don't see how any of these are Libby specific?

So is each "site" a new property?

I don't see this is ~~applicable~~ applicable?

1075520 - R8 SDMS

SOP APPROVAL FORM

Section 4 has good details

TETRA TECH EM INC.

ENVIRONMENTAL STANDARD OPERATING PROCEDURE

SITE RECONNAISSANCE AND CHARACTERIZATION

SOP NO. 001

REVISION NO. 2

Last Reviewed: November 1999

RRiesing

Quality Assurance Approved

May 18, 1993

Date

1.0 BACKGROUND

The site reconnaissance and characterization (investigation) will involve a visual site inspection to evaluate the presence of conditions at hazardous waste sites that may pose potential health and safety hazards to employees engaged in field work. These conditions may include physical hazards, insufficient oxygen levels, exposure to flammable vapor levels, high or toxic concentrations of gases or chemicals, or high levels of nuclear radiation. Evaluation of health and safety hazards consists of (1) reviewing and summarizing existing site data and preparing a site health and safety plan (HSP); and (2) performing the investigation using monitoring or sampling equipment.

1.1 PURPOSE

This standard operating procedure (SOP) was developed to promote uniformity in investigating and evaluating potential health and safety hazards at hazardous waste sites before employees begin field work.

1.2 SCOPE

This SOP applies to the investigative teams conducting investigations at hazardous waste sites to determine potential health and safety hazards that employees may be exposed to during field work. Each investigation will consist of a visual site inspection, the use of monitoring or sampling equipment, and the use of appropriate personal protective equipment.

1.3 DEFINITIONS

None

1.4 REFERENCES

U.S. Environmental Protection Agency (EPA). 1987. "A Compendium of Superfund Field Operations Methods." OSWER Directive 9355.0-14 (EPA/540/P-87/001).

EPA. 1985. "Characterization of Hazardous Waste Sites - A Methods Manual." Volume 1. (EPA/600/4-84/075).

1.5 REQUIREMENTS AND RESOURCES

The requirements and resources needed to complete an investigation are discussed in the following subsections.

1.5.1 Personal Protective Equipment

Members of the investigative team must comply with the site HSP, which will specify the necessary personal protective equipment. This equipment may consist of the following items:

- Protective clothing (coveralls, Tyvek®, Saranex®, or splash suits)
- Hard hat and face shield
- Rubber or steel-toe boots
- Rubber gloves with liners
- Full-face respirator (air-purifying chemical cartridge or supplied air respirator)

1.5.2 Instrumentation

The instrumentation that may be used during an investigation includes the following:

- Organic vapor monitor
- Oxygen and explosivity meter
- Radiation survey meters
- Respirable dust monitors
- Colorimetric indicator detector tubes

1.5.3 Sample Collection Equipment and Documentation

It may be necessary during an investigation to collect environmental or source material samples for laboratory analysis. The following equipment may be needed to collect samples:

- Field logbook
- Sample jars and bottles
- Sample tags and labels
- Sample collection tools (augers, trowels, pipettes, bailer, pumps)
- Colorimetric indicator detector tubes
- Chain-of-custody records

2.0 PROCEDURES

The procedures to be followed when conducting an investigation are discussed in the following subsections.

2.1 HEALTH AND SAFETY PLAN

Before an investigation may begin at a hazardous waste site, a site-specific HSP must be completed that satisfies the requirements of the Occupational Safety and Health Administration as defined in the Code of Federal Regulations (29 CFR 1910.120). The HSP must be reviewed and signed by all members of the investigative team prior to arriving on site.

2.2 VISUAL SITE INSPECTION

The investigative team will visually inspect the site during a walkover of the site. Ambient air monitoring will be conducted if needed. The subsections below discuss establishing a staging area, evaluating potential health and safety hazards, and decontaminating equipment.

2.2.1 Establishing a Staging Area

The investigative team will prepare for the visual site inspection at a staging area judged to be clean on or near the site. This area will be used to don personal protective equipment, zero instruments, take background readings if needed, and serve as the decontamination center. The staging area should be upwind of potential contaminant sources.

2.2.2 Evaluating Health and Safety Hazards

The entire site, including bulk storage vessels, confined spaces, waste lagoons, drum storage areas, and other points of interest will be monitored and sampled as needed to detect the presence of potentially hazardous conditions (for example, oxygen deficiency, explosive atmospheres, high vapor or radioactivity levels, or physical hazards). Locations of health and safety hazards or instrument readings exceeding background readings will be written in a field logbook.

