

## 5. SITE INVESTIGATION PROGRAM

### 5.1 Purpose and Scope

The Site Investigation (SI) Program was established in 1983, to fulfill the assessment role of the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) of 1980 ([www.epa.gov/superfund/policy/index.htm](http://www.epa.gov/superfund/policy/index.htm)) or Superfund Program for the State of Indiana.

SI evaluates sites for their potential to be placed on the National Priorities List (NPL) ([www.epa.gov/superfund/sites/npl/npl\\_hrs.htm](http://www.epa.gov/superfund/sites/npl/npl_hrs.htm)) or referred to another cleanup program.

SI assesses a site to evaluate the potential for releases of hazardous substances to impact human health or the environment.

### 5.2 Rules and Laws

The following federal laws can be found at the U.S. EPA Superfund Laws, Policy and Guidance website ([www.epa.gov/superfund/policy/index.htm](http://www.epa.gov/superfund/policy/index.htm)):

- *Comprehensive Environmental Response Compensation and Liability Act of 1980* (CERCLA) 42 U.S.C. § 9601 et. seq.
- *Superfund Amendments and Reauthorization Act of 1986 (SARA)* P.L. 99-499, 100 STAT.16613 et. seq.
- *The National Oil and Hazardous Substances Pollution Contingency Plan (NCP)*, 40 CFR Parts 300 - 399

The following rule can be found on the U. S. EPA National Priorities List HRS Toolbox website ([www.epa.gov/superfund/sites/npl/hrsres](http://www.epa.gov/superfund/sites/npl/hrsres))

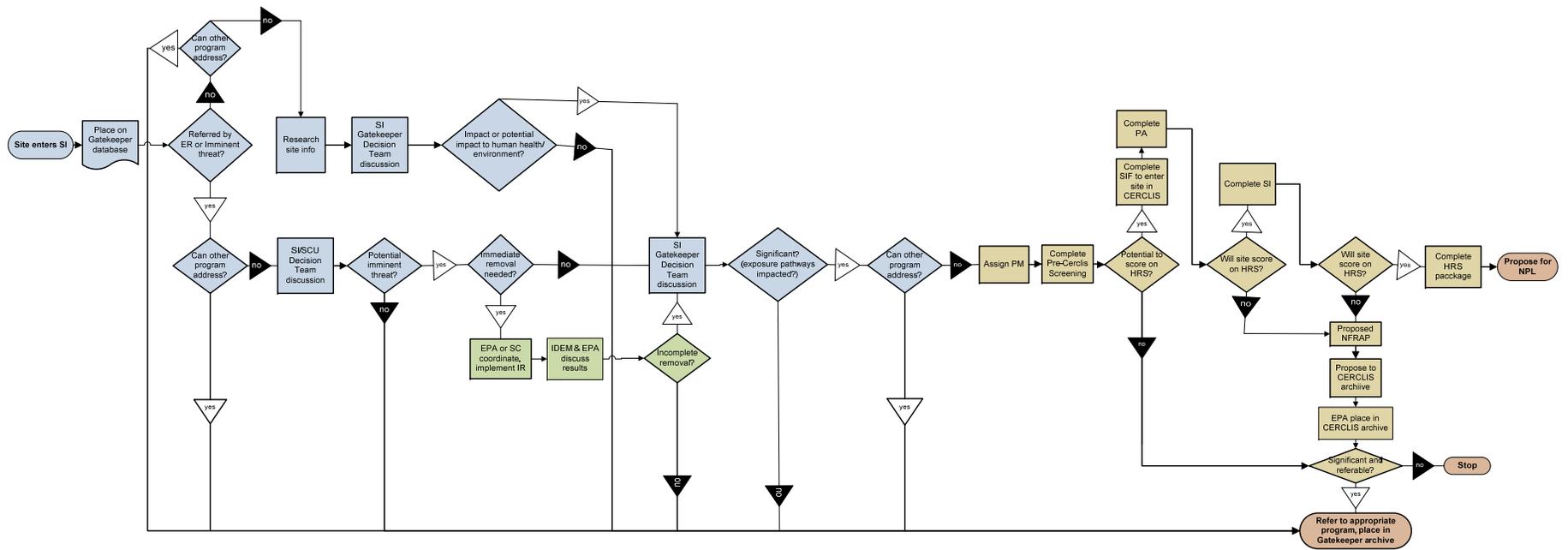
- 40 CFR Part 300, App. A *Hazard Ranking System*

