Site Health and Safety Plan and Community Air Monitoring Plan Hunts Point Sites E OU-1, 2 & 3

For the Property Located at 155 Food Center Drive
Bronx, NY 10474
Block 2781, Lot 500
NYSDEC Site No. V00682-2

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
New York City Economic Development Corporation
110 William Street
New York, NY 10038

Prepared by

61 Broadway,
Suite 1601
New York, NY 10006

September 2015

Revised November 2015

CONTENTS

LIST OF ATTACHMENTS ..... **iv**

ACRONYMS AND ABBREVIATIONS ..... **v**

SITE HEALTH AND SAFETY PLAN APPROVAL ..... **vi**

SITE HEALTH AND SAFETY PLAN ACKNOWLEDGMENT ..... **vii**

1 INTRODUCTION **1-1**

1.1 OBJECTIVES AND METHODS 1-2
1.2 ORGANIZATION 1-2
1.3 ROLES AND RESPONSIBILITIES 1-2
1.3.1 Site Safety Officer 1-2
1.3.2 Project Manager 1-3
1.3.3 Corporate Health and Safety Manager 1-3
1.3.4 Field Personnel 1-4
1.4 SITE DESCRIPTION 1-4
1.5 PROJECT MANAGER AND OTHER KEY CONTACTS 1-5

2 CHEMICAL HAZARD EVALUATION **2-1**

3 PHYSICAL HAZARD EVALUATION AND GUIDELINES **3-2**

3.1 GENERAL PHYSICAL HAZARDS 3-2

4 PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT **4-1**

4.1 PERSONAL PROTECTIVE EQUIPMENT 4-1
4.2 SAFETY EQUIPMENT 4-1

5 AIR MONITORING **5-1**

5.1 INTRODUCTION 5-1
5.2 PHOTOIONIZATION DETECTORS 5-2
5.3 DUST METERS 5-3
5.4 ACTION LEVELS 5-4

6 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING **6-1**

6.1 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING 6-1
6.2 TRAINING REQUIREMENTS 6-1
6.2.1 Site Safety Meetings 6-1

6.3 MEDICAL MONITORING 6-2
7 EMERGENCY RESPONSE PLAN 7-1
7.1 EMERGENCY RECOGNITION AND PREVENTION 7-1
7.2 EMERGENCY RESPONSE AND NOTIFICATION 7-1
7.3 EMERGENCY DECONTAMINATION PROCEDURES 7-3
7.4 SITE COMMUNICATIONS 7-3
7.5 BUDDY SYSTEM 7-3
8 WORK ZONES 8-1
8.1 EXCAVATION OVERSIGHT AND AIR MONITORING 8-1
9 EQUIPMENT DECONTAMINATION AND PERSONAL HYGIENE 9-1
9.1 EQUIPMENT DECONTAMINATION PROCEDURES 9-1
9.2 PERSONAL HYGIENE 9-1
10 VEHICLE SAFETY, SPILL CONTAINMENT, AND SHIPPING INSTRUCTIONS 10-1
10.1 VEHICLE SAFETY 10-1
10.2 SPILL CONTAINMENT 10-1
10.3 SHIPPING INFORMATION 10-2
11 TASK-SPECIFIC SAFETY PROCEDURE SUMMARY 11-1
11.1 EXCAVATION OVERSIGHT AND AIR MONITORING 11-1

LIST OF ATTACHMENTS

Attachment 1. Site Map and Hospital Route
Site Map
Hospital Route Map

Attachment 2. Regulatory Notices
Federal OSHA Right to Know Posters

Attachment 3. Safety Procedures

Attachment 4. Material Safety Data Sheets
Liquinox®
Alconox®
Isobutylene

Attachment 5. Near-Miss Incident Report

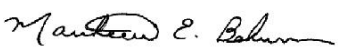
Attachment 6. Employee Exposure/Injury Incident Report

ACRONYMS AND ABBREVIATIONS

CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHSM	Corporate Health and Safety Manager
CPR	cardiopulmonary resuscitation
FBSG	feet below site grade
HAZWOPER	hazardous waste operations and emergency response
HDPE	high density polyethylene
HEPA	high-efficiency particulate air
IDLH	immediately dangerous to life and health
Integral	Integral Engineering, P.C.
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PPE	personal protective equipment
RAWP	Remedial Action Work Plan
SHSP	site health and safety plan
SSO	site safety officer
STEL	short-term exposure limit
SVOCs	semi-volatile organic compounds
VOCs	volatile organic compounds

SITE HEALTH AND SAFETY PLAN APPROVAL

This site health and safety plan (SHSP) has been reviewed and approved for the redevelopment of the property located at 155 Food Center Drive, Bronx, NY.

Project Manager	Date
	
Corporate Health and Safety Manager	September 14, 2015 Date

SITE HEALTH AND SAFETY PLAN ACKNOWLEDGMENT

In the absence of an appropriate subcontractor or consultant health and safety plan, and with the written approval of Integral Consulting Inc. (Integral) corporate health and safety manager (CHSM), the subcontractor or consultant may utilize the Integral site health and safety plan (SHSP), provided there is written concurrence from the subcontractor or consultant that they will directly administer the plan for its employees. The Integral SHSP is a minimum standard for the site and will be strictly enforced for all Integral personnel, or its subcontractors or consultants where applicable.

I have reviewed the SHSP prepared by Integral, dated November 6, 2015 for the fieldwork at the Hunts Point Sites E OU-1, 2 & 3, Bronx, NY property. I understand the purpose of the plan, and I consent to adhere to its policies, procedures, and guidelines while an employee of Integral, or its subcontractors or consultants. I have had an opportunity to ask questions regarding this plan, which have been answered satisfactorily by Integral.

Employee signature	Company	Date
Employee signature	Company	Date
Employee signature	Company	Date
Employee signature	Company	Date
Employee signature	Company	Date
Employee signature	Company	Date
Employee signature	Company	Date

1 INTRODUCTION

It is the policy of Integral Engineering, P.C. (Integral) to provide a safe and healthful work environment that is compliant with applicable regulations. No aspect of the work is more important than protecting the health and safety of all workers.

This site health and safety plan (SHSP) provides general health and safety provisions to protect workers from potential hazards during field activities performed under the expansion and redevelopment for the property located at 155 Food Center Drive, Bronx, NY (hereafter referred to as the "site"). This SHSP has been prepared in accordance with local, State, and federal Occupational Safety and Health Administration (OSHA) safety regulations (29 CFR [Code of Federal Regulations] 1910 and 29 CFR 1926).

Work performed under the redevelopment will be in full compliance with applicable health and safety laws and regulations, including site-specific and OSHA worker safety requirements and Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) requirements. This SHSP follows both OSHA hazardous waste operations and emergency response and applicable regulations in 29 CFR 1910 and 29 CFR 1926.

