____	_____
Machinery		
Protective guards or covers	_____	_____
Leak	_____	_____
Rotation	_____	_____
Lubrication	_____	_____
Grounding	_____	_____
Other	_____	_____
Housekeeping		
Tripping hazards	_____	_____
Trash	_____	_____
Loose material	_____	_____
Storage of flammable materials	_____	_____
Leaks	_____	_____
Unobstructed access	_____	_____

Item	Satisfactory	Not Satisfactory
Material Storage		
Venting	_____	_____
Labeling	_____	_____
Material compatibility	_____	_____
Container integrity	_____	_____
Open flames	_____	_____
Sparks	_____	_____
Lockout/Tagout Procedures	_____	_____
Health and Safety Plan on Site	_____	_____

Employee Signature: _____ Date: _____

Supervisor Signature: _____ Date: _____

Inspector Signature: _____ Date: _____

Construction Equipment Inspection Sheet
Form A-3

Inspector:_____ **Date:**_____

Title:_____ **Time:**_____

Equipment	Types of Problems	Status	Observations/ Remedial Actions
Backhoe #__	cab glass missing	_____	_____
	no backup signal	_____	_____
	no parking brake	_____	_____
	brakes soft	_____	_____
	hydraulic problem	_____	_____
	no seat belt	_____	_____
Crane # ___	cab glass missing	_____	_____
	no backup signal	_____	_____
	no parking brake	_____	_____
	brakes soft	_____	_____
	hydraulic problem	_____	_____
	no seat belt	_____	_____
Bulldozer # ___	cab glass missing	_____	_____
	no backup signal	_____	_____
	no parking brake	_____	_____
	brakes soft	_____	_____
	hydraulic problem	_____	_____
	no seat belt	_____	_____
Front-End Loader # ___	cab glass missing	_____	_____
	no backup signal	_____	_____
	no parking brake	_____	_____
	brakes soft	_____	_____
	hydraulic problem	_____	_____
	heater broken	_____	_____
	defroster broken	_____	_____
	no seat belt	_____	_____

Appendix B

Maxymillian Technologies, Inc.

Material Safety Data Sheets

WILL BE SUBMITTED FOR APPROVAL

Appendix C

Maxymillian Technologies, Inc.

Hazard Communication Program

Hazard Communication Standard

Table of Contents

1.0 OVERVIEW

The Hazard Communication Standard is intended to satisfy requirements of various federal and state agencies. In particular, the Occupational Safety and Health Administration (OSHA) 29 CFR part 1926 and state Right-To-Know laws require us to make this information available to you. This standard contains information about categories of potentially hazardous materials with which workers might come in contact on a jobsite. Be sure you understand how to find information about hazardous materials.

We will make a copy of this standard available to each jobsite supervisor. It is your right to review this standard. Master copies of this standard will be maintained at the home office. This standard and the Material Safety Data Sheets (MSDSs) that represent each category are intended for use at all company jobsites; each jobsite may also have specific MSDSs. Only Con Edison approved chemicals may be brought and used on the jobsite.

Determination of hazardous materials is made by the manufacturer or importer of the material, not by this company. If doubt exists about the accuracy of a hazard evaluation, a qualified person may make the determination, using the guidelines set forth by the Occupational Safety and Health Administration (OSHA) and the written procedures for the evaluation included in this standard, as per 48 Federal Register (FR) 53296-66 through 5335-36. The determinations of qualified persons regarding hazard evaluations shall not preclude state or federal hazardous materials lists.

1.1 Training

It is your right as an employee to be trained to recognize hazardous materials and to understand the importance of performing your job safely. You should be trained before you begin working at a jobsite in how to safely work with hazardous materials in general and those specific to the jobsite. This provision for being trained before beginning work applies especially to the performance of non-routine tasks. It is the joint responsibility of the Safety Engineer and the jobsite supervisor to ensure that such training is provided. You will be requested to sign a copy of a training verification form that indicates when, where, and by whom you were trained; copies of this form are maintained at the home office.

1.2 Definitions

The following abbreviations and terms are used throughout this standard:

Hazard Warning

- Any picture, symbol, or combination of pictures and/or symbols that convey the hazard(s) of the substance(s) in the container(s). These hazard warnings are provided by the manufacturer of the substance.

MSDS/MSDSs
- Material Safety Data Sheets; A printed form that provides information about health, fire, and safety risks associated with a particular substance of compound. These forms are provided by the manufacturer of the substance.

NFPA
- National Fire Protection Agency; a non-profit organization whose aim is to safeguard against fires. The NFPA is responsible for the nationally accepted NFPA 704 Fire Hazard Marking System.

OSHA
- Occupational Safety and Health Administration; the federal agency responsible for the establishment and enforcement of safety and health standards in industry.

UN Classification Numbers
- Those numbers located on some hazard warnings to identify the type and degree of a particular hazard.

UN ID Numbers
- The four-digit identification system used for shipping hazardous materials. For details on this identification system, refer to the Emergency Response Guide Book (Department of Transportation Publication Number 5800.4).

2.0 IDENTIFYING AND LABELING HAZARDOUS MATERIALS

IMPORTANT: DO NOT remove the label from any container. If a label is removed accidentally or is missing, be sure to notify the jobsite supervisor.

2.1 Responsibilities and Requirements

Jobsite supervisors are responsible for ensuring that all containers in which hazardous materials are stored or transported are labeled properly. If a label is accidentally removed, promptly transfer the information and affix a new label to the container. At a minimum, the label must be written in English and must identify the material and the appropriate hazard warning(s).

Original labels will list the chemical identity, appropriate hazard warnings and the name and address of the manufacturer. Referral will be made to the corresponding MSDS to assist in verifying label information. Original labels should not be defaced or removed.

If chemicals are transferred from a labeled container to a portable container that is intended only for immediate use, no labels are required on the portable container. However, no hazardous materials or chemicals should be permanently used or stored in unlabeled containers.

2.2 More than 1 gallon or 5 pounds

It is the responsibility of the manufacturer or distributor of a substance to label, tag, or mark each container that holds more than one (1) gallon or five (5) pounds of hazardous material. The label will contain, at a minimum:

- Identity of the material or substance
- Hazard warning(s) appropriate for the material(s) or substance(s)
- Name and address of the manufacturer (and/or other responsible party).

The label will be diamond-shaped, not less than four (4) inches per side, and include the symbol(s) appropriate for the substance.

2.3 More than 5 gallons or 30 pounds

Containers holding more than five (5) gallons or thirty (30) pounds of an NFPA-classified hazardous substance are required to carry an NFPA label, in addition to the basic label.

The exception to the labeling requirement involves solid metal: solid metal need only be identified by label or MSDS during or prior to initial shipment; subsequent loads need not be labeled.

2.4 Less than 1 gallon or 5 pounds

Containers holding less than one (1) gallon or five (5) pounds may provide signs, placards, or written operating procedures instead of labels, as long as the required information is conveyed.

3.0 MSDS - GENERAL INFORMATION

3.1 Suppliers

MSDSs are supplied by the distributor or manufacturer, either with the first or every delivery of the hazardous substance(s). If an MSDS for a substance is not on file, a responsible person appointed by the Safety Engineer will make written request of the distributor for the MSDS. That person will retain a copy of the written request for safety records.

3.2 File Maintenance

An MSDS for each substance with which an employee might come into contact is kept on file at the home office. Each jobsite supervisor is responsible for ensuring that his or her book contains an MSDS for each substance at the jobsite. The Safety Engineer will appoint a responsible person to ensure the proper and accurate maintenance of MSDS files.

3.3 Distribution Responsibility

Responsibility for MSDSs is shared by the person who accepts shipment, the person who delivers shipment, and the person who maintains MSDS files. If you accept or deliver a shipment that includes an MSDS, it is your responsibility to deliver the MSDS to the home office. A responsible person at the home office will file and distribute the MSDS.

3.4 Availability at Jobsites

The jobsite supervisor or an appointed employee will be responsible for making this standard available to all employees at that jobsite. In the event the individual who maintains the standard is unavailable, copies of this standard, as well as a complete set of MSDSs, can be found at the home office.

3.5 Contents

The specific content and format of MSDSs may vary. At a minimum, they must include the following information:

1. Product identification
   - material name
   - synonyms and trade names
   - chemical formula (unless proprietary)

1. Hazardous ingredients
   - percentage of hazardous substances
   - toxicological data

1. Physical data
   - vapor pressure
   - solubilities
   - specific gravity
   - vapor density

1. Fire and explosion data
   - autoignition temperature
   - flash point
   - flammability limits in ark
   - precautions

1. Reactivity data

2. Health hazard and first aid information

3. Special protection requirements and recommendations

4. Special precautions

5. Point of contact and manufacturer information

4.0 INFORMATION AND TRAINING

All employees who may come in contact with hazardous materials will be provided with general training in how to safely work with hazardous materials. Training also discusses employee rights about working with hazardous substances. OSHA and state Right-To-Know laws require us to maintain records of your training sessions.

4.1 Supervisory Responsibility

Job supervisors are responsible for ensuring that all members of their work crews are trained according to the provisions outlined below. Job supervisors should check with each new member of the crew or with the home office to ensure that the employee has been trained before the employee begins work at the jobsite.

4.2 General Training

You will be trained before your assignment to a jobsite. After this general training, you will receive updated and refresher training annually. Training will be documented by a sign-in sheet recording each employee's attendance, the date and the training topics covered. Training will cover:

1. Health and physical hazards of chemicals in the work area
2. Methods for detecting the presence or release of hazardous chemicals in the workplace
3. Interpreting MSDSs and labels
4. Protective measures
5. Understanding this standard
6. Operations at worksites with hazards chemicals
7. Right to request MSDSs
8. Right to refuse to work with a substance
9. Standard location and availability, including lists of chemicals and MSDSs

4.2.1 Non-Routine Tasks

Non-routine tasks at jobsites require special training. Be sure you are trained before you begin to perform any non-routine task. It is the responsibility of the jobsite supervisor to ensure that employees are trained to safely perform non-routine tasks before they begin performance of the non-routine task.

5.0 PROTECTIVE MEASURES

The use of splash goggles, gloves, protective clothing, boots and possibly respiratory protection may be required during certain site activities. If respiratory protection is used, it will be in full compliance with OSHA Regulations 29 CFR 1910.134 and 29 CFR 1926.103. All personnel protective equipment used will be in accordance with Subpart I of OSHA Regulations 29 CFR 1910 and Subpart E of OSHA Regulations 29 CFR 1926. Any emergencies involving hazardous chemicals of potentially contaminated samples must be reported to the jobsite supervisor or Safety Engineer.

6.0 MULTI-EMPLOYER WORKSITES

OSHA regulations and state Right-To-Know laws require us to coordinate information about hazardous materials used by our workers and those of subcontractors at a jobsite.

We recognize the importance of making this information available to all persons who may come in contact with hazardous materials, and we will make available to our contractors and subcontractors copies of this Hazard Communication Standard. Other contractors and subcontractors at a jobsite are required to provide for use of all employees at a jobsite their own hazard communication standard, or material safety data sheets for all hazardous substances used by their crews.

To this end, a responsible person appointed by the Safety Engineer will make a written request for MSDSs from each subcontractor or contractor whose employees will share our jobsite.

7.0 HEALTH/SAFETY EMERGENCY INFORMATION

Emergency procedures may be unique to each site, but all jobsites should include these standard practices in their emergency procedures:

- Emergency telephone numbers must be prominently displayed near a working telephone. These numbers include:
  - Fire
  - Ambulance
  - Police

Additional emergency phone numbers should be posted before any non-routine task involving hazardous materials begins.

- First aid kits and eye wash stations will be maintained in a convenient location on each site. These locations will be identified to all employees.

- Emergency evacuation procedures should be developed for each jobsite, as necessary. Such procedures should include evacuation routes and designated meeting spots for employee check-in. It is the responsibility of the jobsite supervisor to notify the appropriate authorities in the event any employee does not check in at the designated meeting spot.

Appendix D

Maxymillian Technologies, Inc.

Control of Hazardous Energy (Lockout/Tagout) Program

TABLE OF CONTENTS

1.0 OVERVIEW

This program establishes policies and provides guidelines to ensure standardized implementation of the OSHA Lockout/Tagout Standard.

This policy applies to all employees who perform work that involves the unexpected start-up of equipment, as defined in 29 CFR 1910.147. Training will familiarize the employees with this policy so they may work safely and confidently while performing their assigned tasks. This program does not apply to routine service or maintenance, when guards or safety devices are not by passed. When working at a facility with an established Lockout/Tagout program, that facility's program will take precedence. Training as outlined herein will be on an annual basis and will be provided prior to any associated work. This program will be reviewed by the Safety Officer on an annual and as needed basis.

2.0 DEFINITIONS

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

Authorized employee -- A person who locks or implements a Tagout system procedure on machines or equipment to perform the servicing or maintenance on that machine or equipment. An authorized employee and an affected employee may be the same person when the affected employees duties also include performing maintenance or service on machines or equipment that must be locked or tagged out.

Blanking of lines -- When possible, each end of a feed line into a confined space will be blocked and the line drained. Any drains that may be present in the confined space will be locked open so that any spill will drain from the area.

Capable of being locked out -- An energy isolating device will be considered capable of being locked out if it is designed with a hasp or other attachment or internal part to which or through which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be considered capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized -- Connected to an energy source of containing residual or stored energy.

Energy isolating device -- A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- a disconnect switch
- a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and in addition, no pole can be operated independently:
- a slide gate
- a manually operated electrical circuit breaker
- a slip blind
- a line valve
- a block
- any similar device used to block or isolate energy

The term does not include:

- a push button
- a selector switch
- or other control circuit type devices

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

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

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

Lockout device -- A device that utilizes a positive mean such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment.

Normal production operations -- The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance -- Workplace activities such as construction, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustment or release of hazardous energy.

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

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

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

3.0 EMPLOYEES AND TRAINING

Employee training will address the following:

- each authorized employee shall receive training in the recognition or applicable hazardous energy sources, the type and magnitude of the energy and the methods and means necessary for energy isolation and control

- each authorized employee will be furnished with his/her own unique key and lock

- each affected employee shall be instructed in the purpose and use of the energy control procedure

- tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program; they are essentially working devices fixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock -- locks are to be used whenever possible.

- when a tag is attached to an energy isolating means, it is not to be removed with authorization of the person responsible for it, and it is never to be bypassed, ignored or otherwise defeated

- tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective

- tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use

- tags will be attached to the lock to identify The Company as the company locking out -- tags will conform to 1910.147 in regards to water and corrosion resistance

- all tags will be attached with nylon ties

3.1 Retraining Employees

Retraining of authorized and affected employees shall be performed annually or whenever there is a change in employee job assignments; whenever a new hazard is introduced due to a change in machines, equipment or process and; whenever a periodic inspection by the employer reveals inadequacies in The Company procedures or in the knowledge of the employees.

4.0 ISOLATION PROCEDURES

- isolation will be initiated by the authorized person or persons

- employees in the facility shall be notified prior to equipment isolation and after all isolation procedures have been removed

- machine shutdown - an authorized person shall turn off or shutdown the machine - a Company Supervisor shall observe and verify that shutdown is complete

- equipment isolation - all isolation devices shall be placed at this time - a Company Supervisor shall observe and verify

4.1 Lockout/Tagout

- devices shall be affixed to each energy isolating device by the authorized employee -- a Company Supervisor shall verify

- no employee may affix a personal Lockout/Tagout device for another employee

- locks shall be affixed in a manner that will hold the energy isolating device in a safe (off) position

- Tagout devices, where used, shall be affixed at the same location as would a lock if such fittings are provided, or shall be affixed in a manner that will clearly indicate that movement of the isolating device is prohibited

stored energy - all potential stored or residual energy must be released, relieved or disconnected, if there is a potential of reclamation, verification of isolation shall continue throughout the project

4.2 Verification of Isolation

- prior to work, the authorized person(s) shall verify that the equipment has been disengaged and isolated

- The Supervisor will complete Attachment "A". Certification of Inspection and Record of Training

4.3 Release from Lockout/Tagout

- the work area shall be inspected to insure that nonessential items are not left in the work area and to ensure that the equipment is intact

- the work area shall be checked to ensure that all employees are clear

- before Lockout/Tagout devices are removed affected employees shall be notified

- removal of Lockout/Tagout devices shall be performed by the authorized employee

- a Company shall verify - **Exception:** when the employee is not available then the Supervisor shall remove the Lockout/Tagout devices provided that he:

- verifies that the employee is not at the facility

- makes all reasonable efforts to contact the employee and notify him/her that he will remove the devices

- before re-energization, all employees in the machine or equipment area shall be notified that the Lockout/Tagout devices have been removed.

4.4 Group Lockout/Tagout

Each authorized employee performing servicing or maintenance where the release of hazardous energy is possible, shall be protected by his/her personal Lockout/Tagout device and by the company procedure.

4.5 Shift or Personnel Changes

Changes between shifts shall be made in an orderly fashion. The initial authorization person shall remain in control until all of his crew have removed their locks and tags. He will then transfer them to the next shifts authorized person, who will start the entire Lockout/Tagout procedure for his/her crew. If an employee must leave a site and be replaced, he/she must remove his/her lock and turn them into his/her supervisor who shall orient the new employee. The new employee will then place his/her lock and tag on the equipment.

As it applies to confined space (tank entry):

- Electrical boxes, valves and mechanical devices will be tagged and locked out with chains and padlocks when these items pose a potential threat to an employee. Each person working in the work zone will have a unique padlock that he or she will open upon leaving the work zone. Those items that are locked out will remain so until the last person removes his or her padlock.

- Blanking of lines - When possible, each end of a feed line into a confined space will be blocked and the line drained. Any drains that may be present in the confined space will be locked open so that any spill will drain from the area.

- Misalignment of Lines - Feed lines may be misaligned in the event blanking is not possible. Again, any drains in the confined space must be locked in the open position.

- At lease annually, an authorized employee other than the one(s) utilizing the energy control procedure being inspected, is required to inspect and verify the effectiveness of The Company energy control procedures. These inspections shall at least provide for a demonstration of the procedures and may be implemented through random audits and planned visual observations. These inspections are intended to ensure that the energy control procedures are being properly implemented and to provide an essential check on the continued utilization of the procedures.

- When Lockout is used, The Employer's inspection shall include a review of the responsibilities of each authorized employee implementing the procedure with that employee. Group meetings between the authorized employee who is performing the inspection and all authorized employees who implement the procedure would constitute compliance with this requirement.

- When Tagout is used, The Employer shall conduct this review with each affected and authorized employee.

- Energy control procedures used less frequently than once a year need be inspected only when used.

- The periodic inspection must provide for and ensure effective correction of identified deficiencies.

- The Employer is required to certify that the prescribed periodic inspections have been performed. See Attachment "A"., Certification of Inspection and Record of Training.

Attachment 1

CERTIFICATION OF INSPECTION AND RECORD OF TRAINING

Date:_____ Inspection/Training performed by:_____

Supervisor: _____

Crew:_____

Type of work, include name of equipment:_____

Type of controls used:_____If no, why?_____

Were procedures followed?

_____

Were procedures reviewed with authorized and affected employees?

_____

What type of control was used?

_____

Comments:

_____

Supervisors comments:

_____

Supervisors signature:_____

Appendix E

Maxymillian Technologies, Inc.

Respiratory Protection Program

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Figures

FOREWORD

No employee will be assigned duties requiring use of a respirator until medical clearance is obtained from a competent authority.

1.0 DEFINITIONS

I.D.L.H. Immediately Dangerous to Life or Health—Used for respirator selection. This represents a maximum concentration of airborne contaminant from which, in the event of respirator failure, one could escape within thirty (30) minutes without experiencing any escape impairing or irreversible health effects.

P.E.L. Permissible Exposure Levels—based on an 8 hour work day as prescribed by OSHA

S.C.B.A. Self Contained Breathing Apparatus

S.O.P. Standard Operating Procedure

T.L.V. Threshold Limit Valve—Airborne concentrations of substance and represent conditions under which it is believed that nearly all workers may be repeatedly exposed for an eight hour day, day after day without adverse effects. As recommended by The American Conference of Governmental Industrial Hygienists.

Whenever possible, atmospheric contamination will be prevented through the use of:

- Engineering Controls
- Administrative Controls
- Work Practices

Respirators need to be used for those environments that cannot be controlled through other means. Respirators referred to here are to be used for respiratory protection, any time a hazard(s) exceeds OSHA MANDATED P.E.L. or T.L.V, where applicable.

This Standard Operating Procedure will be available and utilized as part of the Company's required respirator program. This program shall meet or exceed the minimum requirements as set forth in 29 CFR 1910.124. This S.O.P. consists of the following components:

2.0 SELECTION

Respirators shall be selected by a qualified individual. All respirators shall be approved in the latest edition of *The NIOSH Certified Equipment List* or the specific hazard encountered.

Selection criteria[1] shall include but not be limited to the following factors:

- Oxygen Level
- Contaminant
- Warning Properties
- TLV
- Service Limit of Canister
- Protection Factor
- Successful Fit Test
- Respirator Assembly Approval

3.0 TRAINING

Anyone who uses or can be expected to use a respirator in the course of his/her employment shall be trained in its use.

Respirator training shall include but not be limited to the following:

- hazards, definition
- results of improper use
- engineering and administrative controls on the job
- reason for selection of particular type of respirator
- functions, capabilities and limitations of respirator selected
- donning, checking fit and operation
- proper wearing of respirator
- emergency situations, recognition and action
- decontamination.

4.0 FIT TESTING

Fit testing shall be performed and recorded[2] for each person[3] to ensure proper selection of respirator (not all masks fit all people). Testing will be conducted initially upon assignments and annually thereafter, or when subject has:

- weight change—approximately 20 pounds;
- significant facial scarring;

[1]See Enclosure # 1
[2]See Enclosure # 2
[3]See Enclosure # 1

- significant dental changes;
- re-constructive or cosmetic surgery;
- any other condition interfering with a proper seal.

Fit testing will not be conducted if there is hair between the skin and face piece sealing surface. Beards or apparel will be altered or removed to allow a satisfactory fit.

All users or potential users of demand type respiratory protection devices should be fit tested to ensure a proper face piece to face seal. A selection of respirators should be tested with users allowed to choose the most comfortable from those that fit satisfactorily. Fit testing should be performed in accordance with the most appropriate method described by OSHA Respirator Standard, Appendix A, Part 1 (JHM/MT Respirator Program, Enclosure 3: OSHA Respirator Standards, Appendices A – D).

4.1 MAINTENANCE

4.1.1 General Requirements

The purpose of this program is to assure that all respirators are maintained at their original effectiveness. If they are modified in any way, the Protection Factors may be voided. At least one person will be assigned and trained to inspect, clean, repair, and store respirators. However, each individual will be responsible for their assigned respirator except where repairs are concerned. No components will be replaced or repairs made beyond those recommended by the manufacturer.

The program should be based on the number and types of respirators, working conditions, and hazards involved. In general, the program will include:

- inspection (including a leak check);
- cleaning and disinfecting;
- repair.

4.1.2 Inspection

Inspect respirator before and after each use. Inspect a respirator that is kept ready for emergency use monthly to assure it will perform satisfactorily.

The following checklist will be used when inspecting respirators:

- Face piece:
  - Cracks, tears, holes
  - Facemask distortion
  - Cracked or loose lenses/faceshield
- Headstrap
  - Breaks or tears
  - Broken buckles

- Valves
  - Residue or dirt
  - Cracks or tears in valve material
- Filters/Cartridges
  - Approval designation
  - Gaskets
  - Cracks or dents in housing

4.1.3 Cleaning and Disinfecting

Respirators assigned to individuals shall be cleaned regularly. Those used by more than one person shall be cleaned and disinfected after each use.

Clean and disinfect respirators in accordance with the most appropriate method described by OSHA Respirator Standard, Appendix B-2 (JHM/MT Respirator Program, Enclosure 3: OSHA Respirator Standards, Appendices A – D).

4.1.4 Repairs

Only a trained person with proper tools and replacement parts should work on respirators. No one should ever attempt to replace components or to make adjustments or repairs beyond the manufacturer's recommendations. It may be necessary to send high-pressure side components of SCBA's to an authorized facility for repairs.

Make repairs as follows:

- Disassemble and hand clean the pressure-demand and exhalation valve assembly (SCBA's only); exercise care to avoid damage to the rubber diaphragm.
- Replace all faulty or questionable parts or assemblies; use parts only specifically designed for the particular respirator.
- Reassemble the entire respirator and visually inspect the completed assembly.
- Insert new filters, cartridges, or canisters as required; make sure that gaskets or seals are in place and tightly sealed.

4.1.5 Storage

Follow manufacturers' storage instructions, which are always furnished with new respirators or affixed to the lit of the carrying case. In addition:

- After respirators have been inspected, cleaned and repaired, store them so as to protect against dust, excessive moisture, damaging chemicals, extreme temperatures and direct sunlight.
- Do not store respirators in clothes lockers, bench drawers, or tool boxes; place them in wall compartments at work stations or in a work area designated for emergency equipment. Store them in the original carton or carrying case.
- Draw clean respirators from storage for each use; each unit can be sealed in a plastic bag, placed in a separate box and tagged for immediate use.

