



**SCHOOL DISTRICT NO. 22 (VERNON)**

**HEALTH AND SAFETY**

**Lead Exposure Control Plan**

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### HEALTH AND SAFETY

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### **1.0 Health Hazards from lead exposure**

Lead interferes with many body processes and is poisonous to most organs and tissues, including the bones, intestines, kidneys, nervous system, and reproductive organs. Acute lead poisoning (high exposure over a short period of time) can cause fatigue, anemia, constipation, and damage to the nervous system. Chronic lead poisoning (exposure over a longer period of time) can cause fatigue, joint pain, and weakness. Lead poisoning can damage the fetus in pregnant female workers, and impair fertility in male workers. Workers are exposed to lead when they inhale lead-containing dust or ingest lead residue from their hands (for example, when eating, chewing gum, or smoking). Lead is a suspected human carcinogen and has been shown to cause cancer in laboratory animals.

Removing lead-containing paint without proper controls can generate lead dust. Lead enters the body when the dust is inhaled or ingested (swallowed). Once it is in the bloodstream, lead can be carried throughout the body. Lead exposure can cause a number of health effects, including weakness, headaches, stomach cramps, muscle and joint pain, and memory problems

### **1.2 Purpose and responsibilities:**

District 22 has a duty to protect our workers from lead exposure. Studies show that the removal of lead-containing paints and coatings generate airborne lead dust well in excess of safe levels. Effective controls are available to protect workers from harmful exposure.

A combination of control measures will be required to achieve this objective. We commit to being diligent in our efforts to select the most effective control technologies available, and to ensure that the best practices, as described in this exposure control plan (ECP), are followed at our worksites.

### **1.3 Management is responsible for the following:**

- Ensuring that the materials (for example, tools, equipment, personal protective equipment [PPE]), and other resources (for example, worker training) are readily available to fully implement and maintain this ECP.
- Ensuring that supervisors and workers are educated in the hazards of lead exposure, and trained to work safely during the removal of lead-containing paints and coatings.
- Ensuring that workers follow the requirements of the Occupational Health and Safety Regulation and the *Workers Compensation Act*.
- Maintaining written records of training (for example, proper use of respirators), fit-test



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results, crew talks, and inspections (for example, of equipment).

- Conducting an annual review (or more often if conditions change) of the effectiveness of the ECP. This includes a review of available control technologies to ensure that these are selected and used when practicable.
- Initiating immediate investigations into incidents/accidents and reporting these to WorkSafeBC.

#### **1.4 Supervisors are responsible for the following:**

- Providing adequate instruction to workers on the hazards of lead exposure.
- Selecting and implementing the appropriate control measures.
- Ensuring that workers using respirators have been properly trained and fit-tested, and that the results are recorded.
- Ensuring that work is conducted in a manner that minimizes and adequately controls the risk to workers and others. This includes ensuring that workers use appropriate engineering controls and wear the necessary PPE.
- Immediately correcting unsafe acts and conditions.

#### **1.5 Workers are responsible for the following:**

- Participating in all required health and safety education and training.
- Using the assigned protective equipment in an effective and safe manner.
- Following established work procedures as directed by the supervisor.
- Reporting any unsafe conditions or acts to the supervisor.
- Reporting to the employer any exposure incidents or any signs or symptoms of lead illness.

#### **1.6 Hazard identification and risk assessment**

- Lead-containing paints can contain anywhere from 0.009% to 50% lead by weight. Studies have shown that removal of paint with a lead content as low as 0.06% can generate airborne concentrations of lead that approach the occupational exposure limit.
- Removing lead-containing paint without the use of proper controls and PPE can expose workers to levels of airborne lead dust that are above the exposure limit listed in the Regulation.
- Unprotected workers or other persons may be exposed to the hazards of lead. All lead work locations will be enclosed by barriers or barrier tape and identified with signs or placards.



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##### **1.7 Exposure limit**

- The occupational exposure limit (OEL) for inorganic lead is 0.05 milligrams per cubic metre ( $\text{mg}/\text{m}^3$ ).
- Because lead is a suspected human carcinogen and linked with cancer in animals, workplace exposures must be reduced to levels that are As Low As Reasonably Achievable (ALARA) below the OEL.
- low-moderate risk work  $>0.05\text{-}0.50 \text{ mg}/\text{m}^3$  airborne lead concentration.
- low risk work not likely to exceed the eight-hour exposure limit of  $0.05 \text{ mg}/\text{m}^3$  airborne lead concentration.

##### **1.8 Lead dust controls**

- The Regulation requires employers to select lead dust controls based on the following hierarchy:
  1. Engineering controls (for example, barriers, enclosures, general ventilation, local exhaust ventilation)
  2. Administrative controls (for example, wash stations, separate eating and changing areas, and limiting the time workers are exposed to lead)
  3. Personal protective equipment (such as respirators and disposable coveralls)



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**1.9 Acceptable control methods for controlling exposure to lead-containing materials**

- The following control options will be used to eliminate or reduce the risk to workers from the hazards of lead dust exposure.