Attachments to the SHSP provide a site-specific map and specific routes to the hospital from the site (Attachment 1), regulatory notices (Attachment 2), safety procedures (Attachment 3), material safety data sheets (Attachment 4), and a near-miss incident report form (Attachment 5).

This SHSP has been prepared to identify potential site hazards to the extent possible based on information available to Integral. Integral cannot guarantee the health or safety of any person entering this site. Because of the potentially hazardous nature of this site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness at this site. The health and safety guidelines in this plan were prepared specifically for this site and should not be used on any other site without prior evaluation by trained health and safety personnel.

A copy of this SHSP must be in the custody of the field crew during field activities. All individuals performing fieldwork must read, understand, and comply with this plan before undertaking field activities. Once the information has been read and understood, the individual must sign the Site Health and Safety Plan Acknowledgment form provided as part of this plan. The signed form will become part of the project file.

This plan may be modified at any time based on the judgment of the Integral site safety officer (SSO) in consultation with the project manager and Integral corporate health and safety manager (CHSM) or designee. Any modification will be presented to the onsite team during a safety briefing and will be recorded in the field logbook.

1.1 OBJECTIVES AND METHODS

The primary objective of the redevelopment activities is to evaluate excavated material for evidence of contamination and to enforce the Community Air Monitoring Plan (CAMP).

To meet these objectives, field activities will consist of the oversight of all land disturbances and material movement and stockpiling.

If impacted material is encountered during excavation activities, grab soil samples will be collected with a properly calibrated photo-ionization detector (PID) with visual/olfactory indications notes. Soil sampling activities will either be collected by Integral personnel or supervised by Integral and completed by a subcontractor under their own Health and Safety Plan. This will be determined on an as-needed basis.

1.2 ORGANIZATION

This SHSP covers excavation oversight, community air monitoring and potential soil stockpile sampling activities. Chemical and physical hazard evaluations are presented in Sections 2 and 3, respectively. Specific health and safety guidelines associated with each task, including a brief description of the work, are discussed in Section 11 (Task-Specific Safety Procedures).

1.3 ROLES AND RESPONSIBILITIES

All Integral personnel on this site must comply with the requirements of this SHSP. The Integral SHSP is a minimum standard for the site and will be strictly enforced for all Integral personnel, or subcontractors or consultants, where applicable. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs.

1.3.1 Site Safety Officer

The SSO has full responsibility and authority to implement this SHSP and to verify compliance. He or she reports to the project manager and is onsite or readily accessible to the site during all work operations. The SSO is responsible for assessing site conditions and directing and controlling emergency response activities. The specific responsibilities of the SSO include the following:

- Managing the safety and health functions on this site
- Serving as the onsite point of contact for safety and health concerns
- Assessing site conditions for unsafe acts and conditions and ensuring corrective action

- Ensuring that all Integral employees and subcontractors understand and follow the SHSP
- Ensuring that daily work schedules and tasks are reasonable for the required levels of effort and weather conditions
- Confirming local emergency response phone numbers and locations
- Conducting and documenting the initial and daily or periodic health and safety briefings
- Evaluating and modifying the level of protective apparel and safety equipment, based on site conditions
- Ensuring that the field team observes all necessary decontamination procedures.

If the SSO determines that site conditions are unsafe, he or she has the authority to suspend field operations until the problem is corrected. The SSO can modify SHSP procedures in the field. Any changes must be documented in the field logbook, and field staff must be immediately informed of the change. The project manager and Integral's CHSM must be notified by phone or e-mail within 24 hours of any major changes to the SHSP.

1.3.2 Project Manager

The project manager has overall responsibility to ensure that personnel working onsite are safe. The specific responsibilities of the project manager include:

- Ensuring that the SHSP is developed prior to the field work or site visit
- Reviewing and approving the SHSP prior to the field work or site visit
- Ensuring employee understanding of and compliance with the SHSP.

1.3.3 Corporate Health and Safety Manager

The CHSM provides guidance to the project manager and SSO on SHSP preparation and reviews and approves the SHSP. The CHSM also serves as an arbitrator if there is a conflict between the project manager, SSO, and field personnel. In addition, the CHSM[1] conducts periodic unannounced audits of Integral field operations to ensure compliance with the site-specific health and safety plan.

[1] The audit task may be delegated to an office health and safety representative by the CHSM.

1.3.4 Field Personnel

All Integral personnel and subcontractors, where applicable, on this site are responsible for reading and complying with this SHSP, using the proper personal protective equipment (PPE), reporting unsafe acts and conditions, and following the work and safety and health instructions of the project manager and SSO. All Integral personnel, subcontractors, or consultants can and are encouraged to suspend field operations if they feel conditions have become unsafe.

1.4 SITE DESCRIPTION

The Site is located in the area known as the Hunts Point Food Distribution Center in the Bronx, NY and is identified as Block 2781, Lot 500. The site is approximately 15 acres and is bounded by the Con Edison Gas Compressor Station and Food Center Drive to the North, Hunts Point Baldor building to the East, Viele Avenue to the South, and Halleck Street to the West.

The property is currently owned by the City of New York and managed by the New York City Economic Development Corporation (NYCEDC). The Site is located within a larger area formerly used as a Manufactured Gas Plant (MGP), operated by Con Edison, from approximately 1926 to 1960. Plant operations included the manufacturing, storage, and distribution of coal gas.

- **Owners/tenants:** *NYCEDC/Baldor Specialty Foods, Inc.*
- **Site history:** *Former Con Edison Manufactured Gas Plant; A&P Food Distribution Center*
- **Current site use:** *Baldor Food Distribution Center*
- **Hazardous waste site:** *No*
- **Industrial waste site:** *No*
- **Topography (if applicable):** *Flat*
- **Site access:** *Food Center Drive*
- **Nearest drinking water/sanitary facilities:** *On-site or in vicinity*
- **Nearest telephone:** *Cellular*
- **Size of site:** 15 *acres*
- **Pathways for hazardous substance dispersion:** *Dermal, Inhalation*

A detailed site map is provided in Attachment 1 to this SHSP.

1.5 PROJECT MANAGER AND OTHER KEY CONTACTS

	Name (Affiliation)	Work Telephone	Cell Phone
Project manager	Kevin McCarty (Integral)	(212) 440-6707	(646) 895-1430
SSO	Stacey Ng (Integral)	(212) 440-6713	(516) 998-8791
CHSM	Matthew Behum (Integral)	(410) 573-1982	(443) 454-1615
Client contact	Tracey Bell (NYCEDC)	(212) 312-3752	

2 CHEMICAL HAZARD EVALUATION

Potentially hazardous chemicals known to exist at the site are primarily VOCs, SVOCs, metals, and PCBs associated with historic site use and fill material. The chemicals of concern, applicable chemical properties, and potential exposure routes are presented in the following sections.