5.0 EXPOSURE MONITORING/SURVEILLANCE

Air monitoring shall be used to identify and quantify levels of hazardous substance in order to determine the appropriate level of employee protection needed.

As a first step, air monitoring shall be conducted to identify any I.D.L.H. conditions and other dangerous situations, i.e., flammable atmospheres, oxygen deficient environment, or toxic levels of air borne contaminants.

Periodic monitoring shall be conducted when:

- work begins on a different portion of the site;
- contaminants other than those previously identified are being handled;
- a different type of operation is initiated;
- employees are working in areas of obvious liquid contamination, i.e., a spill or lagoon;
- prior to change in protective posture, i.e., upgrade/downgrade.

Whenever possible, real time monitoring will be utilized, i.e., photoionizer, explosimeter. It is recognized, however, that there will be occasions where laboratory tests must be made. On these occasions a qualified person and laboratory facilities shall be utilized.

5.1 Medical Program

Employees are not permitted to wear respirators until a physician or other licensed healthcare professional (PLHCP) has determined that they are medically able to do so. Any employee refusing the medical evaluation will not be allowed to work in an area requiring respirator use.

A licensed physician or other licensed healthcare professional at Berkshire Occupational Health will provide the medical evaluations. Medical evaluation procedures are as follows:

- The medical evaluation will be conducted using the questionnaire provided in Appendix C of the OSHA Respirator Standard (JHM/MT Respirator Program, Enclosure 3: OSHA Respirator Standards, Appendices A – D). The program administrator will provide a copy of this questionnaire to all employees requiring medical evaluations.
- Follow up medical exam will be granted to employees as required by the standard, and/or as deemed necessary by the physician.
- All employees will be granted the opportunity to speak with the physician/PLHCP about their medical evaluation if they so request.
- The physician will be provided with a copy of this respirator program, a copy of the Respiratory Protection Standard, the list of hazardous substances by work area, and for each employee requiring evaluation:
  - their work area or job title;
  - proposed respirator type and weight;
  - length of time required to wear respirator;
  - expected physical work load (light, moderate, heavy);
  - potential temperature and humidity extremes; and
  - any additional protective clothing required.

- Any employee required for medical reasons to wear a positive pressure air purifying respirator, or who requests one, will be provided with a powered air purifying respirator (PAPR).
- After an employee has received medical clearance to wear a respirator, additional medical evaluations will be provided under the following circumstances:
  - The employee reports signs and/or symptoms relating to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
  - The examining physician or supervisor informs the program administrator that the employee needs to be reevaluated.
  - Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.
  - A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

The records for employees currently enrolled in a medical surveillance program are on file at company headquarters.

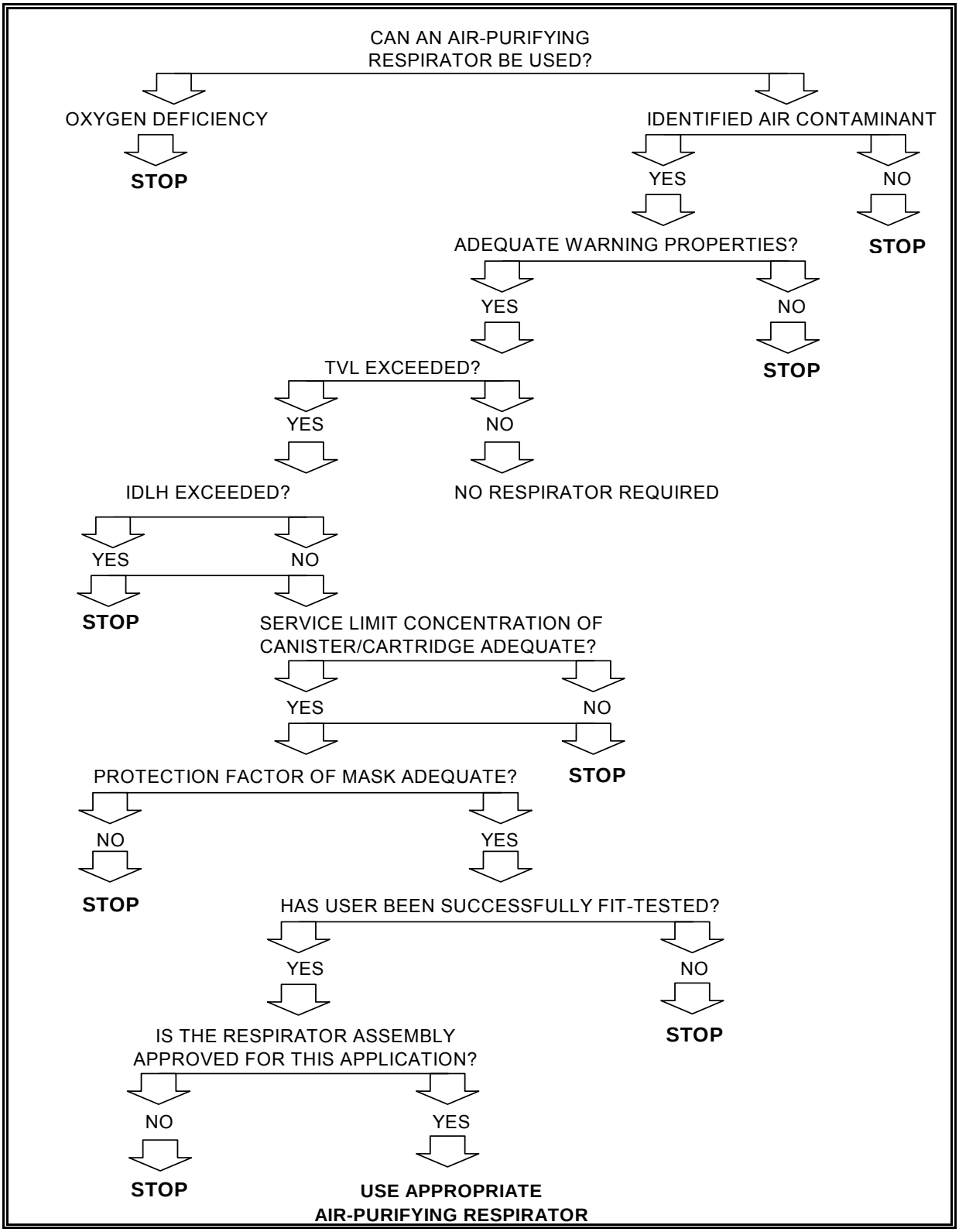
All examinations and questionnaires are to remain confidential between the employee and the physician.

5.2 General

Contact lenses are potentially dangerous on hazardous waste sites. Contaminants, where they could otherwise be removed quickly, may lodge between the lens and eye with serious results. For this reason contact lenses are strictly prohibited on contaminated sites.

Beards or other facial hair that may interfere with the seal of an air purifying respirator are prohibited.

Selection Considerations Flow Chart
Enclosure 1



MAXYMILLIAN TECHNOLOGIES, INC.
RESPIRATOR FIT TEST
ENCLOSURE 2

A. EMPLOYEE INFORMATION

Test Type: Qualitative; Irritant Smoke; Rainbow

Name of Employee: _____ **Date:** _____

Employee's Social Security Number: _____/____/_____

License #: _____ **Company:** _____

B. RESPIRATOR INFORMATION

Respirator Type Selected: _____

Manufacturer: _____ **Model:** _____

Approval #: _____ **Size: S** _____ **M** _____ **L**_____

Name of Test Conductor: _____

C. TEST RESULTS

- ☐ **Lateral Head Movement Pass**
- ☐ **Deep Breathing Pass**
- ☐ **Stationary Jogging Exercise Pass**
- ☐ **Rainbow Passage Reading Pass**
- ☐ **Employee Reaction to Agent after Test Pass**
- ☐ **Proper Performance of Positive and Negative Pressure Valve Checks and Fit**

☐ **Employee Passes** ☐ **Employee Fails**

EXPIRATION DATE: _____/____/_____

RESPIRATOR FIT TESTING PERFORMED IN ACCORDANCE WITH OSHA METHODS AND PROCEDURES

Enclosure 3

OSHA Respirator Standards, Appendices A – D

OSHA Respirator Standards, Appendix A

Fit Testing Procedures (Mandatory)

Appendix A to § 1910.134: Fit Testing Procedures (Mandatory)
Part I. OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures -- General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.

3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.

4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.

5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:

(a) Position of the mask on the nose

(b) Room for eye protection

(c) Room to talk

(d) Position of mask on face and cheeks

7. The following criteria shall be used to help determine the adequacy of the respirator fit:

(a) Chin properly placed;

(b) Adequate strap tension, not overly tightened;

(c) Fit across nose bridge;

(d) Respirator of proper size to span distance from nose to chin;

(e) Tendency of respirator to slip;

(f) Self-observation in mirror to evaluate fit and respirator position.

8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.

12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

14. Test Exercises. (a) The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

(b) Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

B. Qualitative Fit Test (QLFT) Protocols

1. General

(a) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

2. Isoamyl Acetate Protocol

Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.

(a) Odor Threshold Screening

Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.

(1) Three 1 liter glass jars with metal lids are required.

(2) Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C (77 deg. F) shall be used for the solutions.

(3) The isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.

(4) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

(5) The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

(6) A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.

(7) The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

(8) The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."

(9) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(10) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

(11) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(b) Isoamyl Acetate Fit Test

(1) The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

(2) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.

(3) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(4) A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

(5) Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

(6) Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.

(7) If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(8) If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in (b) (1) through (7) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(9) If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

(10) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

3. Saccharin Solution Aerosol Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(7) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Saccharin solution aerosol fit test procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in 3. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

(11) If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

4. Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening.

The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts #14 and #15 combined, is adequate.

(2) The test enclosure shall have a \3/4\ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5 % salt (NaCl) solution in distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

(7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in 4. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5 % salt (NaCl) solution in warm water.

(6) As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex..

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20

or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

(11) If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

5. Irritant Smoke (Stannic Chloride) Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

(a) General Requirements and Precautions

(1) The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

(2) Only stannic chloride smoke tubes shall be used for this protocol.

(3) No form of test enclosure or hood for the test subject shall be used.

(4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

(5) The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

(b) Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

(1) The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

(2) The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

(3) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

(c) Irritant Smoke Fit Test Procedure

(1) The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

(2) The test subject shall be instructed to keep his/her eyes closed.

(3) The test operator shall direct the stream of irritant smoke from the smoke tube toward the faceseal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

(4) If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

(5) The exercises identified in section I.A. 14. of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.

(6) If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.

(7) Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

(8) If a response is produced during this second sensitivity check, then the fit test is passed.

C. Quantitative Fit Test (QNFT) Protocols

The following quantitative fit testing procedures have been demonstrated to be acceptable: Quantitative fit testing using a non-hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

1. General

(a) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

2. Generated Aerosol Quantitative Fit Testing Protocol

(a) Apparatus.

(1) Instrumentation. Aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols shall be used for quantitative fit testing.

(2) Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(3) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.

(4) The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.

(5) The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the test subject is not exposed in excess of an established exposure limit for the test agent at any time during the testing process, based upon the length of the exposure and the exposure limit duration.

(6) The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times, and there is no interference with the fit or performance of the respirator. The in-mask sampling device (probe) shall be designed and used so that the air sample is drawn from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4 inch.

(7) The test setup shall permit the person administering the test to observe the test subject inside the chamber during the test.

(8) The equipment generating the test atmosphere shall maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.

(9) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event and its being recorded.

(10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.

(11) The exhaust flow from the test chamber shall pass through an appropriate filter (i.e., high efficiency particulate or P100 series filter) before release.

(12) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(13) The limitations of instrument detection shall be taken into account when determining the fit factor.

(14) Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.

(b) Procedural Requirements.

(1) When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these pressure checks.

(2) The use of an abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.

(3) A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, the determination of the test agent's stability may be established after the test subject has entered the test environment.

(4) Immediately after the subject enters the test chamber, the test agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.

(5) A stable test agent concentration shall be obtained prior to the actual start of testing.

(6) Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be adjusted once the fit test exercises begin.

(7) The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested.

(8) Calculation of fit factors.

(i) The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.

(ii) The average test chamber concentration shall be calculated as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and after each exercise or the true average measured continuously during the respirator sample.

(iii) The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:

(A) Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.

(B) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.

(C) Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.

(D) The calculation of the overall fit factor using individual exercise fit factors involves first converting the exercise fit factors to penetration values, determining the average, and then converting that result back to a fit factor. This procedure is described in the following equation:

$$\text{Overall Fit Factor} = \frac{\text{Number of exercises}}{1/ff_1 + 1/ff_2 + 1/ff_3 + 1/ff_4 + 1/ff_5 + 1/ff_6 + 1/ff_7 + 1/ff_8}$$

Where ff_1, ff_2, ff_3, etc. are the fit factors for exercises 1, 2, 3, etc.

(9) The test subject shall not be permitted to wear a half mask or quarter facepiece respirator unless a minimum fit factor of 100 is obtained, or a full facepiece respirator unless a minimum fit factor of 500 is obtained.

(10) Filters used for quantitative fit testing shall be replaced whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.

3. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount ™) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the

respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Portacount Fit Test Requirements.

(1) Check the respirator to make sure the respirator is fitted with a high-efficiency filter and that the sampling probe and line are properly attached to the facepiece.

(2) Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.

(3) Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.

(4) Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.

(5) Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

(6) The test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(7) After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

(b) Portacount Test Instrument.

(1) The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.

(2) Since the pass or fail criterion of the Portacount is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.

(3) A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

4. Controlled negative pressure (CNP) quantitative fit testing protocol.

The CNP protocol provides an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, air flow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage air flow into the respirator. The CNP fit test method measures leak rates

through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer Dynatech Nevada also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his or her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) CNP Fit Test Requirements.

(1) The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.

(2) The CNP system defaults selected for test pressure shall be set at -- 1.5 mm of water (-0.58 inches of water) and the modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

(**Note:** CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)

(3) The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.

(4) The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.

(5) The test subject shall be trained to hold his or her breath for at least 20 seconds.

(6) The test subject shall don the test respirator without any assistance from the individual who conducts the CNP fit test.

(7) The QNFT protocol shall be followed according to section I. C. 1. of this appendix with an exception for the CNP test exercises.

(b) CNP Test Exercises.

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during test measurement.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his or her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his or her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his or her breath for 10 seconds during test measurement.

(4) Moving head up and down. Standing in place, the subject shall slowly move his or her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject shall hold his or her head full up and hold his or her breath for 10 seconds during test measurement. Next, the

subject shall hold his or her head full down and hold his or her breath for 10 seconds during test measurement.

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(6) Grimace. The test subject shall grimace by smiling or frowning for 15 seconds.

(7) Bending Over. The test subject shall bend at the waist as if he or she were to touch his or her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(8) Normal Breathing. The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.

(c) CNP Test Instrument.

(1) The test instrument shall have an effective audio warning device when the test subject fails to hold his or her breath during the test. The test shall be terminated whenever the test subject failed to hold his or her breath. The test subject may be refitted and retested.

(2) A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style and size of respirator used; and date tested.

PART II. NEW FIT TEST PROTOCOLS

A. Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this Appendix A.

B. The application must include a detailed description of the proposed new fit test protocol. This application must be supported by either:

1. A test report prepared by an independent government research laboratory (e.g., Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the National Institute for Standards and Technology) stating that the laboratory has tested the protocol and had found it to be accurate and reliable; or

2. An article that has been published in a peer-reviewed industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.

C. If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will so notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information.

OSHA Respirator Standards, Appendix B-1

User Seal Check Procedures (Mandatory)

Appendix B-1 to § 1910.134: User Seal Check Procedures (Mandatory)

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

OSHA Respirator Standards, Appendix B-2

Respirator Cleaning Procedures (Mandatory)

Appendix B-2 to § 1910.134: Respirator Cleaning Procedures (Mandatory)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B-2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. Procedures for Cleaning Respirators

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

B. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,

2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45 % alcohol) to one liter of water at 43 deg. C (110 deg. F); or,

3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

OSHA Respirator Standards, Appendix C

OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

Appendix C to § 1910.134: OSHA Respirator Medical Evaluation Questionnaire (Mandatory)

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date:_____

2. Your name:_____

3. Your age (to nearest year):_____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title:_____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):
a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one): Yes/No

If "yes," what type(s):_____

_____

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you ever had any of the following conditions?
a. Seizures (fits): Yes/No
b. Diabetes (sugar disease): Yes/No
c. Allergic reactions that interfere with your breathing: Yes/No
d. Claustrophobia (fear of closed-in places): Yes/No
e. Trouble smelling odors: Yes/No

3. Have you ever had any of the following pulmonary or lung problems?
a. Asbestosis: Yes/No
b. Asthma: Yes/No
c. Chronic bronchitis: Yes/No
d. Emphysema: Yes/No
e. Pneumonia: Yes/No

f. Tuberculosis: Yes/No
g. Silicosis: Yes/No
h. Pneumothorax (collapsed lung): Yes/No
i. Lung cancer: Yes/No
j. Broken ribs: Yes/No
k. Any chest injuries or surgeries: Yes/No
l. Any other lung problem that you've been told about: Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?
a. Shortness of breath: Yes/No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
d. Have to stop for breath when walking at your own pace on level ground: Yes/No
e. Shortness of breath when washing or dressing yourself: Yes/No
f. Shortness of breath that interferes with your job: Yes/No
g. Coughing that produces phlegm (thick sputum): Yes/No
h. Coughing that wakes you early in the morning: Yes/No
i. Coughing that occurs mostly when you are lying down: Yes/No
j. Coughing up blood in the last month: Yes/No
k. Wheezing: Yes/No
l. Wheezing that interferes with your job: Yes/No
m. Chest pain when you breathe deeply: Yes/No
n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you ever had any of the following cardiovascular or heart problems?
a. Heart attack: Yes/No
b. Stroke: Yes/No
c. Angina: Yes/No
d. Heart failure: Yes/No
e. Swelling in your legs or feet (not caused by walking): Yes/No
f. Heart arrhythmia (heart beating irregularly): Yes/No
g. High blood pressure: Yes/No
h. Any other heart problem that you've been told about: Yes/No

6. Have you ever had any of the following cardiovascular or heart symptoms?
a. Frequent pain or tightness in your chest: Yes/No
b. Pain or tightness in your chest during physical activity: Yes/No
c. Pain or tightness in your chest that interferes with your job: Yes/No
d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
e. Heartburn or indigestion that is not related to eating: Yes/ No
f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you currently take medication for any of the following problems?
a. Breathing or lung problems: Yes/No
b. Heart trouble: Yes/No
c. Blood pressure: Yes/No
d. Seizures (fits): Yes/No

8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)
a. Eye irritation: Yes/No
b. Skin allergies or rashes: Yes/No
c. Anxiety: Yes/No
d. General weakness or fatigue: Yes/No
e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): Yes/No

11. Do you currently have any of the following vision problems?
a. Wear contact lenses: Yes/No
b. Wear glasses: Yes/No
c. Color blind: Yes/No
e. Any other eye or vision problem: Yes/No

12. Have you ever had an injury to your ears, including a broken ear drum: Yes/No

13. Do you currently have any of the following hearing problems?
a. Difficulty hearing: Yes/No
b. Wear a hearing aid: Yes/No
c. Any other hearing or ear problem: Yes/No

14. Have you ever had a back injury: Yes/No

15. Do you currently have any of the following musculoskeletal problems?
a. Weakness in any of your arms, hands, legs, or feet: Yes/No
b. Back pain: Yes/No
c. Difficulty fully moving your arms and legs: Yes/No
d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
e. Difficulty fully moving your head up or down: Yes/No
f. Difficulty fully moving your head side to side: Yes/No
g. Difficulty bending at your knees: Yes/No
h. Difficulty squatting to the ground: Yes/No
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No
If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No
If "yes," name the chemicals if you know them:_____
_____
_____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:
a. Asbestos: Yes/No
b. Silica (e.g., in sandblasting): Yes/No
c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
d. Beryllium: Yes/No
e. Aluminum: Yes/No
f. Coal (for example, mining): Yes/No
g. Iron: Yes/No
h. Tin: Yes/No
i. Dusty environments: Yes/No
j. Any other hazardous exposures: Yes/No
If "yes," describe these exposures:_____
_____
_____

4. List any second jobs or side businesses you have:_____
_____

5. List your previous occupations:_____
_____

6. List your current and previous hobbies:_____
_____

7. Have you been in the military services? Yes/No
If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No
If "yes," name the medications if you know them:_____

10. Will you be using any of the following items with your respirator(s)?
a. HEPA Filters: Yes/No
b. Canisters (for example, gas masks): Yes/No
c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
a. Escape only (no rescue): Yes/No
b. Emergency rescue only: Yes/No
c. Less than 5 hours per week: Yes/No

d. Less than 2 hours per day: Yes/No
e. 2 to 4 hours per day: Yes/No
f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:
a. Light (less than 200 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b. Moderate (200 to 350 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:_____hrs._____mins.
Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No
If "yes," describe this protective clothing and/or equipment:_____
_____

14. Will you be working under hot conditions (temperature exceeding 77 deg. F): Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

_____
_____

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

_____
_____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):
Name of the first toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift_____
Name of the second toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift:_____
Name of the third toxic substance:_____
Estimated maximum exposure level per shift:_____
Duration of exposure per shift:_____
The name of any other toxic substances that you'll be exposed to while using your respirator:
_____

_____

_____

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

_____

OSHA Respirator Standards, Appendix D

(Non-Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Appendix D to § 1910.134 (Non-Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, of if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Appendix F

Consolidated Edison Company of New York, Inc.

Environmental Health & Safety Programs

Noise Construction and Utility Activities
Personal Protective Equipment – Protective Clothing
Lockout / Tagout Procedures
Electrical Enclosed Spaces (as applicable)
Calling a Time Out
Rules We Live By

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

LAND USE

CEHSP E08.02 – Noise Construction and Utility Activities

(CEP converted to CEHSP on 07/24/2008)

Revision 5: 12/10/2008 Effective Date: 12/10/2008

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH STATE AND LOCAL REGULATIONS PERTAINING TO NOISE. The purpose of this procedure is to ensure that all company personnel perform appropriate actions to prevent ***unreasonable noise*** and comply with permissible noise limits.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison personnel and contractors, both on and off Con Edison facilities and at field locations, who attend to Con Edison equipment, facilities, or operations that create noise that could be considered unreasonable.

3.0 INTRODUCTION

New York City, and many local governments in the Company's service area have restrictions on the level of noise that may be produced. In general, these limits apply to two types of situations: ***facility operations***, and ***field operations***. In New York City, however, three distinct situations apply: ***facility operations***, construction activities and utility activities (street work). In addition, the restrictions vary by time of day. Con Edison has compiled tables summarizing the noise regulations applicable in the Company's service area. These tables can be found in Attachments 1 and 2.

In addition, New York State regulations address noise from certain heavy duty trucks. These requirements are discussed in Section 4.4, New York State Noise Requirements.

4.0 COMPLIANCE REQUIREMENTS

Equipment and operations associated with Con Edison facilities and services can produce noise. All equipment used by Con Edison should be in good working order, properly maintained, and properly used. Where possible, noisy equipment should not be located near ***noise-sensitive areas and/or sensitive receptors***, e.g., schools, hospitals, and churches.

Where a given operation could be accomplished using a variety of equipment, equipment with operating characteristics that produce less noise should be used. The facility or field manager is responsible for ensuring compliance with all federal, state and local noise regulations.

Qualified personnel should execute the procedures regarding noise measurements described in the following sections. Qualified personnel are defined as personnel from Con Edison Technical Service, who are trained to make noise measurements according to American National Standards Institute ***(ANSI)*** standards, and are operating under the advice from Con Edison's Environment, Health and Safety (EH&S) noise subject matter expert (SME). The person should be familiar with the make and type of equipment used in these measurements, calibration and should be experienced in general noise data collection procedures. The person should be able to identify ***impulsive*** and ***tonal noise.*** Measurements should be made using a Type 1 ***Sound Level Meter (SLM)*** / preamplifier/microphone combination.

4.1 FIELD OPERATIONS

Field operations include maintenance, installation, upgrade, and repair of Con Edison equipment. These types of operations include repair or installation of aboveground and belowground power transmission conduits (electrical, natural gas, steam), repair or installation of power transmission equipment, tree maintenance, on-site or off-site construction or demolition, and use of any safety equipment associated with these procedures.

Most field operations, other than operations undertaken outside of permissible times, can be thought of as construction activities. Construction activities additionally covered under this CEHSP include any activity (except tunneling) necessary or incidental to the erection, demolition, assembling, altering, installing, or equipping of buildings, public or private highways, roads, premises, parks, utility lines including such lines in already-constructed tunnels or other property, land clearing, grading, excavating and filling. Many communities have time restrictions on such activities, which must be adhered to. Additional requirements (discussed below), including the preparation of a Noise Mitigation Plan and additional sound-reducing devices, are required for work performed in New York City.

Unreasonable Noise

In addition to time restrictions, certain noise codes have specific regulations that must be followed regarding field activities. These regulations are summarized below.

- Construction devices – Prohibiting use of construction devices (e.g., air compressor, pile driver, bulldozer, crane, hoist) so as to create unreasonable noise.

- Containers and construction material – Prohibiting handling or transport of any container or any construction material in a public place so as to create unreasonable noise.

