

**EXAMPLE  
HEALTH AND SAFETY PLAN  
FOR  
REMEDIATION PROJECT**

PROJECT NAME  
PROJECT ADDRESS

Project No.

Prepared For:

Client  
Client Address

Prepared By:

**Innovation Remediation Technologies, Inc.**  
136 Ulricktown Road Littlestown,  
PA 17340

**NOTE: This plan has been developed as a model. It's accuracy and completeness may not be adequate for the needs of a contractor doing remedial work. This plan should be used as a guide only.**



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## LIST OF ATTACHMENTS

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## LOCAL EMERGENCY AND PROJECT TELEPHONE NUMBERS

### LOCAL EMERGENCY NUMBERS\*

<b>CONTACT</b>	<b>NAME</b>	<b>TELEPHONE NO.</b>
Hospital		
Ambulance		
Police/Sheriff		
Fire		
Regulatory Contact		
Regulatory Spill Response		
Poison Control		

\*include numbers other than "911".

### PROJECT PERSONNEL NUMBERS

<b>CONTACT</b>	<b>NAME</b>	<b>TELEPHONE NO.</b>
Site Health & Safety Officer		
Project Manager		
Principal-in-Charge		
Site Contact		
Client Contact		
Health & Safety Coordinator		
Corporate Health and Safety		

### GOVERNMENT CONTACT NUMBERS

CONTACT	NAME	TELEPHONE NO.
Regulatory Contact (Primary)		
Regulatory Contact		

### HAZARDOUS MATERIALS INFORMATION

CONTACT	TELEPHONE NO.
EPA-information	(800) 342-4636
Toxline	(301) 496-1131
CHEMTREC (24-hr, emergency only)	(800) 424-9300
ORNL, Toxicology Information Response Center	(619) 576-1743
National Response Center	(800) 424-8802

HOSPITAL LOCATION MAP  
(attach or draw):  
(POST)

SITE MAP  
(attach or draw)  
(POST)

## 1.0 TASK SPECIFIC HEALTH AND SAFETY RISK ANALYSIS

### 1.1 Predominant Potential Site Chemical Hazards\*

CHEMICAL (OR CLASS)	PEL-TWA ----- TLV-TWA	OTHER PERTINENT LIMITS	WARNING PROPERTIES	ROUTES OF EXPOSURE OF IRRITATION	ACUTE HEALTH EFFECTS	CHRONIC HEALTH EFFECTS/ TARGET ORGANS
1,1,1- Trichloroethane (1,1,1-TCA)	350 ppm	TLV STEL - 450 PPM PEL STEL - 450 ppm PEL Ceiling - 800 ppm IDLH - 700 ppm	Colorless liquid with a mild, chloroform-like odor.	Inhalation, injestion, skin contact	Eye and skin irritation, headache, dizziness	Eyes/skin, CNS, cardiovascular system. Liver
	350 ppm					
Perchloroethylene or Tetrachloroethene (PCE)	25 ppm	PEL Ceiling = 300 ppm IDLH = 150 ppm	Mild chloroform-line odor.	Inhalation, ingestion, skin contact	Throat, eye, nose irritation; dizziness, fatigue, headache, nausea.	Cancer; liver, kidneys, central nervous system, respiratory system, eyes, skin.
	25 ppm					
Trichloroethene (TCE)	25 ppm	IDLH = 1000 ppm TLV STEL = 100 ppm PEL STEL = 200 ppm PEL Ceiling = 300 ppm	Sweet chloroform-like odor.	Inhalation, ingestion, skin contact	Skin and eye irritation; dizziness, fatigue, headache.	Cancer; liver, central nervous system, heart respiratory system, skin.
	50 ppm					
Dichlorobenzene (1,2 DCB)	25 ppm	PEL STEL - 50 ppm	pleasant, aromatic odor	skin contact	liver kidney damage; skin blisters	sys, liver, kidneys
1,2-Dichloroethene (1,2-DCE)	200 ppm	IDLH - 1,000 ppm	Colorless liquid with slightly acrid, chloroform-like odor	Inhalation, ingestion, skin contact	Eye and respiratory system irritation	Respiratory system, eyes, central nervous system
	200 ppm					
Vinyl Chloride	1 ppm	Ceiling = 5 ppm	Pleasant odor	Inhalation	Weakness, abdominal pain, GI bleeding, CNS depression	Carcinogen; blood and lymphatic system damage, liver damage
	5 ppm					
1,1 - Dichloroethene (1,1-DCE)	1 ppm	STEL = 20 ppm	Acrid odor	Inhalation	Eye, skin irritation; weakness CNS depression	Suspect carcinogen; mutagen, liver, kidney damage
	5 ppm					

