



## **Lead and Lead Paint Management Program**

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## PURPOSE and SCOPE

New Brunswick Community College (NBCC) has a duty to protect its employees and students from lead exposure. This Management Program has been prepared to raise the awareness of the hazards posed by lead in our facilities and to outline the measures and procedures that should be taken to control such hazards. The program is designed to manage existing lead products found in our facilities, **NBCC does not permit any lead products to be used in construction projects**. This applies to both renovations and new construction.

### 1.0 IMPLEMENTATION

Lead may affect the health of workers if it is in a form that may be inhaled or ingested. In order for lead to be a hazard by inhalation, lead particles that are small enough to be inhaled must get into the air.

There are three types of particles: dust, fumes, and mist. Dust consists of solid particles created through processes such as blasting, sanding, grinding, etc. Lead fumes are produced when lead or lead-contaminated materials are heated to temperatures above 500 C, such as welding, high temperature cutting, and burning operations. The heating causes vapours to be given off and the vapour condenses into solid fume particles. Mists are made up of liquid droplets suspended in air. The spray application of lead-based paint can generate a high concentration of lead-containing mist.

Therefore, the strategy for controlling airborne lead hazard can be broken down into three basic approaches:

- Prevent lead from getting into the air
- Remove lead present in the air
- Prevent workers from inhaling it

To prevent the ingestion of lead, workers should exercise good work and hygiene practices.

To avoid the ingestion, inhalation, and unintentional transfer of lead from contaminated area, it is essential to have the following control methods in place:

- Engineering controls
- Work practices and hygiene practices
- Protective clothing and equipment
- Training

### 1.1 Engineering Controls

Activities undertaken by NBCC employees and/or contractors involved in construction projects that may expose employees and students to lead should:

- Substitute lead-containing coatings and materials with lead-free coatings and materials
- Select methods and equipment for the removal of lead-containing coatings and materials that will reduce dust generation (e.g. wet methods, such as wet sweeping, and shoveling, reduce dust generation and should be used whenever practicable).
- General mechanical ventilation should be provided to remove contaminated air from the workplace, and filtered air should be provided to replace the exhausted air.

- Local mechanical ventilation should be provided to remove contaminants at the source. Power tools that can generate lead-containing dust should be equipped with effective dust collection systems.

## 1.2 Work and Hygiene Practices

Work practices and hygiene practices are on-the-job activities that reduce the potential exposure to lead. Lead-containing material can accumulate on the hands, clothing, and hair. From there it can be disturbed, re-suspended in air and inhaled or ingested. For all work involving lead exposure, there should be no smoking, eating, drinking, or chewing in the contaminated areas. Workers who have spent a great deal of time handling materials containing lead are able to shower at the end of their shift.

An effective housekeeping program requires the regular cleanup removal of lead-containing dust and debris. Surfaces should be kept clean by washing down with water or vacuuming with a vacuum equipped with a HEPA filter. Containers of lead containing waste should be kept tightly covered to prevent dust from becoming airborne. Cleaning with compressed air or dry sweeping should be not permitted.

## 1.3 Protective Clothing and Equipment

Personal protective clothing and equipment should be provided where workers may be exposed to lead. Appropriate protective clothing and equipment to prevent skin contamination, include but are not limited to coveralls or full-body work clothing; gloves, hats and footwear or disposable coverlets; and safety glasses, face shield or goggles. Respirators should be provided to prevent the inhalation of lead where engineering controls and work practices do not control the concentration of lead to below the OEL (Occupational Exposure Limit).

Protective clothing is to prevent skin exposure and the contamination of regular clothing. All clothing and equipment that has been worn in a lead-contaminated area must be removed at the end of each shift and decontaminated. **Under no circumstances should these be taken home.** Avoid shaking the clothes as this can be a significant source of exposure to lead dust. Contaminated clothing and equipment should be placed in a sealed impermeable plastic bag with proper labels indicating lead contamination. Washing facilities and procedures must be suitable for handling lead contaminated laundry.

## 1.4 Respirators

Workers should wear respirators when there is a risk of exposure to airborne lead. NBCC has developed a Safe Work Practice for Respirators which must be followed by all staff when working where the concentration of lead reaches the OEL (Occupational Exposure Limit) identified as a Type 2 Operation in this program.

