ESHA
Environmental Safety & Health of Alaska

CONTRACT # DACA85-93-C-0048
TRANSMITAL # 02920-2
ITEM # 2

Site Inspection Report

On June 6, 1994, at the request of Larry Wilkinson of NW EnviroService, I conducted an on-site inspection at NE Cape, St. Lawrence Island, AK. With me on this inspection was Larry Wilkinson and a Corps of Engineers representative.

The inspection was hampered by the fact that the site was covered by snow and ice. This made a visual inspection difficult, and not all the expected hazards could be located. Walking over the site was also treacherous in places. Nevertheless, most of the activities to be conducted during the acute hazard removal phase could be visualized during this inspection, and the hazards to be encountered are covered in this report, along with control methods.

The most important aspect of safety on this site will involve all workers conducting their activities in accordance with a written Health and Safety Plan ("Plan"), with a qualified individual acting in the capacity of Site Safety Coordinator. It is the responsibility of the Site Safety Coordinator to determine if a particular activity presents health and safety hazards that are not adequately covered in the Plan, or that the activities should be curtailed until additional information (such as air monitoring results) is available. If in any doubt, contact the Site Safety Officer (CIH) for direction.

General Site Hazards

The work at NE Cape is on a hazardous waste site; the safety requirements of 29 CFR 1910.120 (Alaska Code 10.0101) must be followed. This includes the requirements for training: 40-hours off-site, with a minimum of 3-days supervised activities at the start of the project on-site; supervisors must have 8-hours of supervisor training; all workers will have had 8-hours of refresher training within the past 12 months.

The work will proceed according to NW EnviroServices written Plan. This will revised, as needed, by the Site Safety Coordinator. Any questions concerning the safety aspect of any activity must be brought to the attention of the Site Safety Coordinator immediately.

F10AK096903_01.09_0006_a
200-1e

All of the buildings on the site are in poor repair, with roofs missing or in danger of falling. Many buildings are of questionable structural integrity. This hazard will be controlled by:

1) Informing all workers of this hazard, and that they should minimize time spent inside any structure.
2) Maintaining a watch on workers inside any structure, either visually, or with radio communications.

The entire site is strewn with debris which poses a tripping/fall hazard, as well as nails stuck through boards littering the site, both within and without all structures. This hazard will be controlled by:

1) Informing all workers of this hazard.
2) Providing workers with steel shank safety boots.
3) Ensuring that all workers have received a Tetanus booster within the past 10 years.
4) Having a first aid kit handy at the site.

Most of the structures are covered by Transite tiles (asbestos containing), and some piping is covered with asbestos insulation. This is in poor condition, and friable asbestos containing material (ACM) is littering the site. It will not be possible to spend time at the site without walking through asbestos contamination. This hazard will be controlled by:

1) Informing all workers of the presence of ACM, and the health risks associated with breathing the airborne fibers of asbestos, especially the association between asbestos exposure, smoking, and lung cancer.
2) Providing workers with full-face air purifying respirators (APRs) with HEPA filters. The APRs should have a nose cup and workers should use anti-fog solution on the lenses to prevent the lenses from fogging up and restricting vision. A lower level of respiratory protection may be authorized by the Site Safety Coordinator if activities are away from visible ACM contamination, or air monitoring results for a particular activity in a particular area are less than the action level for asbestos exposure.
3) Providing workers with disposable coveralls.
4) Providing workers with a decontamination scheme that includes a shower. Workers must take a full body shower each time they go through decon, before eating, drinking, smoking, or leaving the work area.
5) Conducting air monitoring of the workers' breathing zones using a portable pump and 25-mm filter cassette for asbestos.

The island is home to many species of animal life, some of which may be dangerous. Polar bears do come to shore off the ice pack from time to time (although this is unlikely during the time this project will be underway); small rodents and foxes may bite the unwary. To control this hazard:

1) Inform all workers not to approach any animal. Attempting to feed or in any other way harass any animal is a violation of State law and is strictly forbidden.
2) Workers must inform the Site Safety Coordinator immediately if any animal bites or scratches a worker.
3) Inform the Site Safety Coordinator immediately if you sight a bear or other large animal.

Both heat stress, due to work in impervious PPE, and cold stress, due to ambient weather conditions, are potential hazards during this project. To control these hazards:

1) Workers will be reminded to stay fully hydrated and to immediately get out of the work area and report to the Site Safety Coordinator if they experience symptoms of heat stress or frost bite.
2) Blankets will be available for workers to cover themselves after going through decon.

Specific Area Hazards

Old Terminal Building:

Activity- puncturing six (6) cylinders of Helium. There are two hazards associated with this activity- escaping helium if allowed to accumulate in a confined area could displace the available oxygen and asphyxiate workers present; and the pressure inside the cylinders, if allowed to escape instantaneously, could cause the cylinder to rocket away at high speed, causing injury to nearby workers. Additionally, the building appears to be structurally unsound, and work inside the structure could place workers at risk. These hazards will be controlled by:

1) Informing the personnel conducting work on the cylinders of the risks associated with high pressure or asphyxiation from leaking helium.
2) Securing the cylinders in such a way that when punctured, if under pressure, the cylinders either will not leave the area, or if they do "take off" they do so in a direction away from buildings, personnel, or aircraft.
3) Ensuring that no personnel are closer than 50 feet to any cylinder being punctured. This requires a means to operate the hydraulic press used to puncture the cylinders remotely.
4) Perform the cylinder puncture operation outside the terminal building.