CHEMICAL (OR CLASS)	PEL-TWA ----- TLV-TWA	OTHER PERTINENT LIMITS	WARNING PROPERTIES	ROUTES OF EXPOSURE OF IRRITATION	ACUTE HEALTH EFFECTS	CHRONIC HEALTH EFFECTS/ TARGET ORGANS
1,1-Dichloroethane (1,1-DCA)	100 ppm	IDLH - 3000 ppm	Oily liquid with a chloroform-like odor	Inhalation, ingestion, skin contact	Skin irritation, fatigue	Skin, liver, kidneys, lungs, central nervous system
	10 ppm					
Methyl Ethyl Ketone (MEK) 2-Butanone	200 ppm	STEL = 300 ppm IDLH = 3000 ppm	Sharp, fragrant mint or acetone like odor	Inhalation, Ingestion	Headache, Dizziness, Vomiting, Eye/Nose Irritation	Central nervous system, respiratory system
	200 ppm					
Hydrogen peroxide	1 ppm	75 ppm	Sharp acrid odor	Inhalation, ingestion, contact	Eye, nose, throat irritant, skin, bleaching hair	Eyes, skin, resp. sys.
	1 ppm					
VTX	5 ppm	None established	Acrid odor	Inhalation, Ingestion	Irritation to bowels upon ingestion, inhalation causes irritation to mucous membranes.	
	5 ppm					
Trichloroethane	10 ppm	IDLH - 100 ppm	Colorless liquid w/a sweet, chloroform-like odor	Dermal, ingestion, skin or eye contact	Irritated eyes, nose	Eyes, respiratory system, CNS, liver, kidneys
	10 ppm					
Toluene	200 ppm	IDLH = 500 ppm	Airplane glue odor	Inhalation, dermal, ingestion	Headache, dizziness, nausea, weakness	CNS, skin, kidneys, liver
	50 ppm					
Benzene	1 ppm	IDLH = 500 ppm	Characteristic benzene odor	Inhalation, dermal, ingestion	Headache, dizziness, nausea, weakness	CNS, carcinogen, bone marrow, blood, skin
	0.3 ppm					
Xylene	100 ppm	IDLH = 900 ppm	Aromatic odor	Inhalation, dermal, ingestion	Skin/eye/respiratory irritant, dizziness, headache, drowsiness	CNS, skin, kidneys, liver
	100 ppm					
Ethylbenzene	100 ppm	IDLH = 800 ppm	Pungent Aromatic odor	Inhalation, dermal, ingestion	Skin/eye/mucous membrane irritant, dizziness, heaache, drowsiness	Eyes, respiratory tract, skin, CNS
	100 ppm					

Coal Tar Pitch (as carcinogenic TPH and PAH)	0.2 mg/m <sup>3</sup>	IDLH = 80 mg/m <sup>3</sup>	Black or brown amorphous liquid	Inhalation, dermal	Skin/eye, respiratory irritant, dizziness, headache, drowsiness	Carcinogen, respiratory system, skin, bladder, kidneys
	0.2 mg/m <sup>3</sup>					
Naphthalene (as noncarcinogenic TPH and PAH)	10 ppm/10 ppm	IDLH = 280 ppm PEL STEL = 15 ppm	Mothball odor	Inhalation, dermal, ingestion	Headache, confusion, vomiting, nausea	CNS, eyes, skin, blood, liver, kidneys

\*The Site Health and Safety Officer must notify the Health & Safety Coordinator at the end of work that day if a PEL, TLV, etc. is exceeded.

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PEL-TWA = Permissible Exposure Limit-Time Weighted Average (8 hours).

TLV-TWA = Threshold Limit Value-Time Weighted Average (8 hours).

STEL = Short Term Exposure Limit (15 minutes).

IDLH = Immediately Dangerous to Life or Health.

C = Ceiling Limit (not to be exceeded, even instantaneously).

SKIN = Skin absorption can be a significant part of exposure.