The following table lists the historical site maximum constituent concentrations for constituents at the Site. The table also lists the chemical properties and OSHA permissible exposure limit (PEL), short-term exposure limit (STEL), and immediately dangerous to life and health (IDLH) level. Breathing zone air can be monitored to ensure that the chemicals do not exceed the PEL. If any of the chemicals exceed the PEL, immediate action is required (e.g., don respirators, leave site) as designated in Section 5 (Air Monitoring) in this SHSP.

Chemical Properties

Chemical of Concern	Concentration (site maximum or range expected)	Medium	OSHA PEL	OSHA STEL	OSHA IDLH	IP(eV)	Carcinogen or Other Hazard
Alconox (Tetrasodium Pyrophosphate)	Concentrated	Decon	5 mg/m^3[(2)]	--	--	--	Irritant
Isobutylene	Concentrated	Gas	--	--	--	--	Flammable; Asphyxiant
1,2,4-Trimethylbenzene	Unknown	Groundwater	25 ppm (NIOSH REL 25 ppm)	--	--	8.27	Flammable Liquid
1,3,5-trimethylbenzene	Unknown	Groundwater	25 PPM (NIOSH REL 25 ppm)	--	--	8.39	Flammable liquid
Benzene	Unknown	Groundwater	1 ppm (NIOSH REL 0.1 ppm)	5 ppm (NIOSH STEL 1 ppm)	500 ppm	9.24	Ca
Benzo(a)pyrene	Unknown	Groundwater, Soil	0.2 mg/m^3 (NIOSH REL 0.1 mg/m^3)	--	80 mg/m^3	--	Ca
Ethylbenzene	Unknown	Groundwater	100 ppm (NIOSH REL 100 ppm)	125 ppm	800 ppm	8.76	Flammable
Xylenes	Unknown	Groundwater	100 ppm (NIOSH REL 100pm)	-- (NIOSH STEL 150 ppm)	900 ppm	8.44-8.56	Flammable
Arsenic	Unknown	Soil	0.01 mg/m^3	--	5 mg/m^3		Ca; Toxic; Combustible

[2] This value is based on the Product MSDS for the chemical tetrasodium pyrohosphate (a primary ingredient in Alconox)

Chemical of Concern	Concentration (site maximum or range expected)	Medium	OSHA PEL	OSHA STEL	OSHA IDLH	IP(eV)	Carcinogen or Other Hazard
Barium	Unknown	Soil	0.5 mg/m^3 (NIOSH REL 0.5 mg/m^3	--	50 mg/m^3	--	--
Mercury	Unknown	Soil	0.1 mg/m^3 (NIOSH REL 0.05 mg/m^3	--	10 mg/m^3	--	Toxic; Irritant
Lead	Unknown	Soil	0.05 mg/m^3 (NIOSH REL 0.05 mg/m^3)	--	100 mg/m^3	--	--
Aroclor-1260	0.053 – 4.6 ppm	Soil	0.5 mg/m^3 (NIOSH REL 0.001 mg/m^3)	--	--	--	Ca

Notes:
-- = none established
Ca = carcinogen
IDLH = immediately dangerous to life and health
IP(eV) = ionization potential (electron volts)
mg/kg = milligrams per kilogram
mg/m^3 = milligrams per cubic meter
NA = not available
PEL = permissible exposure limit
ppm = parts per million
STEL = short-term exposure limit

The table below summarizes the chemical characteristics and potential chemical exposure routes at the site.

	Likely	Possible	Unlikely
Potential Chemical Exposure Routes at the Site:			
Inhalation		X	
Ingestion			X
Skin absorption		X	
Skin contact		X	
Eye contact		X	
Chemical Characteristics:			
Corrosive			X
Flammable		X	
Ignitable			X
Reactive			X
Volatile		X	X
Radioactive			X
Explosive			X
Biological agent			X
Particulates or fibers		X (dust, metals)	
If likely, describe:			

3 PHYSICAL HAZARD EVALUATION AND GUIDELINES

The following sections present general physical hazards and guidelines.

3.1 GENERAL PHYSICAL HAZARDS

The following table presents possible physical hazards that are expected to be present during field activities.

Possible Hazard	Yes	No	Proposed Safety Procedure
Heavy equipment	X		Stay back from operating equipment; wear safety vests and hard hats; coordinate and maintain eye contact with equipment operator.
Material handling	X		Lift properly; seek assistance if necessary; do not overfill coolers or boxes. Seek assistance if drums must be moved.
Adverse weather	X		Seek shelter during electrical storms; work in adverse weather conditions only with proper training and equipment.
Excavations	X		Do not enter excavations greater than 4 ft in depth without evaluation by a qualified person and implementation of applicable trenching and excavation safeguards as required by law.
Plant/animal hazards	X		Know local hazards and take appropriate precautions. Use insect repellent if mosquitoes are persistent.
Uneven terrain/tripping	X		Use caution, wear properly fitting shoes or boots, and keep work area orderly.
Noise	X		Wear ear protection when working around heavy equipment and other noise sources.
Heat Stress	X		Follow heat stress information (Attachment 3). *Note:* potential for heat stress will depend on season and location of the site.
Cold/hypothermia	X		Keep warm and dry; bring changes of clothes; do not work in extreme conditions without proper equipment and training. Follow cold stress information (Attachment 3). *Note:* potential for cold/hypothermia will depend on season and location of the site.
Falling objects	X		Wear hard hats near overhead hazards (i.e., winch).

Summary of potential physical hazards posed by proposed site activities:

Activity	Potential Hazard
Excavation Oversight & Community Air Monitoring	Heavy equipment, slips/trips/falls, falling objects, noise, plant/animal hazards, material handling, adverse weather, cold/hypothermia, heat stress, excavations
Sample handling/mobilization	Material handling, slips/trips/falls

4 PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT

The following sections address PPE and safety equipment required for completing the field activities.

4.1 PERSONAL PROTECTIVE EQUIPMENT

Based on the hazards identified above in Sections 2 and 3, the following table identifies the PPE required for site activities.

	Level of Protection	
Site Activity	**Initial**	**Contingency** [a]
Excavation Oversight	D	Leave Exclusion Zone and assess situation
Air Monitoring	D	Leave Exclusion Zone and assess situation
Soil Sampling	D	Leave Exclusion Zone and assess situation

[a] Based on unexpected change in site conditions

Each level of protection will incorporate the following PPE:

Level D	X	Long pants and shirt or work coveralls, hard hat, latex or nitrile gloves, eye protection, traffic safety vest, and steel-toed boots are required. Hearing protection and work gloves are required as needed.

4.2 SAFETY EQUIPMENT

The following safety equipment will be onsite during the proposed field activities.