Work activity	Dust suppression	Other controls	Respirator type
Low-Moderate risk work	<ul style="list-style-type: none"> <li>• HEPA tool attachments</li> <li>• Poly sheeting</li> <li>• Water mist</li> </ul>	<ul style="list-style-type: none"> <li>• Hazardous materials survey</li> <li>• Review the report to understand what lead containing products are present</li> <li>• Personal hygiene – wash hands before going to the bathroom and before eating, drinking or smoking.</li> <li>• Do not eat, drink, smoke, chew gum or nail bite while on site.</li> <li>• HEPA Vac</li> <li>• Tyvek suit</li> <li>• Do not enter signage</li> <li>• Procedure</li> </ul>	<ul style="list-style-type: none"> <li>• Half-face respirator with HEPA P100 series filters</li> </ul>

**1.10 Respiratory protective equipment**

- Each worker will be fit-tested.
- If a worker is required to wear a respirator that requires an effective seal with the face for proper functioning, the worker must be clean-shaven where the respirator seals with the face.
- Respirators will be used, cleaned, and stored in accordance with the respiratory protection program.



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##### **1.11 Procedure**

Specific work procedures will be developed when required for tasks which may involve lead.

##### **1.12 Worker training for lead exposure**

- Training will be performed by the employer or the employer's designate.
- Training topics:
  - Health hazards of lead exposure
  - Engineering controls and safe work practices used to protect workers
  - The importance of proper equipment control and maintenance
  - Housekeeping procedures
  - Proper use of respirators and the respirator program
  - Personal hygiene procedures to reduce exposures



# LOW-MODERATE RISK LEAD WORK PROCEDURE

## A) General Rules

- 1) All low-moderate risk work ( $>0.05\text{-}0.50\text{ mg/m}^3$  airborne lead concentration) on surfaces that may have lead containing paints and coatings will only be performed by qualified workers.
- 2) Airborne lead dust must be controlled within the work area and cannot enter any other areas of an occupied building.
- 3) All qualified workers involved work with lead containing materials must receive training to ensure compliance with relevant sections of the WCB Regulation (e.g. personal protective equipment).
- 4) Training in the use of the relevant work procedures must be documented.

## B) Hazard Identification

- 1) Prior to commencement of work, bulk paint sampling and/or x-ray fluorescence (XRF) analyzer to determine content of lead on work surface. Occupational health monitoring may be required dependant on risk assessment of the work project. Post wipe-sampling is recommended to confirm lead clearance surface levels after completion of the work project.

## C) Tools and Personal Protective Equipment

- 1) Vacuum equipped with a High Efficiency Particulate Aerosol (HEPA) filter
- 2) Power tools with dust shroud attachments, hand tools and other regular maintenance tools.
- 3) Polyethylene sheeting
- 4) Disposal bags
- 5) Water spray bottles
- 6) Water bucket
- 7) Cloth/Towels
- 8) Half-face piece respirator of elastomeric type fitted with HEPA particulate filters
- 9) Disposable coveralls complete with hoods, and may include attached booties (Tyvek or equivalent material)
- 10) Rubber or equivalent material work gloves
- 11) Safety glasses/goggles
- 12) Safety footwear
- 13) Other relevant equipment/tools as required

## D) Work Area Preparation

- 1) The work area must be isolated from areas of the building where unprotected workers will be working.
- 2) Cover and seal the floor directly below area where lead containing paint and coatings will be worked on with polyethylene sheeting. The sheeting should also be applied to the walls directly below the area of work.
- 3) Dependent on the work being performed and if required, cover and seal all duct openings and grills. Have the Building Engineer/Head Custodian shut off the air handling system for the area being worked in.
- 4) Post signs and associated documentation restricting access to the work area to authorized workers only. Signs should be located at the work area entry/exit away from the work area.
- 5) Wash up area shall be established just outside the work area. This area shall be equipped with a bucket of warm water and cloths/towels.
- 6) Area for changing out of disposable coveralls shall be established near the wash up area. Polyethylene bags shall be available to put the used coveralls in for disposal.

## E) Completion and Disposal

- 1) After work has been complete, vacuum up bulk debris using HEPA equipped vacuum. Do not dry sweep.
- 2) Damp wipe all work surfaces to remove any residual dust in the work area.
- 3) All materials and disposable coveralls used during work on surfaces that may have lead containing paints and coatings will be bagged and disposed of as lead waste.