- Exhausts - Except as otherwise provided in the New York City code, prohibiting discharge into the open air of the exhaust of any device, including but not limited to any steam engine, diesel engine, internal combustion engine or turbine engine, so as to create unreasonable noise.

- Power tools – Prohibiting use of power tools (e.g., nail guns, saws, vacuums, drills) so as to create unreasonable noise.

- Schools, hospital, courts – Prohibiting unnecessary noise through the use of any device on any street adjacent to any school or court while the same is in session, or adjacent to any hospital.

- Sensitive receptors – Prohibiting unnecessary noise through the use of any device within 50 feet of a school, house of worship, hospital, retirement community, open tract of serene land, park or recreation area, and psychiatric centers.

4.1.1 Utility Activities Within New York City

Negotiations with NYCDEP from 2005 to 2006 resulted in the partial exemption for utility-related construction, such as street activities, cable and pipe replacements, and new infrastructure installation.

Utility-related Construction must meet the following requirements:

- Each site where utility-related construction activities occur, or construction devices/tools are used, must have a filled-out Utility Noise Mitigation Plan on-site and posted. This requirement does not apply to safety devices utilized while performing routine maintenance task, such as ventilation blowers.

- OJT/Tailboard Talk training for all personnel who perform utility-related construction is required. Although our present CEHSP and GEIs satisfy this training requirement, additional training has been developed to assist with full compliance.

- The new code has restrictions on the types of tools that can be used, rather than list noise limits for each type as in the prior code requirements.

- Sensitive Receptors such as hospitals and schools adjacent to work locations should be communicated with prior to work starting when possible.

- For work longer than 3 days continuously in one location, postings and other communication must be sufficient to inform all residents within 200 feet of schedule.

Utility Noise Mitigation Plans

A utility noise mitigation plan template is included as Attachment 3. The utility noise mitigation plan should be filled out by the job supervisor or field foreman prior to the start of construction activities – only devices deemed in compliance with NYCDEP regulations shall be utilized. If there are any deviations from the approved items, the ConEd noise SME must be consulted prior to the start of work activities.

Elements of the utility noise mitigation plan include the following requirements:

- Self-certification that tools/equipment maintained so they operate at normal manufacturer's operating specifications.
- Tools/equipment must be equipped with appropriate manufacturer's noise reduction device.
- Specialized vehicles require use of additional noise mitigation measures.
- Use of noise-insulating fabric for portable pumps, compressors, generators, etc.
- Quieter equipment shall be used when available or when required by the NYCDEP. Prohibit unnecessary engine idling.
- Properly install and secure steel traffic plates – must re-set and secure within 24 hours of a call from the DEP to the utility.
- Notify all residents within 200 feet of construction area when work is scheduled to be longer than 3 days.
- Notification shall include information on schedules/work locations.
- Respond to all noise complaints/official DEP notice on same day. If after hours, respond next day.
- Phase in vehicles with quieter backup alarms – already being done at ConEd.
- Establish / implement formal noise mitigation training program.
- Includes field supervisory personnel and subcontract supervisors.
- Supervisors shall field-train all field workers.
- Minimize noise impact of sensitive receptors.
- Schools, hospitals, places of worship, etc.
- Required to work with facility owner/operator.
- Perimeter ***noise barriers*** must be used in accordance with 28-101(g) of NYC Chapter 28.

- If project is non-emergency, long-term (greater than 15 days) where there is a dedicated lane, must comply with 28-100 through 28-104.

Permissible Hours of Utility Activities

Regulations concerning utility activities within New York City are listed below. All utility-related construction activities which fall outside these hours require after-hours authorization from the NYCDEP, the NYCDOB, or the NYCDOT. Additional noise mitigation methods may also be required if the NYCDEP so indicates for after-hours work.

Hours of Work are to be in accordance with NYC DOT permit stipulations and/or NYC DOT Highway Rules, generally 7 AM through 10 PM weekdays for utility activities. Please note the extension to 10 p.m., also applies to Con Edison's contractors. Additional mitigation techniques for receptors within 200 feet may be required by the DEP for hours between 10 PM and 7 AM during weekdays and 7PM through 7AM during weekends.

4.1.2 Construction Operations Within New York City

Construction Activities

General construction and demolition will have to meet the Utility requirements in addition to the following:

- More complex Mitigation Plans (must be completed as part of planning the work and prepared with the assistance of the noise SME)
- Specific mitigation requirements for a variety of tool/equipment types
- Certain activities may require enclosures/barriers to reduce noise
- Certain projects with perimeter construction fences shall be required to have noise attenuating material added to the fencing
- Quieter or "smart" back-up alarms are required.

Construction Noise Mitigation Plans

All construction work performed within New York City must be performed in accordance with NYC Administrative Code, Chapter 28. For all construction activities, a Noise Mitigation Plan (Attachment 3) must be completed. Only NYCDEP-approved devices or equivalent may be used on-site. NYCDEP must approve the plan, however would pre-approve generic plans with checklists for certain repetitive work. Consult with the Corporate Environmental Health and Safety Department for assistance.

The Mitigation Plan must be written and clearly posted at the job site. Elements of the construction and demolition noise mitigation plan include the following requirements:

- More complex Mitigation Plans (must be completed as part of planning the work and prepared with the assistance of the noise SME)

- Residents within 200 feet of a construction site shall be given notice when work is scheduled for longer than 3 days. Conspicuous posting of such information, or where necessary notification of building managers/owners, shall satisfy this requirement.

- The owner/operator of sensitive receptors (e.g. schools, hospitals and places of worship), adjacent to this site, shall be contacted when practicable to coordinate work to minimize impact on the property.

- Self-certification that tools are maintained so that they operate at normal manufacturer's operating specifications. The NYCDEP will refer to an outside source to determine if your equipment "may be the source of a noise complaint".

- Use of mufflers/noise mitigation devices on equipment and construction vehicles to meet requirements. *(Note: If equipment continues to exceed level as specified in the Appendix of Rules, a five day cure periods is allowed to perform maintenance, replace equipment and file an Alternative Noise Mitigation Plan.)*

- Mitigation of noise from internal combustion engines.

- Prevention of vehicle idling and use of quieter backup alarms.

- Use of noise barriers if site is within 75 feet of a residential receptor or 200 feet of ANY receptor.

- By January 1, 2008, quieter or "smart" back-up alarms will be required.

- Construction projects that are not regard as "utility work" (e.g. building construction or demolition, major renovation, or any installations) that are not completed within **15 calendar days**, will not fall under the same exemption as work on the system.

- Construction material shall not be handled in such a way as to create unreasonable noise.

Permissible Hours of Construction

Regulations concerning construction activities within New York City are listed below. All construction activities which fall outside these hours require after-hours authorization from the NYCDEP, the NYCDOB, or the NYCDOT. Additional noise mitigation methods (such as noise barriers) are required if work is performed outside these hours.

Hours of Work are to be in accordance with NYC DOT Permit Stipulations and/or NYC DOT Highway Rules, generally 7 AM through 6 PM weekdays for construction activities. Additional mitigation techniques for receptors within 200 feet may be required by the DEP for hours between 7 PM and 7 AM during weekdays and during weekends. There is an exception for occupied one or two family dwellings, convents or rectories between 10 a.m. and 4 p.m. on wither Saturday or Sunday (Note: Must be a minimum of 300 feet from house of worship).

4.1.3 Operations Outside New York City

Permissible Hours of Construction

Regulations concerning normal field operations are listed in the table in Attachment 1, Normal Field Operation Regulations. Except where indicated, these are simply day and time restrictions imposed by the various communities. In many cases, providing that field operations do not occur outside these day and time restrictions, the field operations will be in compliance with the local noise codes.

Specific Requirements

Some noise codes require special muffler requirements on devices such as engines, air compressors, and pavement breakers. In addition, certain communities impose noise limits on construction activities. If there are specific noise levels stated in the Special Requirements column of the table in Attachment 1, noise monitoring may be required. Careful attention should be given to the equipment and vehicles used in field operations utilizing impact equipment that emit high impulsive noise levels such as pile drivers, pavement breakers, and steam shovels. [6] P

The following procedures apply only to field operations that require noise monitoring as indicated in Attachment 1 and may be skipped if no special requirements are listed in Attachment 1.

4.2 OPERATIONS UNDERTAKEN OUTSIDE OF PERMISSIBLE TIMES

In some jurisdictions, noise from operations undertaken outside of permissible times as a result of dealing with emergency situations is exempt from local noise restrictions. However, some jurisdictions impose time limits on such operations, may require a variance for such operations, and/or may require repair operations to commence within a certain time limit of the ***emergency event***. NYC may issue variance from noise standards for the construction activity. Variance may be granted for the initial period of three days and then renewed. The variance must be clearly posted. If work must begin without variance, an application must be submitted within ***12*** **hours** of commencement.

4.2.1 Utility Activities Within New York City

For utility work conducted outside of 7AM – 10 PM on weekdays, additional authorization must be obtained from NYCDOB, NYCDOT or NYCDEP to work outside those hours. From 6PM – 10PM weekdays, any required daytime noise mitigation controls must be utilized. From 10PM – 7AM weekdays and 7PM – 7AM weekends, additional noise mitigation controls may be required by the DEP if there are any receptors within 200 feet. This will be determined on a case-by-case basis.

4.2.2 Construction Operations Within New York City

In New York City, in the case of urgent necessity in the interest of public safety, the NYCDEP is authorized under the New York City Noise Code to issue a variance from the provisions of the Construction Activity Noise Code provisions for any such construction activity. Such a variance may be granted for an initial period of up to 3 days, and may be renewed for periods of 3 days or less while such urgent necessity continues. The variance must be clearly marked on the license or permit, which must be prominently posted at the job site.

4.2.3 Operations Outside New York City

Refer to the Noise Regulations for Operations Undertaken Outside of Permissible Times (Attachment 4), for any required variances, time limitations, and exemptions regarding operations undertaken outside of permissible times. [8] R/P

4.3 NOISE MONITORING METHODOLOGY

The noise measuring device should be set to use the descriptor specified in the local noise code, as indicated in Special Requirements column of the Attachment 1. Noise that is considered impulsive must be noted and used in the evaluation of the maximum allowable levels given in Attachment 3, the Normal Field Operation Regulations Table. Measurements should be made in such a way as to exclude ***extraneous noises***. Measurements should not be made while ***adverse meteorological conditions*** are occurring in the study area.

Repeat this procedure for each boundary at the property line. Compare the measured property line levels with the maximum allowable levels for the corresponding area in Attachment 1. If measured noise levels are below the maximum allowable noise levels for the corresponding types of noise, as indicated in the Special Requirements column of (Attachment 1), then noise levels from the Normal Field Operations meet the requirements of the local noise code. If measured levels exceed the maximum allowable levels, the noise from l field operations exceeds the local noise codes. [7]

New York City no longer requires noise measurements for normal field locations. Use ***A-weighted*** measurements. All measurements must be taken by "qualified personnel" only.

5.0 DEFINITIONS

Adverse Meteorological Conditions: Rain, snowfall, snow-covered ground, wet ground, gusty winds, and high winds. Measurements should not be made during these types of conditions.

ANSI: Acronym for "American National Standards Institute".

A-Weighted: Measurement that assigns each frequency a "weight" through the use of a filter network that is related to the sensitivity of the ear at that frequency. The level of the filtered signal is displayed as the A-weighted level. The A-weighted frequency characteristic was originally designed to mirror the 40-phon equal-loudness-level contour of the 1933 Fletcher-Munson data.

Emergency Event: The need for immediate repair of Con Edison equipment associated with Con Edison operations due to situations that are causing or are likely to cause service interruptions, or situations that present an imminent danger to the public. Examples include repair or installation of aboveground and belowground power transmission conduits (e.g., electrical, natural gas, steam), immediate repair or installation of power transmission equipment, and immediate tree maintenance.

Extraneous Noises: Noises that are not associated with Con Edison operations. Extraneous noises include, but are not limited to, passing automobiles or trucks, railway activity, nearby

aircraft, nearby construction or demolition, natural sounds, and other nearby noises not associated with Con Edison operations.

Facility Operations: Operational procedures of Con Edison facilities which are essential for normal Con Edison operations. Examples include power generation, compressors, turbines, pipes and valves, bulk material transport, deliveries, fans, and any on-site maintenance or modifications.

Field Operations: Maintenance, installation, upgrade, and repair of Con Edison equipment associated with Con Edison operations. Examples include repair or installation of aboveground and belowground power transmission conduits (e.g., electrical, natural gas, steam), repair or installation of power transmission equipment, tree maintenance, and on-site construction or demolition.

Impulsive Noise: A single short burst or a series of short bursts of sound pressure. The pressure-time history of a single burst includes a rise to peak pressure, followed by a decay of the pressure envelope. The pressure-time history of a single burst includes a 6 dB, or greater, rise to peak pressure, followed by a decay of the pressure envelope, when the rise to peak pressure occurs in 1 second or less. For noise containing a series of short bursts of sound pressure, the noise will be considered impulsive if each impulse in the series is separated in time by less than 1 second. Examples include thunder, noise as a result of pile-driving, steam-shoveling, etc.

Noise Barrier: A structure used for the purpose of placing near a noise source to reduce the noise level measurable at a receptor location.

Noise-Sensitive Area (a.k.a Sensitive Receptor): Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks, or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and old-age homes.

Octave Band: A filter with a single transmission band or passband with relatively low attenuation extending from a lower band-edge frequency greater than zero to a finite upper edge frequency which is twice the lower band-edge frequency. The nominal midband frequency, for a set of contiguous octave bandpass filters, is one of a series that includes 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000 hertz, extended by successive multiplication or division by 10.

Qualified Personnel: Personnel from Con Edison Technical Service, who are trained in calibrated noise measurements and calibrated ***octave band*** measurements, according to ANSI standards, and are operating under the advice from Con Edison EH&S. Qualified personnel should be familiar with the make and type of equipment used in the measurements, and experienced in general noise data collection procedures. Qualified personnel should be able to identify impulsive and periodic noise.

Receptor: Real property, including but not limited to buildings, grounds offices and dwelling units, from which sound levels from sound sources outside such property may be measured.

Sound Level Meter (SLM): Device used to measure sound pressure level with a standardized frequency weighting and indicated exponential time weighting for measurements of sound level, or without time weighting for measurement of time-average sound pressure level or sound exposure level.

Tonal Noise: For the purposes of this document, noise containing single-frequency tones, when the sound pressure of any single-frequency tone in any octave band exceeds the non-tonal masking noise in the corresponding octave band by 6-dB or more. This corresponds, in general, to a tone being prominent when it is more than 10 dB above the threshold of audibility. Examples of tonal noise would include transformer hum, idling engine noise, and constant-rpm engine noise.

Unreasonable Noise: Any excessive or unusually loud sound that annoys, disturbs, injures, or endangers the comfort, repose, health, peace, or safety of a person or that causes injury to plant or animal life, or damage to property or business.

6.0 REFERENCES

NOTE: Con Edison is subject to numerous local noise regulations. Tables have been developed summarizing the local noise regulations applicable in Con Edison's service area. These tables include:

- Attachment 1, Field Operation Regulations
- Attachment 4, Noise Regulations for Operations Undertaken Outside of Permissible Time

For purposes of the References section, the annotations are limited to citations to New York City and New York State regulations. Readers are referred to the Tables for local requirements.

Note: References are forthcoming.

ATTACHMENT 1
FIELD OPERATION REGULATIONS

CITY, TOWN or VILLAGE	ALLOWABLE NORMAL OPERATION DAYS/HOURS	SPECIAL REQUIREMENTS
Airmont	Mon-Sat 8:00am-10:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
Beacon	7:00am-11:00pm	
Briarcliff Manor	Mon-Sat 8:00am-7:00pm	Blasting and Rock Drilling permitted only Mon-Fri 9:00am-5:00pm
Bronxville	Mon-Fri 8:00am-6:00pm	
Buchanan (Village of)	8:00am-7:00pm	
Chestnut Ridge (Village of)	Mon-Sat 8:00am-7:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
Clinton	7:00am-8:00pm	
Croton on Hudson	Mon-Sat 8:00am-10:00pm Sundays 10:00am-8:00pm	
Dover	7:00am-9:00pm	
Greenburg	Mon-Fri 7:00am-8:00pm Sat 9:00am-6:00pm; no work on Sunday	
Hyde Park	6:00am-11:00pm	
LaGrange (Town of)	6:30am-9:00pm	
Larchmont	Mon-Fri 8:00am-7:00pm Sat 9:00am-6:00pm Sun 10:00am-5:00pm	L_{10} (1) levels must not exceed 70dB(A) at a distance of 40 feet
Lewisboro	Mon-Sat 8:00am-7:00pm	
Mamaroneck	Mon-Fri 8:00am-8:00pm Sat 9:00am-6:00pm Sun 9:00am-5:00pm	Pile Drivers and Steam Shovels permitted only Mon-Fri 8:00am-6:00pm No noise permitted beyond property border
Millbrook (Village of)	7:00am-10:00pm	Hours of restriction only apply when within 500 feet of residential zone.
Montebello	Mon-Sat 8:00am-10:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
Mount Pleasant	8:00am-6:00pm	• L_{10} (1) levels must not exceed 70dB(A) at a distance of 400 feet when bordering residential zone from 8:00am-6:00pm. • L_{10} (1) levels must not exceed 55dB(A) at a distance of 400 feet when bordering residential zone from 6:00pm-8:00am. • L_{10} (1) levels must not exceed 75dB(A) at a distance of 400 feet bordering nonresidential zone during business hours. • L_{10} (1) levels must not exceed 80dB(A) at a distance of 400 feet bordering nonresidential zone during nonbusiness hours.

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Mount Vernon	Mon-Fri 7:00am-6:00pm No weekends permitted unless have current permit from the Committee of Buildings	• L_{10} (1) levels must not exceed 70dB(A) at 400 feet when bordering residential zone from 8:00am-8:00pm. • L_{10} (1) levels must not exceed 55dB(A) at 400 feet when bordering residential zone from 8:00pm-8:00am. • L_{10} (1) levels must not exceed 75dB(A) at 400 feet when bordering commercial zone during business hours. • L_{10} (1) levels must not exceed 75dB(A) at 400 feet when bordering commercial zone during non-business hours. • Sound levels must not exceed 80dB(A) at the site boundary when bordering a manufacturing zone. • Sound levels must not exceed 55dB(A) at site boundary when near any noise-sensitive areas.

ATTACHMENT 1 (CONTINUED)
FIELD OPERATION REGULATIONS

CITY, TOWN or VILLAGE	ALLOWABLE NORMAL OPERATION DAYS/HOURS	SPECIAL REQUIREMENTS
New Castle	Mon-Fri 7:30am-8:00pm Sat-Sun 10:00am-5:00pm	No blasting on Saturday, Sunday or holidays
New Rochelle (Residential)	Mon – Fri 8:00am-10:00pm Sat-Sun 10:00am-5:00pm 10:00pm-8:00am	• L_{10} (1) levels must not exceed 70dB(A) at a distance of 400 feet in residential areas. • Sound levels must not exceed 55dB near any sensitive receptor. • Compressors require mufflers with 20dBA or more Insertion Loss. • Pavement Breakers manufactured before 12/31/74 require mufflers with 5dBA or more Insertion Loss. • For residential areas, no noise must be audible beyond property perimeter.
New Rochelle (Commercial)		L_{10} (1) levels must not exceed 75dB(A) at a distance of 400 feet during normal business hours L_{10} (1) levels must not exceed 80dB(A) at a distance of 400 feet at all other times In manufacturing areas, during a 24hour period, L_{10} (1) levels must not exceed 80 dB(A) when measured at construction site boundary
New York City	Mon-Fri 7:00am-6:00pm	
North Castle	8:00am-6:00pm(or sundown) Sundown – 8:00am	• Sound levels must not exceed 70dB(A) at a distance of 400 feet when bordering residential zone. • Sound levels must not exceed 75dB(A) at a distance of 400 feet when bordering commercial zone. • Air Compressors require mufflers with 20 dBA or more Insertion Loss. • Paving Breakers manufactured before 12/31/74 require mufflers with 5 dBA or more Insertion Loss. • Sound levels must not exceed 55dB(A) in residential areas or 65dB(A) in commercial / manufacturing areas
North Hempsted (Village of)	Mon-Fri 8:00am-9:00pm Sat-Sun 10:00am-6:00pm	
Ossining (Town of)	Mon-Fri 8:00am-8:00pm Saturday 9:00am-5:00pm	
Ossining (Village of)	Mon-Fri 7:30am-8:00pm Saturday 9:00am-5:00pm	
Pawling (Village of)	Mon-Sat 7:00am-8:00pm	L_{10} (1) levels must not exceed 80dB(A) at construction site boundary. IMPULSIVE Noise must not exceed 130dB(A) at property line.
Peekskill	Mon-Fri 7:30am-8:00pm Saturday 9:00am-5:00pm	No holiday work permitted

Piermont	7:00am-5:00pm	
Poughkeepsie (City)	6:30am-9:00pm	Other hours for construction (emergency work) only with a permit issued by the Building Inspector
Poughkeepsie (Town)	7:00am-10:00pm	
Ramapo	Mon-Sat 8:00am-10:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
CITY, TOWN or VILLAGE	**ALLOWABLE NORMAL OPERATION DAYS/HOURS**	**SPECIAL REQUIREMENTS**
Sleepy Hollow (Village of)	Mon-Fri 8:00am-9:00pm Saturday 9:00am-9:00pm	
Sloatsburg	Mon-Fri 7:00am-7:00pm	
Suffern	Mon-Fri 7:00am-8:00pm	
Unionvale	7:00am-8:00pm	
West Haverstraw	Mon-Fri 6:00am-9:00pm Saturday 8:00am-22:00pm	
White Plains	7:00am-7:00pm	
Yonkers	Mon-Fri 7:00am-9:00pm	

L_{eq}(1): Time-average sound energy level during a time period of 1 hour. For the purposes of this document, all $L_{eq}(1)$ levels are expressed in dB(A).

L_{10}: The sound level exceeded for 10% of the specified time period.
L_{90}: The sound level exceeded for 90% of the specified time period.

ATTACHMENT 2
UTILITY NOISE MITIGATION PLAN

This document must be used for Utility Activities taking place from 7AM to 10 PM Monday through Friday and 7AM – 6 PM weekends. If work is performed outside these hours, additional noise mitigation measures may be required. (Must have authorization to work any time between 6PM and 7AM)

I Site-Specific Information

If any receptor(s) within 200 feet (if working outside 7AM – 6PM weekdays only), additional noise mitigation may be required by DEP.

If any sensitive receptor(s) have been identified, the building occupant **has been** be contacted. Noise impact of sensitive receptors has been minimized. Con Ed has contacted the facility owner/operator to minimize impact on their operations.

If work scheduled to take longer than 3 days, all residents within 200 feet of construction area have been notified. If job less than 3 days is about to run over, STOP work and perform necessary notifications.

If non-emergency work scheduled to take longer than 15 days, resident notification has been performed, and additional conditions have been met if a dedicated lane is available (all construction mitigation requirements apply).

If the site is required to utilize DOB-specified perimeter barriers at the site **and** a receptor is within 200 feet, a perimeter noise barrier is also being used at the site.

This Plan certifies that all equipment on site is maintained to operate in accordance with the manufacturer's operating specifications.

All tools/equipment are equipped with appropriate manufacturer's noise reduction device

Noise-insulating fabric is utilized for portable pumps, compressors, generators, etc.

Work which occurs after 6PM and before 7AM has after hours work authorization. Additionally:

a. From 6-10PM weekdays, daytime noise mitigation controls apply
b. Between 10PM and 7AM weekdays, and between 7PM and 7AM on weekends, may be required by NYCDEP to employ additional noise mitigation techniques for receptors within 200 feet

Quieter equipment is used when available or when required by the NYCDEP

Unnecessary engine idling is prohibited

Steel traffic plates are properly seated and secured. All are re-set and secured within 24 hours of a call from the DEP

All noise complaints/official DEP notice are responded to on the same day or, if after hours, the next day.

Vehicles with quieter backup alarms are utilized.

A formal noise mitigation training program has been established and site personnel have been trained.