Air Monitoring (check the items required for this project)

- [X] PID
- [ ] LEL/O_2 meter
- [ ] H_2S meter
- [ ] Detector pump and tubes (e.g., benzene)
- [ ] Air sampling pumps
- [X] MINIRAM (particle monitors)
- [ ] Radiation meter
- [ ] Other: _____

First Aid Kit (mandatory, including absorbent compress, adhesive bandages, adhesive tape, antiseptic, burn treatment, medical exam gloves, sterile pad, CPR shield, triangle bandage, scissors [for cutting off the PPE from an injured person])
(check additional items required for the site)

- [X] Emergency blanket
- [X] Insect repellent
- [X] Sunscreen
- [ ] Other: _____

Other (check the items required for this project)

- [X] Eyewash
- [X] Drinking water
- [ ] Stopwatch for monitoring heart rate for heat stress monitoring[3]
- [ ] Thermoscan® thermometer for heat stress monitoring
- [ ] Survival kit[4]
- [ ] Personal flotation device
- [ ] Cool vests
- [ ] Fit test supplies
- [X] Fire extinguisher
- [ ] Windsock
- [X] Cellular phone
- [ ] Radio sets
- [X] Global positioning system
- [ ] Other: _____

[3] Heart rate monitoring requires special training.
[4] Consult the CHSM for guidance for site-specific survival kits.

5 AIR MONITORING

The purpose of the air monitoring program is to avoid or minimize exposure of the field personnel and the public to potential environmental hazards in the soil during remedial activities. Results of the air monitoring will be used to determine the appropriate response action, if needed.

29 CFR 1910.120(h) specifies that monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

Air monitoring will be conducted when entering previously uncharacterized sites, when working in the vicinity of uncontained chemicals or spills, when opening containers and well casings, and prior to opening confined spaces. (Note: Integral personnel are not trained or authorized to enter confined spaces under any circumstances.) Air monitoring must be conducted to identify potentially hazardous environments and determine reference or background concentrations. Air monitoring can sometimes be used to augment judgment in defining exclusion zones.

5.1 INTRODUCTION

Personal air monitoring involves collection of samples within the breathing zone of the field personnel to better understand exposures, ensure appropriate levels of PPE, and document compliance with regulation. Such samples may be full shift for comparison to PELs (or other applicable occupational exposure limits) or short term, for comparison to STELs. Some chemicals in soil or aqueous media may volatilize or become aerosolized and be inhaled by field personnel.

Breathing zone air can be monitored to ensure that the chemicals do not exceed a regulatory or project-specific action level (generally 50 percent of the PEL). Integral commonly uses photoionization detectors (PIDs) and dust meters (e.g., MINIRAM [Miniature Real-time Aerosol Monitor]) for monitoring volatile organic compounds and particle constituents, respectively. In practice, the air directly in the field personnel's breathing zone is monitored with the PID and dust meter for 10-15 seconds. The highest reading is recorded in the project logbook and checked against the site-specific action level in the table below. If any of the constituents exceed

the action level presented in Section 5.4, immediate action is required (e.g., don respirators, leave site, etc.) as designated[5].

The following sections provide general guidance on the selection and calibration of PIDs and dust meters, which are typically rented for Integral field projects.

5.2 PHOTOIONIZATION DETECTORS

It is critical to order a PID with a detector lamp with the appropriate ionization energy to detect chemicals of interest at the site. The ionization energy of the lamp must be greater than the ionization potential of the chemicals of interest. (Ionization potentials are listed in the National Institute of Occupational Safety and Health [NIOSH] pocket guide to chemicals and are presented in Section 2). Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with operation of the PID prior to use in the field. Note that moisture may damage the detector lamp and/or provide erroneous readings, so a moisture filter is used on the probe. Also note that the PID will only accurately quantitate the material used in the calibration process. A response factor is used to measure the sensitivity of the PID to a particular chemical present at the site. Response factors are normally presented in the operation manual for the PID.

The PID must be calibrated daily in accordance with the manufacturer's specifications, which are provided in the operation manual. The calibration typically requires the use of a span gas (generally 100 ppm isobutylene) and zero gas (generally fresh air). Be sure that all the required calibration equipment/supplies are provided with the PID (e.g., span gas cylinder, regulator, tubing, and Tedlar™ bag). Record calibration data in the field logbook.

A PID will be set up both upwind and downwind of the excavation. Monitoring for organic vapors should be conducted in the breathing zone of employees using a PID during excavation activities in the potentially contaminated areas. The PID will continuously calculate 15-minute running average concentrations. If sustained total organic vapors are measured in the breathing zone above 5 ppm, Level C protection will be donned by personnel in the work area. If the sustained organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

[5] Note that neither the PID nor the MINIRAM can identify chemicals. The PID detects total ionizable volatile organic compounds and the MINIRAM detects total particles of sufficient diameter to be detected.

The action levels for organic vapors is based on the *VOC Monitoring, Response Levels, and Actions* section of the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (Appendix 1A of DER-10).

5.3 DUST METERS

It is critical that the dust meter is capable of measuring the concentrations of airborne dust that are at or below the site-specific action levels presented below. Be sure that the meter arrives at least a day prior to the start of the fieldwork so field personnel can familiarize themselves with the operation of the meter and confirm that it was not damaged during shipping. Field personnel must also read the operation manual to become familiar with its operation prior to use in the field.

The dust meter must be field checked (i.e., zeroed) daily in accordance with the manufacture's specifications, which are provided in the operation manual. A dust meter field check typically involves zeroing the meter with ambient or filtered air. Be sure that all the required zeroing and operational equipment/supplies are provided with the dust meter. Record field check data in the field logbook.

Real time monitoring for airborne dust should be performed during excavation activities with equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The instrument to be used is the MIE Inc. DataRAM or equivalent with a latching alarm. The instrument will be fitted with an omnidirectional sampling inlet to get representative samples under a variety of wind speeds and directions. A RAM-TCH inlet heater may also be used in humid conditions to remove water vapor from the sampling stream.

The dust monitor should be set up upwind and downwind of the excavation activities to verify that dust control methods are adequate. If the downwind PM-10 particulate level is 100 $\mu g/m^3$ greater than background for the 15-minute period or if airborne dust is observed leaving the work area, dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do no exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area. Should dust control measures fail to reduce total dust concentrations below 150 $\mu g/m^3$, above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 μg/m3 of the upwind level and in preventing visible dust migration.

