



Ministry of
Environment and
Climate Change Strategy

Technical Guidance 4

Environmental Management Act Applications

**GUIDELINE TO MANAGING LEAD-CONTAINING
CONSTRUCTION AND DEMOLITION WASTE IN B.C.**

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Environmental Protection Division

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DISCLAIMER

This document does not supersede or replace the *Environmental Management Act* or its regulations; in the case of omissions or discrepancies, the *Act* and the Hazardous Waste Regulation apply. It is intended for guidance only.

BACKGROUND

This document provides general guidelines for generators of **waste arising from construction and demolition activities, including cleaning**, that may be characterized as regulated hazardous waste due to the presence of **lead** in a coating applied to the surface of the construction material (e.g., paint) or in the material itself (plumbing fittings, solder, etc.). Such wastes could include wood, metal, plastic, concrete, asphalt and any other material, and if hazardous waste, would most likely exhibit the “leachable toxic” characteristic. A “leachable toxic” waste, as defined in the B.C. [Hazardous Waste Regulation](#) (HWR), is a waste that produces an extract with a lead concentration greater than 5 mg/L, when subjected to the regulatory extraction procedure US EPA Method 1311, also known as the Toxicity Characteristic Leaching Procedure (TCLP). A lead-containing waste that analytically proves to be a “leachable toxic waste” is characterized as a regulated hazardous waste.

Paints made before 1950 contained large amounts of lead, as well as other metals, primarily as pigments. In fact, some paint made in the 1940s contained up to 50% lead by dry weight. If a building or structure was constructed before 1960, it was likely painted with lead-based paint. Since the 1950's, the use of lead has been more common in exterior paint than interior paint. Lead has also been used in water lines and plumbing including pipes, pipe or plumbing fittings, fixtures, solder and flux. Lead is also a common additive in plumbing materials such as lead solder, brass, bronze and other alloys.

According to the document titled “[Hazardous Materials in Construction](#)¹” (Levelton, 2013), lead paint was phased out of architectural paints from mid 1970s. However, lead-containing paints are still in use for rust inhibition on metal structures and for sheet applications and ceramics.

¹ <http://bcbec.com/wp-content/uploads/2018/03/Hazardous-Materials-in-Construction.pdf> or <http://bcbec.com/event/vancouver-luncheon-hazardous-materials-construction/>

WASTE ASSESSMENT

Before beginning a demolition project, a work plan should be developed. The plan should include hazard assessment to identify all potential hazardous wastes that could be generated as a result of the demolition and/or cleaning of the facility, depending on the building/structure type and usage. Hazardous wastes are those which fall under the definition of “hazardous waste” in the HWR. All hazardous wastes generated must be managed in a manner that complies with the requirements of the HWR.

The work plan should include an assessment of the presence of lead-based paint on building/structure surfaces and components. The presence of lead should be confirmed on the basis of analytical test results from representative samples or other reliable field testing methods. Sampling should be carried out by a qualified person to ensure the representativeness of the samples in terms of the number and size of the samples, as well as sampling locations. All representative samples must be collected and handled in a way that preserves the original physical form and chemical composition of the sample, and prevents contamination in the field, in transit and in the laboratory.

Generally, a representative sample means a sample which can be expected to accurately exhibit the average properties of the whole waste. In a demolition project, it is expected that different components of the whole waste could contain varying amounts of lead-based paints. Representative sampling of each of these components is needed in order to determine the average properties of the whole waste. Recommended sampling locations include:

- Fences and porches
- Sidings, walls, doors, ceilings and window sills
- Stairs and banisters
- Painted built-ins (e.g., bookcases, shelves etc.)
- Paint and solvent wastes abandoned in the building prior to and during occupancy

REGULATORY REQUIREMENTS UNDER THE HAZARDOUS WASTE REGULATION (HWR)

In this document, the management of hazardous waste to meet the HWR requirements includes the following as a minimum:

- submission of a completed HWR Schedule 5 – Form 1 to obtain/update a B.C. Generator (BCG) number for the site where the hazardous waste is generated, where total hazardous waste quantity exceeds the registration threshold (HWR, Schedule 6),
- proper storage of any hazardous waste generated,
- use of a transporter licensed for the appropriate hazardous waste(s) for any off-site shipment of the waste(s),

- use of a manifest where quantities shipped exceed the manifesting threshold (HWR s.46), and
- shipment to an authorized hazardous waste management facility.

Other provincial requirements may apply including, but not limited to, Work Safe BC requirements for the work site and all personnel involved in the construction/demolition activity.