The following state law can be found on the Indiana General Assembly website ([www.IN.gov/legislative/ic\\_iac](http://www.IN.gov/legislative/ic_iac)):

- IC 13-25-4 *Indiana Hazardous Substance Response Trust Fund*

### 5.3 Process Overview

Figure 5.1 Site Investigation Process Overview



## ***5.4 How Does a Site Enter the Program?***

Sources of sites for SI to investigate include but are not limited to:

- Citizen complaints
- Referral by other governmental entities
- Independent studies
- Research by the SI Section

A SI gatekeeper committee reviews the sites to determine if they have the potential to score high enough to warrant action under CERCLA authority before recommending them for CERCLA consideration. Sites are scored via the Hazard Ranking System (HRS) ([www.epa.gov/superfund/sites/npl/npl\\_hrs.htm](http://www.epa.gov/superfund/sites/npl/npl_hrs.htm)) developed by the U.S. EPA. Sites are prioritized for further action primarily based on their potential to harm human health and the environment. Every effort is made to investigate the sites that appear to present the highest risks first.

## ***5.5 Emergency and Immediate Actions***

SI refers sites that warrant emergency or immediate actions to the U.S. EPA Emergency Response Program ([www.epa.gov/emergencies/content/er\\_cleanup.htm](http://www.epa.gov/emergencies/content/er_cleanup.htm)) or IDEM's Immediate Removal Program ([www.IN.gov/idem/4298.htm](http://www.IN.gov/idem/4298.htm)) to conduct activities to abate the immediate threat.

## ***5.6 How Is the Public Involved or Notified?***

SI publishes Fact Sheets for each investigation that involves environmental samples. The Fact Sheets explain IDEM's investigation and how it may affect the community. The Fact Sheets are made available as handouts and on the IDEM Site Investigations Updates website ([www.IN.gov/idem/4278.htm](http://www.IN.gov/idem/4278.htm)). SI holds public meetings and availability sessions for high profile sites or if it is otherwise warranted.

SI reports are available in IDEM's Virtual File Cabinet ([www.IN.gov/idem/6551.htm](http://www.IN.gov/idem/6551.htm)) once they are finalized.

## ***5.7 Investigation***

The site assessment process ([www.epa.gov/superfund/cleanup/pasi.htm](http://www.epa.gov/superfund/cleanup/pasi.htm)) evaluates sites to determine and implement the appropriate responses to releases of hazardous substances to the environment. During the site assessment process, U.S. EPA and states collect data to identify, evaluate and rank hazardous waste sites based on HRS criteria ([www.epa.gov/superfund/sites/npl/npl\\_hrs.htm](http://www.epa.gov/superfund/sites/npl/npl_hrs.htm)) using the requirements set forth in the current SI Program Quality Assurance Project Plan.

Once a site is identified, the site undergoes a minimal screening process (*gatekeeper evaluation, pre-CERCLIS Screening [PCS]*) to determine whether the CERCLA site assessment process or other options are appropriate.

If the site is selected for the federal site assessment process, SI will conduct a Preliminary Assessment (PA) ([www.epa.gov/superfund/cleanup/index.htm](http://www.epa.gov/superfund/cleanup/index.htm)). PA investigations collect readily available information about a site and its surrounding area. The PA is designed to distinguish, based on limited data, between sites that pose little or no threat to human health and the environment and sites that may pose a threat and require further investigation. The PA also identifies sites that require assessment for possible response actions. If the PA results in a recommendation for further investigation, a Site Inspection ([www.epa.gov/superfund/cleanup/index.htm](http://www.epa.gov/superfund/cleanup/index.htm)) is performed.