5.4 ACTION LEVELS

The following action levels have been established to determine appropriate actions to be taken during site investigation activities:

Instrument	Observation	Action	Comments
PID	≤5 ppm over background sustained for 1 minute	Continue working	
PID	≥5 ppm over background sustained for 1 minute	Upgrade to Level C Protection	Stop work activities if organic vapor level is above 25 ppm
Dust Meter	<100 µg/m^3	Continue working	
Dust Meter	≥100 µg/m^3	Employ dust suppression techniques	Stop and re-evaluate work activities if dust concentration is above 150 µg/m^3

The action level for dust is based on the *Particulate Monitoring, Response Levels, and Actions* section of the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (Appendix 1A of DER-10).

Dust monitoring measurements should be recorded on the instrument data logger and downloaded daily. Data should be cleared from the data logger before the next day's use. The readings should be recorded every 15 minutes as well as complete sampling time integrated averages. The field notebook or other suitable log book should be used to describe the location of the dust monitor relative to the dust generating activities as well as wind direction. A copy of this description should be attached to the printout of the dust monitor data.

Weekly air monitoring reports shall be submitted to the Department while excavation and redevelopment activities are performed at the site.

Maintain, calibrate, and field check all air monitoring equipment in accordance with the manufacturer's recommendations.

6 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING

The following sections present requirements for health and safety training and medical monitoring.

6.1 HEALTH AND SAFETY TRAINING AND MEDICAL MONITORING

State and federal laws establish training requirements for workers at uncontrolled hazardous waste sites (including areas where accumulations of hazardous waste create a threat to the health and safety of an individual, the environment, or both). Integral and its subcontractor personnel are required to complete the following training requirements prior to working at the site.

6.2 TRAINING REQUIREMENTS

Task	No Training	24-hour	40-hour[a]	Supervisor[b]	First Aid/CPR[c]	Medical Monitoring
Integral Field Personnel						
Stacey Ng			X	X	X	X
Samuel McTavey			X	X		X
Leah Werner			X		X	X

Notes:

[a] Must have current OSHA 8-hour refresher if it has been more than a year since the OSHA 40-hour training.
[b] At least one person onsite must be OSHA HAZWOPER supervisor trained if this is a hazardous waste site.
[c] At least one member of each team of two or more people onsite must be first aid/CPR trained.
[d] Integral subcontractors and consultants may have requirements that are more stringent than those listed above. These are minimum training and monitoring requirements required to work on this site.

6.2.1 Site Safety Meetings

Site safety meetings must be held before beginning new tasks or when new staff enter the site. Site safety meetings should be held at a minimum of once a week and should be held daily on complex or high hazard projects. Tailgate safety meetings should occur every morning during review of the day's work plan, covering specific hazards that may be encountered. Additional meetings will be held at any time health and safety concerns are raised by any of the personnel. Attendance and topics covered, including tailgate meetings, are to be documented in the field logbook.

6.3 MEDICAL MONITORING

OSHA requires medical monitoring for personnel potentially exposed to chemical hazards in concentrations in excess of the PEL for more than 30 days per year and for personnel who must use respiratory protection for more than 30 days per year. Integral requires medical monitoring for all employees potentially exposed to chemical hazards.

Will personnel working at this site be enrolled in a medical monitoring program?	Yes X	No _____

7 EMERGENCY RESPONSE PLAN

The following sections discuss emergency recognition and prevention, emergency response and notification, emergency decontamination, and site communications.

7.1 EMERGENCY RECOGNITION AND PREVENTION

It is the responsibility of all personnel to monitor work at the site for potential safety hazards. All personnel are required to immediately report any unsafe conditions to the SSO. The SSO is responsible to immediately take steps to remedy any unsafe conditions observed at the work site.

The following are examples of some emergency situations that could occur during the Hunts Point Site E OU-3 field activities:

- Slips, trips and falls (on sloped areas, steel stairs, etc.)
- Lacerations from scrap metal (in soil, waste piles, etc.)
- The air monitoring action level is exceeded
- Entrainment of clothes or objects in moving equipment or parts
- Serious injury or illness (e.g., physical injury, heart attack)
- Severe thunderstorm with lightning.

Immediate actions will be taken by the field team under the leadership of the SSO in response to these emergencies.

7.2 EMERGENCY RESPONSE AND NOTIFICATION

If an emergency at the site warrants it, all personnel must immediately evacuate the affected work area and report to the SSO at the predetermined emergency assembly location:

Field vehicle

In case of injury, field personnel should take precautions to protect the victim from further harm and notify local or facility emergency services. In remote areas, it will be necessary to have first aid-trained personnel on the field team. The victim may require decontamination prior to treatment if practicable—requirements will vary based on site conditions.

Emergency medical care will be provided by:

- [X] Local emergency medical provider (NYPD/FDNY)
- [ ] Facility emergency medical provider
- [ ] First aid-trained field staff (for remote areas only)

Local Resources	Name	Telephone	Notified Prior to Work (Yes/No)?
Fire	FDNY	911	No
Police	NYPD	911	No
Ambulance	FDNY	911	No
Hospital	Lincoln Medical Hospital	(718) 579-5016	No
Site phone	N/A		
Directions to the hospital:	See attached map.		

The SSO must confirm that the hospital listed is still in operation and that it has an emergency room. **It is required that the SSO drive to the hospital so that the directions are practiced and understood prior to initiating fieldwork.**

Corporate Resources	Name	Work Telephone	Cell Phone
Integral CHSM [a]	Matthew Behum	Office: (410) 573-1615	(443) 454-1615
Integral President	Bill Locke	Office: (720) 465-3315	(303) 548-1111
Integral Human Resources Manager	Amy Logan	Office: (303) 404-2944 ext. 12	NA
Medical Consultant	Dr. Peter Greaney, MD (WorkCare)	Office: 800.455.6155 ext. 2219	NA

Notes:

[a] If the CHSM cannot be reached, call Ian Stupakoff–Office: (360)705-3534, ext. 20; Cell: (360)259-2518. If Ian Stupakoff cannot be reached, call David Livermore–Office: (503)943-3613; Cell: (503)806-4665. If David Livermore cannot be reached, call Barbara Trenary–Office: (206) 248-9645; Cell: (206) 849-0882.

In case of serious injuries, death, or other emergency, the Integral CHSM must be notified immediately at the phone numbers listed above. The Integral CHSM will notify the project manager and Integral's president. The project manager will notify the client.

7.3 EMERGENCY DECONTAMINATION PROCEDURES

In case of an emergency, if possible, gross decontamination procedures will be promptly implemented. If a life-threatening injury occurs and the injured person cannot undergo decontamination procedures onsite, then the medical facility will be informed that the injured person has not been decontaminated and given information regarding the most probable chemicals of concern. Decontamination procedures should not be implemented if there is not a reasonable possibility that the injured party requires such intervention.