Perimeter noise barriers are used if required in accordance with 28-101(g)

b) If project is non-emergency, long-term (greater than 15 days) where there is a dedicated lane, sections 28-100 through 28-104 are being follow

ATTACHMENT 3
HOLD SPACE FOR DRAFT CONSTRUCTION MITGATION PLAN

ATTACHMENT 4
NOISE REGULATIONS FOR OPERATIONS UNDERTAKEN OUTSIDE OF PERMISSIBLE TIME

CITY, TOWN, or VILLAGE	Regulations	DETAILS
Bedford	EXEMPT	
Airmont (Village of)	EXEMPT	
Chestnut Ridge (Village of)	EXEMPT	
Clinton (Town of)	EXEMPT WITH APPROVAL	Granted by Zoning Enforcement Officer and the Zoning Board of Appeals
Croton-on-Hudson	EXEMPT	
Dover (Town of)	ONLY FOR TEMPORARY CONDITIONS	
Fishkill (Town of)	BY TEMPORARY PERMIT	Granted by Town Clerk upon recommendation of Zoning Enforcement Officer
Hastings-on-Hudson	EXEMPT	
Hyde Park (Town of)	EXEMPT	
LaGrange (Town of)	EXEMPT	
Mamaroneck (Town of)	ONLY WITH EXCEPTION	Issued by Town of Mamaroneck
Mamaroneck (Village of)	SPECIAL PERMIT REQUIRED	Issued by Building Inspector
Millbrook (Village of)	EXEMPT	
Montebello (Village of)	EXEMPT	
Mount Pleasant	SPECIAL PERMIT REQUIRED	Issued by Building Inspector
Mount Vernon	SPECIAL PERMIT REQUIRED	Issued by Commissioner of Buildings
New Castle	VARIANCE REQUIRED	Issued by Zoning Board of Standards and Appeals
New Hempstead (Village of)	EXEMPT	
New Rochelle	PERMIT FOR RELIEF REQUIRED	Issued by City Clerk
New York City	VARIANCE REQUIRED	Within 12 hours, Variance Required. Variance Valid for 3 days, and must be renewed as required. Mitigation Plan required.
North Castle	SPECIAL PERMIT REQUIRED	Issued by Building Inspector
Nyack (Village of)	EXEMPT	
Pawling (Village of)	EXEMPT	
Piermont (Village of)	VARIANCE REQUIRED	Issued by Village Board
Poughkeepsie (City)	SPECIAL PERMIT REQUIRED	Issued by Building Inspector, valid for up to 3 days. May be renewed for an additional 3 days.
Poughkeepsie (Town of)	EXEMPT	
Ramapo (Town of)	EXEMPT	
Scarsdale	EXEMPT	
Sleepy Hollow	EXEMPT	
Spring Valley (Village of)	SPECIAL	Exempt for 24 hours
Suffern (Village of)	EXEMPT	
Wappingers Falls (Village of)	EXEMPT	
West Haverstraw (Village of)	SPECIAL PERMIT REQUIRED	Issued by Building Inspector for periods of 3 days. May be renewed.
Yonkers	EXEMPT	

Revision 5: 12/10/2008 Effective Date: 12/10/2008

PERSONAL PROTECTIVE EQUIPMENT – PROTECTIVE CLOTHING

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP S05.03 – Personal Protective Equipment: Protective Clothing

(CSP converted to CEHSP on 07/17/2008)

Revision 8: 06/10/2008 Effective Date: 06/30/2008

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO THE SELECTION OF PROTECTIVE CLOTHING FOR THE BODY (ARMS, LEGS, AND TORSO). The purpose of this procedure is to ensure that appropriate ***personal protective equipment (PPE)*** is selected and worn to protect Con Edison workers, contractors, and visitors at Con Edison facilities and work sites from chemical and physical hazards to the ***body***.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to any Con Edison activity that presents work hazards to the body that require the use of PPE.

3.0 INTRODUCTION

Many hazards can threaten the body, including heat, splashes from hot metals during welding, splashes from hazardous liquids (acids, bases, solvents), impacts, cuts, electrical hazards (arc, flame), and radiation. Based on the results of ***hazard assessments*** performed in each facility in accordance with CEHSP S 05.01, *Hazard Assessment and Personal Protective Equipment*, protective clothing must be identified that provides the correct protection.

Where hazards are determined to be present that can cause injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact, it is necessary to select PPE to adequately protect affected employees. A variety of protective clothing is available to protect against these hazards, including vests, jackets, aprons, coveralls, and full-body suits. In addition, the OSHA Electrical Maintenance Standard, 29 Code of Federal Regulations (CFR) 1910.269, prohibits generation, transmission, and distribution employees who may be exposed to flame or electric arc from wearing clothing that may increase the severity of an injury.

This procedure presents requirements for selecting and maintaining protective clothing to control work hazards to the body, specifically the arms, legs, and torso.

4.0 COMPLIANCE REQUIREMENTS

4.1 HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE

Con Edison must perform a hazard assessment to determine the ***proper*** personal protective equipment required for each job task performed by employees. The hazards, physical requirements of the operation, resistance of clothing to work-related destructive factors (chemicals, abrasion, etc.), and worker comfort must be considered when selecting required clothing. The PPE hazard assessment is performed to ensure that PPE is correctly identified and that implementation is consistent with workplace conditions. The assessment must be reviewed when new PPE or new chemicals are introduced into the workplace or when operations change. A ***hazard assessment certification*** must be maintained by personnel and the facility to provide a record of workplace reviews. [1] R

The following paragraphs identify guidelines for the selection and use of protective clothing.

4.1.1 Arc or Flame Protection

OSHA standard 29 CFR 1910.269 requires that all electric power generation, transmission, and distribution employees who may be exposed to arc or flames wear clothing that does not contribute to the severity of an injury that could be sustained by the employee. This requirement is based on the fact that certain fabrics are easily ignited and can cause burns. Employees who are potentially be exposed to electrical arc and/or gas fires must wear flame resistant/flame retardant clothing. Employees who are not exposed to electrical arc and/or gas fires may wear 100% natural fiber clothing (wool or cotton). [2] R

4.1.2 Fit and Appearance

Clothing of all kinds must meet certain safety requirements when there is a potential for it to catch on moving parts of machinery (gears, pulleys, rotating shafts, etc.). Clothing, whenever practical, must not have loose parts, such as sleeve tabs, pant cuffs, pocket flaps, etc. Sleeves or pant legs must fit closely to the wearer.

When appropriate, the color of the garment selected must be chosen to show stains that could indicate contact with a hazardous substance or to make a worker conspicuous. Also, persons working in areas near traffic must wear fluorescent yellow/reflective vests as specified in the Con Edison Work Area Protection and Traffic Control Field Manual. [3] R/P

Revision 8: 06/10/2008 Effective Date: 06/30/2008

4.1.3 Laundering

Maintenance and laundering are needed when clothing is soiled due to ***incidental contact*** with substances typically found in the workplace. In the event an employee's uniform or coveralls are contaminated with a hazardous substance (as outlined in this CEHSP) the employee will turn the clothing over to supervision for proper cleaning or disposal as required. All clothes must be laundered in accordance with manufacturer's instructions. [4] R/P

4.2 CON EDISON PPE REQUIREMENTS

4.2.1 Selection of Protective Clothing

Decisions regarding the appropriate garment to wear must be made on a daily basis according to existing field conditions. The following conditions or materials may be encountered during daily duties:

- Potential for flame or electric arc.
- Presence of oil - non-PCB and PCB-containing.
- Presence of asbestos-containing material (ACM).
- Work with or on lead-containing material.
- Work with hazardous chemicals.

Attachment 1 is a flowchart that provides guidelines for the selection of protective clothing for these hazards. Attachment 2 identifies types of protective clothing.

Based on the potential exposure of the employees, natural fiber clothing may be acceptable. However, in any situation where employees may be exposed to the hazards of electric arc or flame these employees must wear appropriate flame-retardant clothing. These situations will be documented on the appropriate hazard assessment form for the task being conducted.

Requirements for Flame-Retardant Clothing

Employees and contractors must wear flame retardant (FR) clothing when performing tasks that may expose them to the hazards of flame or electric arc. Employees who are potentially exposed to electric arc must wear Nomex, Indura, or other FR materials approved by Corporate EH&S. Employees who are potentially exposed to gas flash fire must wear Nomex.

In situations where employees and contractors are required to wear FR clothing, all layers of clothing underneath the FR clothing must be either FR or 100% natural fiber (wool or cotton), including undergarments. In warmer weather, employees or contractors may choose to wear only 100% natural fiber undergarments under the outermost layer of FR clothing. In all cases, the outermost layer of clothing must be FR. Employees and contractors are prohibited from wearing clothing containing polyester, nylon, rayon, and acetate, alone or in blends, when performing tasks that may expose them to flames or electric arc.

In situations that present the potential for flame or electric arc exposure and the possibility that the garments may become soiled with oil, PCB-containing oil, or other liquid, limited-use FR/ **Chemical Resistant (CR)** disposable outerwear must be worn over the FR coveralls. **These disposable FR/CR garments must not be worn without the FR coveralls.**

Clothing Requirements for Oil and PCB-Containing Oil

If oil is present and there is reason to expect that a flame or electrical arc will not occur, employees must use garments that protect against the oil hazard. Depending on the amount of oil present and the potential for contact with oil, either disposable polycoated or Saranex coveralls must be worn. The selection of garment is independent of the PCB content of oil.

- Saranex coveralls provide greater protection against oil breakthrough and ***penetration*** than do polycoated coveralls. For this reason Saranex coveralls must be worn when the amount of oil present may result in substantial contact.

- In situations where potential contact with oil is minimal, polycoated coveralls can be used.

If a situation has the potential for flame or electric arc exposure and possible soiling of garments with oil, limited-use FR disposable outerwear must be worn over the FR coveralls. **These disposable FR garments must not be worn without the FR coveralls**.

After work involving potential contact with oil is completed, the disposable coveralls must be removed. If the garments have been in direct contact with oil containing 50 parts per million (ppm) or greater PCBs, the coveralls must be disposed of in accordance with Corporate Environmental Procedure (CEP) 06.12, *Disposal*. If the garments have been in direct contact with oil containing less than 50 ppm PCBs, the coveralls must be disposed of as general waste.

Clothing Requirements for Asbestos-Containing Materials

If asbestos-containing material (ACM) is present and there is reason to expect that a flame or electrical arc will not occur, employees must use garments that protect against the asbestos hazard. In this situation, a Con Edison-approved disposable coverall (Tyvek) must be worn during asbestos removal. This coverall may be worn alone or over FR coveralls.

If there is reason to expect that a flame or electrical arc may occur during asbestos work and there is a potential chemical or oil exposure, such as during the removal of arc-proofing tape in a manhole, the limited-use, chemically resistant FR disposable garments (polycoated Sontara) must be worn in place of the asbestos coverall. If there is reason to expect that a flame or electrical arc may occur during asbestos work and there is no potential chemical or oil exposure, the limited-use FR disposable garments (uncoated Sontara) must be worn in place of the asbestos coverall. In these situations, the limited-use FR disposable outerwear must be worn over the FR coveralls. **These disposable FR garments must not be worn without the FR coveralls**.

Upon completion of asbestos work, the asbestos coverall or limited-use FR garment must be removed and disposed of in accordance with the Asbestos Management Manual, Chapter 11 - Storage, Transfer, Transportation and Disposal.

Clothing Requirements for Work with Hazardous Liquid Chemicals

The proper selection of protective clothing depends on the nature of potential hazard (routes of entry, physical characteristics, toxicological properties, etc.), the type of work to be done, ergonomic constraints, and the chemical and physical performance or resistance characteristics required by the protective clothing. Both polycoated and Saranex Tyvek coveralls are chemical

resistant to a wide range of chemicals. If a hazardous chemical splashes onto the coveralls, remove the chemical first by washing it off and then remove the coveralls. Saranex coveralls must be worn when the amount of acid, bases, solvents or other hazardous liquids present may result in substantial contact.

- In situations where potential contact with acids, bases, solvents and other hazardous liquid material is minimal, polycoated Tyvek must be worn.
- The PPE for battery maintenance activities includes a rubber apron and vinyl sleeves.

Clothing Requirements for Welding and Burning

Employees exposed to the hazards created by welding, cutting or brazing operations, including assistants and fireguards, must wear flame-retardant coveralls. Employees performing welding or cutting activities must also don the following equipment:

- Flame-resistant gauntlet gloves.
- Flame-retardant coveralls.
- Flame-resistant aprons or leather vests, jackets, leggings, sleeves and spats worn over the flame-retardant coveralls when additional protection against sparks and radiant energy is needed.
- 100% natural fiber undergarments
- A flame-retardant skullcap with ear covers for overhead work.

Clothing Requirements for Lead Splicing Work

Persons performing lead splicing work must wear FR coveralls. If the job will result in soiling of the FR coveralls, limited-use FR garments must be worn over the FR coveralls. This should protect and extend the life of the FR coveralls. **The limited-use FR garment must not be used without the FR coveralls.**

Clothing Requirements for Working with Hazardous Materials

Clothing for all tasks where there is a potential for exposure to hazardous materials must be approved by EH&S. [5] R/P

Clothing Requirements for Working Near or Over Water

U.S. Coast Guard approved personal flotation devices must be worn by an employee whenever the danger of drowning exists. This condition may exist whenever an employee is working near or over water and could be pulled or pushed or fall into the water.

Each personal flotation device must be maintained in a safe condition and inspected frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use. An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, is provided. [6] R/P

4.2.2 Reusable Clothing Maintenance and Laundering

Most reusable work garments require periodic laundering to clean them of general debris and material that accumulates on them at the work location due to incidental contact. The vendor will

maintain those clothes that are part of the rental contract. All other clothes must be laundered according to manufacturer's specifications.

When ***accidental contact*** occurs and reusable clothing becomes soiled or contaminated with materials such as ACM or PCBs, appropriate precautions must be taken.

PCB-Contaminated Reusable Clothing

Reusable clothing that has been in direct contact with oil containing 50 ppm or greater PCBs must be disposed of in accordance with CEP 06.12, *Disposal*.

Reusable clothing that has been in direct contact with oil containing 1 ppm or more PCBs, but less than or equal to 49 ppm PCBs, must be collected and bagged at the work location for vendor pickup.

Friable ACM-Contaminated Reusable Clothing

Reusable clothing that has been in direct contact with friable ACM must be wet down to minimize fiber release, placed in a sealed container, and collected from the employee. The contaminated garment must be removed and disposed of in accordance with the Asbestos Management Manual, Chapter 11 - Storage, Transfer, Transportation and Disposal.

Laundering of 100% Cotton Clothing

The laundering instructions for 100% cotton garments are as follows:

- Machine wash in warm water with similar colors.
- Use only non-chlorine bleach, when needed.
- Tumble dry at low to medium temperature.
- Iron on a low to medium temperature, if required.

Laundering Indura and Proban Coveralls

Both Indura and Proban coveralls are made of cotton that has been treated to make them fire retardant. When washed properly, the fire-retardant treatment should last the life of the garment. The manufacturer's instructions for laundering Indura and Proban treated fabrics must be adhered to, including the following washing instructions:

- Wash clothing inside out to minimize edge and surface abrasion.
- Use a water level sufficient for the quantity of clothing to be washed, preferably the high tide level on the washer.
- Use a quality detergent, such as Tide, All, Era, Yes, or Wisk. Follow the detergent manufacturer's instructions.
- Use a temperature that is as low as possible but that still cleans the garment. When using a quality detergent, the warm or cold setting may be sufficient.
- Do not use chlorine (sodium hypochlorite) bleach such as Clorox as this can affect the fire-retardant properties of these garments.

- When drying garments, use the minimum setting required to dry the clothing in a practical time
- Dry garments inside out.
- To minimize shrinkage, immediately remove garments from the clothes dryer when they are dry or slightly damp.

Laundering Nomex Garments

Nomex garments are made of flame-retardant aramid fibers. The flame-retardant property is "built into" the fiber; it is not applied to a fabric as a treatment or additive, as in the case of the Indura and Proban coveralls. The manufacturer's instructions for laundering Nomex garments must be adhered to, including the following washing instructions:

- Nomex garments must be sorted and washed separately from other garments to prevent flammable fibers/lint from being transferred to the Nomex garment.
- Heavily soiled or stained garments must be pre-treated as soon as possible with a full-strength heavy-duty liquid detergent.
- The wash load size must allow the garment to move freely throughout the wash and rinse cycles.
- Normal wash water setting (approximately 140^{o} Fahrenheit) is adequate for moderately soiled garments. Higher temperatures may be required for heavily soiled or stained garments.
- A synthetic heavy-duty liquid laundry detergent, such as liquid Tide, All, Era, Yes, and Wisk, is recommended for cleaning Nomex garments.
- Chlorine bleach must not be used. Bleach will not degrade the flame-retardant properties of the garment, but it may cause strength and color loss over time.
- Nomex garments must be tumble-dried on medium or high temperature settings.
- Iron on medium setting, if necessary. [7] R/P

4.3 PPE INSPECTION AND MAINTENANCE

This information will help to ensure that equipment is maintained in a satisfactory condition and provides the required protection when used. The following minimum requirements for inspection and maintenance will be followed.

- PPE must be properly inspected prior to use. Damaged or missing items like holes in gloves or protective clothing, missing side shields on glasses, and broken laces or cracked soles on shoes can significantly impact the effectiveness of the PPE. Signs of wear, such as smooth soles on shoes that can cause slipping or scratches on goggles that limit vision, can present new hazards. PPE that is damaged, missing items, or shows signs of wear, jeopardizing the protection afforded by the equipment, will be removed from service and repaired or replaced.
- PPE must be cleaned and properly decontaminated in accordance with manufacturer recommendations.

- PPE must be properly stored to protect it from exposure to conditions that can damage or compromise its effectiveness. Specific locations acceptable for the storage of PPE will be identified.
- Employees must be familiar with methods for obtaining new PPE in the event that testing and inspection identify unacceptable equipment.

Con Edison maintains a supply of PPE that can be used by facility personnel when needed. The equipment is specific to the tasks performed by Con Edison personnel. [8] R/P

4.4 TRAINING AND TESTING

Refer to CEHSP S05.01, *Hazard Assessment and Personal Protective Equipment*, Section 4.4 for detailed training and testing requirements. [9] R/P

4.5 RECORDKEEPING

In accordance with CEHSP S05.01, *Hazard Assessment and Personal Protective Equipment,* the Training Coordinator for each operating organization must retain training records for three years. Additionally, OSHA 1910.269(a)(2)(vii) requires that training records associated with FR clothing be maintained for the duration of the employee's employment. The Safety Administrator must maintain hazard assessment documentation for all job types currently performed within the organization. [10] R/P

5.0 DEFINITIONS

***Accidental Contact*:** An unexpected event where a substantial amount of a substance spills, splashes, sprays, or otherwise comes into contact with a worker. It is not a typical occurrence for the duties/job being performed.

Body: Arms, legs, and torso.

Hazard Assessment: A systematic review performed to identify exposure hazards and appropriate PPE for specific work operations. This assessment includes a review of the work activities, equipment, and materials used, and end products and by-products to evaluate the potential for physical contact, noise hazards and/or respiratory hazards.

Hazard Assessment Certifications: Written verification that identifies a completed exposure assessment, including the evaluated tasks/processes and areas, the person who performed the assessment, and the date(s) of the assessment.

Incidental Contact: Materials that an employee may contact during the performance of his daily duties. For example, an auto mechanic contact with lube oil while replacing a part or a troubleshooter brushing up against equipment in a vault during an inspection that results in a smudge on their clothing.

Penetration: Flow of chemicals through clothing discontinuities, such as zippers, seams, and pinholes.

***Personal Protective Equipment (PPE)*:** Clothing and equipment worn by personnel to prevent contact with hazards present in the work area. PPE includes safety glasses, face shields, gloves, safety shoes, hearing protection, hard hats, etc.

Proper: Approved, certified, or suitable, within acceptable guidelines set forth by governing codes and standards, as well as recognized safe work practices.

6.0 RESPONSIBILITIES

Employees: The PPE user is responsible for following the requirements of the PPE procedure, including: wearing required PPE; attending required training; caring for, cleaning, and maintaining PPE; and submitting equipment for repair or replacement.

Environment, Health, and Safety (EH&S): EH&S performs the following functions:

- Reviews applicable regulations and ensures that procedures meet all regulatory requirements.
- Revises procedures as applicable.
- Reviews/approves controlled documents prior to release.
- Distributes updates and changes.
- Reviews training prepared by the Learning Center.
- Provides technical assistance to Safety Administrators.

Facility or Site Manager Responsible for Compliance: The Con Edison designated individual within each operating organization who is responsible for ensuring compliance with federal, state, and local regulations and this procedure.

Law Department: The Law Department assists and provides guidance to EH&S by reviewing changes to these procedures in light of all applicable statutes and regulations to ensure that the procedures meet all legal requirements.

Operating Organizations: Unless otherwise indicated, operating organizations are responsible for compliance with federal, state, and local regulations and this procedure.

Safety Administrator: Responsible for performing hazard assessments, selecting PPE, and maintaining hazard assessment certifications.

Supervisors: Responsible for ensuring that personnel wear proper PPE and for performing necessary training.

Training Coordinators: Enters PPE training records into the Training Registration System.

7.0 REFERENCES

4.1 HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE

[1] 29 CFR 1910.132(d) (hazard assessment, including written certification requirement); 29 CFR 1910.132, Appendix B (non-mandatory compliance guidelines for hazard assessment, including Section 7, reassessment of hazards). NOTE: The OSHA regulations do not specifically require reassessment of hazards, although the issue is addressed in the Appendix B non-mandatory guidelines).

[2] 29 CFR 1910.137 (electrical protective equipment); 29 CFR 1910.269(l)(6) (apparel for electrical power generation, transmission, and distribution).

[3] USDOT Federal Highway Administration, *Manual on Uniform Traffic Control Devices,* Section 6D.03, Worker Safety Considerations (2003 Edition) (clothing requirements when working near traffic). The manual can be found at: http://mutcd.fhwa.dot.gov/HTM/2003/html-index.htm. The remaining requirements in this section relating to fit and appearance are required by Con Edison as a matter of policy.

[4] See Note 6 below regarding laundering.

4.2 CON EDISON REQUIREMENTS

[5] 29 CFR 1910.132 (general PPE requirements); 29 CFR 1910.137 (electrical protective equipment); 29 CFR 1910.252(b)(3) (protective clothing for welding, cutting and brazing); 29 CFR 1910.269(l)(6) (apparel for electric power generation, transmission and distribution). NOTE: The OSHA regulations do not contain specific requirements for protective apparel comparable to those discussed in CEHSP S 05.01, *Hazard Assessment and Personal Protective Equipment* relating to head, eye and/or face, hand and foot protection. The specific clothing identified in this section has been determined to meet OSHA requirements relating to proper PPE. NOTE: 29 CFR 1910.269(l)(6) allows clothing made of acetate, nylon, polyester or rayon provided it has been treated to eliminate hazards; Con Edison bars all clothing containing such fibers as a matter of policy.

[6] 29 CFR 1910.269(w)(5)(i)-(iii) (requiring personal flotation device when danger of drowning exists). NOTE The cited provision applies only to the operation and maintenance of electric power generation, control, transformation, transmission and distribution lines and equipment. Con Edison applies this requirement to all activities that involve the potential for drowning as a matter of policy.

[7] 29 CFR 1910.132(a) (general PPE maintenance requirement); 29 CFR 1910.132(e) (prohibiting use of damaged/defective PPE); 29 CFR 1910.132, Appendix B, Sec. 12 (non-mandatory: cleaning and maintenance); 29 CFR 1910.137(b) (in service use and care of electrical protective equipment). NOTE: Con Edison has developed the specific procedures in this section relating to maintenance and laundering of particular types of clothing to ensure that the clothing continues to provide proper protection to Con Edison employees.

4.3 PPE INSPECTION AND MAINTENANCE

[8] 29 CFR 1910.132(a) (general PPE maintenance requirement); 29 CFR 1910.132(e) (prohibiting use of damaged/defective PPE); 29 CFR 1910.132, Appendix B, Sec. 12

(non-mandatory: cleaning and maintenance); 29 CFR 1910.137(b) (in service use and care of electrical protective equipment). NOTE: Con Edison has developed the specific procedures in this section relating to inspection and maintenance to ensure that protective clothing is maintained in a satisfactory condition.

4.4 TRAINING AND TESTING

[9] See CEP 05.01, *Hazard Assessment and Personal Protective Equipment*, for training and testing requirements.