## LOW-MODERATE RISK LEAD WORK PROCEDURE

### F) Entry and Exit Procedures

- 1) Put on all required personal protective equipment before entering the work area.
- 2) Prior to exiting the work area, removing all disposable coveralls, but not respirator and place coveralls in the disposal bag.
- 3) Wash off the exterior of the respirator, hands and face prior to removing the respirator.
- 4) Inspect own work clothes, boots for potential contamination and clean with damp wiping or vacuum with HEPA equipped vacuum.
- 5) Wash hands and face after removing respirator.



# LOW RISK LEAD WORK PROCEDURE

## A) General Rules

- 1) All low risk work (not likely to exceed the eight-hour exposure limit of 0.05 mg/m<sup>3</sup> airborne lead concentration) on surfaces that may have lead containing paints and coatings will only be performed by qualified workers.
- 2) This low risk work procedure is to be used for regular daily maintenance work involving lead-containing paints or coatings.
- 3) Airborne lead dust must be controlled within the work area and cannot enter any other areas of an occupied building.
- 4) All qualified workers involved in work with lead containing materials must receive training to ensure compliance with relevant sections of the WCB Regulation (e.g. personal protective equipment).
- 5) Training in the use of the relevant work procedures must be documented.

## B) Regular Daily Maintenance Work

The following list of regular daily maintenance work is considered to be low risk work that is performed on surfaces that may have lead containing paints and coatings.

- 1) Installing pictures, school composites, bookshelves, whiteboards, tackboards or other – drilling holes to 3/16" in diameter with power tool.
- 2) Installing door hardware – drilling holes to 1" in diameter with power tool.
- 3) Removing and replacing damaged windows/doors – removal and replacing up to 6 ft with power and/or hand tool.
- 4) Installing windows, grills or other hardware on doors/walls – cutting up to 5 ft<sup>2</sup> for windows/grills/walls with power and/or hand tool.
- 5) Removing and replacing damaged wall trim – removal and replacing with hand tool.
- 6) Installing inserts for conduit sleeves – drilling holes up to 3/8" in diameter with power tool.
- 7) Removing and installing conduit, boxes, straps, electrical panel covers or other electrical equipment.
- 8) Cutting wood mouldings for conduit/wire mold – cutting up to 4 in<sup>2</sup> with power tool.
- 9) Cutting copper pipe – cutting up to 1" in diameter with hand tool and/or use of chemical paint stripper if necessary.
- 10) Cutting steel pipe – cutting up to 4" in diameter with power tool.
- 11) Removing and installing mechanical equipment
- 12) Sheet metal fabrication – scraping/brushing for minor repairs with hand tools, and/or use of chemical paint stripper if necessary.
- 13) Removing peeling paint from surfaces – scraping/brushing with hand tools and/or use of glove bag enclosures if area is no more than 2.6 ft<sup>2</sup>.

## C) Tools and Personal Protective Equipment

- 1) Vacuum equipped with a High Efficiency Particulate Aerosol (HEPA) filter
- 2) Power tools with dust shroud attachments, hand tools and other regular maintenance tools.
- 3) Polyethylene sheeting or equivalent sheeting material
- 4) Disposal bags
- 5) Water spray bottles
- 6) Water bucket
- 7) Cloth/Towels
- 8) Half-face piece respirator of elastomeric type fitted with HEPA particulate filters.
- 9) Rubber or equivalent material work gloves
- 10) Safety glasses/goggles
- 11) Safety footwear
- 12) Disposable coveralls
- 13) Other relevant equipment/tools as required



## LOW RISK LEAD WORK PROCEDURE

### D) Work Area Preparation

- 1) The work area should be isolated from areas of the building where unprotected workers will be working.
- 2) Cover and seal the floor directly below area where lead containing paint and coatings will be worked on with polyethylene sheeting. The sheeting may also be applied to the walls directly below the area of work.
- 3) Dependent on the work being performed and if required, cover and seal all duct openings and grills. If possible, shut off the air handling system for the area being worked in.
- 4) Post signs and associated documentation restricting access to the work area to authorized workers only.
- 5) Put on all required personal protective equipment before entering the work area.

### E) Completion and Disposal

- 1) After work has been complete, vacuum up bulk debris using HEPA equipped vacuum. Do not dry sweep.
- 2) Damp wipe all work surfaces to remove any residual dust in the work area.
- 3) All materials used during the regular maintenance work performed on surfaces that may have lead containing paints and coatings will be bagged and disposed of as regular garbage waste
- 4) After exiting the work area, inspect own work clothes, boots for potential contamination and clean with damp wiping or vacuum with HEPA equipped vacuum.
- 5) Wash hands and face after removing respirator.

**LOW-RISK LEAD PAINT REMOVAL PRE-JOB**

**Loose/peeling/flaking paint on all wall and ceiling surfaces**

Location/Address: \_\_\_\_\_

Work Order # \_\_\_\_\_ Date(s): \_\_\_\_\_

Site Supervisor: \_\_\_\_\_

Contact Information: \_\_\_\_\_

**RISK ASSESSMENT**

The lead containing paint [above 600 mg/kg (0.06% in content)] from the above mentioned surfaces has been determined to be a Low-Risk work activity based on the potential airborne lead concentrations not likely to exceed 0.05 mg/m<sup>3</sup>.