Decontamination procedures will only be used if practical and if they will not further injure the person or delay treatment. Decontamination procedures should not be implemented if there is not a reasonable possibility that the injured party requires such intervention. The SSO will make the determination on whether or not to decontaminate the injured person. The following steps will be followed for decontaminating injured personnel while onsite:

- If it will not injure the person further, cut off PPE using scissors or scrub the gross contamination from the injured person's PPE (e.g., Tyvek® coveralls, work boots) with a Liquinox® or Alconox® solution followed by a rinse with tap or deionized/distilled water
- Remove PPE if feasible without further injuring the person.

7.4 SITE COMMUNICATIONS

Each field team will carry a cell phone or satellite phone that is in good working order. If there is any type of emergency that requires the site to be evacuated (e.g., severe thunderstorm with lightening, chemical release), the field team leader will blow the air horn three times. When the horn sounds, all personnel will meet at the predetermined emergency assembly location (Food Centre Drive entrance). All other emergency notifications that do not require evacuation (e.g., a minor injury) will be conducted using a cell or satellite phone. Emergency phone numbers are listed above in Section 7.2.

7.5 BUDDY SYSTEM

The buddy system will be used at the site at all times. The buddy system is a system of organizing employees into field teams in such a manner that each employee of the field team is designated to be observed by at least one other employee in the field team. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

8 WORK ZONES

Work zones are defined as follows:

Contamination reduction zone	Area between the exclusion and support zones that provides a transition between contaminated and clean zones
Exclusion zone	Any area of the site where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to personnel
Support zone	Any area of the site, so designated, that is outside the exclusion and contamination reduction zones

Site control measures in work zones are described below for each type of field activities.

8.1 EXCAVATION OVERSIGHT AND AIR MONITORING

Exclusion zone: An approximate 12-ft radius around the excavator will be clearly marked with orange traffic safety cones, caution tape, before entry to ensure safe working conditions. Only properly equipped and trained (i.e., wearing level D PPE) personnel will be allowed in this area.

Contamination reduction zone: All decontamination activities will occur inside the exclusion zone.

Support zone: All areas outside the exclusion and contaminant reduction zones.

Controls to be used to prevent entry by unauthorized persons: No unauthorized personnel will be allowed into the exclusion/contaminant reduction zones.

9 EQUIPMENT DECONTAMINATION AND PERSONAL HYGIENE

9.1 EQUIPMENT DECONTAMINATION PROCEDURES

After sampling is completed, the exclusion zone will be used as the contaminant reduction zone for decontamination activities, provided there is no contamination remaining after the sampling is completed. To minimize or prevent personal exposure to hazardous materials, all personnel working in the exclusion zone and contaminant reduction zone will comply with the following decontamination procedures:

- All gloves, rain gear, and boots will be removed prior to entering the field vehicle.

Decontamination equipment required at the site includes the following:

- Buckets or tubs
- Laboratory grade distilled/deionized water
- Site water
- Scrub brushes (long-handled)
- Liquinox or Alconox detergent
- Plastic bags
- Foil
- Paper towels
- Garbage bags
- Clean garden sprayer

All non-disposable components of the sampling equipment (e.g., stainless steel spoons and bowls used for sample composting) that contact the sediment will be decontaminated using the following steps:

1. Rinse with site water/tap water
2. Wash with Alconox or Liquinox detergent
3. Rinse with site water/tap water
4. Allow to air dry
5. Wrap up compositing equipment in aluminum foil.

9.2 PERSONAL HYGIENE

The following personal hygiene practices will be used at the site to reduce exposure to chemicals.

- Long hair will be secured away from the face so it does not interfere with any activities.

- All personnel leaving potentially contaminated areas will wash their hands, forearms, and faces in the contaminant reduction zone prior to entering any clean areas or eating areas.
- Personnel leaving potentially contaminated areas will shower (including washing hair) and change to clean clothing as soon as possible after leaving the site.
- No person will eat, drink, or chew gum or tobacco in potentially contaminated areas. Single portion drink containers and drinking of replacement fluids for heat stress control will be permitted only in support areas.
- Smoking is prohibited by Integral personnel and subcontractors in all areas of the site because of the potential for contaminating samples and for the health of the field team.

10 VEHICLE SAFETY, SPILL CONTAINMENT, AND SHIPPING INSTRUCTIONS

10.1 VEHICLE SAFETY

Integral's vehicle safety program requires the following:

- Cell phone usage while driving is not allowed, including the use of hands-free devices. If it not feasible to wait to use the cell phone until arriving at your destination, pull off the road and park in a safe location to use the cell phone. Do not pull to the side of the road to use a cell phone because this significantly increases the risk of a rear-end collision.
- All vehicles are to be operated in a safe manner and in compliance with local traffic regulations and ordinances.
- Drivers are to practice defensive driving and drive in a courteous manner.
- Drivers are required to have a valid driver's license and liability insurance (per local state laws).
- Seat belts are to be worn by the driver and all passengers.
- No persons are allowed to ride in the back of any trucks or vans, unless equipped with seatbelts.
- Vehicles are to be driven in conformance with local speed limits.
- Personnel who are impaired by fatigue, illness, alcohol, illegal or prescription drugs, or who are otherwise physically unfit, are not allowed to drive or work on Integral field sites.
- Personnel are to avoid engaging in other distractions such as changing radio stations while driving.
- Motor vehicle accidents are to be reported to the responsible law enforcement agency, the Integral human resources manager, and the Integral CHSM on the same day of occurrence. Documentation of damage should be photographed.
- Personnel who have experienced work-related vehicle accidents or citations may be required to complete a defensive driving program.

10.2 SPILL CONTAINMENT

No bulk chemicals will be used at the site.

10.3 SHIPPING INFORMATION

Federal laws and international guidelines place restrictions on what materials may be shipped by passenger and cargo aircraft. In addition, 49 CFR regulates labeling, manifesting, and shipment of all packages containing potentially hazardous materials. In the course of this field investigation, the following items will be shipped to and from the site as shown below:

1.2 Item	Hazardous Constituent	Quantity	Packaging	How Shipped
Samples	None	(various quantities) solid and liquid matrix samples	Coolers	Laboratory courier
Calibration Gas (Isobutylene)	None	One (1) 17 liter canister	Pressurized canister	Equipment rental courier

A 24-hour emergency response number (on any shipping documents such as a Uniform Hazardous Waste Manifest, Shipper's Declaration of Dangerous Goods, etc.) is required for shipments of all dangerous or hazardous goods. Integral does not have a 24-hour emergency contact number for dangerous or hazardous goods shipment. No dangerous or hazardous goods may be shipped by Integral until an account is set up with a 24-hour emergency response service, such as CHEM-TEL (1-813-248-0573). If any hazardous or dangerous goods need to be shipped for a project, they must be shipped directly to the site by the supplier. Any hazardous or dangerous goods that are not used in the course of the field effort must remain at the site.

The samples will be prepared and labeled for shipment in accordance with the sampling and analysis plan developed for the site.