The Site Inspection identifies sites that should enter the NPL Site Listing Process ([www.epa.gov/superfund/sites/npl/npl\\_hrs.htm](http://www.epa.gov/superfund/sites/npl/npl_hrs.htm)) and provides the data needed for HRS scoring and documentation. SI investigators typically collect environmental and waste samples to determine what hazardous substances are present at a site. They determine if these substances are being released to the environment and assess if they have reached nearby targets. The Site Inspection can be conducted in one stage or two. The first stage tests hypotheses developed during the PA and can yield information sufficient to prepare an HRS Scoring Package. If further information is necessary to document an HRS score, an expanded Site Inspection is conducted.

An HRS Scoring Package can be prepared for sites that are considered candidates for inclusion on the NPL. The HRS Scoring Package or Documentation Record compiles evidence collected during the PA and the Site Inspection into a legally defensible record to support the HRS score and the proposal for the NPL.

Sites not considered candidates for inclusion on the NPL can be given a No Further Remedial Action Planned (NFRAP) designation and/or referred to another cleanup authority after any stage of assessment.

IDEM's Site Decision Team, a team of management and representatives from different IDEM programs, determines which program may most effectively manage a site that does not qualify for the NPL after the SI Program has conducted an evaluation.

## **5.8 Remedial Action**

SI is a preremedial program. As SI completes each phase of environmental investigation, SI conveys its decisions to the U.S. EPA via Memoranda of Decision. Ultimately, U.S. EPA decides whether a site warrants remediation or cleanup under the federal Superfund Program and cleanup is conducted at the federal level.

## 5.9 *When Issues Arise*

If IDEM personnel and other technical personnel or the general public disagree, and the disagreement cannot be resolved through cooperative efforts, the disagreement can be directed through the chain of command starting at either the state or federal level. Ultimately, CERCLA site assessment work is conducted by IDEM to fulfill U.S. EPA requirements under a Cooperative Agreement. Final decisions are at the discretion of the U.S. EPA.

## 5.10 *Forms and Checklists*

Sample copies of many forms, templates and checklists discussed in this *Remediation Program Guide* (RPG) may be found at the end of each Chapter of this guide. **The sample forms, templates and checklists in this guide are images only, may not be current, and cannot be completed electronically.**

Current State Forms that can be completed electronically are posted on the IDEM Forms website ([www.IN.gov/idem/5157.htm](http://www.IN.gov/idem/5157.htm)) as PDF fillable forms, Microsoft Word documents or Excel documents. Links to those forms and checklists as well as links to many other documents and websites have been provided where the document is discussed in the text.

Site Investigations Program staff use the following instruments:

- Sample 5.1 Sampling Work Plan Template

## Sample 5.1 Sampling Work Plan Template

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
SITE INVESTIGATION PROGRAM

SAMPLING  
WORK PLAN FOR  
REASSESSMENT

SITE NAME: \_\_\_\_\_  
LOCATION: \_\_\_\_\_  
EPA ID#: \_\_\_\_\_

**SAMPLE**

Preparer \_\_\_\_\_ Date \_\_\_\_\_

Reviews and Approvals

Project Manager \_\_\_\_\_ Date \_\_\_\_\_

Site Investigation Chief \_\_\_\_\_ Date \_\_\_\_\_

Geology \_\_\_\_\_ Date \_\_\_\_\_

Chemistry \_\_\_\_\_ Date \_\_\_\_\_

Health and Safety Officer \_\_\_\_\_ Date \_\_\_\_\_

EPA \_\_\_\_\_ Date \_\_\_\_\_

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
SITE INVESTIGATION PROGRAM  
WORK PLAN

SECTION I. General Information

SITE NAME: \_\_\_\_\_

LOCATION: \_\_\_\_\_

PROPOSED DATE  
OF INSPECTION: \_\_\_\_\_

ESTIMATED FIELD  
HOURS (per worker): \_\_\_\_\_

PROJECT OBJECTIVE: \_\_\_\_\_

PROJECT DESCRIPTION

**SAMPLE**

BACKGROUND REVIEW PERFORMED:  Yes  No

Preliminary HRS Route Score:      GW \_\_\_\_\_ SW \_\_\_\_\_ AIR \_\_\_\_\_  
DC \_\_\_\_\_ F&E \_\_\_\_\_  
Total  
Score (Sm) \_\_\_\_\_

