



DOCUMENT 02 84 00

POLYCHLORINATED BIPHENYL (PCB) REMEDIATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Provide all labor, materials, equipment, transportation, packaging, sampling and testing, and incidentals required to remove and dispose of polychlorinated biphenyl (PCB) containing or contaminated materials from the former Marshall Elementary School located at 33901 Curtis Road in Livonia, Wayne County, Michigan. Work shall be performed in accordance with all Federal, State, and local laws and regulations. PCB-containing materials include, but are not limited to:
 - 1. Consider fluorescent light ballasts to be PCB-containing unless clearly labeled No-PCB.
 - 2. Any and all other materials or items such as caulks, glazing compounds sealants and expansion joint (as identified in Section 3.3 of the Hazardous Materials Survey Report) containing or suspected to contain PCBs.
- B. The existing pole-mounted electrical transformers located at the northern extent of the parking lot are owned DTE Energy and are not scheduled to be removed.
- C. The Hazardous Materials Survey (HMS) for the subject buildings has been conducted by NTH Consultants, Ltd. (NTH) and the findings are presented in reports included as Attachment I. Verify all information.
- D. Dispose of waste only at approved disposal facilities.
- E. Provide a summary report on items disposed of for compliance with 40 CFR 761.180 (a).

1.02 RELATED SECTIONS

- A. Other sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this Work.



- B. Section 02 41 00 - Demolition
- C. Section 02 80 00 - Universal and Hazardous Materials Remediation
- D. Section 02 82 00 - Asbestos Remediation

1.03 GENERAL REQUIREMENTS

- A. **Contractor Responsibility:** Assume full responsibility and liability for compliance with all applicable federal, state and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site and persons occupying areas adjacent to the site. Provide medical examinations and maintain medical records of personnel as required by the applicable Federal, State, and local regulations. Hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of Contractor, Contractor's employees or subcontractors.
- B. Decontamination area location, dumpster location and entrances that may be used for the movement of supplies and personnel are subject to approval by the Owner's Representative.

1.04 REFERENCES

- A. **General Applicability of Codes, Regulations, and Standards:** Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.
- B. The references in this Article may apply to the work under this Section. This list shall not be considered complete, and it is the Contractor's responsibility to perform all work in accordance with all Federal, State and local laws and regulations.
- C. **CODE OF FEDERAL REGULATIONS (CFR)**
 - 29 CFR Part 1910 Occupational Safety and Health Standards
 - 29 CFR Part 1926 Safety and Health Regulations for Construction



40 CFR Part 761 Polychlorinated Biphenyls (PCB) Manufacturing, Processing, Distribution in Commerce and Use Prohibitions (referred to herein as TSCA)

D. STATE OF MICHIGAN

R 333.5001 – 408.49103 General Industry and Construction Safety and Occupational Health Standards

1.05 SUBMITTALS

At least **20 working days** prior to beginning work, submit the following items. Do not begin work until they are acknowledged as received.

A. Work Plan

1. Submit work plans describing the means, methods, and procedures proposed for removing, transporting and disposing of regulated PCB-containing materials.
2. The work plans shall address safety issues dealing with removal, handling, storing, and transporting the regulated PCB-containing materials and products used to remove PCBs, including methods of preventing all materials from entering sewers, the generation of airborne dust and spread of contamination.
3. Submit health and safety plans in accordance with Michigan Occupational Safety and Health Act (MIOSHA) requirements.

B. For all disposal facilities:

1. Use only disposal facilities approved by LPS. If a waste requires a specialty disposal method that approved facility cannot provide, submit a request to the Owner's Representative with an explanation of why an alternate facility is required.
2. Submit the name, location, 24-hour telephone number, and Federal, State and local license or permit numbers.
3. Indicate which material classification(s) are intended to be disposed of at each facility (PCB Remediation Waste, PCB Product Waste, mixed hazardous and PCB waste, etc.)



4. Submit the name and address, and federal, state and local permit or identification numbers of the proposed transportation contractor.
 5. Submit for Owner's Representative review prior to LPS's signature, the disposal facility's approval application (waste profile) filled out in its entirety, inclusive of required laboratory data. Within 5 days, the Owner's Representative will either return the LPS signed waste profile to the Contractor or reject the application. Contractor is responsible for the contents of the waste profile, and disposal facility rejection of an LPS signed waste profile shall not be cause for additional compensation.
 6. Submit the approved waste profile after receiving disposal facility approval prior to removing hazardous material from the sites. The approval shall contain the facility's waste approval number.
 7. Submit a sample manifest filled out in accordance with the requirements of this Section and 40 CFR 761.207.
- C. Submit the name and address of any environmental testing laboratory to be utilized.

