



Environmental Health & Safety Plant / Warehouse Operations Health & Safety Plan

A. SITE DESCRIPTION

Date: 11/01/2010

Location: 4920 Iris Street, Wheat Ridge, CO 80033

Hazards: Mercury Vapor, Elemental Mercury, PCB's, Lead, Sulfuric Acid

Surrounding Populations: Commercial

Topography: Flat work site

Weather conditions: Primarily indoor work, outdoor fall/winter weather conditions expected

Additional information: Daily operations consist of palletizing collected waste and staging in warehouse for processing; processing lamps through the GreenMachine 2010-AF-LSU; collection, segregation, transportation, and recycling/disposal of by products; collection, packaging, labeling/marketing, and transportation of batteries and mercury devices.

The purpose of this plan is to establish personal protection standards and mandatory safety practices and procedures for the work proposed within the project are including encounters with hazardous materials and other emergencies. This plan shall be present and readily available during all on-site activities. All personnel working on or visiting the site shall be briefed on the plan and adhere to all provisions of this plan. Any supplemental plans used by subcontractors during this phase of on-site activities shall conform to this plan as a minimum.

This Health and Safety Plan applies to all government employees, contractors, subcontractors and visitors. All work areas of contamination or hazardous materials shall conform to all requirements of OSHA (Occupational Safety and Health Administration) regulations for the particular contaminants involved. In addition to the provisions for the personnel working in any potential areas of contamination, all personal working on this project shall be involved in the communication and understanding of the potential hazardous through a Hazard Communication program in accordance with the provisions of OSHA Regulations 29 Code of Federal Regulations (CFR) 1910.1200 and 29 CFR 1926.59, the Hazard Communication Standard for the construction industry.

B. STAGING OBJECTIVES

The objective of waste staging is to properly prepare waste recycling by products for transportation to ERT approved End Use facilities.

C. ON SITE ORGANIZATION AND COORDINATION

The following personal are designated to carry out the stated job functions on site. (Note: One person may carry out more than one job function.)

OPERATIONS OFFICER Karl Reed

1- SITE SAFETY OFFICER Michael Helm

2- SITE SAFETY OFFICER Karl Reed

PUBLIC INFORMATION OFFICER Michael Helm

RECORDKEEPER Michael Helm

WAREHOUSE Karl Reed

D. ON SITE CONTROL

Access to the warehouse is under the control of the Site Safety Officers. Some areas of the warehouse will be active: however when possible, routine business activities will be relocated away from the work areas.

No unauthorized person should be within the work area without the express permission from one of the Site Safety Officers (SSO) or his representative.

The SSO will be in communication with all personnel through visual contact, and/or hand – held radios (when applicable) throughout the work day.

Control boundaries will be established by the SSO. Care will be taken to prevent personnel from walking within the work zone. Areas where waste processing procedures are in process will be restricted to necessary personnel only.

E. HAZARD EVALUATION

The following substance(s) are known or suspected to be on site. The primary hazards of each are identified.

Substances Involved Primary Hazards

Mercury Vapor Inhalation, Ingestion, Eyes, Dermal

Elemental Mercury Inhalation, Ingestion, Injection, Eyes, Dermal

Acid (sulfuric) Ingestion, Ingestion, Injection, Dermal, Eyes

CFC's Inhalation, Ingestion, Eyes

Lead Inhalation, Ingestion, Injection, Eyes, Dermal

The following additional hazards are expected on site: The primary hazards are movement of waste materials. Work will be performed according to ERT, LLC's Health and Safety Protocols. The warehouse will be kept clean and free of debris at all times.

OVERALL HAZARD IS LOW

F. PERSONAL PROTECTIVE EQUIPMENT

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas and/or tasks.

Location Job Function Level of Protection

Exclusion Zone Waste Processing A B C D

Packaging A B C D

Waste Loading A B C D

Reduction Zone Office, Clerical Office A B C D Other

Specific protection equipment for each level of protection is as follow:

Level A Fully-encapsulating suit Level C Disposal Coveralls (Tyvek)

SCBA Protective Gloves

1/2 Face or Full-face canister respirator

Level B Disposable coveralls PAPR

Splash gear (type)

SCBA Level D Protective gloves

Hard hats

Other Case by case Steel-toed boots

Eye protection

In the case of a spill the following protective materials are 1/2 Face Respirators, Nitrile gloves, Safety Glasses, and Tyvek Suits required for the involved substances:

Substance Protective Material Mercury Vapor 1/2 Face Respirators, Nitrile gloves, SG, Tyvek Suits

Elemental Mercury 1/2 Face Respirators, Nitrile gloves, SG, Tyvek Suites

Acid (sulfuric) 1/2 Face Respirators, Nitrile gloves, SG, Tyvek Suites

CFC's 1/2 Face Respirators, Nitrile gloves, SG, Tyvek Suites

Lead 1/2 Face Respirators, Nitrile gloves, SG, Tyvek Suites

Leatherwork gloves will be necessary while working around all equipment.