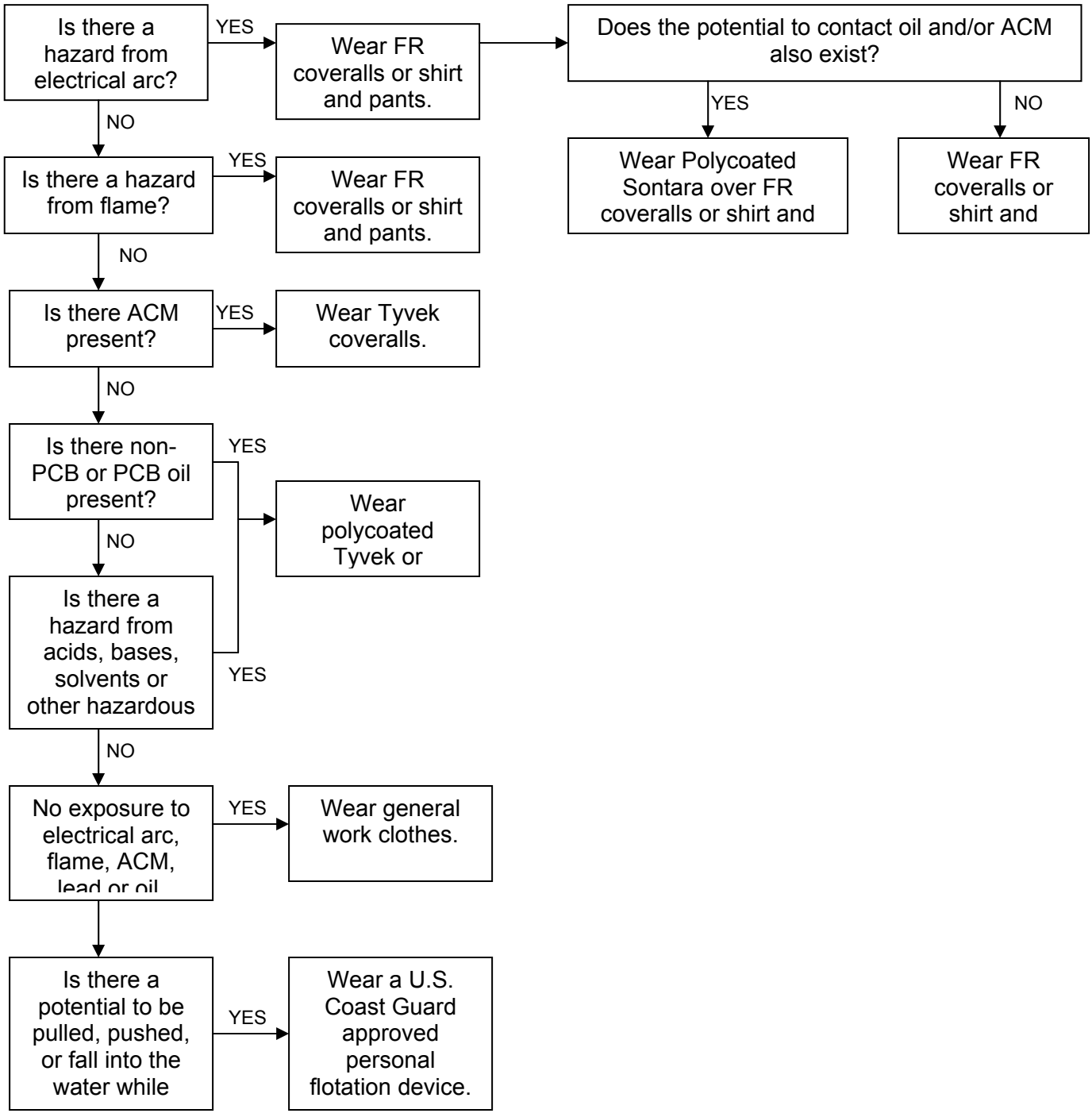
4.5 RECORDKEEPING

[10] 29 CFR 1910.132(d)(2) (written hazard assessment certification); 29 CFR 1910.132(f)(4) (training records); 29 CFR 1910.269(a)(2) (electric power generation, transmission and distribution training recordkeeping). NOTE: the OSHA regulations do not specify a retention period for training records under 29 CFR 1910.132(f)(4). Con Edison has adopted a three-year record retention period as a matter of policy. 29 CFR 1910.269(a)(2) requires training records to be retained for the duration of the employee's employment**.** This training covers PPE, including FR clothing.

National Safety Council - Accident Prevention Manual for Business and Industry, 10th edition.

ATTACHMENT 1

GUIDELINES FOR SELECTION OF PROTECTIVE CLOTHING



Revision 8: 06/10/2008 Effective Date: 06/30/2008

ATTACHMENT 2
PERSONAL PROTECTIVE CLOTHING

PROTECTIVE CLOTHING	USE	GROUP/OPERATION
Flame Retardant (FR)	• Worn when there is potential exposure to flame or electric arc. • Worn when performing lead splicing.	Steam, Powerhouse, Electrical Welding, Hotwork Gas Operations Welding, Hotwork
U.S. Coast Guard Approved Personal Flotation Device	Worn when the potential of drowning exists.	Steam, Powerhouse, Electrical, Spill Response Team Members
Tyvek	Worn when potential for contact with asbestos-containing materials (ACM).	Maintenance, Spill Response Team Members
Kleenguard Ultra (Tyvek equivalent)	Worn for general utility, asbestos, bloodborne pathogens, lead dust, bulk chemical delivery, and short-term, incidental contact with oil, including polychlorinated biphenyls (PCB).	Maintenance, Spill Response Team Members
Disposable Polycoated / Saranex	• Polycoated is worn when there is minimal potential for contact with PCBs. • Saranex is worn where there is greater potential for contact with PCBs.	Maintenance, Spill Response Team Members
Disposable Polycoated/ Saranex	• Polycoated is worn when there is a minimal potential for contact with acid, bases, solvents and other hazardous liquid materials. • Saranex is worn where there is a greater potential for contact with acids, bases, solvents and other hazardous liquid materials	Acid Deliveries, Maintenance of Acid Systems, solvents
Polycoated Sontara	Polycoated Sontara is worn when there is both a potential for arc or flame and a potential for exposure to an oil contaminant or asbestos. This garment protects normal FR clothing.	Operations where there is an exposure to arc or flame and where there is an exposure to oil and/or asbestos
Uncoated Sontara	Uncoated Sontara is worn when there is a potential for arc or flame and no potential for exposure to an oil contaminant. This garment protects normal FR clothing.	Operations where there is an exposure to arc or flame and where there is an exposure to asbestos (no oil)
Rubber Apron Vinyl Sleeves	Rubber apron bib style and vinyl sleeves are worn over work clothes to protect against acids.	Battery Maintenance and acid handling

Revision 8: 06/10/2008 Effective Date: 06/30/2008

LOCKOUT / TAGOUT PROCEDURES

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP S12.00 – Lockout/Tagout Procedures

(CSP converted to CEHSP on 07/17/2008)

Revision 3: 12/17/2007 Effective Date: 12/31/2007

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH ALL FEDERAL REGULATIONS RELATING TO *LOCKOUT/TAGOUT*. The purpose of this procedure is to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment is isolated from the ***energy source*** and rendered inoperative.

This document does not supersede Con Edison's General Instructions Governing Work on System Electrical Equipment (i.e., Bluebook) or any other existing corporate documents (i.e., COP 5-1-2, Processing & Controlling Operating Orders and Work Permits).

2.0 APPLICABILITY

This Corporate, Environmental and Safety Procedure (CEHSP) applies to all Con Edison facilities, each of which is responsible for establishing and documenting site-specific lockout/tagout procedures for each piece of equipment, machinery or system under that site's supervision. Procedures may be established for classes of equipment or machinery if their

function and operation are similar and the procedure can collectively account for the control of all hazardous energy sources.

This CEHSP also applies to all outside contractors performing work on Con Edison equipment within the facility. It is the responsibility of the Facility's Manager to ensure compliance. Failure to comply may result in immediate termination of such outside contractor's services.

Procedures must be developed, documented and utilized by each Con Edison site for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Exception: The site does not need to document the required procedure for a particular machine or equipment, when **all** of the following elements exist:

(1) The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;

(2) The machine or equipment has a single energy source which can be readily identified and isolated;

(3) The isolation and locking out of that energy source will completely de-***energize*** and deactivate the machine or equipment;

(4) The machine or equipment is isolated from that energy source and locked out during ***servicing and/or maintenance***;

(5) A single ***lockout device*** will achieve a locked-out condition;

(6) The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;

(7) The servicing and/or maintenance does not create hazards for other employees; and

(8) The employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing and/or maintenance.

3.0 INTRODUCTION

3.1 PROCEDURE

This procedure applies to any job task that may expose workers to potentially hazardous energy. There are several qualified exceptions:

- Anytime a guard is removed. Minor tool changes and adjustments and/or other minor servicing activities that are routine, repetitive, and integral to the use of the equipment and that occur during ***normal production operations***, are not covered by the lockout/tagout standard, provided the work is performed using alternative measures that provide effective protection.

- The standard does not apply while servicing or maintaining cord and plug connected electrical equipment, provided that the equipment is unplugged from the energy source; and the plug remains under the exclusive control of the employee performing the servicing and/or maintenance.

- ***Hot tap*** operations that involve transmission and distribution systems for gas, steam, water, or petroleum products when they are performed on pressurized pipelines provided that continuity of service is essential, shutdown of the system is impractical, and employees are provided with alternative protection that is equally effective. [1] R

3.2 PERSONNEL

Authorized Employees

An authorized employee is one who is able to initiate these procedures, and to employ all parts of the procedures to ensure the safe completion of work. Authorized employees are selected on the basis of either their formal training, on the job experience, licenses held or familiarity with mechanical and electrical work and associated hazards related to this work.

Affected Employees

Individuals whose jobs requires them to operate a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires them to work in an area in which such servicing or maintenance is being performed.

All other company and outside contract employees whose work operations are or may be in an area where lockout/tagout procedures may be utilized are also deemed affected employees. [2] R

4.0 COMPLIANCE REQUIREMENTS

4.1 LOCKOUT PROCEDURE

Except under conditions noted in Section 4.4, the only authorized employee that can remove a lock and tag is the authorized employee who installed the lock and tag.

- The authorized employee who performed all the steps in Section 4.2, A-B-C-D-E, may apply a sequentially numbered padlock to equipment capable of accommodating a padlock for the purpose of preventing the normal operation of an ***energy isolating device*** such as a switch, valve, etc.

- The authorized employee will continue the procedure in Section 4.2 steps F and G to completion, and return the padlock along with all Stop Tags.

- The authorized employee will update log entries as stated in 4.2 E. [3] R/P

4.2 LOCKOUT/TAGOUT PROCEDURE SEQUENCE

A. Notification

The authorized employee will notify the supervisor of the facility and any affected employee in the facility that a lockout/tagout procedure will be put into effect, the location of the equipment to be taken off-line, and the reason for the procedure.

The authorized employee will issue the appropriate amount of Stop Tags, and enter data into a logbook consisting of:

- Date and time
- ID number of tag(s) issued
- Equipment removed from service
- Authorized employee name(s)
- Date and time tags were returned (equipment returned to service).

The authorized employee is to acknowledge understanding the procedure, and the importance of adhering to the procedure.

B. Identification and Location of Devices

After receiving a job briefing on the hazards associated with the work assignment and required personal protective equipment, the authorized employee will make a survey to locate and identify all energy isolating devices (i.e., which switch(s) valve(s) or other isolating devices apply to the equipment) to be locked out.

Note: More than one energy source may be involved.

C. Shut Down of Equipment

The authorized employee must shut the machinery or equipment down in the operational method described by departmental procedure, or stop and obtain an operating procedure from his/her supervisor before shutting down the equipment.

D. Isolation - Dissipation

The authorized employee will operate the switch, valve, or other energy-isolating device, or multiple combinations thereof, so that the equipment is isolated from all of its energy sources. Stored energy between the isolating device and the equipment must be dissipated. Energy such as spring-loaded components, rotating components, pressurized hydraulic, water, steam, gas, air pressure, or potential stored energy (i.e., capacitors) must be relieved of potential hazard by blocking, restraining, re-positioning or bleeding down as required.

E. Tagout Procedure Sequence

Lockout is the preferred method of isolating machines or equipment from energy sources, and must be used when the energy isolating device is ***capable of being locked out***.

A tagout procedure may be used on those energy isolating devices that are incapable of being locked out after all available methods and means have been exhausted and no satisfactory alternative is available.

The authorized employee will apply Stop Tags to each energy isolating device, in accordance with an associated procedure.

The authorized employee will record the following information on each tag affixed:
1. Name of employee invoking the procedure
2. Date procedure initiated
3. Reason for procedure
4. Warning legend

When the equipment is returned to operation, the authorized employee will remove all Stop Tags and log each stop tag removed, completing the procedure.

F. Verification

The authorized employee will verify that all energy has been isolated by going back to the original device and verifying by testing that an unexpected release of stored energy will not occur (i.e., electrical, hydraulic, pneumatic, pressurized liquids and gases etc.). After ensuring that personnel are not exposed to any hazards from the release of stored energy, the authorized employee will follow written procedures for performing the assigned task.

G. Restoring Machine or Equipment to Normal Operation

After the assigned task is completed and the equipment is ready for return to normal operation, the authorized employee will perform the following sequence:

1. Check area around the equipment to be sure no other personnel are exposed to danger. Notify all affected employees of the intent to restore energy.
2. Remove all tools and supplies from immediate vicinity.
3. Check to make certain all protective guards, covers, casings, etc. are in place, and that all moving parts are unrestricted.
4. Check position of local starting mechanism, valves, controls, etc. to ensure against premature or unwanted action leading to a hazardous condition.
5. Remove, in reverse sequence of application, all Stop Tags.
6. Re-position valves, switches, etc. in compliance with operating procedures.
7. Operate the energy isolating devices to restore energy to the equipment.
8. Notify the supervisor of the facility and affected employees of the restoration of energy to the equipment.
9. Operate the equipment in the normal manner to detect any discrepancies. Repeat procedures as found necessary.
10. Return Stop Tags and update the log in accordance with step 4.1 E. [4] R/P

4.3 GROUP LOCKOUT OR TAGOUT

When work is performed on machinery or equipment involving more than one person, each employee in the group is responsible for adhering to all provisions of the procedures for lockout or tagout.

In the event a group of employees require the procedure to be used, the following actions must be followed:

1. A single authorized employee will be designated by the supervisor of the facility as having primary responsibility for a set number of persons working under the protection of a group procedure.

2. This authorized employee will be the individual designated to coordinate with the affected employees and ensure continuity of protection.

3. Each employee working on the unit must review with the authorized employee designated by the supervisor of the facility, placement of Stop Tag or padlock device on each energy isolating device de-energized under the procedure.

4. All affected employees must receive a job briefing by an authorized employee. [5] R

4.4 SHIFT OR PERSONNEL CHANGES

Shift Changes

When work on a machine or piece of equipment will continue into the next work shift, protection must be continued. The oncoming authorized employee must be satisfied that the procedure is properly in effect and it is safe to transfer lockout or ***tagout devices***.

- The oncoming authorized employee will be given a job briefing, and will accompany the off-going authorized employee to the location of each Stop Tag or padlock device.

- The off-going authorized employee will point out the location of all Stop Tags and padlocks tags applied during his/her shift.

- The oncoming authorized employee will record the number of Stop Tags and padlocks applied.

- The oncoming authorized employees must ensure that they are familiar with the existence and reason for the lockout or tagout procedure, and the number of Stop Tags and padlock devices recorded.

- The authorized employees will review the number of Stop Tags and padlock devices for discrepancies, and then record the transfer of responsibility from the off-going to the oncoming employee in the log.

Personnel Changes

Each Stop Tag or padlock device must be removed from each energy isolating device by the authorized employee who applied them.

If the employee who initiated the procedure is not available to remove the Stop Tag or padlock device, they may be removed by a ***qualified employee*** provided the following conditions are completely satisfied:

1. The qualified employee must be trained in all aspects of this procedure.

2. The qualified employee has complied with all parts of this procedure prior to removing the device.

3. The qualified employee verifies that the employee who initiated the procedure is unavailable. All reasonable attempts must be made to contact the employee and inform the employee of the intended action.

The employee will be informed that the above action was taken before the employee begins work again at the location.

Special Circumstances

In situations where a lockout device must be removed by someone other than the person who installed it, the following steps must be taken:

- A qualified employee on site must personally verify that no affected employees are exposed to danger from re-energizing or reactivating equipment.

- The lockout device(s) may be removed by cutting or similar method only after the qualified employee has verified that no affected employee exposure exists. [6] R

4.5 ANNUAL INSPECTION

The operating organization must conduct, on at least an annual basis, an inspection of the requirements and compliance with this procedure. This inspection must:

- Be performed by an authorized employee other than those using the procedure.

- Correct any inadequacies or deficiencies found.

- Include a review of the employee's responsibilities between each authorized employee and the inspector.

- Be certified to include the machine or equipment, the date of the inspection, the employees included, and the person performing the inspection.

Attachment 2 must be used for these inspections.

These annual inspections are intended to assure that the energy control procedure continues to be implemented properly and that the employees involved are familiar with their responsibilities under that procedure. The inspection must be able to determine whether the:

- Steps in the energy control procedure are being followed;
- Employees involved know their responsibilities under the procedure;
- Procedure is adequate to provide the necessary protection, and what changes, if any, are needed.

When lockout is used, the inspection must include:

- A review with all authorized employees for the procedure being inspected,
- Their responsibilities under that procedure.
- Group meetings between the authorized employee and affected employees.

When tagout is used, this review must be performed with all affected employees, as defined in the standard, as well as with all authorized employees, for the procedure being inspected.

The site's senior manager must certify that the annual inspections have been performed. The certification must identify:

- The machine or equipment on which the energy control procedure was being utilized,
- The date of the inspection,
- The employees included in the inspection,
- And the person performing the inspection.

The results of the audit will be forwarded to the manager of maintenance, for recordkeeping. [7] R

4.6 PROTECTIVE HARDWARE AND MATERIAL

Lockout and tagout equipment must be provided in sufficient quantity to satisfy the requirements of this procedure. Such hardware and material must be capable of safely tagging, isolating, securing or blocking machines and equipment from energy sources.

Lockout and tagout devices must be singularly identified, must be the only devices used for controlling energy, and must not be used for other purposes.

Whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment must be designed to accept a lockout device

Durable

Lockout and tagout devices must be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

Tagout devices must be constructed and printed so that exposure to weather condition or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

Tags must not deteriorate when used in corrosive environments such as areas where acid and alkaline chemicals are handled and stored.

Standardized

Lockout and tagout devices must be standardized within the facility where used in at least one of the following criteria - color, shape, or size. Additionally, on tagout devices, print and format must be standardized.

Substantial

Lockout devices must be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

Tagout devices, including their means of attachment, must be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means must be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than fifty (50) pounds and having the basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

Identifiable

Lockout and tagout devices must indicate the identity of the employee applying the devices.

Tagout devices must warn against hazardous condition if the energy isolating device is not operated, and must include a legend such as the following - Do Not Open, Do Not Close, Do Not Start, Do Not Energize, Do Not Operate. [8] R

4.7 TRAINING

The company will provide training to ensure that employees understand the purpose and function of the lockout/tagout procedure and that the knowledge and skills required for the safe application, usage and removal of lockout/tagout controls are acquired by authorized employees.

The company must certify that employee training has been accomplished and is up to date. The certification must contain each employee's name and dates of training.

Equipment-Specific Training

Each authorized employee must receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

Each affected employee must be instructed in the purpose and use of the lockout/tagout procedure.

All other employees whose work operations are or may be in an area where lockout/tagout procedures may be utilized must be instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.

Specific instructions will include the proper procedure for locking out and tagging out of devices. Specific training will be given regarding the limitations of tags. Attachment 1 must be utilized for this purpose.

Training will be done through The Learning Center, or by the safety administrator or by the responsible shop operating supervisor. The tracking and recording of this training will be the responsibility of the department training Coordinator. [9] R/P

Retraining

Retraining must be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedure.

Additional retraining must be conducted whenever a periodic inspection reveals, or local EH&S has reason to believe, that there are deviations from, or inadequacies in the employee's knowledge, or use of the energy control procedures.

The training must reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary. [10] R

5.0 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

Qualified Employee: A qualified person is a person who has been trained and has demonstrated proficiency, in compliance with 29 CFR 1910.147(c)(7), to perform servicing and maintenance on the machine or equipment to be inspected.

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

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

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

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

6.0 REFERENCES

3.0 INTRODUCTION

3.1 PROCEDURE

[1] 29 CFR 1910.147(a)(2)(ii)-(iii) (applicability and exceptions).

3.2 PERSONNEL

[2] 29 CFR 1910.147(b) (definitions).

4.0 COMPLIANCE REQUIREMENTS

4.1 LOCKOUT PROCEDURE

[3] 29 CFR 1910.147(c)(1) (energy control program generally). See 29 CFR 1910.147, Appendix A (non-mandatory guidelines: typical minimal lockout procedure).

4.2 LOCKOUT/TAGOUT PROCEDURE SEQUENCE

[4] 29 CFR 1910.147(c)(2) (preference for lockout); 29 CFR 1910.147(c)(3) (full employee protection); 29 CFR 1910.147(c)(4) (energy control procedure); 29 CFR 1910.147(c)(9) (notification of employees); 29 CFR 1910.147(d)(1)-(6) (preparation for shutdown, machine or equipment shutdown; machine or equipment isolation; lockout or tagout device application; stored energy; verification of isolation); 29 CFR 1910.147(e)(1)-(3) release from lockout or tagout). See 29 CFR 1910.147, Appendix A (non-mandatory guidelines: typical minimal lockout procedure).

4.3 GROUP LOCKOUT OR TAGOUT

[5] 29 CFR 1910.147(f)(3) (group lockout/tagout).

4.4 SHIFT OR PERSONNEL CHANGES

[6] 29 CFR 1910.147(c)(8) (requiring lockout/tagout to be performed only by authorized employee performing servicing and/or maintenance); 29 CFR 1910.147(f)(4) (shift changes).

4.5 ANNUAL INSPECTION

[7] 29 CFR 1910.147(c)(6).

4.6 PROTECTIVE HARDWARE AND MATERIAL

[8] 29 CFR 1910.147(c)(5) (protective materials and hardware).

4.7 TRAINING

[9] 29 CFR 1910.147(c)(7)(i), (iv) (training and recordkeeping). NOTE: This section includes Con Edison-specific procedures relating to training and recordkeeping.

[10] 29 CFR 1910.147(c)(7)(iii) (retraining).

ATTACHMENT 1

EXAMPLE SITE PROCEDURE

GENERAL

The following simple lockout procedure is provided to assist employers in developing their procedures so they meet the requirements of this standard. When the energy-isolating devices are not lockable, tagout may be used, provided the employer complies with the provisions of the standard that require additional training and more rigorous periodic inspections. When tagout is used and the energy-isolating devices are lockable, the employer must provide full employee protection (see 29 CFR 1910.147 (c)(3)) and additional training and more rigorous periodic inspections are required. For more complex systems, more comprehensive procedures may need to be developed, documented, and utilized.

Lockout Procedure for

_____

(Name of Company for single procedure or identification of equipment if multiple procedures are used).

Purpose

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It must be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

Compliance With This Program

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance, must not attempt to start, energize, or use that machine or equipment.

_____

Type of compliance enforcement to be taken for violation of the above.

Sequence of Lockout

(1) Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

_____

Name(s)/job title(s) of affected employees and how to notify.

(2) The authorized employee must refer to the company procedure **for the particular machine or equipment** to identify the type and magnitude of the energy that the machine or equipment utilizes, must understand the hazards of the energy, and must know the methods to control the energy.

Type(s) and magnitude(s) of energy, its hazards and the methods to control the energy.

(3) If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

Type(s) and location(s) of machine or equipment operating controls.

(4) De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

Type(s) and location(s) of energy isolating devices.

(5) Lock out the energy isolating device(s) with assigned individual lock(s).

(6) Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

Type(s) of stored energy - methods to dissipate or restrain.

(7) Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

Method of verifying the isolation of the equipment.

(8) The machine or equipment is now locked out.

Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps must be taken.

(1) Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

(2) Check the work area to ensure that all employees have been safely positioned or removed from the area.

(3) Verify that the controls are in neutral.

(4) Remove the lockout devices and reenergize the machine or equipment. Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.

(5) Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

Attachment 2
lockout/tagout periodic inspection

Page ____ of ____

Facility Name _____ Date _____
Address _____
Equipment Name _____ I.D. No. _____
Authorized Inspector (Print) _____ I.D. No. _____

The identified equipment requires a periodic inspection of the energy control procedures according to §1910.147(6) The Control of Hazardous Energy (Lockout/Tagout). Check (✓) or complete all elements of this form that apply to the Periodic Inspection. Note deficiencies in comments section.

ENERGY SOURCES

☐ Electrical ☐ Hydraulic ☐ Chemical ☐ Other _____
☐ Mechanical ☐ Pneumatic ☐ Thermal _____

ENERGY ISOLATING DEVICES

☐ A manually operating electrical circuit breaker.
☐ A disconnect switch
☐ A manually operated switch by which the circuit's conductors can be disconnected from all underground supply conductors (no pole can be operated individually).
☐ A line valve
☐ A block
☐ A similar device used to block or isolate energy.
☐ Other _____

Note: Push buttons, selector switches, and other circuit type devices are not energy-isolating devices.

	YES	NO	COMMENTS
Do authorized employees understand the energy control procedures for this equipment?			
Do the authorized employees understand the requirements of the standard for this equipment?			
Do the authorized employees understand which locks/tags are to be used on this equipment?			
Are the lockout/tagout procedures being followed?			
Do employees understand their responsibilities in the energy control procedure?			
Have any deviations or inadequacies been identified during this inspection that require attention? If so, list.			
Have tagout procedures been reviewed when tagout alone is the only means of energy isolation?			
Have you reviewed the removal of an isolating circuit breaker?			
Have you reviewed blocking of a controlling switch?			
Have valve handle removal procedures been reviewed?			
Have you reviewed the opening of an extra disconnect switch?			

The items checked above have been reviewed with/explained to the authorized employees at the time of the periodic inspection.

Authorized Employee (Signature)	Date	Authorized Employee (Signature)	Date

I hereby certify that the periodic inspection for compliance with lockout/tagout standards on the equipment as specified by OSHA 29 CFR §1910.147 has been satisfactorily completed with the authorized employees identified above.