## 1.2 Chemical Monitoring and Action Level\*

CHEMICAL (OR CLASS)	MONITORING EQUIPMENT	TASK NO.	MONITORING FREQUENCY/ LOCATION (source, area or breathing zone)	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
Aromatic volatile organic compounds and Naphthalene	GT 402 meter, RAE PID, use lamp greater than 11.37 eV probe	2-5	Every 15 minutes in breathing space.	10 ppm above background sustained in breathing zone for two minutes and no benzene or vinyl chloride tube discoloration.	100 ppm in breathing zone and no benzene or vinyl chloride tube discoloration.
Benzene	Dräger 0.5/a benzene Tube.	2-5	Pull Dräger Tube sample for breathing zone if sustained PID at or above 1 ppm above background in breathing zone for two minutes.	Any tube discoloration.	>1 ppm in breathing zone
Vinyl chloride and 1,1-dichloroethene	PID, Dräger 0.5/a vinyl chloride tube. Dräger 0.5/a 1,1-DCE	2-5	Pull Dräger Tube sample for breathing zone if sustained PID at or above 1 ppm above background in breathing zone for two minutes.	Any tube discoloration.	Any tube discoloration, employ engineering controls to alleviate or continue in Level B.
Oxygen	GT 402 meter	2-5	Continuously	Oxygen deficient 19.5% Oxygen enriched 23.5%	In an oxygen deficient or enriched environment supplied air will be used in work area.

CHEMICAL (OR CLASS)	MONITORING EQUIPMENT	TASK NO.	MONITORING FREQUENCY/ LOCATION (source, area or breathing zone)	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
Carbon Monoxide	GT 402 meter	2-5	Continuously during	If meter detects carbon	Engineering controls will

			handling of chemical oxidant	monoxide a respirator will be worn until confirmed below PEL	be performed to alleviate carbon monoxide from workspace.
Carbon Dioxide	Dräger 0.5/a carbon dioxide tube.	2-5	Continuously during handling of chemical oxidant	If meter detects oxygen deficient environment a Dräger tube will be pulled and a respirator will be worn until confirmed below PEL	Engineering controls will be performed to alleviate carbon dioxide from workspace.
Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> )	PID 10.6/11.7 eV probe, Dräger 0.5/a Hydrogen Peroxide tube.	2-5	Continuously during handling.	PID>1 ppm above background in breathing zone for a minimum of 1 minute	50 ppm in breathing zone. Employ engineering controls to alleviate.

- Record peak readings every 30 minutes, or more frequently as necessary.
  - Set alarm on instrument at 10 ppm.
  - Calibrate equipment every day.
  - Leak check colorimetric tube pump daily.

\*Complete Attachment 5 (Air Monitoring Equipment Calibration/Check Log) and Attachment 6 (Air Monitoring Log).

### 1.3 Personal Protective Equipment Requirements

Level D: Safety glasses, hard hat, disposable ear plugs, long-sleeved shirt and pants, steel-toe boots.

Groundwater and soil sampling: Nitrile 4 or 8 mil gloves and steel toe boots. [Leather gloves- when moving construction equipment/materials.](#)

For contact with chemicals: polyvinyl [alcohol \(PVA\)](#) or [Viton](#) gloves, and neoprene over boots, PE coated Tyvek or rainsuit when in excavations or contact with chemicals.

Other: [Dust mask will be used if visual dust is present](#)

Level C: Level D plus:

Air-purifying Respirator (Half- or Full-Face): [Full-face minimum](#)

Cartridges: [Organic Vapor/Acid gas/HEPA](#)

Gloves: [Inner-8 mil PVA or Viton](#)  
[Outer - 11 mil PVA or Viton](#)

Chemical resistant boots: [Neoprene over boots](#)

Chemical resistant suit: [PE-coated Tyvek](#)

Other: \_\_\_\_\_

Level B\*: Level D and C plus:

Self-Contained Breathing Apparatus Supplied Air (Full-Face): SCBA

Gloves: [Inner- 8 mil PVA or Viton or nitrile](#)  
[Outer -11 mil PVA or Viton or Sol vex](#)

Chemical resistant boots: [Neoprene over boots](#)

Chemical resistant suit: [CPF 3 suites](#)

\*Work in level B will only be undertaken if agreed upon by Principal-in-charge and the corporate Health & Safety Coordinator.