SPECIFIC MANAGEMENT GUIDANCE BY SUBSTRATE AND WASTE TYPE GENERATED

Demolition waste may contain two types of painted components or substrate: metallic and non-metallic. The following is a guideline as to how each waste type stream is properly managed:

A. NON-METALLIC PAINTED COMPONENTS/SUBSTRATE

If not tested on site, demolition waste can be screened for the presence of lead by collecting representative samples of paint chips and submitting them to an approved laboratory for lead analysis. If test results indicate that lead is present in the coating, two waste management options are available:

- Option 1:** A further evaluation is carried out to determine if the demolition waste is a regulated hazardous waste. The evaluation is completed by subjecting **representative core samples** of the whole waste (paint unremoved) to the TCLP test to determine if it exhibits the characteristic of “leachable toxic”. If the TCLP test results show that the concentration of lead is greater than 5 mg/L, then the total generated waste quantity must be characterized and managed as hazardous waste. Otherwise, the demolition waste is characterized and managed as non-hazardous construction and demolition (C&D) waste.
- Option 2:** The paint is professionally removed from the painted components (e.g., by sand blasting, chemical paint strippers, etc.) and the resulting wastes from the removal process are segregated into two streams: the **paint waste** stream and the **cleaned component waste** (the substrate) stream. Management of the generated waste streams shall be carried out as follows:
- The **paint waste** (including paint chips, spent shot blast and residues) must be collected and contained in secure covered containers or heavy plastic bags, as appropriate and managed as follows:
 - **Option 2.1** (recommended): Based on investigation into other jurisdictions and available analytical information, it is expected that the paint waste would fail the TCLP test for lead and would be characterized as “leachable toxic” hazardous waste in B.C.. Accordingly, it is

recommended that the paint waste stream is managed as hazardous waste without having the specific waste undergo TCLP testing. The waste is manifested as “leachable toxic waste” and shipped by an appropriately licensed carrier directly to an authorized hazardous waste facility, **or**

- **Option 2.2:** Representative samples of the waste stream are appropriately collected and subjected to the TCLP test at an accredited laboratory. The waste stream is characterized and managed based on the TCLP test results.
- The **cleaned waste** (the substrate) must be appropriately sampled (**representative core samples** of the whole waste) and subjected to TCLP testing to determine if the waste qualifies as hazardous waste. Based on the test results, the cleaned substrate is either managed as hazardous waste (i.e., failed TCLP test) or otherwise. Cleaned substrates passing the TCLP test can be disposed of by recycling or by disposal as non-hazardous C&D waste.
- The advantage of the Option 2 approach is a reduction in the hazardous waste volume generated and thus both an economic and an environmental benefit.

B. METALLIC PAINTED COMPONENTS

At a demolition site, the work plan should include an assessment for lead-based paint on metallic building/structure components. Waste generated from the maintenance or demolition of metallic structures (e.g., such as bridges, water towers, or tanks) may include chemical residues and/or sandblast grit from paint removal activities. These wastes may contain lead based paint which, consequently, would necessitate carrying out a hazardous waste assessment.

All painted metallic demolition components are not characterized as hazardous waste so long as the paint is not removed from the painted surfaces. However, generators of such waste streams are encouraged to manage of the waste at metal recyclers rather than by landfilling.

If lead-based paint is removed from metal surfaces (e.g., by sand blasting, mechanical stripping or chemical paint strippers, etc.), then the paint waste stream generated from the removal process, which could include spent shot blasting waste, collected paint chips or chemical residues, must be collected and contained in secure, covered containers or heavy plastic bags, as appropriate, and managed as described in Options 2.1 (recommended) or 2.2 above. The professionally cleaned metal waste is not characterized as hazardous waste and can be managed at authorized scrap metal recyclers.

C. OTHER LEAD-CONTAINING WASTES

Other potentially lead-containing waste streams resulting from demolition activities include plumbing components such as lead pipe and soldered joints, lead-containing compounds used in welding or soldering of the water lines and other plumbing applications, sheeting for acoustic insulation, masonry plugs for fasteners, glazes and ceramics, pointing mortar, and brass fixtures are also potential sources of lead. However, these waste components are not characterized as hazardous waste and can be managed as solid, non-hazardous waste at authorized scrap metal recyclers (metallic components) or landfills (non-metallic components). Waste radiation shielding should be professionally surveyed to document it is free from residual radioactive contamination prior to disposal or recycling. Radioactive materials are regulated by the federal *Nuclear Safety and Control Act*.

HWR GENERATOR REGISTRATION REQUIREMENTS

The HWR requires a person who, within a 30 day period, produces or at any time stores at on site facility a quantity greater than 500 kg of leachable toxic waste, to apply for a provincial generator registration (BCG) number by completing the online registration form² of the HWR.

TRANSPORTING HAZARDOUS WASTE

Hazardous waste shipments requiring the use of a hazardous waste manifest must be transported by a [licensed transporter](#)³. For solid hazardous waste, a manifest must be used for transporting any quantity in excess of 5 kg.

ADDITIONAL INFORMATION

The responsibility of complying with all applicable regulatory requirements in terms of health, safety and the environment rests with the generator of the waste. For further information on the management of hazardous waste, please see the Ministry of Environment's hazardous waste website.⁴

A Work Safe BC document titled "Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry" is also useful.⁵

² <https://www2.gov.bc.ca/gov/content?id=CCFC390820E6414F87866E3EAE6CAD10>

³ <http://a100.gov.bc.ca/pub/apex/f?p=200:1:334904216870516::NO::>

⁴ <http://www2.gov.bc.ca/gov/topic.page?id=4C31A8F4F63B414D807AE4CF35EF9E36>

⁵ <https://www.worksafebcstore.com/lead-containing-paints-and-coatings.html>