Inspector _____ _____ _____

Signature Title Date

ELECTRICAL ENCLOSED SPACES
(as applicable)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP S17.01 – Electrical Enclosed Spaces
(CSP converted to CEHSP on 07/17/2008)
Revision 16 – 7/01/10 Effective Date: 10/01/10

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO ENSURE THE HEALTH AND SAFETY OF EMPLOYEES AND CONTRACTORS WORKING IN ELECTRICAL ENCLOSED SPACES. This procedure discusses entry into ***electrical enclosed spaces***, including requirements for testing the atmosphere, training, ventilation, and monitoring.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison employees and contractors working under Con Edison oversight (defined as “contractors” for this CEHSP), who work in electrical enclosed spaces used for the operation and maintenance of electric power generation, transmission, and distribution lines and equipment, including fiber-optic equipment associated with these electrical systems.

For outside agencies such as public improvement, that are not under contract with Con Edison, the Con Edison organization serving as the primary contact must inform the agency's project supervision of the relevant safety precautions to be taken when working in Con Edison facilities that meet the definition of an electrical enclosed space under Occupational Safety and Health Act (OSHA) regulations. The communication of the potential hazards and relevant safety precautions to the agency must be documented.

3.0 INTRODUCTION

This CEHSP identifies the procedures for inspection, entry and work in electrical enclosed spaces. Spaces that are not designed for entry under normal operating conditions are not considered to be electrical enclosed spaces for the purposes of this procedure. In addition, spaces that are expected to contain a ***hazardous atmosphere*** are not considered to be electrical enclosed spaces. These spaces are instead addressed as ***permit-required confined spaces***.

This procedure does not address practices in permit-required confined spaces, ***gas enclosed spaces*** (working spaces such as gas manholes) and similar structures not associated with electric power generation, transmission, and distribution. Entry into these spaces must be performed in accordance with applicable CEHSPs. Permit-required confined spaces are addressed in CEHSP S16.00, *Permit-Required Confined Space Program,* and gas enclosed spaces are addressed in CEHSP S17.02, *Gas Enclosed Spaces.*

4.0 COMPLIANCE REQUIREMENTS

4.1 JOB BRIEFINGS

The lead or more knowledgeable employee must conduct a job briefing with the employees involved before they start the job. The briefing must cover: the hazards associated with the job; work procedures involved; special precautions; energy source controls; and personal protective equipment (PPE) requirements. The procedures covered will include personal escape and rescue plans based on the configuration of the enclosed space and address proper emergency contacts Additional briefings must be held if significant changes that might affect the safety of the employees occur during the course of the work. Job briefings must be documented [1] R

4.2 VEHICULAR OR PEDESTRIAN TRAFFIC

Prior to the performance of work, protection of enclosed space entry work areas must be planned, using the current Con Edison *Work Area Protection and Traffic Control Field Manual,* to avoid vehicular and pedestrian traffic hazards. [2] R

4.3 PRE-ENTRY INSPECTION

4.3.1 Evaluation of Potential Hazards

Before an entrance cover to an enclosed space is removed, it must be determined that removal can be done safely and that the condition of the electrical facilities contained therein is sufficient to allow unrestricted access and emergency rescue. The initial inspection must be conducted by a ***qualified*** Con Edison employee or equivalently trained individual and must include:

1) Testing for stray voltage on the frame, cover, or grating, in accordance with OJT ELE0020.

2) Checking whether the cover is above “normal”, expected temperature.

3) Gradually loosening the cover if it is fastened in place, to release any residual pressure.

4) Determining whether there might be a hazardous atmosphere in the space, or whether conditions at the site could cause a hazardous atmosphere, such as an oxygen deficient or flammable atmosphere to develop within the space. This includes the oxygen level, presence of a flammable atmosphere, carbon monoxide levels, and if applicable, other toxic contaminants. Where vented manholes are present, the vent holes must be used to test the atmosphere. If an atmosphere is potentially in the flammable range or above the upper explosive limit and if it is determined that the cover must be removed, it must be done without creating a spark .

Any conditions making it unsafe to remove the cover must be eliminated before the cover is removed (that is, reduced to the extent that it is no longer unsafe). [3] R/P

4.3.2 Removal/Opening of the Cover

Appropriate tools (manhole hooks, bars, etc.) must be used to remove covers from subsurface structures. Removed covers must be place in locations that will not hinder traffic or pose a tripping hazard. When covers are removed from electrical enclosed spaces, a manhole guard consisting of a railing with appropriate toe guards, temporary cover or other barrier must be installed promptly to prevent an accidental fall through the opening and protect employees working in the space. [4] R

4.3.3 Defective Primary Cable

Where a cable in a manhole has one or more abnormalities that could lead to or that could be an indication of an impending fault, the defective cable must be de-energized before an employee may enter the manhole. This is indicated by a D-Fault tag hung in the chimney of the structure. The latest version of EO-1184, *Identifying Cable And Splice Abnormalities On Distribution Feeders* or CE-TI-6832, *Procedure For A Quick Visual Inspection (QVI) on the 69 KV and 138 KV Low and Medium Pressure Insulating Fluid Filled Cable Systems*, must be followed in all cases involving D-Faults. Abnormalities, such as oil or compound leaking from cables or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be an indication of an impending fault. [5] R

4.4 ATMOSPHERIC TESTING

Atmospheric testing is required prior to space entry for the following reasons:

- To evaluate the hazards and verify that acceptable conditions for entry exist.
- To ensure that acceptable conditions are maintained during the entry work.

4.4.1 Order of Testing

All structures must be tested according to Attachment 1 prior to entry.

The internal atmosphere must be tested using an approved, properly calibrated Atmospheric Testing Device, in the following sequence:

- Oxygen (acceptable criteria between 19.5 and 23.0%). Oxygen monitoring equipment must be set to alarm if the oxygen content falls below 19.5 percent, or increases above 23.0 percent.
- Flammable gases and vapors (acceptable criteria less than 10% of the lower explosive limit (LEL), i.e., a reading of less than 0.5% as calibrated against methane.
- Carbon monoxide (CO) (acceptable criteria less than 35 parts per million [ppm]).
- Tests for toxic vapors and gases, if necessary. Entry level for toxic substances must not exceed the associated OSHA Permissible Exposure Limit (PEL), regardless of the anticipated length of entry. If hydrogen sulfide (H2S) is present, follow GSI 17.01.02.

The readings will be documented including the time and results.

For entry into pipe type feeder manholes that are connected to sulfur hexafluoride (SF_6) equipment or manholes containing sulfur hexafluoride (SF_6) switches, the ChemLab must be contacted to perform the monitoring if there has been a fault on the feeder or equipment (as per GEHSI S17.01.03, *Entry Into Subsurface Structures Containing SF6 Potheads*, 17.01.04, *Entry into SF6 Switch Structures, and* 17.01.05, *Testing, Ventilation, and Monitoring Subsurface Structures*).

Where hazardous atmospheres are suspected, it is permissible to "pre-test" the space with an instrument not approved per section 4.4.3 for one or more concerns. Pre-testing is desirable to minimize the potential for damaging a space entry gas detector through overexposure. Regardless of the results and actions of any such pretest, proper testing for all concerns using an approved instrument must be performed prior to actual space entry. [6] R/P

4.4.2 Stratified Atmospheres

Following initial testing from outside the space, the atmosphere must be tested a distance of approximately four feet in the direction of travel and to each side during descent. If a sampling probe is used, the entrant's rate of progress must be slowed to accommodate the sampling speed and detector response. [7] R

4.4.3 Space Entry Gas Detector Requirements

Pre-entry atmospheric testing, and any required during-entry atmospheric testing, must only be performed using a gas detector approved by Corporate EH&S for space entry testing in accordance with CEHSP S09.03, *Preliminary Assessment and Approval of New EH&S-Related Equipment, Supplies and R&D Services*. Approved instruments must be initially calibrated by Technical Services, and must be recalibrated at least once every 90 days. Instruments with remote calibration procedures accepted by Safety & Industrial Hygiene and Technical Services can be calibrated locally; Technical Services must calibrate all other instruments. All gas detectors must have the calibration due date clearly indicated and must not be used if this date is not clearly visible. Calibration due date may be indicated by a sticker attached by Technical Services or displayed on the instrument's screen where possible.

Only personnel who have current training on the use of space entry gas detectors may use them in the field or be assigned duties that may require their use in emergency situations. Contractors must use instrumentation that meets the OSHA requirements they must also calibrate the equipment in accordance with the manufacturers instructions. [8] R/P.

4.4.4 Approved Equipment

The Draeger Miniwarn units are the only approved space entry gas detectors for compliance with the testing requirements of this CEHSP. Contractors may use equipment not specifically listed provided it is appropriate for meeting the testing requirements and is in working order and properly calibrated. [9] P

4.4.5 Hazardous Atmosphere

Employees must not enter any enclosed space that contains a hazardous atmosphere, unless the entry is performed in accordance with CEHSP S16.00, *Permit-Required Confined Space Program.* [10] R

4.4.6 Con Edison Initial Entry and Visual Inspection

Once the structure is initially entered, a visual inspection must be conducted for exposed live conductors, improperly sealed cable ends, visual burnouts, structural damage, D-Fault tags, environmental tags, and excessively long cable ends that could contact the structure cover/grating or metal frame. The visual inspection must be documented. In addition, abnormalities, such as oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or to be an indication of an impending fault. EO-1184, *Identifying Cable And Splice Abnormalities On Distribution Feeders* or CE-TI-6832, *Procedure For A Quick Visual Inspection (QVI) on the 69 KV and 138 KV Low and Medium Pressure Insulating Fluid Filled Cable Systems,* must be followed to determine when a cable must be de-energized for work in a manhole. If personnel note a "D" Fault, they must exit the structure immediately and report their findings in accordance with EO-1184 or CE-TI-6832. If a D-Fault tag, environmental tag, or any unsafe condition is found, further steps may only be taken with consent and advice of the control center and/or field supervisor. Cable inspections are not required for enclosed spaces where electrical equipment has not been previously tied into the system or for service boxes with no primary cable. [11] P

4.4.7 Entry by Con Edison Personnel Not Qualified for Electrical Work, Contractors, or Public Improvement Personnel

If entry takes place immediately after the initial inspection (see Section 4.4.6) a follow-up inspection is not required provided that the Con Edison Inspector or the contractor supervisor were on location during the initial inspection by the qualified electrical worker. If entry by non-qualified personnel (i.e., Con Edison employees not qualified for electrical work, contractors, and public improvement personnel) is not immediate but takes place within 72 hours of the initial inspection, a "follow-up inspection" must be conducted prior to each entry. The follow-up inspection must be conducted by a qualified person (Con Edison or contractor trained by Con Edison) involved in the work and include:

1) Verification that the initial inspection was performed in the specified time frame.

2) Testing for stray voltage by a qualified Con Edison employee or qualified contractor.

3) Completion of atmospheric testing as outlined in this section

4) Determination that it is safe to enter the space.

5) A visual inspection for any abnormalities previously defined.

6) Communication of inspection results and hazards to the Con Edison inspectors and the contractor supervisor.

If entry is delayed past the 72 hours, the initial inspection must be repeated per Section 4.4.6. Qualified telecommunication employees and their contractors accompanied by qualified Con Edison personnel do not need to repeat the initial inspection until 30 days has expired. Con Edison personnel not qualified for electrical work may only enter after the "follow-up" inspection is conducted by qualified personnel. Follow-up inspections must be documented. Service boxes without primary service are exempt from the

initial inspection (Section 4.4.6), however, they must have the equivalent of the “follow-up inspection”. This section does not apply to enclosed spaces or trenches where electrical equipment has not been previously tied into the system. [12] P

4.4.8 Burnouts or Electrical Failure

Only Con Edison qualified employees are authorized to complete the work identified in this paragraph. If evidence is present of cable or component failure, fire, smoke, explosion, or other abnormalities, additional PPE in the form of protective hood (C/S 684-0755) and goggles (C/S 689-3952) must be worn prior to approaching the cover and subsequent work until the burnout has been cleared. Employees responding to burnouts may remove the cover if it can be done safely. After removal of the cover, the employees must remain a safe distance away for a period of 10 minutes in the absence of a flare-up. If a flare-up occurs, the employee must remain a safe distance away until the burning stops. The hose of a power ventilator may be directed into the opening if the hose can be placed safely. After a burnout has been cleared (burnt apart or cut), the structure must be ventilated to remove gases and odors created by the burnout. [13] P

4.4.9 Attendants

While work is performed in an electrical enclosed space, an attendant must always be available within oral and/or visual contact of personnel in the structure in order to render emergency assistance. The attendant is not precluded from performing other duties outside the electrical enclosed space if these duties do not distract the attendant from monitoring employees within the space. The duties of the attendant are outlined in the applicable OJT. The attendant must not be distracted from his/her duties by engaging in such activities as speaking on a cell phone, text messaging or use of other handheld devices. Other than for performing a rescue, one person must be present outside the structure to perform the attendant duties. This does not preclude more than one person entering the structure. An attendant is not precluded from reaching into an underground structure to hand an entrant tools or other job materials so long as only the hands/arms break the entry plane.

Prior to an attendant entering the space to perform rescue, he/she must notify emergency rescue support. Attendants must be trained in first aid, cardiopulmonary resuscitation (CPR), and rescue. [14] R

4.4.10 Personal Protective Equipment

The minimum personal protective equipment for Con Edison employees, contractors, and visitors for work covered in the scope of this procedure are safety shoes, hardhat, eye protection, and FR clothing (where electrical flash hazards exist, or hot work operations are

conducted). If working to clear a burnout or electrical failure, see the personal protective equipment requirement in Section 4.4.8. The FR clothing requirements are outlined in CEHSP S05.03, *Personal Protective Equipment: Protective Clothing*. Entrants and attendants are required to wear a retrieval harness at all times during entry activities in underground electric distribution structures. For work in excavations that exceed 48 inches in depth and contain energized conductors (either direct buried or in ducts), entrants and attendants must wear harnesses if the work task has the potential to contact energized conductors (i.e. breaking out a manhole/service box or breaking out a concrete encased duct bank containing live electrical facilities). Harnesses are not required in underground electric distribution structures when the cables are not connected to the system (i.e., newly installed and not having been connected to the system yet). [15] R

4.5 MONITORING AND VENTILATION

4.5.1 Monitoring

If flammable gases or vapors or CO are detected at the alarm level or if oxygen increases/decreases beyond alarm levels, forced-air ventilation must be used during the entire period of entry to maintain oxygen at a safe level (between 19.5% and 23.0% oxygen), ensure that the concentration of combustible gases and vapors at less than 10% of the LEL (0.5% as calibrated against methane) and concentrations of CO at less than 35 ppm. If combustible gases are vapors are detected, the local control center must be notified immediately.
Continuous monitoring must be conducted to ensure that any increase in the concentration of flammable gases or vapors and/or CO that occurs is detected. This monitoring shall be conducted at a height of approximately 4 feet above the entrant(s) respective walking/working surface (s). If the structure (such as a service box) is less than 4 feet deep monitoring shall be conducted at approximately one foot below street level.

Monitoring results at the time of initial entry into the structure must be documented. Under no circumstances will a monitor be left in the structure when employees exit. Should the enclosed space be exited during the shift there is no need to repeat the initial entry monitoring and document the results provided continuous atmospheric monitoring is performed the entire shift, and the entrant and/or attendant do not leave the work zone. If continuous monitoring inside the structure is stopped for any reason during the shift (e.g. to replace battery, device removed from structure when employee exits), initial entry monitoring must be repeated and documented.
Structures must be re-tested for safe atmosphere after de-watering.

Continuous forced-air ventilation is required during hot work while making/breaking lead cable splices. For additional information on Con Edison procedures for addressing these hazards, refer to CEHSP S10.00, *Lead Management Program*, and CEHSP S15.00, *Welding, Cutting And Other Hot Work Operations.* [16] R/P

4.5.2 Ventilation

Ventilation with forced air may be necessary to eliminate or control hazardous gases or fumes that may be present in electrical enclosed spaces and to maintain an adequate supply of oxygen. The use of power ventilation, however, does not eliminate the need to perform continuous atmospheric monitoring. Personnel who enter electrical enclosed spaces for cable identification,

inspection, or other minimal time periods must first perform initial atmospheric monitoring and maintain continuous monitoring throughout the entry to ensure that an enclosed atmosphere is safe.

If at any time a test indicates an unsatisfactory atmosphere, leave the manhole or vault at once. Operate the power ventilator for 10 minutes and then take a second test. (For more guidance on proper ventilation techniques refer to ELE1010). Take this test away from the output of the power ventilator. If this test indicates a satisfactory condition, the subsurface enclosure may be entered. If the unsatisfactory condition persists, report the matter to the supervisor or local control center. Only Con Edison-approved power ventilation equipment may be used. [17] R/P

Specific Ventilation Requirements

If continuous forced-air ventilation is used, operation of the system must begin before entry is made, and operation must be maintained to ensure that a safe atmosphere exists before employees are allowed to enter the work area. The forced-air ventilation must be directed to deliver air into the immediate area where employees are present within the electrical enclosed space and must continue until all employees leave the enclosed space. [18] R

Air Supply

The air for the continuous forced-air ventilation must be supplied from a clean source and must not increase the hazards in the electrical enclosed space. [19] R

4.6 OPEN FLAMES

If open flames are used in electrical enclosed spaces, a test for flammable gases and vapors must be made immediately before the open flame device is used (Continuous monitoring satisfies this requirement). In New York City, a certificate of fitness is required as outlined in CEHSP S14.03, *FDNY Certificates of Fitness*. [20] R

4.7 ACCESS

Employees must not climb into or out of manholes or vaults by stepping on cable or hangers. Only approved ladders that extend three feet above the surface may be used. [21] R A ladder must be placed in the electrical enclosed space at all times during work in the space, unless it is impractical due to the position of the ladder in relation to the work tasks in the structure. If impractical, then the ladder must be positioned within reaching distance of the attendant at the entrance into the space.

Note: Rack arms, stanchions, and cable hangers are designed to support the weight of cable and joints only. These items must not be used for any other load-bearing purposes.

4.8 COMMUNICATIONS

Reliable communications (visual, voice, signal line, or two-way radio) must be maintained among all employees involved in the job. If reliable communications cannot be maintained, the entry must be discontinued. The entry may continue when a reliable communication mechanism is established. [22] R

4.9 LOWERING/LIFTING EQUIPMENT

Equipment used to lower/lift materials and tools into manholes or vaults must be capable of supporting the weight to be lowered and must be checked for defects before use. Before tools or materials are lowered into a manhole or vault, employees working in the space must be clear of the area directly under the opening. [23] R

4.10 DUCT RODS

If duct rods are used, they must be installed in the direction presenting the least hazard to employees. An employee must be stationed at the far end of the duct line being rodded to ensure that the required minimal approach distances are maintained from exposed energized parts. [24] R

4.11 CABLES

Energized cables must be carefully inspected for defects before they are moved. Energized primary cable must only be inspected/handled/moved by qualified Con Edison employees or qualified contractors. Energized joints must only be handled by Con Edison personnel or contractors fully qualified by 29 CFR 1910.269. Energized secondary cable must only be inspected/handled/moved by or under the direction of qualified Con Edison employees, or qualified contractors. Refer to EO-10130 (distribution cable) for cable moving procedures.

When multiple cables are present in a work area, the cable to be worked must be identified by electrical means, unless its identity is obvious by reasons of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked must be protected from damage.

When work is performed on buried cable or on cable in manholes metallic sheath bonding must be maintained or the cable sheath must be treated as energized. [25] R/P

4.12 USE OF EQUIPMENT BY CON EDISON EMPLOYEES AND/OR CONTRACTORS

Con Edison employees may use the contractor's ladders or rescue device, if visually inspected before use, and found to be in proper working order. Only Con Edison atmospheric monitoring equipment may be used by or for Con Edison employees. Contractors may use Con Edison equipment with prior approval from Con Edison personnel supervising the work. [26] P

4.13 TRAINING

Con Edison employees and contractors who enter electrical enclosed spaces for the purpose of conducting physical work, or who serve as attendants, must be trained as required for the reason for entry, including the following:

- Applicable work procedures
- First aid/CPR (SAF 0021)
- Electrical enclosed space entry procedure
- Electrical enclosed space rescue
- The hazards of electrical enclosed space entry
- The proper use of forced-air ventilation for manholes, vaults, or similar structures
- Procedures for clearing underground structures of flammable gas and vapors

All of the above topics (except first aid/CPR) are covered in OJT ELE1010, Enclosed Space Entry and Rescue and in various skill courses.

Employees subject to entering manholes where SF_6 may be present must receive the following additional training:

- Properties of SF_6
- Nature and composition of the solid and gaseous decomposition products
- Appropriate precautions to be taken. [27] R/P

4.14 ELECTRICAL ENCLOSED SPACE RESCUE

Examples of situations that may require rescue or resuscitation include but are not limited to:

- Illness (of a degree to preclude self-rescue).
- Injury (burns or fractures).
- Unconsciousness (physical blow, electric shock, or heart attack).

Retrieval equipment must be inspected to ensure proper function, and be available outside of the truck at the job site prior to the start of work. Before the actual work tasks begin, the retrieval device must be set up at the space entrance, or nearby so that employees can be promptly and safely extracted from the space. The placement of the retrieval device will be determined during the job briefing, based on potential hazards in the space and around the work area. For structures less than 48" in depth, the retrieval device does not have to be set up. When placing grounds on a transformer where the top of the transformer is within 48" of the grating, the retrieval device does not have to be set up.

The preferred placement of the self-supporting extraction device is always at the structure opening, in position to facilitate immediate use for rescue. If the work area cannot be configured to support this placement, the device may be positioned elsewhere inside the work area, but personnel must ensure that they have identified the location where the device would be set up to facilitate rescue, and maintain that area free of material/equipment.

A ladder must be placed in the electrical enclosed space at all times during work in the space, unless it is impractical due to the position of the ladder in relation to the work tasks in the structure. If impractical, then the ladder must be positioned within reaching distance of the attendant at the entrance into the space.

For multiple entrants in an enclosed space, the same rescue method shall be employed for each person. If both entrants are simultaneously injured, the rescue priority will be based upon first aid training.
[28] R

5.0 DEFINITIONS

Attendant: An individual authorized by the management of his/her department who is stationed outside an enclosed or other space to monitor the authorized entrants and perform all duties assigned in this program, including providing assistance to employees inside the space.

Confined Space: A space that:

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

Confined spaces include, but are not limited to pits, sumps, sewers, manholes, wells, tanks/tankers, boilers and pressure vessels, other vessels, and equipment.

Electrical Enclosed Space: A working space, such as a manhole, vault, tunnel, service box, or shaft, used for the operation and maintenance of electric power generation, transmission, and distribution lines and equipment. An electrical enclosed space has a limited means of egress or entry, and is designed for periodic employee entry under normal operating conditions. Under normal conditions, an electrical enclosed space does not contain a hazardous atmosphere, but may contain a hazardous atmosphere under abnormal conditions.

Gas Enclosed Space: A working space used solely for the maintenance and distribution of natural gas lines and equipment, such as a manhole, vault, tunnel, or shaft. A gas-enclosed space has a limited means of egress or entry, and is designed for periodic employee entry under normal operating conditions. Under normal conditions, a gas-enclosed space does not contain a hazardous atmosphere, but may contain a hazardous atmosphere under abnormal conditions.

Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, unaided from an enclosed space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10% of its ***lower explosive limit [LEL]*** (0.5% as calibrated against methane).
- Atmospheric oxygen concentration below 19.5% or above 23.0%.
- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in The Occupational Safety and Health Administration General Industry Standard (29 CFR 1910.1000) and which could result in employee exposure in excess of its dose or permissible exposure limit.
- Any other atmospheric condition that is ***immediately dangerous to life or health (IDLH).***

Immediately Dangerous to Life or Health (IDLH): Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a dangerous atmosphere.

Lower Explosive Limit (LEL): The lower limit of flammability of a gas or vapor at ordinary ambient temperatures expressed by a percentage of the gas or vapor in air by volume.

Permit-Required Confined Space: A confined space that has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere.

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

Qualified: Qualified is defined in this CEHSP with respect to employees, workers, or contractors as being trained and knowledgeable in the procedures, potential hazards, and appropriate safety measures relevant to the work the person is required to perform.

6.0 RESPONSIBILITIES

Chem Lab: The Chem Lab is responsible for providing clearances for entering an enclosed space that may contain SF_6 gas or SF_6 by-products.

Electric Construction Group: The Electric Construction Group is responsible for installing and maintaining caution signs for SF_6 enclosed spaces.

Employees: Con Edison employees working in subsurface structures are responsible for following the requirements of this CEHSP and for attending required training.

Environment, Health, and Safety (EH&S): EH&S performs the following functions:

- Reviews applicable regulations and ensures that procedures meet all regulatory requirements.
- Revises procedures as applicable.
- Distributes updates and changes.
- Reviews training prepared by The Learning Center.
- Provides technical assistance to line management and the field.

In addition, the Director of EH&S Safety and Industrial Hygiene provides advice and counsel on this procedure.

Facility, Site, EHS; or Field Manager Responsible for Compliance: The Con Edison designated individual within each operating department who is responsible for ensuring compliance with federal, state, and local regulations, and this procedure.

Law Department: The Law Department assists and provides guidance to EH&S by reviewing changes to these procedures in light of all applicable statutes and regulations to ensure that the procedures meet all legal requirements.