Transformer Shed Behind Terminal Building:

The small shed in which the three transformers sit will be dismantled to enable the removal of the transformers to proceed. The oil in the transformers contains high concentrations of PCBs. The main hazard from PCB is skin contact (it may form a type of skin rash called "chloracne"). The transformers themselves are heavy and pose a risk of crushing injury during the lifting phase of their removal. The terrain behind the shed has a gentle slope that might lead to the lifting devices not holding the transformers properly. These hazards will be controlled by:

1) Using care during the dismantling of the shed not to incur physical injury; wear safety glasses and protective (example- leather) work gloves.
2) Wearing splash suits and face shields during the pumping of the oil if close enough to be splashed. Use gloves made of Viton (any manufacturer) or "Silver Shield" (made by North); high concentrations of PCB will permeate most other glove material.
3) Care in the placement of any lifting tripod or lift truck, so that the device is not place at an angle over the transformers.
4) Ensuring that workers do not stand directly under any transformer where they could be crushed should the transformer fall.

Barracks Area:

The generator building has a room with a fuel storage tank. There was a pronounced odor of hydrogen sulfide (H_2S) coming from this area. H_2S can cause death if breathed in high concentrations. There are no drums or transformers or other items of interest in this room. The transformer room was inaccessible during the inspection due to the roof having collapsed from the weight of snow on it. The switch boxes and transformers are heavy and contain PCBs. These hazards will be controlled by:

1) Informing the workers of the hazards of breathing H_2S, and that they should not enter the area with the fuel tank.
2) Using an instrument capable of detecting and quantifying the presence of H_2S gas when working in this area.
3) Using the jib crane to remove the roof of the transformer room to enable a safe approach to the transformers.
4) Using the same precautions as above during the oil transfer and moving of the transformers or switches.
5) Transformers may be rolled out of the building to enable an easier approach for lifting by jib crane; use safety boots to avoid crushing injuries, special drum-moving dolly, etc.

Mess Hall Area:

At the time of the inspection, the interior of this building was covered with ice, making walking treacherous. There were many small containers (5 gallon or smaller) strewn about this building. Many of these were imbedded in the ice. There are three (3) cold storage rooms which meet the definition of "confined space" under the new 29 CFR 1910.146 standard. Moving the containers, should they break, could expose workers to vapors coming from the spill. To control these hazards:

1) Either wait until the ice has melted to conduct operations in this area, or place some non-slip material such as plywood sheets on the floor.
2) Conduct entry into the three cold storage lockers using confined space entry protocols (atmospheric testing, safety watch, have entrants wear lifelines, be prepared for emergency rescue with SCBAs available, entry permit, etc.).
3) If a spill occurs, back out and conduct clean-up using SCBAs until air monitoring demonstrates that an unsafe atmospheric concentration does not exist.
4) Full containers may be very heavy; use proper lifting techniques.
5) Containers are rusty and may have sharp edges. Wear leather gloves over chemical protective gloves. Wear splash suits, safety boots, full-face respirators with combination HEPA / organic vapor filters, hard hats.

Drums:

55-gallon drums may weigh several hundred pounds. If the drums fall apart during removal, the contents will spill and may expose workers to toxic vapors. To control these hazards:

1) Use mechanical drum moving/lifting devices.
2) Situate the area to lift the drums onto trailers on level ground. Ensure workers do not stand beneath drums being lifted where they could be struck by a falling drum.
3) Wear safety boots, work gloves over chemical resistant gloves, full-face respirators with HEPA/ organic vapor filters, splash suits.
4) If a spill occurs, back off and clean up the spill using SCBAs until air monitoring shows that an unsafe atmospheric concentration does not exist.

Disposal

Hazardous and Toxic Wastes will be transported off-site to an EPA approved TSD facility for disposal.

Hazardous Chemicals Identified On-Site

The C of E has identified the following materials as part of this clean-up operation. Not all of the chemicals on this list were visually located during the inspection, probably because they were hidden by the ice and snow present at the time. It is also possible that materials not on this list may be encountered.

Petroleum, oil, and lubricants (POL)
PCB -oils and contaminated soil
1,1,1-Trichloroethane
Paint, paint solvents
Calcium hypochlorite
Bromochloromethane
Oxalic acid
Sodium hydroxide
Isopropyl alcohol
Helium compressed gas cylinders

Petroleum, oil, and lubricants (POL)- these materials can be absorbed through intact skin as well inhaled. Vapors affect the central nervous system, causing dizziness, nausea, headache. Benzene, a component of gasoline and some jet fuels (JP-4) may cause leukemia, a cancer of the blood. Using respirators with organic vapor cartridges and preventing skin contact by using chemical resistant gloves made of Nitrile will be the easiest control methods.

