

# TABS ON CONTAMINATED SITES

Contaminated Sites Program - Federal Sites

This is one in a series of Technical Assistance Bulletins (TABs) prepared by Environment Canada-Ontario Region for Federal Facilities operating in Ontario.

## TAB #10



## Health & Safety Procedures for Contaminated Sites

is to minimize potential contamination of workers

### DESCRIPTION:

A comprehensive health and safety program should be developed **prior to** site assessment/remediation activities to ensure that both the workers and the surrounding community are protected. Knowledgeable personnel should plan the safety operations **before** anyone begins work at a contaminated site. Once the assessment/remediation work commences, everyone entering the site must be made aware of safety procedures. Site personnel must be thoroughly trained to follow the procedures outlined in the "Site Health and Safety Program."

**Contaminated sites** pose a threat to both the environment and public health. They are **potentially more dangerous to workers than many other occupational situations** involving the handling of dangerous substances. There are often uncertainties as to the types, quantities, and locations of contaminants, as well as the degree of containment.

This TAB is an overview of the health and safety measures that are required during a site assessment. **It is not a comprehensive document** but rather a summary of the issues which need to be addressed. It is therefore not to be used alone when preparing a health and safety program. When preparing a health and safety Program, the departmental Health and Safety Officer should be consulted.

### SITE HEALTH AND SAFETY PROGRAM

The purpose of a **Health and Safety Program** is to provide comprehensive protection against all known and potential hazards. Specifically, its role

and protect the public from the site's hazards. It should outline all the health and safety procedures that are to be followed throughout site assessment and remediation. The program can be divided into several components, each of which is described in this TAB.

#### 1. Site Safety Plan

The Site Safety Plan is the primary component of the Health and Safety Program. It establishes policies and procedures to protect workers and the public from the potential hazards posed by a contaminated site. The plan should describe potential hazards at the site, identify the personnel responsible for health and safety, and describe actions to be taken to mitigate hazards.

Standard Operating Procedures (SOPs) should be developed and provided to all personnel. SOPs cover all activities that can be standardized. They should be easy to understand and practice. A Contingency Plan should be developed for safe and effective response to emergencies (refer to **TAB #9**).

## 2. Safety Meetings and Inspections

To ensure that the Site Safety Plan is being adhered to, the site safety officer should develop a set schedule for the inspection of site conditions, facilities, equipment, and activities. A checklist should be developed for each site, listing all items to be inspected. All problems should be re-inspected to ensure that they have been corrected, and the follow-ups noted on the checklist. The frequency of site inspections should be specified.

The site safety officer should also conduct safety meetings prior to initiating any site activity, and on a regular basis throughout the project, as appropriate (dependent on the magnitude of the project).

## 3. Site Map

A Site Map should be used for planning work activities and identifying evacuation routes and safety zones. The map should show topographic features, prevailing wind direction, drainage patterns, and the location of buildings, containers, impoundments, pits, ponds, tanks, as well as all other relevant information gathered to date.

## 4. Site Work Zones

In order to prevent cross contamination of a site, zones should be delineated on the site according to the types of activities and contaminants that will occur there. Three separate zones are used:

**Exclusion zone:** Area where contamination does exist or could occur. The exclusion zone may be divided into different sections where there are different types of hazardous wastes.

**Contaminant Reduction Zone (CRZ):** This is the transition area between the exclusion zone and the support zone. It is the area where the decontamination of equipment and personnel takes place. Its purpose is to keep the support zone free of contamination.

**Support Zone:** The support zone is the area free of contamination. People wear normal work clothes in this area. The personnel in this zone are responsible for organizing off-site emergency response teams in the event of an emergency.

## 5. Site Security

Security should be maintained in the support zone and at access points. An identification system should be established to identify authorized persons. A chain-link fence and warning signs may also be required, depending on the nature of the site.

## 6. Safe Work Practices

A list of clear and enforceable instructions (standing orders) which state safety practices and precautions should be developed, posted, and made available to all employees. The standing orders should be site-specific. They should be distributed to everyone who enters the site and posted at the site office and at controlled access points.

## 7. Medical Program

Workers at contaminated sites may experience a high degree of stress. A medical program should be developed. It should include measures for both emergency treatment and the monitoring of health and fitness of workers to determine their ability to perform work without suffering any undue discomfort. The medical program should be site-specific and designed by an experienced health physician.

## 8. Personal Protective Equipment

Personal protective equipment (PPE) is required to shield and/or isolate individuals from chemical, physical, and biological hazards. A written PPE program must be established for all activities at contaminated sites. The program has two objectives: protection from health and safety hazards, and protection from incorrect use and/or malfunction of PPE.

**Respiratory Equipment:** The basic function of a respirator is to reduce the risk of respiratory injury due to breathing airborne contaminants.

**Clothing and Accessories:** On a contaminated site, only clothing that is designed for protection against the specific chemical exposure that will be encountered at the site, must be used. Chemical protective clothing is available in a variety of materials that offer a wide range of protection.

**Personal Protective Equipment (PPE) Use:** It is essential that personnel be adequately trained in the use of PPE. The duration of use of the PPE should be established. Operational testing must be performed on new equipment before it is issued to workers.

## 9. Decontamination

Contaminants can adhere to the surface of PPE or permeate PPE material. It is important to avoid bodily contact with contaminated material, and to prevent contamination of the Support Zone. All contaminated material that has been attached to clothing or equipment must be removed and/or neutralized in either the exclusion Zone or the Contamination Reduction Zone.

A **Decontamination Plan** should be developed by an occupational hygienist. Decontamination personnel must be trained and protected against the hazards they will encounter.

## LIABILITIES AND HEALTH & SAFETY AT CONTAMINATED SITES

There are two issues that should be considered when work on contaminated sites is being contracted out. Protection of site personnel, including consultants and contractors, will be assisted by requiring that:

- The terms of reference include a health and safety clause to ensure that workers are made aware of the fact that the site is potentially contaminated, and that the consultants and their contractors are responsible for ensuring that they are sufficiently protected.
- The terms of reference include a clause to ensure that the public will be protected. Fencing and security are examples of measures that can be taken to protect the public from exposure to a contaminated site.

## SOURCES

Canadian Council of Ministers of the Environment (1996). *A Protocol for the Derivation of Environmental and Human Health, Soil Quality Guidelines*.

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