

## **Part 1 General**

### **1.1 SUMMARY**

- .1 Comply with requirements of this Section when performing following Work:
  - .1 Removal of loose, flaking and peeling lead-containing coatings and lead leachate toxic paint and/or coated building materials from most interior and exterior painted surfaces including the ceilings, steps, railings, window casings window trim, and doors/hatches, and from wood trim, walls (interior and exterior), and concrete foundation. See Assessment Report reference, Appendix 1.
  - .2 Lead based paint and lead leachate toxic paints have been identified on the interior and exterior of the lightstation. Locations of the lead containing and lead leachate toxic building materials are described the Assessment Report, Appendix 1.
  - .3 All paint and painted materials with a total lead concentration greater than 90 mg/kg (ppm) exceed the Surface Coating Materials Regulation under the Hazardous Products Act and must be handled in accordance with these specifications.
  - .4 Disposal options for lead containing paint and lead leachate toxic paints are as follows:
    - .1 Painted materials with lead concentrations below 1,000 mg/kg may be disposed of at a Construction and Demolition (C&D) Disposal Site.
    - .2 Exterior painted materials or paint chips with lead concentrations above 1,000 mg/kg, but with a lead leachate concentration below 5 mg/L, may be disposed of at an approved solid waste landfill or C&D facility pending authorization from the facility operator.
    - .3 Interior loose, flaking or peeling paint areas not abated concurrently with the mercury abatement process shall be abated in accordance with this specification. Painted materials or paint chips with a lead leachate concentration above 5 mg/L must be transported out of province by a hazardous waste disposal firm to an approved facility capable of accepting lead leachate toxic waste.
  - .5 Comply with requirements of this Section when performing the following Work
    - .1 Removal of lead-containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter on building materials as indicated in Section 1.7 and in the Appendices.
    - .2 Removal of lead-containing coatings or materials with non-powered hand tool, other than manual scraping and sanding on building materials, as indicated in Section 1.7 and in the Appendices.

### **1.2 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 35 33 - Health and Safety Requirements

- .3 Section 01 35 43 - Environmental Procedures
- .4 Section 01 74 11 - Cleaning
- .5 Section 01 74 21 - Construction Demolition Waste Mgt and Disposal
- .6 Section 02 41 13 - Selective Site Demolition
- .7 Section 02 81 01 - Hazardous Materials
- .8 Section 02 82 00.01 - Asbestos Abatement Minimum Precautions

### 1.3 REFERENCES

- .1 Department of Justice Canada
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Health Canada
  - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .3 Human Resources and Social Development Canada (HRSDC)
  - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety.
- .4 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .5 U.S. Environmental Protection Agency (EPA)
  - .1 EPA 747-R-95-007 [1995], Sampling House Dust for Lead.
- .6 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)
  - .1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).
- .7 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances
  - .1 Lead in Construction Regulation - 29 CFR 1926.62 [1993].
- .8 Underwriters' Laboratories of Canada (ULC)
- .9 Occupational Health and Safety Act, S.N.S. 1996, c. 7, Province of Nova Scotia, last updated in 2013, c.41.
- .10 Workplace Health and Safety Regulations, N.S. Reg. 143/2014, Province of Nova Scotia.
- .11 Nova Scotia Guidelines for Disposal of Contaminated Solids in Landfills, March 22, 1994, amended May 18, 2005.
- .12 Code of Practice: Working With Inorganic Lead, Province of Nova Scotia, June 17, 2011.
- .13 Ontario Ministry of Labour
  - .1 Lead on Construction Products Guideline, April 2011 (rev).
- .14 Stantec Consulting Limited

- .1 Limited Hazardous Building Materials Assessment, Sambro Island Lighthouse, Halifax County, Nova Scotia, DFRP #02835, LL #507, RPIS #MC 00504. Dated March 30, 2016 (Appendix 1).
- .15 References in Appendices obtained from previous reports on this site.

#### **1.4 DEFINITIONS**

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .2 Authorized Visitors: Public Works and Government Services Canada (PWGSC), Fisheries and Oceans Canada, Environmental Consultant, representatives of regulatory agencies and any visitor approved by PWGSC and/or Fisheries and Oceans Canada.
- .3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air ( $50 \text{ ug/m}^3$ ) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic meter of air for removal of lead based paint by methods noted in paragraph 1.1.
- .6 Competent person: individuals capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.
- .7 Lead dust: wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

#### **1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction. The Departmental Representative will involve the Environmental Consultant in the disposal approval process.
- .3 Provide proof of Contractor's General and Environmental Liability Insurance.
- .4 Quality Control:
  - .1 Provide Departmental Representative proof that lead based paint waste has been received and properly disposed (e.g. Special Waste Permit from a waste management facility for non-lead leachate toxic paint and with lead concentrations over 1,000 mg/kg).