Operating Departments: Unless otherwise indicated, operating departments (Customer Operations, Electric, Gas, Purchasing and CFS, Steam, and Systems & Transmission Operation [S&TO]) are responsible for compliance with federal, state, and local regulations, and this procedure.

Supervisors: Supervisors are responsible for ensuring that personnel follow proper procedures and for performing necessary training.

7.0 REFERENCES

4.1 JOB BRIEFINGS

[1] 29 CFR 1910.269(c) (job briefing). NOTE: The cited regulation does not require that completion of job briefings be documented. Con Edison requires such documentation as a matter of policy.

4.2 VEHICULAR OR PEDESTRIAN TRAFFIC

[2] 29 CFR 1926.200 (accident prevention signs and tags).

4.3 PRE-ENTRY INSPECTION

[3] 29 CFR 1910.269(e)(4) (evaluation of potential hazards). NOTE: The cited regulation discusses potential hazards relating to atmospheric pressure, temperature differences, and hazardous atmosphere generally. Con Edison included additional evaluation measures as a matter of policy to enhance employee safety.

[4] 29 CFR 1910.269(e)(5) (removal of covers). NOTE: The cited regulation addresses the removal of covers generally; Con Edison requires the use of appropriate tools as a matter of policy.

[5] 29 CFR 1910.269(t)(7) (defective cables). NOTE: The cited regulation includes exceptions to the requirement that defective cable be de-energized before employees enter a manhole. Con Edison does not allow these exceptions as a matter of policy. Also, the CEHSP identifies Con Edison-specific procedures addressing D-Faults.

4.4 ATMOSPHERIC TESTING

[6] 29 CFR 1910.269(e)(8) (calibration of test instruments); 1910.269(e)(9) (testing for oxygen deficiency); 29 CFR 1910.269(e)(10) (testing for flammable gases); 29 CFR 1910.269(x) (definition of hazardous atmosphere). NOTE: The cited regulations address atmospheric testing generally. Con Edison has adopted additional testing requirements, including a requirement that test results be documented, as a matter of policy.

[7] 29 CFR 1910.146, Appendix B, Sec. 4 (testing stratified atmospheres).

[8] NOTE: The electrical enclosed space regulations do not address use of space entry gas detectors except as identified in Note 6 above. Con Edison has developed these procedures for calibration and use of gas detectors as a matter of policy.

[9] NOTE: The electrical enclosed space regulations do not address approval of space entry gas detectors and use of detectors for survey purposes. Con Edison has developed these procedures as a matter of policy.

[10] 29 CFR 1910.269(e)(6) (hazardous atmosphere).

[11] NOTE: The electrical enclosed space regulations do not require documented visual inspections once personnel enter an electrical enclosed space. Con Edison has developed these procedures to ensure the safety of its employees.

[12] NOTE: The electrical enclosed space regulations do not contain specific procedures addressing entry of nonqualified personnel. Con Edison has developed these procedures to ensure the safety of Con Edison personnel not qualified for electrical work, contractors and public improvement personnel entering such spaces.

[13] NOTE: The electrical enclosed space regulations do not contain special procedures to address burnouts or electrical failures. Con Edison has developed these procedures to ensure the safety of employees responding to such incidents.

[14] 29 CFR 1910.269(e)(2) (attendant training); 1910.269(e)(7) (attendants generally); 1910.269(t)(3) (attendants for manholes).

[15] 29 CFR 1910.269(g) (requires PPE to meet requirements of 40 CFR Part 1910, subpart I).

4.5 MONITORING AND VENTILATION

[16] 29 CFR 1910.269(e)(11) (ventilation and monitoring); 1910.269(e)(12) (specific ventilation requirements). NOTE: The cited regulations address ventilation and monitoring generally. Con Edison has adopted additional requirements, including a requirement that monitoring be documented, as a matter of policy.

[17] See Note 16 above.

[18] 29 CFR 1910.269(e)(12) (specific ventilation requirements).

[19] 29 CFR 1910.269(e)(13) (air supply).

4.6 Open Flame

[20] 29 CFR 1910.269(e)(14) (open flames). See CEHSP S14.03, *FDNY Certificates of Fitness* for additional requirements.

4.7 ACCESS

[21] 29 CFR 1910.269(h)(1) (ladders, platforms, step bolts, and manhole steps); 1910.269(t)(1) (access).

4.8 COMMUNICATIONS

[22] 29 CFR 1910.269(t)(3)(iv) (reliable communication).

4.9 LOWERING EQUIPMENT

[23] 29 CFR 1910.269(t)(2) (lowering equipment into manhole).

4.10 DUCT RODS

[24] 29 CFR 1910.269(t)(4) (duct rods).

4.11 CABLES

[25] 29 CFR 1910.269(t)(5) (multiple cables); 1910.269(t)(6) (moving cables); 1910.269(t)(8) (sheath continuity). NOTE: The CEHSP includes Con Edison-specific details regarding cable moving.

4.12 USE OF EQUIPMENT BY CON EDISON EMPLOYEES AND/OR CONTRACTORS

[26] NOTE: These procedures clarify when Con Edison employees and contractors can use each other's equipment.

4.13 TRAINING

[27] 29 CFR 1910.269(a)(2) (training generally); 1910.269(e)(2) (enclosed space training, including attendants). NOTE: The training outlined in the CEHSP was developed to satisfy the requirements of 29 CFR 1910.269 and other regulations applicable to employees entering electrical enclosed spaces.

4.14 ELECTRICAL ENCLOSED SPACE RESCUE

[28] 29 CFR 1910.269(e)(3) (rescue equipment).

ATTACHMENT 1
SAMPLING PROCEDURE FOR MANHOLE ATMOSPHERES

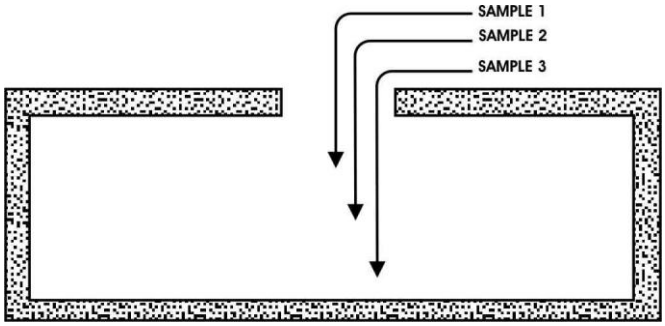
Detector must first be operated in fresh air. Initial test is for oxygen deficiency followed by a gas detection test.

STEP 1

Observations of the atmosphere in the manhole shall be made at a level approximately two feet from the top, near the middle of the manhole, and at a level near the bottom. If water is present in the manhole, the latter observation must be made at a level just above the surface of the water. Care must be taken not to immerse the end of the sampling hose in water. When exposed to water, the filter at the end of the sampling hose will automatically close to prevent any material or gas from entering the instrument. This action will also render the instrument inoperable until the filter is replaced. To prevent erroneous readings, operating difficulties and maintenance problems, always use the probe and filter supplied with each gas detector.

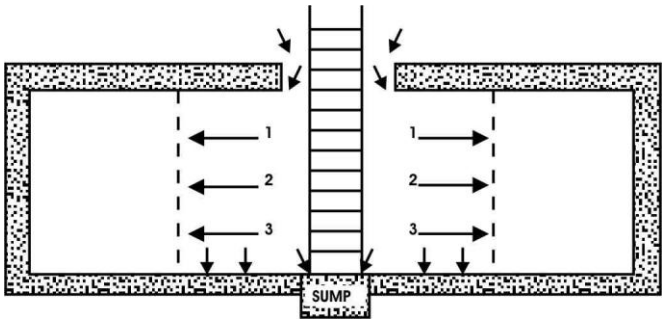
STEP 2

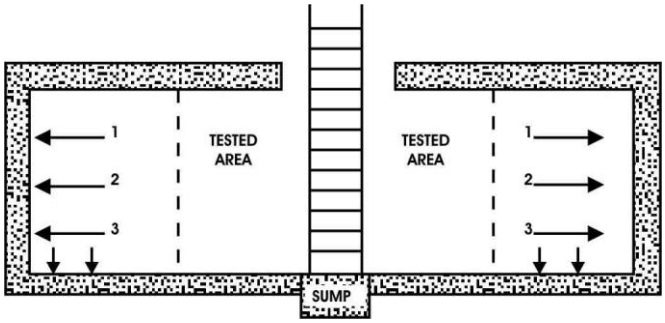
Insert ladder into structure and take sample around casting and chimney. While descending the ladder, take samples to the right and left for three levels



STEP 3

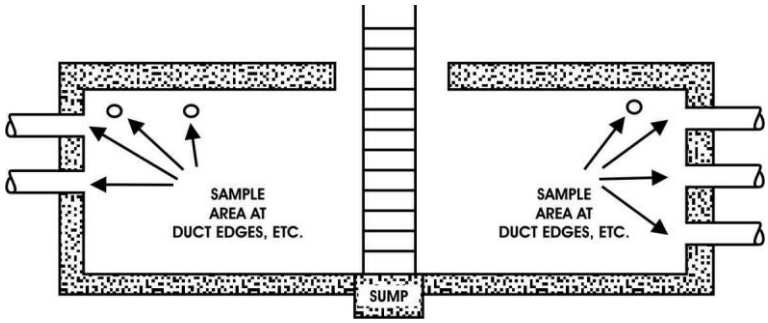
Check the remainder of the manhole from the tested area





STEP 4

Check the remaining interior of the structure at corners, cracks, and other irregularities. Duct edges shall also be checked without removing duct seal, foam, cement, or other packing materials. If possible, readings shall also, be performed up the ducts a distance of approximately 2 inches past the plane of the manhole wall.



CALLING A TIME OUT

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP A28.00 – Calling A Time Out

(CSP converted to CEHSP on 07/16/2008)

Revision 4: 08/04/09 Effective Date: 10/01/09

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO MINIMIZE ENVIRONMENTAL, HEALTH AND SAFETY (EH&S) CONCERNS WHENEVER POSSIBLE. This procedure outlines the process for calling a ***Time Out*** or work stoppage due to a safety, health and/or an environmental concern and resolving the Time Out before proceeding with work.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison employees and contractors.

3.0 INTRODUCTION

The company's commitment to EH&S excellence requires that all work proceed only if it is safe and environmentally sound. The responsibility for fulfilling this requirement rests with every employee and contractor. Success depends on open communication between individuals and their supervisors prior to beginning work, and – in certain cases – after EH&S issues are identified.

4.0 COMPLIANCE REQUIREMENTS

4.1 CALLING A TIME OUT

All work shifts must begin with a job briefing in which safety, health, and environmental issues are discussed. If an employee has an EH&S concern, he/she must discuss it with his/her supervisor before proceeding with the job. After discussion, if there is still uncertainty on how to proceed or the concern is not adequately addressed, the employee has the right to call a Time Out without reprisal.

When a safety, health, and/or environmental concern arises on a job, the concerned employee must stop the work in question and immediately contact his/her supervisor to provide information regarding the nature of the hazard or EH&S-related concern. The supervisor must discuss the concern with the employee, either in person or on the phone, and attempt to resolve it. If the concern is resolved to the satisfaction of the employee and the supervisor and if there is certainty that all safety, health, and environmental procedures are being followed, the work may continue. If the concern is not resolved to the satisfaction of the employee and/or supervisor, work is to remain stopped and the employee must call a Time Out. The Time Out applies only to the location where it has been called; there are no system-wide or company-wide Time Outs.

4.2 RESOLVING A TIME OUT

Once a "Time Out" is called, the following process must be followed to resolve the concerns:

- The local EH&S representative is to be contacted to obtain assistance in resolving the concern. For support groups working in the field, their organization's contact person must also be notified. The local EH&S representative will act as the authority (expert) related to health, safety, and environmental rules, regulations, and procedures and either make a determination on the merits of the concern or contact an appropriate subject matter expert (SME) from other areas of the company, including, but not limited to Engineering, Corporate EH&S, or operations. In general, the number of people involved in the Time Out must be kept to the minimum required to resolve the issue. If the local EH&S representative understands all of the issues involved in the Time Out and all EH&S concerns are addressed, the local EH&S representative's determination is final and the Time Out is concluded.

- When the local EH&S representative determines that support is needed from a company SME, the SME will serve as the final arbiter of the Time Out. In this instance, once all EH&S concerns are addressed, the SME's decision is final and the Time Out is closed.

- In either case, whether the local EH&S representative or the SME is called, once the EH&S concern is evaluated and either it is determined that no safety, health or environmental issue exists or that the EH&S concern has been mitigated, the employees are expected to return to work.

- If the local EH&S representative cannot be reached, the job cannot continue until EH&S intervention is obtained. The Corporate EH&S Response Team (ERT) can be used either to directly resolve the issue or to reach another EH&S representative who can. Furthermore, any person listed on the ***Time Out card*** may be called to resolve the issue.

- Pending resolution of the Time Out, in emergency and other situations where extensive job and procedural reviews are necessary to resolve the concerns, an alternate work plan (where practical) approved by the responsible SME will be implemented to complete the job. Before proceeding with any work prior to the resolution of the "Time Out," the

Operating Supervisor and the local EH&S representative must ensure that the work will be performed in full accord with EH&S procedures, that all rules and regulations will be followed, and that safety, health, and environmental risks will be minimized.

At the conclusion of all "Time Out" situations, it must be clearly stated to all those involved that the "Time Out" is over.

When an EH&S concern has been raised, the employee and supervisor have resolved the issue themselves, and work has proceeded, the supervisor must notify the local EH&S representative if the concern was significant or could recur. In all Time Out situations, the EH&S representative will review the incident in a timely manner, determine if the Time Out has implications outside the organization/area where it occurred, and take appropriate steps to prevent its recurrence.

4.3 TIME OUT SAFETY TALK

To ensure that all employees are familiar with and understand the Time Out Program, an annual safety talk (SAF7240) must be provided.

4.4 TIME OUT CARD

Each organization must issue a Time Out card to all of its employees. All cards is must be green and white, approximately 3-1/2 inches by 2 inches, and include the following information, at a minimum:

SIDE 1	SIDE 2
You Can Always Call a Time Out	Operating Area Location/Organization
If you have a safety, health, and/or environmental question and/or concern, we are available 24 hours a day for assistance.	No job proceeds until it is made safe and environmentally sound
Con Edison Picture of "Referee"	List names and telephone numbers of local EH&S staff or Call the Control Center at (xxx) xxx-xxxx, to reach a Safety or Environmental Specialist to assist you

5.0 DEFINITIONS

Time Out: Mechanism for any company employee to stop a job if he or she is unsure of how to proceed because of a safety, health or environmental concern. A Time Out can only be called if the concern cannot be resolved to the satisfaction of the employee and supervisor.

Time Out Card*:* A green and white card, approximately 3-1/2 inches by 2 inches, issued to all company employees for the purpose of calling a Time Out.

Revision 4: 08/04/2009 Effective Date: 10/01/2009

6.0 RESPONSIBILITIES

Employees**:** Employees are responsible for discussing EH&S concerns with their operating supervisors and calling a Time Out, when appropriate.

Local EH&S Representative: The local EH&S representative is the operating department's EH&S manager or one of his/her staff members. The local EH&S representative is responsible for:

- Determining the merits of EH&S issues identified by operating supervisors and resolving Time Outs, if possible.
- Contacting the appropriate SME if additional guidance is needed.

Operating Supervisor: The operating supervisor is a supervisor in an operating department with that title or any other supervisor in another department. The operating supervisor is responsible for:

- Attempting to resolve EH&S concerns raised by employees.
- Contacting the local EH&S representative if the employee EH&S concern cannot be resolved.
- Assessing the significance of any EH&S concerns raised and notifying the local EH&S representative of concerns that are significant or are likely to recur.

Subject Matter Expert: The SME is an individual who has detailed, specific knowledge on a particular subject by the nature of his/her education, training and experience. The SME is responsible for:

- Providing assistance to the local EH&S representative in resolving Time Outs.
- Serving as final arbiter of Time Outs.
- Approving alternate work plans, where necessary

Corporate EH&S Response Team (ERT)**:** If the local EH&S representative cannot be reached, the ERT is responsible for directly resolving the Time Out or reaching another EH&S representative who can.

7.0 REFERENCES

This CEHSP was developed by Con Edison as a matter of policy to ensure open communication about, and prompt resolution of, EH&S issues arising on the job.

Revision 4: 08/04/2009 Effective Date: 10/01/2009

RULES WE LIVE BY

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP A32.00 – Rules We Live By
Effective Date: 01/04/2010

CONTENTS

1.0 PURPOSE

This procedure establishes a consistent approach to communicating and reinforcing the importance of following critical safety work practices designed to protect employees, contractors, and the public.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison employees (management and union) and contractor employees working for Con Edison.

3.0 INTRODUCTION

There are safety and operational procedures specifically designed to protect against the potential for significant injury due to the energy (electricity, gas, steam, or falling from elevation) that must be controlled. Operating groups that work with these sources of energy have identified Rules We Live By. This is defined as a work procedure or safety requirement that, if not followed, could result in a severe injury or fatality, or place other individuals (employees or members of the public) at significant risk.

4.0 COMPLIANCE REQUIREMENTS

4.1 RULES WE LIVE BY IDENTIFICATION, TRAINING, AND REPORTING

4.1.1 IDENTIFICATION

Where work tasks require the safe control of electricity, gas, steam, or work at elevation, the operating organization must identify key procedures required to control the energy or mitigate the effect or impact onto the employee, fellow employees, contractor employees or the public. Lessons learned from previous incidents must be included in the identification process. To see the Central List of the Rules, click here.

An organization must notify Corporate EH&S of any change to a Rule.

4.1.2 TRAINING AND COMMUNICATION

An organization's Rules We Live By and associated procedures must be reinforced in applicable skills training.

Each employee in the organization must receive OJT training on the Rules We Live By identified by the organization.

Rules We Live By must be reinforced, when applicable, in job briefings.

Rules We Live By must be incorporated into the scope of safety field observations and inspections.

Where contractor work practices involve Rules We Live By, contractor employees will be trained on the applicable Rules We Live By, reporting procedure, and consequences. The operating organization must communicate the applicable Rules to contractor management and ensure the Rules are incorporated in the HASP. The contractor supervisor will be required to train their affected employees and subcontractor employees before they begin work.

4.1.3 REPORTING AND INVESTIGATION

If a supervisor observes a Rule We Live By being violated, the work must be stopped immediately.

If an employee, not a supervisor, believes a Rule We Live By may have been violated, he/she must stop the work immediately and report the situation to the supervisor of the employee who committed the alleged violation.

Resolution of the alleged violation must follow the Time Out process as defined in CEHSP A28.00 – Calling a Time Out.

4.2 VIOLATION OF A RULE WE LIVE BY

A violation of a Rule We Live By will result in significant consequences.

Any employee who witnesses a violation of a Rule We Live By and does not stop the work and report the violation will also be considered to have violated the Rule.

A violation by a contractor company or by a sub-contractor must be reported via an action line by the operating organization with contractor oversight.

The organization must notify Corporate EH&S after action has been taken as a result of the violation.

4.3 DEFINITIONS

Con Edison employee: This includes all management and union employees.

Contractor employee: This includes all per-diem contractor employees and those employees working for a contractor company hired by Con Edison.

RULES WE LIVE BY
2011

Hazard	Electric Operations	Central Operations	Gas Operations	Customer Operations	Business Shared Services (CFS)	Enterprise Shared Services (Facilities)
Verify Dead/Lockout-Tag Out	Properly test or spear to ensure that electric equipment, cable, or wire is "dead" as required regardless of voltage, before beginning dead work activities.	Properly test or verify that equipment is in a de-energized state before beginning dead work activities				Properly lock out/tag out equipment before beginning work on the equipment
Permits (Operating, D-faults)	Enter D-Fault tagged structures only when authorized by the operating authority to perform feeder processing.	• Operating Orders and Work Permits - Only perform work that is within the authorized scope of work as listed on the work permit. • Do not change the status of a piece of equipment that has a Stop Tag applied to it. • Follow the sequence of an operating order.		Do not enter a structure that has been classified and tagged as a D-fault	Operating Orders and Work Permits - Only perform work that is within the authorized scope of work as listed on the work permit.	
Atmospheric Testing	• Perform atmospheric testing before entering and while working in an enclosed space or a permit-required confined space • For excavations greater than 4 feet in depth the atmosphere shall be tested prior to entry or when the excavation is not already occupied	• Perform atmospheric testing before entering and while working in an enclosed space or a permit-required confined space • For excavations greater than 4 feet in depth the atmosphere shall be tested prior to entry or when the excavation is not already occupied	• Perform atmospheric testing before entering and while working in an enclosed space or a permit-required confined space. • For excavations greater than 4 feet in depth the atmosphere shall be tested prior to entry or when the excavation is not already occupied	Perform atmospheric testing before entering and while working in an enclosed space or a permit-required confined space.	Perform atmospheric testing before entering and while working in an enclosed space or a permit-required confined space	□
Rescue/Retrieval	Entrant and attendant are required to wear rescue harness when working in enclosed spaces	Entrant and attendant are required to wear rescue harness when working in enclosed spaces	Entrant and attendant working in enclosed spaces shall wear rescue harnesses, when required	Entrant and attendant are required to wear rescue harness when working in enclosed spaces	Entrant and attendant are required to wear rescue harness when working in enclosed spaces	
High Hazard Energy PPE	• Use fall protection equipment as required. • Wear eye protection and FR-clothing at all times in enclosed spaces, and while otherwise working with energized equipment, cable, or wire. • Use appropriate rubber gloves, rubber sleeves, and face shield as required for the electrical hazard.	• Use fall protection equipment as required • Use the appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for the electrical hazard	• Use fall protection equipment as required • Wear fire retardant (FR) coveralls when working on blowing gas. • Wear FR hood and FR glove liners whenever airline respirators are required.	• Use fall protection equipment as required • Use appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for electrical work.	• Use fall protection equipment as required. • Use the appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for the electrical hazard	
Sheeting/Shoring		Ensure that excavations five feet or deeper are properly sheeted and shored before anyone enters.	Ensure that excavations five feet or deeper are properly sheeted and shored before anyone enters.			
Gas Piping Integrity Test			Perform an integrity test before a customer turn on.	Perform an integrity test before a customer turn on.		
Securing Loads					Reels over 5,000 Lbs are secured per DOT requirements	

PERSONAL PROTECTIVE EQUIPMENT: PROTECTIVE CLOTHING

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP S05.03 – Personal Protective Equipment: Protective Clothing

(CSP converted to CEHSP on 07/17/2008)

Revision 8: 06/10/2008 Effective Date: 06/30/2008

CONTENTS

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO THE SELECTION OF PROTECTIVE CLOTHING FOR THE BODY (ARMS, LEGS, AND TORSO). The purpose of this procedure is to ensure that appropriate ***personal protective equipment (PPE)*** is selected and worn to protect Con Edison workers, contractors, and visitors at Con Edison facilities and work sites from chemical and physical hazards to the ***body***.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to any Con Edison activity that presents work hazards to the body that require the use of PPE.

3.0 INTRODUCTION

Many hazards can threaten the body, including heat, splashes from hot metals during welding, splashes from hazardous liquids (acids, bases, solvents), impacts, cuts, electrical hazards (arc, flame), and radiation. Based on the results of ***hazard assessments*** performed in each facility in accordance with CEHSP S 05.01, *Hazard Assessment and Personal Protective Equipment*, protective clothing must be identified that provides the correct protection.

Where hazards are determined to be present that can cause injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact, it is necessary to select PPE to adequately protect affected employees. A variety of protective clothing is available to protect against these hazards, including vests, jackets, aprons, coveralls, and full-body suits. In addition, the OSHA Electrical Maintenance Standard, 29 Code of Federal Regulations (CFR) 1910.269, prohibits generation, transmission, and distribution employees who may be exposed to flame or electric arc from wearing clothing that may increase the severity of an injury.

This procedure presents requirements for selecting and maintaining protective clothing to control work hazards to the body, specifically the arms, legs, and torso.

5.0 COMPLIANCE REQUIREMENTS

4.1 HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE

Con Edison must perform a hazard assessment to determine the ***proper*** personal protective equipment required for each job task performed by employees. The hazards, physical requirements of the operation, resistance of clothing to work-related destructive factors (chemicals, abrasion, etc.), and worker comfort must be considered when selecting required clothing. The PPE hazard assessment is performed to ensure that PPE is correctly identified and that implementation is consistent with workplace conditions. The assessment must be reviewed when new PPE or new chemicals are introduced into the workplace or when operations change. A ***hazard assessment certification*** must be maintained by personnel and the facility to provide a record of workplace reviews. [1] R

The following paragraphs identify guidelines for the selection and use of protective clothing.

4.1.1 Arc or Flame Protection

OSHA standard 29 CFR 1910.269 requires that all electric power generation, transmission, and distribution employees who may be exposed to arc or flames wear clothing that does not contribute to the severity of an injury that could be sustained by the employee. This requirement is based on the fact that certain fabrics are easily ignited and can cause burns. Employees who are potentially be exposed to electrical arc and/or gas fires must wear flame resistant/flame retardant clothing. Employees who are not exposed to electrical arc and/or gas fires may wear 100% natural fiber clothing (wool or cotton). [2] R

4.1.2 Fit and Appearance

Clothing of all kinds must meet certain safety requirements when there is a potential for it to catch on moving parts of machinery (gears, pulleys, rotating shafts, etc.). Clothing, whenever practical, must not have loose parts, such as sleeve tabs, pant cuffs, pocket flaps, etc. Sleeves or pant legs must fit closely to the wearer.