If air-purifying respirators are authorized, P100 (dust), Mercury Vapor, and Acid Gas are the appropriate canisters for use with the involved substances and concentrations. A competent individual will determine that all criteria for using this type of respiratory protection have been met. Individuals

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SITE SAFETY OFFICER AND/OR OPERATIONS MANAGER

G. ON SITE WORK PLANS

Work Party(s) consisting of one or two person(s) will perform the following tasks:

Personnel Company Tasks

Operations Manager ERT, LLC Coordinate and supervise all site work

Work Party #1 ERT, LLC Move, feed, packaging, transportation

Rescue Local Fire Dept.

The work party(s) were briefed, and understand the contents of this plan before activities commenced. Work parties accept full responsibility for their own well being.

H. COMMUNICATION PROCEDURES

The SSO will be available via mobile phone or hand-held radio throughout the warehouse activities. Personnel in a warehouse should remain in contact with the Operations Manager throughout the day.

A loud whistle or continues horn blast is the emergency signal to indicate that all personnel should leave a particular area immediately.

The following standard hand signals will be used in case of failure of radio communications or radios are not present.

Signals Meaning

Hand gripping throat Out of air, can't breathe

Grip partner's wrist and/or Both hands around waist Leave area immediately

Hands on top of head Need assistance

Thumbs up OK, I am all right, I understand

Thumbs down No, negative

Telephone communications to the SSO should be established from each remote location as soon as practicable. Cellular phones should be available on site.

I. SITE SAFETY AND HEALTH PLAN

1. Michael Helm is the designated Site Safety Officers. Michael Helm is also the General Manager for safety recommendations on site. Subcontractors will provide their own Site Safety Officer during the assessment activities with ERT having final safety controls.

2. EMERGENCY MEDICAL CARE

Site is located in Wheat Ridge, CO. The medical center identified can provide the necessary services if an emergency arises. The facility is familiar with the type of hazards and chemicals that may be encountered during this assessment. A map of alternative routes to these facilities is attached. The Medical facility telephone numbers are attached to the figure:

Exempla Lutheran Medical Center: Exempla Lutheran Medical Center's main phone number is

(303) 425-4500 FREE (303) 425-4500

Local ambulance service is available by dialing 911 response time is unknown.

Emergency medical information for substances present is presented on attached table.

LIST OF EMERGENCY PHONE NUMBERS:

Agency/Facility Phone Numbers

Police 911

Fire 911

Hospital 911 or (303) 425-4500 FREE (303) 425-4500 Public Health Advisor N/A

National Response Center 1-800-424-8802 FREE 1-800-424-8802

Poison Control Center 1-800-332-3073 FREE 1-800-332-3073

ON SITE FIRST AID

First-aid equipment is available on site at the following locations:

Equipment location

First-aid kit SSO's field kit / Plant safety areas

Emergency eye wash Plant safety areas

Emergency shower Plant safety areas

3. SAFETY AND HEALTH RISK ANALYSIS

Many safety risks are encountered during any waste management activities. These include the risk of contamination, slips, trips, and falls; being injured from the use of construction equipment, contact with live and over head utilities, and contact with hazardous chemicals. General OSHA construction safety practices (29 CFR 1926, along with applicable sections of 29 CFR 1910, the general industry standard) shall be followed during all work phases of work on this project.

The major goal of this HASP is to protect the workers from the health effects of overexposure to hazardous chemicals and particulate.

As listed in the Hazard Evaluation, a variety of potentially hazardous substances are known or suspected to be present. Workers may potentially be exposed to toxic vapors and organic contaminants. The contaminants may become airborne and inhaled during operations.

1. When signs of contamination are detected (such as visible staining or unusual odors), the SSO will be notified immediately. Workers may not disturb potentially hazardous materials until the SSO has determined it to be safe for Level C protective equipment.
2. Steel-toed shoes and safety glasses are required as minimal personal protection equipment at all times.
3. Smoking shall not be permitted within 500 feet of extraction building.
4. Fire extinguishers, electrical equipment, and wiring shall conform to the applicable requirements of 29 CFR 1926.

AIRBORNE HAZARDS

In the case that gases become airborne during extraction activities.

1. 911 will be called.
2. Unauthorized personnel shall avoid the area until the air is declared safe.
3. All electrical activities within 1000 feet will be stopped until the air is declared safe.

CHEMICAL EXPOSURE

Exposure to toxic chemicals is a concern at this project site. Hazardous substances of concern include those listed in the Hazard Evaluation. Most compounds identified are present at moderate levels.

These chemicals can enter the unprotected body by inhalation and skin absorption. These contaminants can cause injury at the area of contact or can systematically affect other parts of the body.