Air shipment of equipment with lithium batteries is required to note the presence of these batteries. Warning labels are available from the equipment rental agency and can be copied.

11 TASK-SPECIFIC SAFETY PROCEDURE SUMMARY

11.1 EXCAVATION OVERSIGHT AND AIR MONITORING

Integral personnel will wear the appropriate PPE at the Site as outlined in Section 4 while working outside field vehicles and when around or in contact with contaminated media. The work area breathing zone will monitored frequently using a PID and dust meter as outlined in Section 5. Care will be exercised while lifting, assembling, and decontaminating equipment. Personnel will wear high visibility vests or clothing while working around vehicular traffic and heavy equipment operation. Hearing protection will be worn at all times while working in proximity to noisy equipment.

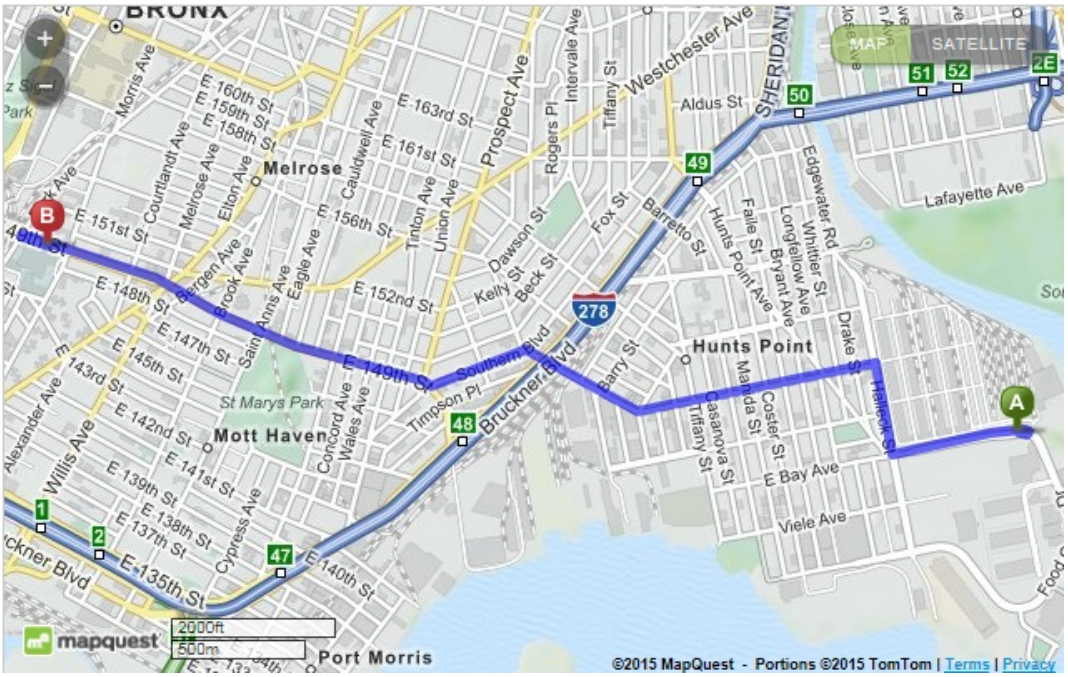
Integral personnel will stay outside of the swing radius of operational backhoes and/or excavators at all times, and will first gain the attention of the operator when needing to approach the path of the machine. Personnel will work upwind or crosswind to excavation activities whenever possible. Equipment will only be approached from the front or side of the cab. A fire extinguisher will be available within 25 feet of motorized work at all times.

Integral personnel will stay clear of excavation edges unless the ground is confirmed to be stable and not undercut. Personnel will not enter excavations greater than 4 feet in depth. Excavation spoils and other materials will be kept at least 2 feet from the trench edges.

ATTACHMENT 1

SITE MAP AND HOSPITAL ROUTE

Attachment 1. Site Map and Hospital Route



Route: 155 Food Center Drive, Bronx, NY - 234 E. 149th Street, Bronx, NY
Driving time: 11 minute(s)
Driving distance: 3.2 mile(s)

1:	Start at 155 Food Center Drive, New York, NY	
2:	Go west on Food Center Drive	
3:	Turn right onto Halleck Street	0.2 mile(s)
4:	Turn left onto Randall Avenue	0.7 mile(s)
5:	Randall Avenue become Leggett Avenue	0.4 mile(s)
6:	Turn left onto Southern Boulevard	0.3 mile(s)
7:	Take the 2nd right onto E 149th Street	1.2 mile(s)
8:	Make a U-turn. Lincoln Medical Center will be on the right.	

ATTACHMENT 2

REGULATORY NOTICES

You Have a Right to a Safe and Healthful Workplace.

IT'S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.

The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at **www.osha.gov**. If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA
www.osha.gov

U.S. Department of Labor • Occupational Safety and Health Administration • OSHA 3165

ATTACHMENT 3

SAFETY PROCEDURES

FROSTBITE

What happens to the body:

Freezing in deep layers of skin and tissue; pale, waxy-white skin color; skin becomes hard and numb; usually affects fingers, hands, toes, feet, ears, and nose.

What to do: (land temperatures)

- Move the person to a warm, dry area. Don't leave the person alone.
- Remove wet or tight clothing that may cut off blood flow to the affected area.
- **Do not** rub the affected area because rubbing damaged the skin and tissue.
- Gently place the affected area in a warm water bath (105°) and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast, causing tissue damage. Warming takes 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **Note:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

How to Protect Workers

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

Workers are at increased risk when…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medications. Check with your doctor, nurse, or pharmacy and ask if medicines you take affect you while working in cold environments.
- They are in poor physical condition, have a poor diet, or are older.

HYPOTHERMIA - (Medical Emergency)

What happens to the body:

Normal body temperature (98.6°F/37°C) drops to or below 95°F/35°C; fatigue or drowsiness; uncontrolled shivering; cool, bluish skin; slurred speech; clumsy movements; irritable, irrational, or confused behavior.

What to do: (land temperatures)

- Call for emergency help (i.e., ambulance or 911).
- Move the person to a warm, dry area. Don't leave the person alone.
- Remove wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if he is alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) **or alcohol**.
- Have the person move his arms and legs to create muscle heat. If he is unable to do this, place warm bottles or hot packs in the armpits, groin, neck, and head areas. **Do not** rub the person's body or place him in a warm water bath. This may stop his heart.