When appropriate, the color of the garment selected must be chosen to show stains that could indicate contact with a hazardous substance or to make a worker conspicuous. Also, persons working in areas near traffic must wear fluorescent yellow/reflective vests as specified in the Con Edison Work Area Protection and Traffic Control Field Manual. [3] R/P

Revision 8: 06/10/2008 Effective Date: 06/30/2008

4.1.3 Laundering

Maintenance and laundering are needed when clothing is soiled due to ***incidental contact*** with substances typically found in the workplace. In the event an employee's uniform or coveralls are contaminated with a hazardous substance (as outlined in this CEHSP) the employee will turn the clothing over to supervision for proper cleaning or disposal as required. All clothes must be laundered in accordance with manufacturer's instructions. [4] R/P

4.2 CON EDISON PPE REQUIREMENTS

4.2.1 Selection of Protective Clothing

Decisions regarding the appropriate garment to wear must be made on a daily basis according to existing field conditions. The following conditions or materials may be encountered during daily duties:

- Potential for flame or electric arc.
- Presence of oil - non-PCB and PCB-containing.
- Presence of asbestos-containing material (ACM).
- Work with or on lead-containing material.
- Work with hazardous chemicals.

Attachment 1 is a flowchart that provides guidelines for the selection of protective clothing for these hazards. Attachment 2 identifies types of protective clothing.

Based on the potential exposure of the employees, natural fiber clothing may be acceptable. However, in any situation where employees may be exposed to the hazards of electric arc or flame these employees must wear appropriate flame-retardant clothing. These situations will be documented on the appropriate hazard assessment form for the task being conducted.

Requirements for Flame-Retardant Clothing

Employees and contractors must wear flame retardant (FR) clothing when performing tasks that may expose them to the hazards of flame or electric arc. Employees who are potentially exposed to electric arc must wear Nomex, Indura, or other FR materials approved by Corporate EH&S. Employees who are potentially exposed to gas flash fire must wear Nomex.

In situations where employees and contractors are required to wear FR clothing, all layers of clothing underneath the FR clothing must be either FR or 100% natural fiber (wool or cotton), including undergarments. In warmer weather, employees or contractors may choose to wear only 100% natural fiber undergarments under the outermost layer of FR clothing. In all cases, the outermost layer of clothing must be FR. Employees and contractors are prohibited from wearing clothing containing polyester, nylon, rayon, and acetate, alone or in blends, when performing tasks that may expose them to flames or electric arc.

In situations that present the potential for flame or electric arc exposure and the possibility that the garments may become soiled with oil, PCB-containing oil, or other liquid, limited-use FR/ **Chemical Resistant (CR)** disposable outerwear must be worn over the FR coveralls. **These disposable FR/CR garments must not be worn without the FR coveralls.**

Clothing Requirements for Oil and PCB-Containing Oil

If oil is present and there is reason to expect that a flame or electrical arc will not occur, employees must use garments that protect against the oil hazard. Depending on the amount of oil present and the potential for contact with oil, either disposable polycoated or Saranex coveralls must be worn. The selection of garment is independent of the PCB content of oil.

- Saranex coveralls provide greater protection against oil breakthrough and ***penetration*** than do polycoated coveralls. For this reason Saranex coveralls must be worn when the amount of oil present may result in substantial contact.

- In situations where potential contact with oil is minimal, polycoated coveralls can be used.

If a situation has the potential for flame or electric arc exposure and possible soiling of garments with oil, limited-use FR disposable outerwear must be worn over the FR coveralls. **These disposable FR garments must not be worn without the FR coveralls**.

After work involving potential contact with oil is completed, the disposable coveralls must be removed. If the garments have been in direct contact with oil containing 50 parts per million (ppm) or greater PCBs, the coveralls must be disposed of in accordance with Corporate Environmental Procedure (CEP) 06.12, *Disposal*. If the garments have been in direct contact with oil containing less than 50 ppm PCBs, the coveralls must be disposed of as general waste.

Clothing Requirements for Asbestos-Containing Materials

If asbestos-containing material (ACM) is present and there is reason to expect that a flame or electrical arc will not occur, employees must use garments that protect against the asbestos hazard. In this situation, a Con Edison-approved disposable coverall (Tyvek) must be worn during asbestos removal. This coverall may be worn alone or over FR coveralls.

If there is reason to expect that a flame or electrical arc may occur during asbestos work and there is a potential chemical or oil exposure, such as during the removal of arc-proofing tape in a manhole, the limited-use, chemically resistant FR disposable garments (polycoated Sontara) must be worn in place of the asbestos coverall. If there is reason to expect that a flame or electrical arc may occur during asbestos work and there is no potential chemical or oil exposure, the limited-use FR disposable garments (uncoated Sontara) must be worn in place of the asbestos coverall. In these situations, the limited-use FR disposable outerwear must be worn over the FR coveralls. **These disposable FR garments must not be worn without the FR coveralls**.

Upon completion of asbestos work, the asbestos coverall or limited-use FR garment must be removed and disposed of in accordance with the Asbestos Management Manual, Chapter 11 - Storage, Transfer, Transportation and Disposal.

Clothing Requirements for Work with Hazardous Liquid Chemicals

The proper selection of protective clothing depends on the nature of potential hazard (routes of entry, physical characteristics, toxicological properties, etc.), the type of work to be done, ergonomic constraints, and the chemical and physical performance or resistance characteristics required by the protective clothing. Both polycoated and Saranex Tyvek coveralls are chemical

resistant to a wide range of chemicals. If a hazardous chemical splashes onto the coveralls, remove the chemical first by washing it off and then remove the coveralls. Saranex coveralls must be worn when the amount of acid, bases, solvents or other hazardous liquids present may result in substantial contact.

- In situations where potential contact with acids, bases, solvents and other hazardous liquid material is minimal, polycoated Tyvek must be worn.
- The PPE for battery maintenance activities includes a rubber apron and vinyl sleeves.

Clothing Requirements for Welding and Burning

Employees exposed to the hazards created by welding, cutting or brazing operations, including assistants and fireguards, must wear flame-retardant coveralls. Employees performing welding or cutting activities must also don the following equipment:

- Flame-resistant gauntlet gloves.
- Flame-retardant coveralls.
- Flame-resistant aprons or leather vests, jackets, leggings, sleeves and spats worn over the flame-retardant coveralls when additional protection against sparks and radiant energy is needed.
- 100% natural fiber undergarments
- A flame-retardant skullcap with ear covers for overhead work.

Clothing Requirements for Lead Splicing Work

Persons performing lead splicing work must wear FR coveralls. If the job will result in soiling of the FR coveralls, limited-use FR garments must be worn over the FR coveralls. This should protect and extend the life of the FR coveralls. **The limited-use FR garment must not be used without the FR coveralls.**

Clothing Requirements for Working with Hazardous Materials

Clothing for all tasks where there is a potential for exposure to hazardous materials must be approved by EH&S. [5] R/P

Clothing Requirements for Working Near or Over Water

U.S. Coast Guard approved personal flotation devices must be worn by an employee whenever the danger of drowning exists. This condition may exist whenever an employee is working near or over water and could be pulled or pushed or fall into the water.

Each personal flotation device must be maintained in a safe condition and inspected frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use. An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, is provided. [6] R/P

4.2.2 Reusable Clothing Maintenance and Laundering

Most reusable work garments require periodic laundering to clean them of general debris and material that accumulates on them at the work location due to incidental contact. The vendor will

maintain those clothes that are part of the rental contract. All other clothes must be laundered according to manufacturer's specifications.

When ***accidental contact*** occurs and reusable clothing becomes soiled or contaminated with materials such as ACM or PCBs, appropriate precautions must be taken.

PCB-Contaminated Reusable Clothing

Reusable clothing that has been in direct contact with oil containing 50 ppm or greater PCBs must be disposed of in accordance with CEP 06.12, *Disposal*.

Reusable clothing that has been in direct contact with oil containing 1 ppm or more PCBs, but less than or equal to 49 ppm PCBs, must be collected and bagged at the work location for vendor pickup.

Friable ACM-Contaminated Reusable Clothing

Reusable clothing that has been in direct contact with friable ACM must be wet down to minimize fiber release, placed in a sealed container, and collected from the employee. The contaminated garment must be removed and disposed of in accordance with the Asbestos Management Manual, Chapter 11 - Storage, Transfer, Transportation and Disposal.

Laundering of 100% Cotton Clothing

The laundering instructions for 100% cotton garments are as follows:

- Machine wash in warm water with similar colors.
- Use only non-chlorine bleach, when needed.
- Tumble dry at low to medium temperature.
- Iron on a low to medium temperature, if required.

Laundering Indura and Proban Coveralls

Both Indura and Proban coveralls are made of cotton that has been treated to make them fire retardant. When washed properly, the fire-retardant treatment should last the life of the garment. The manufacturer's instructions for laundering Indura and Proban treated fabrics must be adhered to, including the following washing instructions:

- Wash clothing inside out to minimize edge and surface abrasion.
- Use a water level sufficient for the quantity of clothing to be washed, preferably the high tide level on the washer.
- Use a quality detergent, such as Tide, All, Era, Yes, or Wisk. Follow the detergent manufacturer's instructions.
- Use a temperature that is as low as possible but that still cleans the garment. When using a quality detergent, the warm or cold setting may be sufficient.
- Do not use chlorine (sodium hypochlorite) bleach such as Clorox as this can affect the fire-retardant properties of these garments.

- When drying garments, use the minimum setting required to dry the clothing in a practical time
- Dry garments inside out.
- To minimize shrinkage, immediately remove garments from the clothes dryer when they are dry or slightly damp.

Laundering Nomex Garments

Nomex garments are made of flame-retardant aramid fibers. The flame-retardant property is "built into" the fiber; it is not applied to a fabric as a treatment or additive, as in the case of the Indura and Proban coveralls. The manufacturer's instructions for laundering Nomex garments must be adhered to, including the following washing instructions:

- Nomex garments must be sorted and washed separately from other garments to prevent flammable fibers/lint from being transferred to the Nomex garment.
- Heavily soiled or stained garments must be pre-treated as soon as possible with a full-strength heavy-duty liquid detergent.
- The wash load size must allow the garment to move freely throughout the wash and rinse cycles.
- Normal wash water setting (approximately 140^{o} Fahrenheit) is adequate for moderately soiled garments. Higher temperatures may be required for heavily soiled or stained garments.
- A synthetic heavy-duty liquid laundry detergent, such as liquid Tide, All, Era, Yes, and Wisk, is recommended for cleaning Nomex garments.
- Chlorine bleach must not be used. Bleach will not degrade the flame-retardant properties of the garment, but it may cause strength and color loss over time.
- Nomex garments must be tumble-dried on medium or high temperature settings.
- Iron on medium setting, if necessary. [7] R/P

4.3 PPE INSPECTION AND MAINTENANCE

This information will help to ensure that equipment is maintained in a satisfactory condition and provides the required protection when used. The following minimum requirements for inspection and maintenance will be followed.

- PPE must be properly inspected prior to use. Damaged or missing items like holes in gloves or protective clothing, missing side shields on glasses, and broken laces or cracked soles on shoes can significantly impact the effectiveness of the PPE. Signs of wear, such as smooth soles on shoes that can cause slipping or scratches on goggles that limit vision, can present new hazards. PPE that is damaged, missing items, or shows signs of wear, jeopardizing the protection afforded by the equipment, will be removed from service and repaired or replaced.
- PPE must be cleaned and properly decontaminated in accordance with manufacturer recommendations.

- PPE must be properly stored to protect it from exposure to conditions that can damage or compromise its effectiveness. Specific locations acceptable for the storage of PPE will be identified.
- Employees must be familiar with methods for obtaining new PPE in the event that testing and inspection identify unacceptable equipment.

Con Edison maintains a supply of PPE that can be used by facility personnel when needed. The equipment is specific to the tasks performed by Con Edison personnel. [8] R/P

4.4 TRAINING AND TESTING

Refer to CEHSP S05.01, *Hazard Assessment and Personal Protective Equipment*, Section 4.4 for detailed training and testing requirements. [9] R/P

4.5 RECORDKEEPING

In accordance with CEHSP S05.01, *Hazard Assessment and Personal Protective Equipment,* the Training Coordinator for each operating organization must retain training records for three years. Additionally, OSHA 1910.269(a)(2)(vii) requires that training records associated with FR clothing be maintained for the duration of the employee's employment. The Safety Administrator must maintain hazard assessment documentation for all job types currently performed within the organization. [10] R/P

5.0 DEFINITIONS

***Accidental Contact*:** An unexpected event where a substantial amount of a substance spills, splashes, sprays, or otherwise comes into contact with a worker. It is not a typical occurrence for the duties/job being performed.

Body: Arms, legs, and torso.

Hazard Assessment: A systematic review performed to identify exposure hazards and appropriate PPE for specific work operations. This assessment includes a review of the work activities, equipment, and materials used, and end products and by-products to evaluate the potential for physical contact, noise hazards and/or respiratory hazards.

Hazard Assessment Certifications: Written verification that identifies a completed exposure assessment, including the evaluated tasks/processes and areas, the person who performed the assessment, and the date(s) of the assessment.

Incidental Contact: Materials that an employee may contact during the performance of his daily duties. For example, an auto mechanic contact with lube oil while replacing a part or a troubleshooter brushing up against equipment in a vault during an inspection that results in a smudge on their clothing.

Penetration: Flow of chemicals through clothing discontinuities, such as zippers, seams, and pinholes.

***Personal Protective Equipment (PPE)*:** Clothing and equipment worn by personnel to prevent contact with hazards present in the work area. PPE includes safety glasses, face shields, gloves, safety shoes, hearing protection, hard hats, etc.

Proper: Approved, certified, or suitable, within acceptable guidelines set forth by governing codes and standards, as well as recognized safe work practices.

6.0 RESPONSIBILITIES

Employees: The PPE user is responsible for following the requirements of the PPE procedure, including: wearing required PPE; attending required training; caring for, cleaning, and maintaining PPE; and submitting equipment for repair or replacement.

Environment, Health, and Safety (EH&S): EH&S performs the following functions:

- Reviews applicable regulations and ensures that procedures meet all regulatory requirements.
- Revises procedures as applicable.
- Reviews/approves controlled documents prior to release.
- Distributes updates and changes.
- Reviews training prepared by the Learning Center.
- Provides technical assistance to Safety Administrators.

Facility or Site Manager Responsible for Compliance: The Con Edison designated individual within each operating organization who is responsible for ensuring compliance with federal, state, and local regulations and this procedure.

Law Department: The Law Department assists and provides guidance to EH&S by reviewing changes to these procedures in light of all applicable statutes and regulations to ensure that the procedures meet all legal requirements.

Operating Organizations: Unless otherwise indicated, operating organizations are responsible for compliance with federal, state, and local regulations and this procedure.

Safety Administrator: Responsible for performing hazard assessments, selecting PPE, and maintaining hazard assessment certifications.

Supervisors: Responsible for ensuring that personnel wear proper PPE and for performing necessary training.

Training Coordinators: Enters PPE training records into the Training Registration System.

7.0 REFERENCES

4.1 HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE

[1] 29 CFR 1910.132(d) (hazard assessment, including written certification requirement); 29 CFR 1910.132, Appendix B (non-mandatory compliance guidelines for hazard assessment, including Section 7, reassessment of hazards). NOTE: The OSHA regulations do not specifically require reassessment of hazards, although the issue is addressed in the Appendix B non-mandatory guidelines).

[2] 29 CFR 1910.137 (electrical protective equipment); 29 CFR 1910.269(l)(6) (apparel for electrical power generation, transmission, and distribution).

[3] USDOT Federal Highway Administration, *Manual on Uniform Traffic Control Devices,* Section 6D.03, Worker Safety Considerations (2003 Edition) (clothing requirements when working near traffic). The manual can be found at: http://mutcd.fhwa.dot.gov/HTM/2003/html-index.htm. The remaining requirements in this section relating to fit and appearance are required by Con Edison as a matter of policy.

[4] See Note 6 below regarding laundering.

4.2 CON EDISON REQUIREMENTS

[5] 29 CFR 1910.132 (general PPE requirements); 29 CFR 1910.137 (electrical protective equipment); 29 CFR 1910.252(b)(3) (protective clothing for welding, cutting and brazing); 29 CFR 1910.269(l)(6) (apparel for electric power generation, transmission and distribution). NOTE: The OSHA regulations do not contain specific requirements for protective apparel comparable to those discussed in CEHSP S 05.01, *Hazard Assessment and Personal Protective Equipment* relating to head, eye and/or face, hand and foot protection. The specific clothing identified in this section has been determined to meet OSHA requirements relating to proper PPE. NOTE: 29 CFR 1910.269(l)(6) allows clothing made of acetate, nylon, polyester or rayon provided it has been treated to eliminate hazards; Con Edison bars all clothing containing such fibers as a matter of policy.

[6] 29 CFR 1910.269(w)(5)(i)-(iii) (requiring personal flotation device when danger of drowning exists). NOTE The cited provision applies only to the operation and maintenance of electric power generation, control, transformation, transmission and distribution lines and equipment. Con Edison applies this requirement to all activities that involve the potential for drowning as a matter of policy.

[7] 29 CFR 1910.132(a) (general PPE maintenance requirement); 29 CFR 1910.132(e) (prohibiting use of damaged/defective PPE); 29 CFR 1910.132, Appendix B, Sec. 12 (non-mandatory: cleaning and maintenance); 29 CFR 1910.137(b) (in service use and care of electrical protective equipment). NOTE: Con Edison has developed the specific procedures in this section relating to maintenance and laundering of particular types of clothing to ensure that the clothing continues to provide proper protection to Con Edison employees.

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4.3 PPE INSPECTION AND MAINTENANCE

[8] 29 CFR 1910.132(a) (general PPE maintenance requirement); 29 CFR 1910.132(e) (prohibiting use of damaged/defective PPE); 29 CFR 1910.132, Appendix B, Sec. 12 (non-mandatory: cleaning and maintenance); 29 CFR 1910.137(b) (in service use and care of electrical protective equipment). NOTE: Con Edison has developed the specific procedures in this section relating to inspection and maintenance to ensure that protective clothing is maintained in a satisfactory condition.

4.4 TRAINING AND TESTING

[9] See CEP 05.01, *Hazard Assessment and Personal Protective Equipment*, for training and testing requirements.

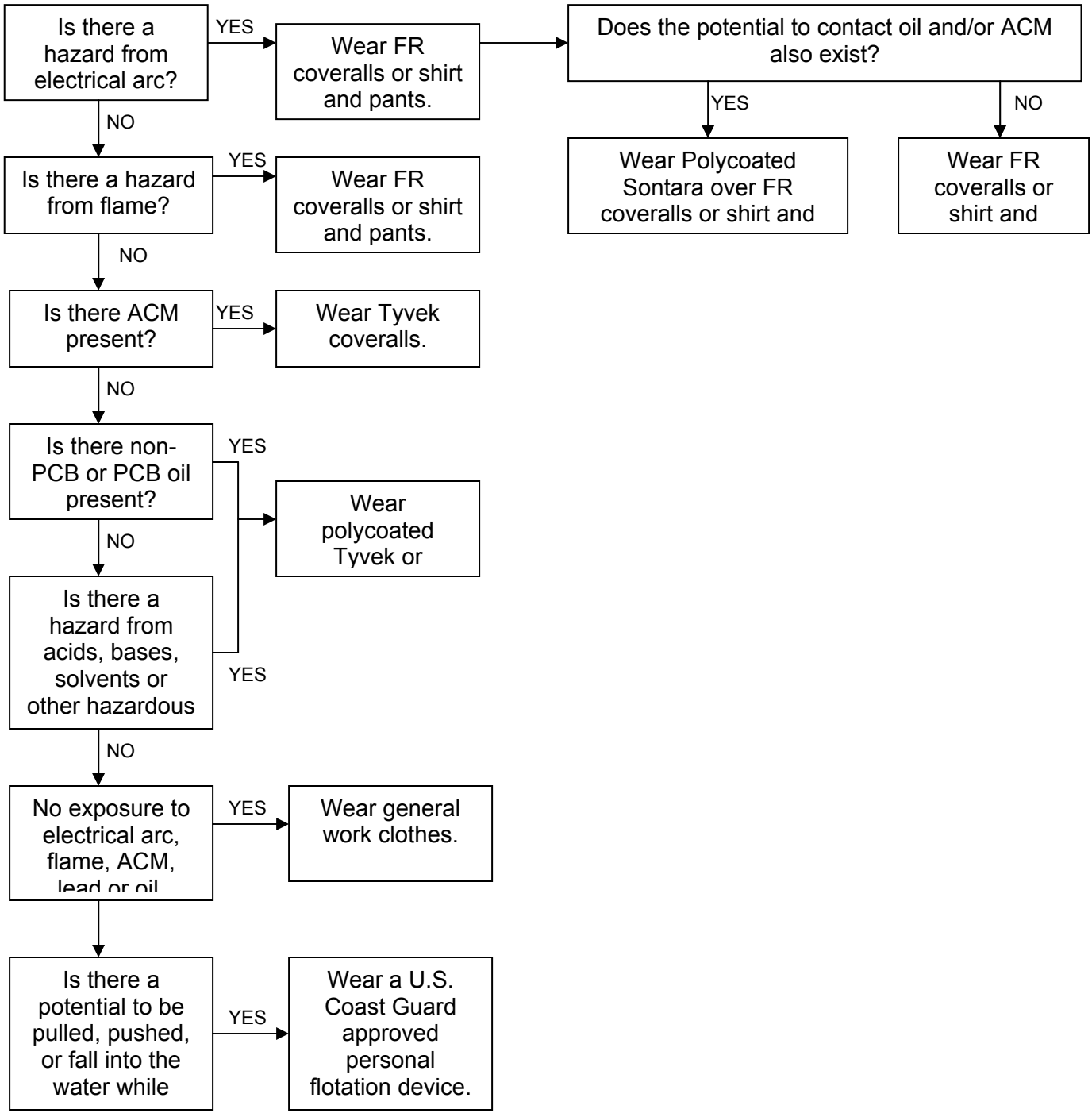
4.5 RECORDKEEPING

[10] 29 CFR 1910.132(d)(2) (written hazard assessment certification); 29 CFR 1910.132(f)(4) (training records); 29 CFR 1910.269(a)(2) (electric power generation, transmission and distribution training recordkeeping). NOTE: the OSHA regulations do not specify a retention period for training records under 29 CFR 1910.132(f)(4). Con Edison has adopted a three-year record retention period as a matter of policy. 29 CFR 1910.269(a)(2) requires training records to be retained for the duration of the employee's employment**.** This training covers PPE, including FR clothing.

National Safety Council - Accident Prevention Manual for Business and Industry, 10th edition.

ATTACHMENT 1

GUIDELINES FOR SELECTION OF PROTECTIVE CLOTHING



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ATTACHMENT 2
PERSONAL PROTECTIVE CLOTHING

PROTECTIVE CLOTHING	USE	GROUP/OPERATION
Flame Retardant (FR)	• Worn when there is potential exposure to flame or electric arc. • Worn when performing lead splicing.	Steam, Powerhouse, Electrical Welding, Hotwork Gas Operations Welding, Hotwork
U.S. Coast Guard Approved Personal Flotation Device	Worn when the potential of drowning exists.	Steam, Powerhouse, Electrical, Spill Response Team Members
Tyvek	Worn when potential for contact with asbestos-containing materials (ACM).	Maintenance, Spill Response Team Members
Kleenguard Ultra (Tyvek equivalent)	Worn for general utility, asbestos, bloodborne pathogens, lead dust, bulk chemical delivery, and short-term, incidental contact with oil, including polychlorinated biphenyls (PCB).	Maintenance, Spill Response Team Members
Disposable Polycoated / Saranex	• Polycoated is worn when there is minimal potential for contact with PCBs. • Saranex is worn where there is greater potential for contact with PCBs.	Maintenance, Spill Response Team Members
Disposable Polycoated/ Saranex	• Polycoated is worn when there is a minimal potential for contact with acid, bases, solvents and other hazardous liquid materials. • Saranex is worn where there is a greater potential for contact with acids, bases, solvents and other hazardous liquid materials	Acid Deliveries, Maintenance of Acid Systems, solvents
Polycoated Sontara	Polycoated Sontara is worn when there is both a potential for arc or flame and a potential for exposure to an oil contaminant or asbestos. This garment protects normal FR clothing.	Operations where there is an exposure to arc or flame and where there is an exposure to oil and/or asbestos
Uncoated Sontara	Uncoated Sontara is worn when there is a potential for arc or flame and no potential for exposure to an oil contaminant. This garment protects normal FR clothing.	Operations where there is an exposure to arc or flame and where there is an exposure to asbestos (no oil)
Rubber Apron Vinyl Sleeves	Rubber apron bib style and vinyl sleeves are worn over work clothes to protect against acids.	Battery Maintenance and acid handling

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