The effects of exposure not only depend on the chemical itself, its concentration, route of entry, and duration of exposure, but may be influenced by personal factors such as the individual's alcohol consumption, smoking habits, medications used, fitness, nutrition, age, and sex.

PHYSICAL HAZARDS

Noise

Personnel working around large construction equipment and loud, congested areas can be exposed to excessive noise causing temporary or permanent damage. The effects of noise can include:

- Workers being startled, annoyed, or distracted
- Physical damage to ear
- Communication impediment that may increase potential hazards

Personal protection against the effects of noise shall be provided whenever personnel noise exposures equal or exceed an 8-hour, time-weighted average sound level of 85 dBA, or peak of 115 dBA for 15 minutes, in compliance with OSHA Standard 29 CFR 1910.95.

Heat Stress

Working at temperatures (greater than 80 degrees Fahrenheit), especially if workers are wearing personal protection equipment (PPE) puts workers at considerable risk of developing heat stress. This can result in health effects ranging from heat fatigue to serious illness or death. Numerous interacting elements including; environmental conditions, clothing, workload, and the individual characteristics of the workers can also contribute to heat stress.

Signs of Heat Stress:

- Heat rash – may result from continuous exposure to heat or humid air.
- Heat cramps – caused by heavy sweating with inadequate electrolyte replacement.

* Signs and symptoms include:

- Muscle spasms
- Pain in hands, feet, and abdomen
- Heat exhaustion – occurs from increased stress on various body organs including

inadequate blood circulation due to cardiovascular insufficiency or dehydration.

* Signs and symptoms include:

- pale, cool, moist skin

- heavy sweating

- dizziness

- nausea

- fainting

· Heat stroke – the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained.

* Signs and symptoms include:

- red, hot, usually dry skin

- lack of or reduced perspiration

- nausea

- dizziness and confusion

- strong rapid pulse

- coma

The potential for heat stress can be minimized by having water and other liquids available at the site, allowing workers experiencing heat stress to take more frequent breaks, having training personnel monitor the work force for signs of heat stress, and having first-aid or medical help available. Warning signs of heat stress must be heeded before workers reach the life-threatening stage of heat stroke.

ENVIRONMENTAL MONITORING

The environmental monitoring instruments (**bold**) and action levels to be used on site at the specified intervals are as follows:

Instruments Intervals

Jerome (Hg) 431-X Start, Hourly, end of shift

Manometer Constant

These instruments will be used to monitor the work environment during all remediation activities.

EMERGENCY PROCEDURES (should be modified as required for incident)

The following standard emergency procedures will be used by on site personnel. The SSO or his representative shall be notified of any on site emergencies and be responsible for ensuring that the appropriate procedures are followed.

Personal Injury in the Exclusion Zone (as defined): Upon notification of an injury in the Exclusion Zone, the designated emergency signal (loud whistle) shall be sounded. All site personnel shall assemble at a pre designated location. The rescue team will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The SSO and Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone.

The SSO or EMT (when applicable) shall initiate the appropriate first aid, and contact should be made for an ambulance and with the designated facility (if required), if an EMT is not present on the job site call 911. No persons shall reenter the Exclusion Zone until the cause of the injury or symptoms are determined.

Personnel Injury in the Support Zone: Upon notification of an injury in the Support Zone, the Project Team Leader and SSO will assess the nature of the injury. If the cause of the injury does not affect the performance of site personnel, operations may continue, with the SSO initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal (loud whistle) shall be sounded, and all personnel shall move to pre designated location for further instructions. Activities on site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of fire or explosion on site, the designated emergency signal (loud whistle) shall be sounded and all personnel assembled at pre designated location. The fire department shall be alerted via 911 and all personnel moved a safe distance from the involved area.

Personal Protection Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Project Manager and SSO shall be notified and then determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate action is taken.

In all situations when an on site emergency results in the Exclusion Zone, or Support Zone personnel shall not reenter until:

- The conditions resulting in the emergency have been corrected.
- The hazards have been reassessed.
- The Site Safety Plan has been reviewed.
- Site personnel have been briefed on any changes in the Site Safety Plan.

SITE CONTROL MEASURES

The following site control measures shall be followed in order to minimize potential contamination of workers, protect the public from potential site hazards, and prevent unauthorized access to the site.

Exclusion Zone: The work area (exclusion zone) shall be clearly defined to prevent unauthorized unprotected persons from entering the area. This can be done using barricade tape (yellow-caution, and/or red-danger).

A site control or security person shall be designated whose responsibility it is to see that the work area is secure and that no one accesses the area without checking with security and signing the Site Health and Safety Plan. Duty may be performed by the SSO.

An on site staging area shall be established outside of the contaminated are to coordinate the on site activities and to decontaminate personnel leaving the site.

Non-Hazardous Areas: For security and Health and Safety purposes Non-Hazardous areas will be monitored for personnel entering and exiting. Personal protection equipment will not be a factor.