\*The Site Health and Safety Officer must notify the Health & Safety Coordinator at the end of work that day if Level "C" is used.

## **2.0 GENERAL SITE REQUIREMENTS AND BACKGROUND INFORMATION**

### **2.1 Key Personnel and Responsibilities**

- Prior to beginning on-site work, the Project Manager will ensure Attachments 1-4 are completed.
- The Site Health and Safety Officer (SHSO) will ensure Attachments 5-8 are completed the first day of on-site work. Within 24 hours of the end of fieldwork, the SHSO will submit the completed HASP to the Health & Safety Coordinator (HSC).
- The Site Health and Safety Officer will oversee the overall Plan. He/she has the authority to stop work or prohibit any personnel from working on the site at any time for not complying with any aspect of the Plan.
- The Subcontractor Field Supervisor is responsible for implementing their Plan for his/her own employees.
- Each person on the site has responsibility for their own health and safety, as well as assisting others in carrying out the Plan. Any person observed to be in violation of the Plan should be assisted in complying with the Plan, or reported to the Site Health and Safety Officer.
- Any site personnel may shut down field activities if there is a real or perceived immediate danger to life or health.

### **2.2 Minimum Training, Respirator Fit-Testing, and Medical Surveillance Requirements for Site Personnel**

- 40-hr. Hazardous Waste Operations Training (HAZWOPER) for those workers who regularly engage in hazardous waste operations on-site
- 24-hr. HAZWOPER training for those workers that regularly or occasionally participate in activities on-site involving hazardous waste but are not expected to be exposed to levels above permissible exposure/published limits
- 8-hr. Annual HAZWOPER Refresher Training
- 8-hr. Supervisor HAZWOPER Training for Site Health and Safety Officer
- First Aid and CPR Training for Site Health and Safety Officer
- Annual Respirator Fit Testing
- Annual Medical Clearance

### 2.3 Purpose of Field Work

### 2.4 Detailed Description of Specific Tasks Planned

(Number each separate task in order of progression. The task numbers assigned here will be referred to throughout the Plan):

1. Perform utility location in the work zone. Conduct "tailgate" health and safety meeting(s).
2. Install and develop three injection point wells in the work zone.
3. Completion of an oxidant injection test into a single well for one day.
4. Injection of chemical oxidant (H<sub>2</sub>O<sub>2</sub>/VTX mixture) into multiple wells over seven days.
5. Groundwater sampling and monitoring before, during and following treatment.

### 2.5 Initial Site Entry

Has this been performed by Solerox? (YES/NO): **Yes**. If YES, describe:

Performed activities outlined in Solerox "Additional Limited Design Investigation and Pilot Testing Work Plan" including well installation and sampling.

### 2.6 Interior Work & Confined Spaces

Will any work be done inside an enclosure, building, or confined space? (YES/NO): **NO**.  
If YES, describe:

### 2.7 Excavation and Trenching

Excavation and/or trenching will be done on this site? (YES/NO): **NO**. If YES, describe, including proposed dimensions and if entry may be required (including mounting tanks for vacuuming, purging, sampling, etc.):

Attachment 11 will be completed for excavations of any depth and requiring entry.

## 2.8 Landfills and Other Areas Potentially Containing Explosive Gas or Vapor

Site is in an area containing a current/former landfill, or the geology contains known/suspected pockets of explosive gas/vapor? (YES/NO): **No**. If YES, describe:

## 2.9 Time of On-Site Work

Work will be done during daylight hours? (YES/NO): **Yes**. If NO, describe:

## 2.10 Hazardous Materials

Will any hazardous materials (chemicals) be used on-site? (If so, include MSDSs) (YES/NO): **Yes**. If YES, describe:

Approximately 5,000 gallons of 35% Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>)

Approximately 5,000 gallons of Solerox - Neutral pH VTX

MSDS for both chemicals provided in Attachment 12.

## 2.11 Background Information

(e.g., historical operations and environmental investigations):

## 3.0 SITE CHARACTERISTICS

### 3.1 Facility Description

(Identify structures, buildings, pits, impoundments, and work area.):

### 3.2 Site Status

Occupied (YES/NO): (If YES, describe current activities and relationship to field work):

### 3.3 Unusual Site Features

(water supply, telephone, radio, power lines, traffic patterns, gas lines, water mains, terrain, vacant lots, debris, other physical hazards, etc.):

### 3.4 Site Map

(see p. vii - include adjacent buildings, encumbrances, site facility, previous project location [if any], proposed project location, and location of nearest phone).