1.06 SAMPLING AND ANALYTICAL TESTING

- A. If additional data is required to obtain disposal facility approval, for characterization, post remediation verification or post decontamination verification, collect and analyze appropriate samples. Notify the Owner's Representative in writing at least one week in advance of sampling with an explanation for the additional testing and the date and time of the sampling so that the Owner's Representative will have the opportunity to collect co-located samples.
- B. Retain a laboratory which routinely provides analysis acceptable to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to perform required analytical testing and sampling. Costs of sample collection, shipping, and testing shall be borne by the Contractor and are incidental to the Contract. Sampling as required or as specified by the Owner's Representative shall be performed by the Contractor.
- C. Provide a copy of the laboratory results to the Owner's Representative.



1.07 QUALITY ASSURANCE

- A. Contractor will be experienced in the removal, packaging, handling, transportation, and proper disposal of PCBs and have all necessary local permits and/or approvals.
- B. Contractor shall be responsible for the proper handling of material being disposed of from the time the Contractor moves the material until the material is disposed off-site at the licensed disposal facility. The Contractor shall be responsible for cleaning up of all spills that occur during loading, hauling and final disposal at no cost to LPS. Contractor shall immediately notify the Owner's Representative of any spills and appropriately clean up and dispose of all material and impacted media required for cleanup.
- C. Do all work required by and in accordance with all applicable federal, state, and local government regulatory agencies and arrange for all permits and licenses for the packaging, loading, hauling, and final disposal operations.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Use only products designed to remove PCBs from surfaces and allowed under TSCA.

PART 3 – EXECUTION

3.01 GENERAL

- A. Preparation
 - 1. Obtain all required permits. Provide approved containers, vehicles, equipment, labor, labels, manifests and other documents necessary for accomplishment of the work.
- B. Safety Guidelines
 - 1. Perform all work associated with PCB cleanup using appropriate personal protective equipment as defined by MIOSHA or more stringent if required.



2. Personal protective equipment shall include respiratory protection and/or ventilation for vapors or particulates associated with PCB removal, building material removal, or other activities if appropriate.
3. Make the work areas safe for the Owner's Representative and other authorized agents of the Owner.
4. Ensure that personnel conducting work under this Section are trained and thoroughly familiar with the safety precautions, procedures, and equipment required for controlling the potential hazards associated with this work.

3.02 GENERAL REMOVAL

A. Packaging and Handling Requirements

1. Prior to the start of removal operations, determine which waste materials may be hazardous. Keep hazardous waste segregated from solid waste, so that proper disposal of the waste material can be achieved.
2. Inspect containers to determine if they are broken, leaking or deformed. In the case of over-packed, leaking, or broken containers of hazardous materials, remove hazardous contents, and place them in new drums.
3. Categorize and containerize materials by contents and disposal compatibility. Perform compatibility tests, so waste can be segregated in the interim storage area without risk of fire or explosion.
4. Package small containers of waste to meet all applicable U.S. Department of Transportation (DOT) and/or Michigan Department of Transportation (MDOT) requirements. Collect liquid waste in drums (55-gallons or smaller).
5. Properly label all containers prior to shipment in accordance with all, TSCA, MDOT and other Federal and State regulations. Label each container (and item if not within a container) with the number and type of each item contained within, the earliest date an item within was removed from service, and a unique identifying number. Labeling requirements apply to all items and containers, including packages, boxes, drums, roll-offs, trucks, and other bulk containers.
6. Label all storage containers with appropriate hazard labels.



7. Provide for the safe storage of waste on-site, prior to disposal. For security reasons, restrict access to waste storage areas. Comply with requirements of 40 CFR 761.65. Do not store any materials on-site more than 30 days after removal unless a plan for longer term storage has been submitted and approved.
8. Do not place waste on unprotected ground. Adequately shield waste to prevent dispersion of the debris by wind or rainwater.
9. Evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.

3.03 PCB CONTAINING AND SUSPECTED PCB MATERIALS AND ITEMS

A. General

1. Properly remove, segregate from other materials, and properly containerize, in accordance with TSCA and other regulations, other suspected PCB containing items and suspected PCB materials not otherwise described herein and notify the Owner's Representative.