- .2 Provide Departmental Representative necessary permits for transportation and disposal of lead leachate “toxic” paint waste.
- .3 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

## **1.6 QUALITY ASSURANCE**

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead paint, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
  - .2 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers and visitors in work Area include:
      - .1 Respirator NIOSH approved and equipped with replaceable HEPA filter cartridges with an assigned protection factor of [10], acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.
      - .2 Half mask respirator: half-mask particulate respirator with N, R, P - series filter, and 95, 99, 100 % efficiency could be provided.
    - .2 Eating, drinking, chewing, and smoking are not permitted in work area.
    - .3 Ensure workers wash hands and face when leaving work area.
    - .4 Visitor Protection:
      - .1 Provide approved respirators to Authorized Visitors to work areas.
      - .2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

## **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels. A summary of lead waste and subsequent disposal requirements are as follows:
  - .1 Paint chips/residue/waste from the following interior surfaces that were not removed during the mercury abatement should be treated as leachate toxic paint and disposed of at an “out of province” disposal site through the services of an approved hazardous waste disposal company.

- .1 White paint on interior stone walls in lower 2/3 of lighthouse (paint chips).
- .2 White paint over red, cream and brown paint on interior wood trim (paint chips and paint + substrate).
- .3 Grey paint over yellow and brown paint on interior stairs (paint chips and paint + substrate).
- .4 White paint over cream paint on interior concrete walls on upper 1/3 of lighthouse (paint chips).
- .2 Paint chips/residue/waste from the following exterior paints should be disposed of at the approved solid waste management facility.
  - .1 Red paint on exterior concrete base (paint chips and paint + substrate).
  - .2 Red paint on exterior wood shakes (paint chips and paint + substrate).
  - .3 White paint on exterior wood shakes (paint + substrate).
- .3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

## **1.8 EXISTING CONDITIONS**

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification and labeled as Appendix 1.
- .2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

## **1.9 SCHEDULING**

- .1 Not later than two days before beginning Work on this Project notify following in writing:
  - .1 Nova Scotia Labour and Advanced Education.
  - .2 Disposal Authorities.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3 Provide Departmental Representative copy of notifications prior to start of Work.

## **1.10 PERSONNEL TRAINING**

- .1 Provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures, and in use, cleaning, and disposal of respirators.
- .2 Instruction and training related to respirators includes, at minimum:
  - .1 Proper fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.

- .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.
- .4 Supervisory personnel to complete required training.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
- .2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual lead paint residue.
- .4 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.
  - .1 Label containers with pre-printed bilingual cautionary "Warning Lead" clearly visible when ready for removal to disposal site.

## **Part 3 Execution**

### **3.1 SUPERVISION**

- .1 One Supervisor for every ten workers is required.
- .2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

### **3.2 PREPARATION**

- .1 Remove and store items to be salvaged or reused.
  - .1 Protect and wrap items and transport and store in area specified by Departmental Representative.
- .2 Work Area:
  - .1 Tarp and enclose work area to ensure capture of all paint particles removed. If contractor can demonstrate a dustless removal technique that shall not result in dispersal of paint chips enclosure shall not be required.
  - .2 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.
  - .3 Seal off openings with polyethylene sheeting and seal with tape.
  - .4 Protect ground surfaces, and floor surfaces covered from wall to wall with polyethylene sheets.
  - .5 For exterior work, use appropriate methods for containing loose and flaking paint to ensure that residual lead does not impact the adjacent soil.

- .6 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.
  - .7 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.
  - .8 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.
- .3 Do not start work until:
- .1 Arrangements have been made for disposal of waste and the Departmental Representative has been notified.
  - .2 Tools, equipment, and materials waste containers are on site.
  - .3 Arrangements have been made for building security.
  - .4 Notifications have been completed and preparatory steps have been taken.

### **3.3 LEAD ABATEMENT**

- .1 Remove peeling, flaking, and loose lead-containing coatings and other lead leachate toxic paint from surfaces identified in Section 1.7.2.
- .2 Removal of lead-containing and lead leachate toxic coatings using wet methods to reduce dusts being generated by renovation activities (e.g. using amended water to wet surfaces before chipping, scraping, etc.).
- .3 Remove lead leachate toxic paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.
- .4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .5 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
- .6 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Departmental Representative, who may also engage a designated Consultant, apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for 8 hours no activity, or disturbance during this period.

### **3.4 INSPECTION**

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Department.

- .2 Departmental Representative will inspect work for:
  - .1 Adherence to specific procedures and materials.
  - .2 Final cleanliness and completion.
  - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

### **3.5 FINAL CLEANUP**

- .1 Following Departmental Representative approval, proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
- .3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

### **3.6 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by Departmental Representative.

**END OF SECTION**