### 3.5 Contaminant Description

(maximum concentrations from site investigation):



Reference:

## 4.0 WASTE CHARACTERISTICS

### 4.1 Waste Generation

[Type(s)/Quantities Expected]:

Anticipated: Yes    No

Types:    Liquid  Solid  Sludge  Other (describe)

Quantity (expected volume):

### 4.2 Expected Health Characteristics

Corrosive  Flammable/Ignitable  Radioactive  Toxic

Reactive  Unknown  Other (specify):

### 4.3 Packaging Requirements for Waste Material (expected)

- Open head 55-gallon drum: \_\_\_\_\_
- Closed head 55-gallon drum: \_\_\_\_\_
- Overpack drum: \_\_\_\_\_
- Lined waste bins: \_\_\_\_\_
- Other: \_\_\_\_\_

### 4.4 Disposal and/or Treatment Methods Proposed

Subcontractors will be responsible for characterizing, packaging, labeling, storing, and disposing of wastes not treatable by on-site systems.

#### 4.5 Potential Non-chemical Hazards

POTENTIAL HAZARD	YES	NO
Overhead/underground hazards		
• Overhead (describe)		
• Underground (describe)		
Equipment hazards		
• Geoprobe		
• Drilling		
• Excavation		
• Machinery		
Heat exposure		
Cold exposure		
Oxygen deficiency		
Confined space		
Noise		
Ionizing radiation		
Non-ionizing radiation		
Fire/Explosion		
Electrical		
Biological		
Work Surfaces		
• Holes/ditches		
• Steep grades		
• slippery surfaces		
• Uneven terrain		
• Unstable surfaces		
• Elevated work surfaces		
Shoring		
Other:		

#### 4.6 Task Specific Hazards

		IDENTIFIED/
--	--	-------------

	<b>TASK</b>	<b>HAZARD RATING</b>	<b>ANTICIPATED HAZARDS</b>
1.			
2.			
3.			
4.			
5.			

#### **4.7 Overall Hazard Rating**

(Unknown, low, moderate, serious, or extreme):

## 5.0 GENERAL SITE HEALTH AND SAFETY PROCEDURES

### 5.1 MAPS - Site Map and Hospital Location Map

(p. vii and p. vi): Hospital route must be clearly marked. POST SITE AND HOSPITAL LOCATION MAPS.

### 5.2 Post "Local Emergency and Project Telephone Numbers"

(p. iv and p. v)

### 5.3 Site Security

Site Health and Safety Officer is responsible for preventing unauthorized entry onto the site and for knowing who is on-site at all times.

1. Work will be done around heavy equipment (e.g., drill rig, backhoe, etc.) (YES/NO): Yes. If YES, describe:

Drill rig.

2. Work will be done in or adjacent to a road, street or highway (YES/NO): No. If YES, describe:

3. Reflective vests will be worn around heavy equipment or when working in or around traffic.

4. Prior to working on-site, a general inspection for hazards will be made by the Site Health and Safety Officer.

5. Access to the work site will be controlled in the following manner

- Work site area perimeter identification method (describe equipment and procedures to be used):

- Work area security (on- and off-hours):

6. If an on-site command post is necessary, ensure that it is located upwind from sources.

7. On-site personnel must be able to call off-site via a telephone within 150 feet of work.

8. Designate at least one vehicle for emergency use.

### 5.4 Work Limitations and Restrictions

- No eating, drinking, or smoking on-site, except in the support zone.
- No rings, watches, bracelets, necklaces, or other jewelry that could trap chemical contamination or get caught in moving equipment.
- No contact lenses on-site.
- No facial hair that would interfere with respirator fit.
- Buddy system at all times in Level C or B, or when working around heavy equipment like backhoes or drill rigs.

## 5.5 Heat and Cold Stress

The Site Health and Safety Officer will monitor weather broadcasts before the start of outdoor work each day, and more frequently as necessary. No work will be done outdoors during hazardous weather conditions.