3.04 FLUORESCENT LIGHT BALLASTS

A. General

1. Properly remove, segregate from other materials, and containerize fluorescent light ballasts not clearly labeled as No-PCB.
2. Fluorescent light ballasts containing PCBs only intact and non-leaking PCB Small Capacitor are regulated for disposal under 40 CFR 761.60(b)(2)(ii).
3. Fluorescent light ballasts containing PCBs in the potting material are regulated for disposal as PCB bulk product waste under 40 CFR 761.62.
4. Leaking fluorescent light ballasts are regulated for disposal as PCB bulk product waste under 40 CFR 761.62(a) or (c).



3.05 EXPANSION CAULK AND ADJACENT BUILDING MATERIALS

A. General

1. This subsection applies to caulk containing PCBs at a concentration equal to or greater than 50 ppm and those adjacent building materials containing PCBs at a concentration greater than 1 ppm. Such materials are classified as PCB bulk product waste.
2. Construct an enclosure in the area of caulk removal using 6 mil fire retardant plastic sheeting, attached to the building face and laid down on the surface below the work area.
3. Place 6-mil fire retardant plastic sheeting at least 10 feet wide or to the furthest point of gravity fall for dislodged debris by methods used, whichever is further.
4. Place 6-mil fire retardant plastic sheeting outside the enclosure for use as a decontamination area. A 6-mil fire retardant plastic sheeting overlapping curtained doorway shall be installed at the entrance to the enclosure.
5. All windows and vents within the work area and 25 feet from all sides of the work area shall be closed or sealed using 6-mil fire retardant plastic sheeting.
6. Avoid working in high winds.
7. For all work areas with use of electromechanical tools for PCB removals, HEPA filtered negative air ventilation units must be installed in the enclosure area and operate continuously during removal operations to establish negative pressure. A minimum of 4 air changes per hour must be maintained within work area during removals and cleanings until work area clearance is obtained.
8. When using electromechanical tools use HEPA vacuum attachments to contain the dust generated.



9. All removed PCB material shall be placed into 6 mil plastic disposal bags or other suitable container. Large components with PCB material or PCB residue shall be wrapped in one layer of 6 mil plastic sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting. If reusable containers are to be used, line with 6 mil plastic and pad with cardboard or other suitable materials to prevent material from tearing the sheeting.
 10. Dispose of PCB Bulk Product Waste in accordance with 40 CFR 761.62.
- B. Caulk with Adjacent Building Materials
1. Saw cut building materials using a HEPA vacuum attachment to contain the dust generated at a distance far enough from the caulk so that all building materials with PCBs at concentrations over 1 ppm are included in the removal area.
 2. Operate in a manner to prevent release of dust.
- C. Expansion Caulk without Adjacent Building Materials
1. Use tools that generate the least amount of dust and will still complete the PCB caulk removal, such as utility knives, chisels, and scrapers. Refer to appropriate EPA regulations and recommendations regarding tools and protective measures to be used for PCB caulk removals.
 2. Grinding electromechanical tools (e.g. angle grinders, masonry groove cutters, circular saws, and slot mills, etc.) are not allowed to be used for exterior open-air PCB caulk removals. PCBs may be released into the air if your tools or work methods produce high heat (i.e., temperatures exceeding 212°F). This increases the risk for workers to breathe in PCB gases.
 3. Operate in a manner to prevent release of dust.



3.06 PCB REMEDIATION WASTE – POROUS SURFACES

A. General

1. PCB Remediation Waste in the building will include materials with PCB concentrations greater than 1 ppm or equal to or greater than 10 micrograms per 100 square centimeters ($\geq 10 \mu\text{g}/100 \text{ cm}^2$) that were not manufactured with PCBs.
2. Floor coverings in contact with concrete floors may also be considered PCB Remediation Waste in the absence of laboratory data collected in accordance with TSCA Subpart N to the contrary.
3. Remove the full thickness of each item unless it has been shown that the PCBs have penetrated only a specific distance into an item.
4. Dispose of PCB Remediation Waste in accordance with Performance-based disposal requirements in 40 CFR 761.61 (b).