## 1.5 Training

Training is an important component in preventing worker exposure to lead. Control methods, measures and procedures can only be as effective as the workers carrying them out. Training should cover the following:

- WHMIS training
- The hazards of lead, including health effects and symptom recognition
- Personal hygiene, respirator requirements and Safe Work Practices

## 1.6 Medical Surveillance

While medical surveillance can be used as a preventive measure. NBCC workers are not exposed to lead products at a level to require regular medical surveillance. Should a situation arise where an employee believes they may have been exposed to lead the employee is to immediately seek the advice of a physician. Physicians can then alert the worker, NBCC and the JH&S Committee to exposure problems in the workplace.

## 1.7 Classification of Work

In this guideline, lead-containing construction operations are classified into two groups, Type 1, or Type 2. Any construction project which could generate levels above 1.25 mg/m<sup>3</sup> will only be carried out by a licensed contractor using industry standard processes.

TYPE 1 OPERATION	TYPE 2 OPERATION
<0.05 mg/m <sup>3</sup>	>0.05 to 1.25 mg/m <sup>3</sup>

## 1.8 Type 1 Operations

- Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap
- Removal of lead-containing materials using a power tool that has an effective dust collection system equipped with HEPA filter
- Removal of lead-containing sheet metal
- Removal of lead-containing packing, Babbitt, or similar material
- Removal of lead-containing materials using non-powered hand tools, other than manual scraping or sanding

## 1.9 Type 2 Operations

- Welding or high temperature cutting of lead-containing materials outdoors. This operation is considered a Type 2 operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise, it will be considered a Type 3 operation.
- Removal of lead-containing materials by scraping or sanding using non-powered hand tools.
- Manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

## 1.10 Safe Work Practices for Working with Lead Type 1 Operations

The following is a list of general measures and procedures that should be followed for all work with lead:

- Washing facilities consisting of a wash basin, water, soap and towels and used before eating or leaving the project,
- No eating, drinking, chewing gum or smoking in the work area,
- Drop sheets to be used below all lead operations which produce or may produce dust, chips, or debris containing lead,

- Dust and waste should be cleaned up and removed by vacuuming with a HEPA filter equipped vacuum,
- Cleanup after each operation
- Dust and waste should be cleaned up and placed in a container that is dust tight, identified as containing lead waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before being removed from the work area, and remove from workplace frequently,
- Inspect the work area daily at least once to ensure the cleanliness of the area,
- Compressed air or dry sweeping should not be used to clean up and lead-containing dust or waste.

**Note:** Respirators are not necessary if the general practices are followed. Respirators should be available for employees with N-, R-, or P-series filter and 95, 99 or 100% efficiency.

### **1.11 Safe Work Practices for Working with Lead Type 2 Operations**

- All measures listed for Type 1 Operations must be followed,
- Signs should be posted to warn of the lead hazard
  - there is lead dust, fume, or mist hazard
  - access to the work area is restricted to authorized persons
  - respirators must be worn in the work area
- Personal protective clothing and equipment must be worn by those who enter the work area including proper respirator.

### **1.12 General and Local Mechanical Ventilation**

Where the work area is enclosed, general mechanical ventilation should be provided. The air from an enclosed work area should pass through a dust collector effective for capturing the size of the particulate matter being generated and for the volume and velocity of air moving through the enclosure. Local mechanical ventilation is highly recommended for welding, burning and high temperature cutting and removal of lead containing materials. Air velocity at any point in front of or at the opening of the ventilation hood should be sufficient to overcome opposing air currents and capture the contaminated air by causing it to flow into the hood. The air velocity at the source should be at least 0.5m/sec (100ft/min). The air discharged from the ventilation system should pass through a HEPA filter and be routed out of the workplace in a way that will prevent the return of contaminants into the workplace. If ventilation is not practicable then appropriate respirators should be provided.

### **1.13 Disposal of Lead Paint and Lead Painted Materials**

In order to dispose of an object that is known to contain lead paint, a leachate extraction test must be completed on a sample of the paint to determine its leachable lead concentration.

If the results of a leachate extraction tests are above 5 milligrams per litre (mg/L) for lead then the object in question is considered leachable toxic and therefore must be disposed through the services of an approved hazardous waste disposal company. Disposal at a Regional Solid Waste Landfill is not permitted. Regardless of test results, no lead painted objects that are flaking, chipping or peeling may be disposed of at a C&D Site.

## 1.14 References

Guideline lead on Construction Projects

Occupational Health and Safety Branch, Ministry of Labour, April 2011

Disposal of lead Paint and lead Painted Material Guideline

Department of Environment and Local Government, Prov of NB, August 2014