### Heat Stress

- For temperatures above 75°F, each person will take their pulse at rest. At breaks, the pulse should be less than 110 beats per minute after one minute. Before returning to work, the pulse should be no more than 10 beats greater than the resting pulse.
- If the air temperature is greater than 95°F, work should be done for 30 minutes with a rest break of 10 minutes for Level D. For Level C, work should be done for 20 minutes, with a rest break of 10 minutes. At least 8 ounces (1 cup) of cool water, Gatorade-type drink, or dilute fruit juice should be consumed at each rest break or at least one cup every 20 minutes.
- Work should stop if any of the following symptoms occur: muscle spasm and/or pain in the limbs or abdomen (heat cramps); weak pulse, heavy sweating, dizziness, and/or fatigue (heat exhaustion); or rapid pulse, no sweating, nausea, dizziness, and/or confusion (heat stroke). Provide First Aid immediately.
- Use sunscreen on unprotected skin to protect against ultraviolet exposure as necessary.

### Cold Stress

- For temperatures below 40°F, adequate insulating clothing must be worn. If the temperature is below 20°F, workers will be allowed to enter a heated shelter at regular intervals. Warm sweet drinks should be available. Coffee intake should be limited.
- No one should begin work or return to work from a heated shelter with wet clothes. Workers should be aware of signs of cold stress such as heavy shivering, pain in the fingers or toes, drowsiness, or irritability. Onsets of any of these signs are indications for immediate return to a heated shelter.

## 5.6 Decontamination Procedures

1. Personnel:
2. Sampling Apparatus:
3. Heavy Equipment
4. Level C Decontamination Stations (in order from exclusion zone to support zone):
  - a) Equipment drop
  - b) Wash and rinse outer garment, boots, and gloves
  - c) Remove outer boots and gloves
  - d) Change respirator cartridges (if returning to exclusion zone)
  - e) Remove inner gloves and outer garment
  - f) Remove respirator
  - g) Clean hands and face
5. The following equipment will be made available, or equivalent
  - emergency eyewash,
  - soap/detergent solution and HzO rinse (via Hudson-type sprayers),
  - soap gel or disposable wipes,
  - disposable towels,
  - plastic sheeting,
  - cleaning brushes and tubs.

## 5.7 General Procedures

- The Utility Clearance Log and Map (Attachments 3 & 4) will be completed prior to beginning any subsurface work.
- Daily Health and Safety Briefings will be held by the Site Health and Safety Officer (Attachment 7).
- Determine wind direction, establish exclusion zone, and set up decontamination reduction zone and support zone upwind when upgrading to Level C or B.
- Try to remain upwind when collecting samples, venting wells, etc.
- Potable water must always be available at the work site.
- If toilet facilities are not located within a 5-minute walk from the decontamination facilities, either provide a chemical toilet and hand washing facilities or have a vehicle available (not the emergency vehicle) for transport to nearby facilities.
- Provide dust control by spraying soils with water or a surfactant/water solution.
- Use ground fault circuit interrupters for plug-in electrical devices and extension

- cords.
- Hearing protection in the form of disposable earplugs will be worn around heavy equipment, machinery, or when two individuals, five feet or less apart need to shout to be heard.
  - Be aware of tripping hazards with extension cords, tools, hoses, augers, etc.
  - Other: \_\_\_\_\_

## **5.8 Emergency Equipment**

- At least one ABC-type dry chemical fire extinguisher, and
- First Aid Kit.

## 5.9 Perimeter Identification and Personal Protective Equipment (PPE)

Complete the table below indicating the type of zone boundaries required for this job. Mark zone boundaries on Site Map, p. vii.

TASK NO. <sup>1</sup>	LEVEL OF PROTECTION REQUIRED (B, C, D; N/A) <sup>2</sup>		ZONE BOUNDARIES REQUIRED (a, b, c, d; N/A) <sup>3</sup>	
	PPE START	PPE UPGRADE	PPE START	PPE UPGRADE
1	Level D	NA	d	NA
2	Level D	Level C	d	a-c
3	Level D	Level C	d	a-c
4	Level D	Level C	d	a-c
5	Level D	Level C	d	a-c

- 1 As identified in Section 2.0, Subpart D.
- 2 Level B - Self-contained breathing apparatus (SCBA) or supplied-air respirator with an escape bottle, chemical resistant suit  
  
Level C - Full- or half-face air-purifying respirator, chemical resistant PPE.  
  