Conditions that may lead to potential health and safety hazards are discussed in the following paragraphs. Background information about hazardous materials or waste handled at the site will be used to determine if any or all of the conditions described below need to be monitored.

1. **Oxygen Deficiency:** The entire site, but particularly confined spaces, may be monitored for oxygen deficiency. Readings should be taken at ground, waist, and head levels. Any area with an oxygen level of less than 19.5 percent must be avoided. Confined spaces must be entered only by investigative team members using air-supplied respirators. Under no circumstance should an air-purifying respirator be used in confined spaces or oxygen-deficient atmospheres. An additional note of caution is that an explosivity meter will not function properly in oxygen-deficient atmospheres. An oxygen-deficient atmosphere may be explosive, but the explosivity meter will not respond properly in this atmosphere. Treat oxygen-deficient atmospheres as potentially explosive.

2. **Explosivity:** Continuous ground, waist, and head level readings may be obtained in confined spaces or areas where explosive gases are suspected. If readings approach or exceed 10 percent of the lower explosive limit (LEL), extreme caution should be used in continuing the investigation. If readings approach or exceed 25 percent of the LEL, the investigative team should withdraw from the area immediately. Be aware that explosivity meters will go off scale and readings will drop as the concentration of explosive gases increases. Before resuming any on-site activities, the investigative team should consult with fire protection experts or the local fire department and then develop explosion

prevention procedures for safe site work. (Refer to the discussion of oxygen-deficient atmospheres and the explosivity meter caution in the Oxygen Deficiency paragraph above).

3. **Chemical Vapors:** Organic chemical vapor levels may be monitored using an organic vapor monitor. Inorganic chemical vapors may be monitored using colorimetric indicator detector tubes or compound-specific detectors such as the Monotox cyanide sampler. When working in an unknown environment (for example, an environment in which atmospheric compounds are not known) and wearing air-purifying respirators,.vapor concentrations cannot exceed 5 parts per million (ppm) for a 5-minute time weighted average period. If vapors exceed 5 ppm, the site must be evacuated. Re-entry will only be allowed with the use of air-purifying respirators. Atmospheric concentrations cannot exceed 500 ppm for continuous site work to occur. If atmospheric concentrations exceed 500 ppm, the site should be evacuated and appropriate experts contacted to determine additional personal protective equipment or other safety precautions required for continued site work.

   When working in a known environment (for example, atmospheric compounds are known), vapor concentrations cannot exceed the threshold limit value for the compound if no respiratory protective equipment is being used. Air-purifying respirators may be worn only when the vapor concentration is below the recommended level of the respirator cartridge being used and below the immediately dangerous to life and health concentration. Areas in which high levels of vapor concentrations are encountered should be avoided if possible. When specific chemical vapors are known to exist on site, colorimetric indicator detector tubes specific to those chemicals should be used.

4. **Radioactivity:** The site may be monitored for radiation levels. If radioactivity levels approach 10 milliroentgen/hour (mR/hr), a detailed radiological site survey should be conducted. If radioactivity levels are greater than 10 mR/hr, the site should be evacuated and the assistance of a radiation health physicist should be obtained prior to site re-entry. Normal background radioactivity levels are about 0.02 mR/hr; however, levels up to 10 mR/hr are acceptable for investigations of short duration.

5. **Physical Hazards:** Physical hazards may include electrical hazards (down or exposed power lines); unsafe structures or deteriorated buildings, tanks, supports, or beams that are in the process of collapsing (or based on physical evidence may collapse at any time); pits (open or closed); trenches; buried tanks or structures; or any other type of elevated, surface, or subsurface structure that may fall, cause an employee to trip or fall, or cause an employee to fall into it. Other physical hazards of concern may include heavy equipment (backhoe, drill rig, and so on); biological hazards (plants and insects); noise hazards; and weather (lightning, heat, and cold stress). All such hazards should be identified and described in a field logbook.

2.2.3 Decontaminating Equipment

Disposable personal protective clothing should be worn during an investigation. Prior to leaving the site, all disposable clothing will be placed in large industrial-grade plastic bags or 55-gallon drums. Boots and other nondisposable items will be decontaminated in the staging area using portable water basins and industrial-grade, water-based detergents. Decontaminated equipment and clothing will be placed in plastic bags before investigators leave the site. All contaminated equipment will remain on site.

3.0 CAUTIONS

Seemingly safe sites or situations may still present life-threatening conditions. Even the best monitoring equipment cannot replace astute observation and common sense. Be alert and aware of surroundings and conditions at all times.