Projected HRS score with  
field work:      GW \_\_\_\_\_ SW \_\_\_\_\_ AIR \_\_\_\_\_  
DC \_\_\_\_\_ F&E \_\_\_\_\_  
Total  
Score (Sm) \_\_\_\_\_

INSPECTION PRIORITY:       Low       Medium       High

WP-2  
SECTION II. Site/Waste Characteristics

TYPE OF FACILITY: \_\_\_\_\_

SITE DESCRIPTION: \_\_\_\_\_

\_\_\_\_\_

DISPOSAL METHODS: \_\_\_\_\_

\_\_\_\_\_

FEATURES OF DISPOSAL AREA: \_\_\_\_\_

\_\_\_\_\_

HISTORY (complaints, agency, previous action): \_\_\_\_\_

\_\_\_\_\_

**SAMPLE**

STATUS:  Active  Inactive  Unknown

HAZARD TYPE:  Liquid  Solid  Gas  Unknown

CHARACTERISTICS:  Corrosive  Ignitable  Volatile  Radioactive  
 Toxic  Persistent  Reactive  Incompatible  
 Unknown  Other \_\_\_\_\_

SECTION III. Hazard Evaluation

SUBSTANCES BELIEVED TO BE PRESENT: \_\_\_\_\_  
(Refer to Chemical Evaluation Form)

WP-3

SECTION IV. Field and Laboratory Work Required

Establish Perimeter:  Yes  No  
Map:  Yes  No  
Identify Contamination Zone:  Yes  No  
Geophysical Work:  Yes  No  
If Yes, specify: \_\_\_\_\_

Drilling:  Yes  No  
Determine location of wells:  Yes  No  
Installation plans attached:  Yes  No

Sampling Required:  Yes  No  
Identify locations:  Yes  No  
Map attached:  Yes  No  
If No, attach information \_\_\_\_\_  
Locations undetermined at this time

Perform Site Recon:  Yes  No  
If No, attach information \_\_\_\_\_

Perform Laboratory: \_\_\_\_\_

SAMPLE

WP-4  
SECTION V. Quality Assurance Records Log

Site Name \_\_\_\_\_

Site ID Number \_\_\_\_\_

Record and Documentation

(check all that apply)

- General Work Plan \_\_\_\_\_
- Safety Plan \_\_\_\_\_
- Log Books \_\_\_\_\_
- Photos \_\_\_\_\_
- Chain of Custody \_\_\_\_\_
- Traffic Reports \_\_\_\_\_
- Field Collected Information \_\_\_\_\_
- Analytical Information \_\_\_\_\_

- QA \_\_\_\_\_
- Technical Review \_\_\_\_\_
- Editorial Review \_\_\_\_\_
- QA Report \_\_\_\_\_
- QA Record \_\_\_\_\_
- Calibration Record \_\_\_\_\_
- Preinspection Meeting \_\_\_\_\_
- Drilling Logs \_\_\_\_\_
- Correspondence \_\_\_\_\_
- Reports \_\_\_\_\_

Sample Description \_\_\_\_\_ Sample No. \_\_\_\_\_  
**SAMPLE**

WP-5  
JUSTIFICATION FOR PROPOSED SAMPLES

Site Name  
City, County., INDIANA

Sample No.                      Sample Type                      Justification

The possibility does exist that if, during the sampling event, contamination is suspected in different locations, sampling points may be revised.

# SAMPLE

WP-6  
SUMMARY TABLE OF SAMPLING AND ANALYSIS PROGRAM

<u>SAMPLE</u> <u>MATRIX</u>	<u>FIELD</u> <u>PARAMETERS</u>	<u>LABORATORY</u> <u>PARAMETERS</u>	<u>Sample</u> <u>No.</u>	<u>Field</u> <u>Dup.</u>	<u>Field</u> <u>Blank</u>	<u>MS/</u> <u>MSD<sup>2,3</sup></u>	<u>Matrix</u> <u>Total<sup>4</sup></u>
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1. The field quality control samples also include trip blank, which is required for VOA water samples. One trip blank, which consists of two 40-ml glass vials (preserved) for water samples is shipped in each cooler of VOA samples.