Level D - No respiratory protection. Safety glasses, hard hat, steel-toe boots, long-sleeved shirt and pants. Hearing protection, gloves, and other PPE as required.
- 3 This job will require one or all of the following "zones" or "boundaries" to be established during work.
  - a. Exclusion Zone - Required when workers within that zone must wear personal protective equipment. (Usually Level B or C.)
  - b. Contamination Reduction Zone - Required when decontamination of people and equipment leaving the Exclusion Zone is required. (Usually Level B or C.)
  - c. Support Zone - the location where administrative and other support activities are conducted. (Usually Level B or C.)
  - d. Work Area Boundary - Excludes non-workers from entering a potentially hazardous environment. (Usually Level B, C, or D.)

## **6.0 CONTINGENCY PLAN**

### **6.1 Injury or Illness**

If an injury or illness occurs, take the following action:

- Get First Aid for the person immediately.
- Notify the Site Health and Safety Officer. The Site Health and Safety Officer is responsible for immediately notifying the Project Manager, and preparing and submitting an Injury/Illness Incident Report (Attachment 9) to the Health and Safety Director (HSD) within 24 hours, as well as notifying the employee's supervisor and Principal-in-Charge. If a subcontractor employee is injured, the Subcontractor Field Supervisor will also complete their own injury/illness investigation and submit a copy of their report to the TSG HSD as well.
- The Site Health and Safety Officer will assume charge during a medical emergency.

### **6.2 Site Incident**

If an incident occurs, take the following action:

- Notify the SHSO immediately. The SHSO is responsible for immediately notifying the Project Manager, and preparing and submitting a Site Incident Report (Attachment 10) to the HSD within 24 hours.

### **6.3 Local Emergency and Project Telephone Numbers**

(see p. iv & v)

### **6.4 Emergency Routes**

(also see Hospital Location Map - p. vi):

1. Route from on-site work area to off-site property:
2. Route from off-site property to hospital:

(ATTACHMENT 1)

**Innovative Remediation Technologies, Inc.**  
EMPLOYEE TRAINING AND MEDICAL CLEARANCE

RESPONSIBILITY	NAME	Certification Dates				
		40-HOUR or 24-HOUR HAZWOPER (note which)	8-HOUR HAZWOPER REFRESHER	8-HOUR HAZWOPER SUPERVISOR*	MEDICAL CLEARANCE	OTHER
Site Health and Safety Officer						
Geologist						
Geologist						
Engineer						

\*Health and Safety Officer at a minimum must have this training.

(ATTACHMENT 2)

**Innovative Remediation Technologies, Inc.**  
SUBCONTRACTOR TRAINING AND MEDICAL CLEARANCE RECORD

Subcontractor:

Address:

Employees Assigned to Project:

I certify the above employees assigned to this project have received training, medical clearance, and respirator fit-testing according to the Health and Safety Plan and the Occupational Safety and Health Administration Standard on Hazardous Waste Operations and Emergency Response (29 CFR 1910.120). If any of these employees are injured, I will submit an injury report to the TSG Health and Safety Director within 24 hours.

Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Title\*: \_\_\_\_\_ Date: \_\_\_\_\_

\*Subcontractor Supervisor or Manager only.

(ATTACHMENT 3)

**Innovative Remediation Technologies, Inc.**  
UTILITY CLEARANCE LOG

Date: \_\_\_\_\_

“One-call” confirmation number and date contacted: \_\_\_\_\_

“One-call” expiration date: \_\_\_\_\_

Subcontractor locating firm and invoice number: \_\_\_\_\_

Facility contact person & telephone number: \_\_\_\_\_

Facility drawings reviewed: \_\_\_\_\_

Verbal/written sign-off of clearance by facility contact: \_\_\_\_\_

Pressurized lines/shut-off valves identified\*: \_\_\_\_\_

Underground utilities/lines identified\*: \_\_\_\_\_

\_\_\_\_\_

Underground utilities/lines marked on-site by: \_\_\_\_\_

Overhead utilities/lines identified\*: \_\_\_\_\_

Overhead utilities/lines on-site by: \_\_\_\_\_

\*Mark on copy of facility drawing or include in site sketch (Attachment 5)

**Clearance Contact:**

\_\_\_\_\_  
Name (Solerex employee only)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Clearance Reviewed by:**

\_\_\_\_\_  
Name (Solerex employee only)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

(ATTACHMENT 4)