PCB -oils and contaminated soil- PCBs cause a skin disease called chloracne, a severe form of acne. They pose no inhalation hazard unless heated. Using Viton gloves or Silver Shield gloves when working in close proximity to the liquid oils will control exposure. Try to avoid splashing the oil on you. Normal rubber, such as natural or butyl rubber, will rapidly absorb PCBs; however, once it gets into the soil, PCB binds closely to the dirt. Rubber boots contaminated with PCBs cannot be decontaminated and must be discarded at the end of the project, so try to avoid coming into direct contact with contaminated soil.

1,1,1-Trichloroethane- a common cleaning solvent found in paint strippers, electrical cleaners, etc. Also known as methyl chloroform, this chemical has an 8-hour time-weighted average allowable concentration of 350 parts per million (ppm); except in an uncontrolled spill, overexposure to this chemical is unlikely during this project. If not cleaning up a spill, any glove will work. If contact with the liquid is likely, use Viton or Silver Shield gloves.

Paint, paint solvents- may contain pigments such as lead, as well as vehicle solvents,such as methyl ethyl ketone (MEK) and toluene. MEK vapor has an 8-hour TWA limit of 200 ppm; toluene has a 50 ppm 8-hour TWA limit. Except in a spill, overexposure during this project is unlikely. In a spill situation, for less than 1-hour of exposure, use any glove material. For 1-4 hours of contact with the liquids, use Silver Shield. These paint pigments can be absorbed through ingestion, so good decon is vital to prevent increasing your body burden of these contaminants. Inhalation and skin absorption are modes of entry for the solvents.

Calcium hypochlorite- used to disinfect water or swimming pools. It liberates toxic chlorine gas which is also very corrosive to the skin and eyes. Use eye protection when handling. Over exposure is unlikely unless the container breaks. Use SCBAs and chemical gloves made of neoprene rubber or Silver Shield during spill clean-up.

Bromochloromethane- also known as Halon 1011. Liquid spills evaporate about 5 times faster than water. Liquid may irritate eyes and skin. Inhalation and ingestion are modes of entry of this chemical. The 8-hour TWA exposure limit is 200 ppm. Except in a spill, overexposure is unlikely. When cleaning up a spill, use SCBA and Viton or Silver Shield gloves. Do not heat this material, as it decomposes into very toxic gasses such as phosgene.

Oxalic acid- this white powder was used to remove rust in radiators. It has an 8-hour TWA exposure limit of 1 milligram per cubic meter of air (1 mg/m^3). Do not mix with the hypochlorite, as dangerous byproducts may form. It is corrosive to skin and eyes. Wear neoprene or PVC gloves and face shields and chemical goggles when handling this material.

Sodium hydroxide- this very strong base must be kept out of the eyes. Use goggles and face shield when working around this material. It causes severe skin corrosion; wear gloves made of neoprene rubber or PVC.

Isopropyl alcohol- also known as "rubbing alcohol", this material, in the quantity found at the site, should not pose undue risk to workers. If it spills indoors or other confined area, use SCBA to clean it up. Gloves may be made of neoprene or nitrile rubber or PVC. The 8-hour TWA exposure limit is 400 ppm.

Helium compressed gas cylinders- helium is a simple asphyxiant, which means that it may displace the oxygen in the air and kill by lack of oxygen. It is not toxic through skin contact. It is its high pressure hazard that poses the greatest risk on this site, since the cylinders will be handled outside.

In all cases, workers should wear splash suits made of any convenient material (Saranex coated Tyvek is a good choice), hardhat, safety boots, eye protection, hearing protection if around operating machinery, and full-face respirators with filter appropriate to asbestos protection and also to any vapors that may be present. The recommended PPE can be modified by the Site Safety Coordinator based on actual hazard present.

Air Monitoring

The Site Safety and Health Plan by the C of E recommends using a miniram for particulate monitoring. This instrument must be calibrated to the specific dusts present at the site in order to give meaningful data. A better way to monitor particulate exposure is to use a gravimetric analysis; a preweighed filter is used to collect a breathing zone sample during the work shift. At the end of the shift it is reweighed, and the exposure can be calculated using the weight of particulate per cubic meter of air drawn through the filter. If the total particulate exposure is less than 1 mg/m^3 , then the exposure to the soil contaminant is below allowable levels, and respiratory protection may not be needed.

Breathing zone monitoring for asbestos dust should be conducted since ACM is present throughout the site. If possible, the means to analyze the filters should be available on-site, since sending the samples to a lab in Anchorage will yield results after the project is completed.

A Photoionization detector instrument (PID) such as a TIP or HNu will prove useful for determining if any hydrocarbon vapors are cominig from a drum of solvent, or from contaminated soil after a spill.

A Combustible Gas Indicator (CGI), Oxygen meter, H_2S detector combination instrument will be useful on this project. An Industrial Scientic HMX-271 is an example of such an instrument.

RESPECTFULLY SUBMITTED

Martin H. Finkel

Martin H. Finkel, CIH #3384
Environmental Safety and Health of Alaska