2. Additional sample volume for the matrix spike/matrix spike duplicate (MS/MSD) is required for organic analysis, except for the OLC SOW. Samples designated for MS/MSD analysis will be collected, with extra sample volumes, at a frequency of one per group of 20 or fewer investigative samples. Triple the normal sample volumes will be collected for VOAs, and double the normal sample volumes will be collected for SVOCs and pesticides and PCBs.

3. For inorganic analysis, no extra sample volume is required for the spike and duplicate analyses, however, samples for the spike and duplicate analysis should be identified on the field COC at a rate of one per group of 20 or fewer investigative samples.

\*\*IDENTIFY HERE IF SAMPLES ARE COLLECTED USING ANY OF THE 5035 METHODS, i.e., IN METHANOL, OR IN ENCORE TUBES

4. The number of samples to be collected for MS/MSD are not included in the matrix total. The number of trip blank samples is also excluded from the matrix total.

SUMMARY OF PROCEDURES AND ADDITIONAL COMMENTS (*Sample point selection method*):

# SAMPLE

WP-7  
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
SITE INVESTIGATION PROGRAM  
SITE SAFETY PLAN

SECTION I. Site Safety Work Plan

Site Secured:  Yes  No  
 Perimeter Identified:  Yes  No  
 Contamination Zones Identified:  Yes  No

Physical Hazards (Please check each that applies)

Heightened work surface Notes/Measurements: \_\_\_\_\_

Impact Notes/Measurements: \_\_\_\_\_

Falling or flying objects  
 Overhead work or projection

Compression Notes/Measurements: \_\_\_\_\_

Rolling or pinching objects  
 Hands  Feet  Impact  
 Penetration Notes/Measurements: \_\_\_\_\_

Sharp objects which may pierce the hands or feet.

Heat Notes/Measurements: \_\_\_\_\_

Burns Radiant Heat High Humidity  
 Eye Injury High Temperatures Check of adequate ventilation

Cold Notes/Measurements: \_\_\_\_\_

Non-ionizing Radiation Notes/Measurements: \_\_\_\_\_

Gamma Rays  Beta Particles  Alpha particles  
 Ultraviolet  Infrared  Microwaves (If present contact ISHD Radiological Section 233-7153)

Electrical Notes/Measurements: \_\_\_\_\_

Noise Notes/Measurements: \_\_\_\_\_

Confined spaces (staff will not enter confined spaces)

Biological Agents Notes/Measurements: \_\_\_\_\_

Tuberculosis  Hepatitis B  Tetanus  
 Poison Ivy  Insects  Stray Animals

Are Engineering controls possible?  Yes  No (Explain) \_\_\_\_\_

SP-1  
 SECTION I. Site Safety Work Plan  
 (Continued)

Air monitoring will be conducted. Staff will be informed about heat stress.

Are Administrative controls possible?  Yes  No (Explain)

Staff will be instructed to avoid areas of potential risk. A buddy system will be used. Staff will work in groups of at least two persons.

Level of Protection:  A  B  C  D  Unknown

Modifications \_\_\_\_\_  
\_\_\_\_\_

All personnel will bring all health and safety equipment and prepare and respond as necessary

Equipment and Materials: \_\_\_\_\_  
\_\_\_\_\_

Site Entry Procedures: \_\_\_\_\_  
\_\_\_\_\_

Exit and Decon Procedures: \_\_\_\_\_  
\_\_\_\_\_

Quantity of Wastes Disposal Generated and Result of Disposition: \_\_\_\_\_  
\_\_\_\_\_

All hazardous waste will be disposed of properly

**SAMPLE**

Personnel Required:

Name	Signature	Training	Duties

*\*By signing this document you are acknowledging that you have read and understand the established safety procedures for site activities. You must also realize that the majority of effective health & safety practices is common sense and requires the constant attention of all site workers. This document may or may not address all hazards associated with this site and may change as site activities occur.*