**Innovative Remediation Technologies, Inc.**  
UTILITY CLEARANCE MAP





(ATTACHMENT 7)

**Innovative Remediation Technologies, Inc.**  
DAILY HEALTH AND SAFETY BRIEFING LOG

Date: \_\_\_\_\_

Start Time: \_\_\_\_\_

Subjects Discussed: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Attendees:

Print Name

Signature

Print Name	Signature
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Meeting Conducted by: \_\_\_\_\_  
Name (Site Health and Safety Officer) Signature



(ATTACHMENT 9)

**Innovative Remediation Technologies, Inc.**  
INJURY/ILLNESS REPORT (Use additional space if necessary)

DATE OF INCIDENT	CASE NO.	TIME OF DAY
EMPLOYEE NAME		DATE OF BIRTH
HOME ADDRESS		PHONE NO.
SEX: MALE ___ FEMALE ___ AGE ___ JOB TITLE		SOCIAL SECURITY NO.
OFFICE LOCATION		DATE OF HIRE
WHERE DID THE INCIDENT OCCUR? (INCLUDE ADDRESS)		
ON EMPLOYER'S PREMISES? YES ___ NO ___ PROJECT NAME/NO.		
WHAT WAS EMPLOYEE DOING WHEN INCIDENT OCCURRED? (BE SPECIFIC)		
HOW DID THE INCIDENT OCCUR? (DESCRIBE FULLY)		
WHAT STEPS COULD BE TAKEN TO PREVENT SUCH AN INCIDENT?		
OBJECT OR SUBSTANCE THAT DIRECTLY CAUSED INCIDENT?		
DESCRIBE THE INJURY OR ILLNESS		PART OF BODY AFFECTED
NAME AND ADDRESS OF PHYSICIAN		
IF HOSPITALIZED, NAME AND ADDRESS OF HOSPITAL		
LOSS OF ONE OR MORE DAYS OF WORK? YES/NO		IF YES, DATE LAST WORKED
HAS EMPLOYEE RETURNED TO WORK? YES/NO		IF YES, DATE RETURNED
DID EMPLOYEE DIE? YES/NO ___ IF YES, DATE		
COMPLETED BY (PRINT) _____	SIGNATURE _____	DATE _____
(Supervisor or Site Health & Safety Officer)		
EMPLOYEE SIGNATURE _____		DATE _____
PIC SIGNATURE _____		DATE _____

This report must be completed by the employee's supervisor or Site Health and Safety Officer immediately upon learning of the incident. The completed report must be reviewed and signed by the Principal-in-Charge and transmitted to Corporate Health and Safety and the Health & Safety Coordinator within 24 hours of the incident, even if employee is not available to review and sign. Employee or employee's doctor must submit a copy of the doctor's report to Corporate Health and Safety within 24 hours of the initial exam and any subsequent exams. For field injuries, submit a copy of the Health and Safety Plan.

(Attachment 10)

**Innovative Remediation Technologies, Inc.**  
**SITE INCIDENT REPORT**  
 (Attach additional documentation as necessary)

DATE OF INCIDENT:		TIME OF INCIDENT:	
LOCATION OF INCIDENT:		PROJECT NAME:	
PROJECT NUMBER:			
TYPE OF INCIDENT* (check those that apply)			
<input type="checkbox"/> "Near Miss"		<input type="checkbox"/> Vehicle Accident	
<input type="checkbox"/> Underground Property Damage		<input type="checkbox"/> Fire	
<input type="checkbox"/> Above-ground Property Damage		<input type="checkbox"/> Evacuation	
<input type="checkbox"/> Chemical Exposure		<input type="checkbox"/> Regulatory Agency Inspection/Violation	
Other (describe):			
*Submit copy of Health & Safety Plan and Attachments for field-related incidents.			
DESCRIPTION OF INCIDENT:			
CAUSE OF INCIDENT:			
ACTION TAKEN:			
FUTURE CORRECTIVE ACTION:			
DESCRIBE THE INJURY OR ILLNESS		PART OF BODY AFFECTED	
INVESTIGATOR NAME	SIGNATURE	DATE	
PRINCIPAL-IN-CHARGE	SIGNATURE	DATE	

cc: Corporation Health & Safety, Vice-president of Operations, Corporate Admin., and the Health & Safety Coordinator within 24 hours of incident.