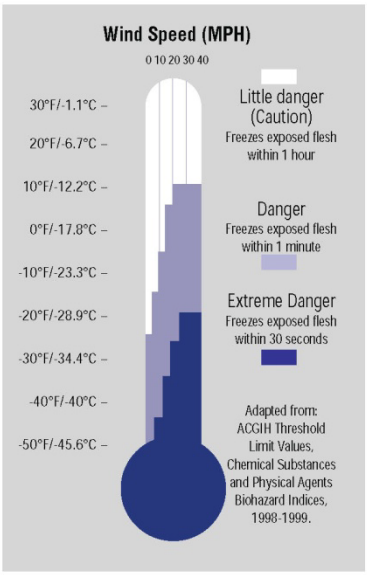
What to do: (water temperatures)

- Call for emergency help (i.e., ambulance or 911). Body heat is lost up to 25 times faster in water.
- **Do not** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **Do not** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses body heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



Oregon Occupational Safety & Health Division
440-3336E-S (9/03)

HEAT EXHAUSTION

What happens to the body:

Headaches, dizziness, or light-headedness, weakness, mood changes, irritability or confusion, feeling sick to your stomach, vomiting, fainting, decreased and dark-colored urine, and pale, clammy skin.

What should be done:

- Move the person to a cool shaded area. Don't leave the person alone. If the person is dizzy or light-headed, lay him on his back and raise his legs about 6-8 inches. If the person is sick to his stomach, lay him on his side.
- Loosen and remove heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if he is not feeling sick to his stomach.
- Try to cool the person by fanning him. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (ambulance or call 911.)

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

HEAT STROKE - A Medical Emergency

What happens to the body:

Dry, pale skin (no sweating); hot red skin (looks like a sunburn); mood changes; irritability, confusion, and not making any sense; seizures or fits, and collapse (will not respond).

What should be done:

- Call for emergency help (i.e., ambulance or 911.)
- Move the person to a cool, shaded area. Don't leave the person alone. Lay him on his back and if the person is having seizures, remove objects close to him so he won't hit them. If the person is sick to his stomach, lay him on his side.
- Remove heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if he is alert enough to drink anything and not feeling sick to his stomach.
- Try to cool the person by fanning him or her. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs in armpits and groin area.

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train workers about heat-induced illnesses.
- Perform the heaviest work during the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks.)
- Use the buddy system (work in pairs.)
- Drink plenty of cool water (one small cup every 15-20 minutes.)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- Take frequent short breaks in cool, shaded areas (allow your body to cool down.)
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk of heat illnesses.)

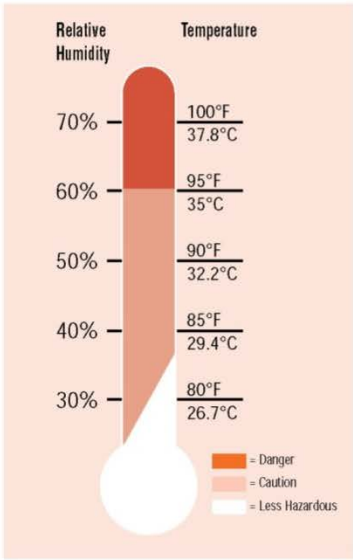
Workers are at increased risk when...

- They take certain medications. Check with your doctor, nurse, or pharmacy to see if medicines you take affect you when working in hot environments.
- They have had a heat-induced illness in the past.
- They wear personal protective equipment.

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and **death**.



Oregon Occupational Safety & Health Division
440-3333E-S(9/03)

ATTACHMENT 4

MATERIAL SAFETY DATA SHEETS

ATTACHMENT 5

NEAR-MISS INCIDENT REPORT

Near-Miss Incident Report

(completed by field staff)

Employee: _____

Office or site location: _____

Near-Miss Incident (check one or more): Exposure ( ) Physical injury ( ) Property damage ( )

Location (city and state):_____ Project and Contract No. _____

Date of incident: _____ Time of incident: _____

Fully describe the incident, including how it happened, persons involved, if chemicals were involved in the incident, etc.:

_____

_____

_____

_____

_____

_____

Was the operation being conducted under an established safety plan? (Yes / No)

If yes, attach a copy. If no, explain: _____

_____

_____ _____

Employee's signature Date

_____ _____

Project manager's signature Date

_____ _____

Site safety officer's signature Date

Corporate Health and Safety Manager Review and Comments

Corrective action/procedure changes carried out at the site:

_____

_____

_____

Corrective actions to be taken to prevent similar incidents at other sites:

_____

_____

_____

_____ _____

Corporate health and safety manager's signature Date

ATTACHMENT 6

EMPLOYEE EXPOSURE/INJURY INCIDENT REPORT

Employee Exposure/Injury Incident Report

(completed by the CHSM or designee)

Employee:			
Office or field location:			
Incident:			
Potential or known exposure (describe):			
Physical injury or illness (describe):			
Location (city and state):		Project and Contract No.	
Date of incident:		Time of incident:	
Date incident reported:		Person to whom incident was reported:	
Weather condition during incident:		Temperature:	
Precipitation:			
Wind speed and direction:		Cloud cover:	
Name of materials potentially encountered (chemical exposure):			
Chemical and phase (i.e., liquid, solid, gas, vapor, fume, mist), radiological, etc.:			
Describe the exposure/injury in detail and the parts of the body affected (attach extra sheets if necessary):			
Describe exact onsite or offsite location where the incident occurred:			
What was the employee doing when the exposure/injury occurred? (Describe briefly as site reconnaissance, soil sampling, etc.):			

How did the incident occur? Describe fully the factors that led to or contributed to the incident:				
Was medical treatment given? ☐ Yes ☐ No If yes, when?				
By whom?		Name of paramedic:		
		Name of physician:		
		Other:		
Where?	Onsite		Offsite	
If offsite, name of hospital or clinic:				
Length of inpatient stay (dates):				
Was Integral Consulting management notified? ☐ Yes ☐ No If yes, when?				
Name and title of manager(s) notified:				
Did the exposure/injury result in permanent disability or death? ☐ Yes ☐ No				
If yes, explain:				
Number of days away from work		Number of days of restricted work activity:		
Has the employee returned to work? (Yes / No) If yes, date:				
Names of other persons affected during the incident:				
Names of persons who witnessed the incident:				
Name and title of field team leader or immediate supervisor at the site:				
Was the operation being conducted under an established safety plan? ☐ Yes ☐ No				

If yes, attach a copy. If no, explain:	

Was personal protective equipment (PPE) used by the employee? ☐ Yes ☐ No

If yes, list items:	

Did any limitations in safety equipment or PPE affect or contribute to exposure? ☐ Yes ☐ No

If yes, explain:	

Attachments to this report:		Medical report(s) (if not confidential)		Site safety plan
		Other relevant information		

Employee's signature		Date
Site safety officer's signature		Date
Project manager's signature		Date

Corporate health and safety manager review and comments

Corrective action/procedure changes carried out on the project:
Corrective actions to be taken to prevent similar incidents at other sites:

Corporate Health and Safety Manager's signature		Date