Work Limitations: \_\_\_\_\_

SP-2  
SECTION II. Emergency Information

Site Resources:  Water  Telephone  Radio  Other (specify) \_\_\_\_\_

Local Resources: See accompanying HASP

Name

Number

Address

Ambulance  
 Hospital  
 Police Dept  
 Fire Dept.  
 Airport  
 Local Health Dept.  
 Directions to Hospital                      See attached directions and map

SECTION III. Emergency Contacts

IDEM Emergency Response                      317/233-7745 or 888/233-7745 (24 Hour)  
 IDEM Health & Safety (Dave Appel)                      317/232-4867  
 IDEM Human Resources (Corliss White)                      317/233-1785  
 IDEM Vehicle Problems (Nicole Kane)                      317/232-4518  
 Industrial Hygienist (Lorena Alexander)                      317/351-1111 ext. 2222  
 OH Radiological (Robert Miller)                      317/351-1111 ext. 2222  
 NIOSH/ATSDR Emergency Response                      800/498-1111 (24 Hour)  
 EPA Regional Response Center                      800/424-8888 (24 Hour)  
 Indiana State Chemist                      773/311-1414  
 Pollution Control                      800/424-8888-1234  
 IDEM Eastern Regional Office                      573/555-4848 or 800/553-5519  
 IDEM Northwest Regional Office                      219/757-0265 or 888/209-8892  
 IDEM Southwest Regional Office                      812/380-2305 or 888/672-8323



SP-3  
 FIELD MONITORING EQUIPMENT CHECK-OUT  
 (Use separate form for each piece of equipment used)

Type of Instrument: \_\_\_\_\_  
 Serial Number: \_\_\_\_\_  
 Date of Calibration: \_\_\_\_\_

Type of Calibrate Gas: \_\_\_\_\_

Fully Charged:  Yes  No

FIELD MONITORING RESULTS

		Breathing Zone*	Work Zone
1.	Location of monitoring _____	<input type="checkbox"/>	<input type="checkbox"/>
	Results (peak reading) _____	<input type="checkbox"/>	<input type="checkbox"/>
2.	Location of monitoring _____	<input type="checkbox"/>	<input type="checkbox"/>
	Results (peak reading) _____	<input type="checkbox"/>	<input type="checkbox"/>
3.	Location of monitoring _____	<input type="checkbox"/>	<input type="checkbox"/>
	Results (peak reading) _____	<input type="checkbox"/>	<input type="checkbox"/>
4.	Location of monitoring _____	<input type="checkbox"/>	<input type="checkbox"/>
	Results (peak reading) _____	<input type="checkbox"/>	<input type="checkbox"/>
5.	Location of monitoring _____	<input type="checkbox"/>	<input type="checkbox"/>
	Results (peak reading) _____	<input type="checkbox"/>	<input type="checkbox"/>
6.	Location of monitoring _____	<input type="checkbox"/>	<input type="checkbox"/>
	Results (peak reading) _____	<input type="checkbox"/>	<input type="checkbox"/>

\* Breathing zone is identified as a hemisphere surrounding the lower half of the face

Do air monitoring results modify original PPE selection?    YES            NO

Describe modifications to level of PPE:

\_\_\_\_\_

SP-4

Monitoring Action Levels

Photo Ionization Detector (MiniRae, HNu) and Flame Ionization Detectors (FID)

Known Constituents

- 0-5 meter units            Level D
- 5-50 meter units \*        Level C
- 50-500 meter units\*      Level B
- >500 meter units\*        Leave Area

\* The aforementioned levels are valid only for known compounds detected in the breathing zone and are superceded

by chemical specific permissible exposure levels (PEL).

Unknown Constituents

0-5 meter units	Level D
5-20 meter units	Level C
20-100 meter units	Level B
>100 meter units	Leave Area

Combustible Gas Indicator

0-10% LEL	Continue investigation
10-15% LEL	Continue with caution
>15% LEL	Leave Area, Fire Hazard

Oxygen Meter

<19.5%	Supplied air (SCBA) required
19.5-23.5%	Continue with caution
>23.5%	Leave Area, Increased fire hazard

All measurements for known and unknown constituents must be conducted in the breathing zone

# SAMPLE

SP-5

Hospital Directions

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

Insert Map Here

**SAMPLE**

SP-6