**PROJECT PREPARATION**

1. Ensure the following equipment is on hand prior to installing the work area barrier tape:

***Mandatory Personal Protective Equipment***

- Half face piece elastomeric respirator equipped with HEPA particulate cartridges (fit test documentation present)
- Disposable Tyvek type coveralls with elastic hood and cuffs
- Laceless rubber boots or attached booties on the disposable coveralls.
- Work gloves (rubber, nitrile, latex or of equivalent material)
- Safety glasses/goggles

***Mandatory Documentation and Equipment***

- Long Term Notice of Project, safe work procedures, other relevant documentation if applicable (e.g. lead analysis).
- Caution barrier tape with Lead hazard warning signs. MSDS sheets as required.
- 6 mil polyethylene disposal bags.
- Rolls of polyethylene drop sheets.
- Duct tape and painter's tape.
- Wash buckets, sponges and/or wash cloths.
- Water misting equipment (spray bottles)
- DOP-tested HEPA Vacuum
- Other relevant equipment/tools as required (Ladders, etc.)

## **LOW-RISK LEAD PAINT REMOVAL PRE-JOB**

### **Loose/peeling/flaking paint on all wall and ceiling surfaces**

2. Contact Environmental Consultant to schedule any post-wipe surface sampling and occupational air monitoring as required.
3. Complete review of work procedures and relevant documentation with project personnel.
4. Post notice of project, work procedures and relevant documentation outside of the work area.
5. Isolate and lock-out any processes and /or equipment in the work areas (as required) and conduct lock-out test.
6. HEPA vacuum floor directly under removal locations (both sides of wall) to a distance of 4 feet left and right of the removal location and 6 feet out from the wall. Remove or cover any shelves or furnishings in the work area.
7. Install polyethylene drop sheet(s) onto cleaned areas and tape down to floor using duct/painter's tape.
8. Ensure all relevant equipment, HEPA vacuums and hand tools are in the work area.
9. Cordon off the work area using barrier tape, signs and tags 15 feet (10 feet minimum) from the work area. After barrier tape is installed, do not cross barrier tape into work area until completing step 11 below.

### **REMOVAL PROCEDURE**

10. Ensure a wash bucket with warm water and sponge/wash cloths is available immediately outside the work area barrier tape (Clean/wash zone)
11. Don the respirator (under hood of disposable coveralls), disposable coveralls, gloves, rubber boots or work boots with boot coverings, safety glasses/goggles and any other safety equipment as required. Conduct negative and positive seal check on respirator. Ensure respirator face seal is obtained prior to entering the work area.
12. Enter work area and lightly mist polyethylene drop sheet(s) with water.
13. Lightly mist the removal area. Hand scrape loose paint and sand as required. If a HEPA vacuum is used as part of the scraping/sanding, continue to run the HEPA vacuum for 30 seconds to ensure all particles/debris are drawn into the HEPA vacuum.
13. Once scraping is completed, clean all tools and wipe down as required. Remove tools from the immediate work area to the edge of the work area barrier tape.
14. HEPA vacuum entire work area, remove polyethylene drop sheet(s) and any other polyethylene covering furnishings by folding sheet onto itself and place in disposal bag. Take waste bag to edge of work area barrier tape.
15. HEPA vacuum entire work area and wipe down work area floor and bottom of work boots or booties, put cloths used for cleaning into the disposal bag at the edge of the removal area.
16. Remove coveralls near barrier entrance, but not respirator and place the coveralls in the disposal bag.
17. Inspect work boots, hands and bottom of boots for any potential contamination and final clean as necessary before putting last cleaning cloths into disposal bag.
18. Still wearing respirator, step outside the barrier to the wash down station and wash hands and wipe down respirator, remove respirator, wash hands and face and only then final clean respirator and cover HEPA filters with tape before placing respirator into storage bag, put last cleaning cloths into waste disposal bag and tape shut with duct tape.

**LOW-RISK LEAD PAINT REMOVAL PRE-JOB**

**Loose/peeling/flaking paint on all wall and ceiling surfaces**

19. Remove barrier tape and tools from work area.
20. Dispose of waste bags into general garbage disposal and or schedule pick-up by waste contractor.

**\*\*NOTE: YOUR RESPIRATOR IS THE FIRST PIECE OF PERSONAL PROTECTIVE EQUIPMENT TO BE PUT ON AND THE LAST TO COME OFF\*\***

**PRE-JOB MEETING REVIEW ITEMS FOR LEAD PAINT REMOVAL PROJECT**

- 1.
- 2.
- 3.
- 4.