B. Materials that Cannot be Removed Intact

1. Construct an enclosure in the area of removal using 6 mil fire retardant plastic sheeting and laid down on the surface below the work area.
2. Place 6-mil fire retardant plastic sheeting at least 10 feet wide or to the furthest point of gravity fall for dislodged debris by methods used, whichever is further.
3. Place 6-mil fire retardant plastic sheeting outside the enclosure for use as a decontamination area. A 6-mil fire retardant plastic sheeting overlapping curtained doorway shall be installed at the entrance to the enclosure.
4. All windows and vents within the work area and 25 feet from all sides of the work area shall be closed or sealed using 6-mil fire retardant plastic sheeting.
5. Remove materials approximately in a manner to prevent releases of dust.
6. For all work areas with use of electromechanical tools for removals, HEPA filtered negative air ventilation units must be installed in the enclosure area and operate continuously during removal operations to



establish negative pressure. A minimum of 4 air changes per hour must be maintained within work area during removals and cleanings until work area clearance is obtained.

7. When using electromechanical tools use HEPA vacuum attachments to contain the dust generated.
8. All removed materials shall be placed into 6 mil plastic disposal bags or other suitable container. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting. If reusable containers are to be used, line with 6 mil plastic and pad with cardboard or other suitable materials to prevent material from tearing the sheeting.

C. Partial Removal of Items

1. For items where PCBs have been shown to have penetrated only a specific distance into the concrete, it is permissible to remove and dispose the outer surface to a depth where testing has shown that PCBs are less than or equal to 1 ppm.
2. If partial removal of items without depth data is desired, test each item in accordance with TSCA Subpart N and submit data for approval.
3. If partial removal is performed using electromechanical means, follow the procedures under Subsection B of this Section.
4. After partial removal, conduct verification in accordance with TSCA Subpart O.
5. Partial removal is successful if the concentration of PCBs in all samples is ≤ 1 ppm. If decontamination is not successful, decontaminate again or dispose of the entire item as PCB Remediation Waste.

3.07 PCB REMEDIATION WASTE – NONPOROUS SURFACES

A. General

1. PCB Remediation Waste at the facility includes materials with PCB concentrations greater than 1 ppm or ≥ 10 $\mu\text{g}/100$ cm^2 that were not manufactured with PCBs. PCB Remediation Waste in the building will include materials with PCB concentrations greater than 1 ppm or equal to or greater than 10 micrograms per 100 square centimeters (≥ 10 $\mu\text{g}/100$ cm^2) that were not manufactured with PCBs



2. Remove the full thickness of each item.
3. If removal is performed using electromechanical means, follow the procedures under Subsection B of Section 3.07.
4. Dispose of PCB Remediation Waste in accordance with Performance-based disposal requirements in 40 CFR 761.61 (b) unless decontamination is performed in accordance with Subsection B of this Section.

B. Decontamination Option for Nonporous Surfaces

1. Nonporous surfaces may be decontaminated using the procedures of 40 CFR 761.79.
2. If decontamination is performed using electromechanical means, follow the procedures under Subsection B of Section 3.07.
3. After decontamination, conduct verification in accordance with TSCA Subpart P.
4. Decontamination is successful if the concentration of PCBs in all samples is $\leq 10 \mu\text{g}/100 \text{ cm}^2$. If decontamination is not successful, decontaminate again or dispose of the item as PCB Remediation Waste.
5. Dispose of Decontamination Waste and Residues in accordance with 40 CFR 761.79.

3.08 DECONTAMINATION

A. General

1. When removal of PCB materials is completed, the decontamination process shall consist of vacuuming (with a HEPA filter), wet wiping/mopping and a repeated vacuuming (with a HEPA filter) of the entire work area. All surfaces in and around the work area must be free of dust generated during the work.
2. Decontaminate all tools and equipment before removal from the work area.



3. If dust or debris has migrated to areas of the building other than the immediate work area, those areas shall be incorporated into the work area and thoroughly decontaminated to ensure all visible dust generated by the activity is eliminated.
4. Visually inspect the area for any remaining dust or debris. Vacuum (with HEPA filter) and wet wipe until space is clean. Dispose of vacuum contents as PCB waste.
5. Upon completion of decontamination and removing temporary dust barriers, a final inspection shall be performed by the Contractor and Owner's Representative. Contractor will clean or re-clean any areas at no additional expense to the LPS.
6. Dispose of decontamination waste in a manner consistent with the source waste, TSCA and other state and federal regulations.

3.09 DISPOSAL AT A LICENSED DISPOSAL OR RECYCLING FACILITY

A. General

1. Obtain disposal approval, including collection of samples if required, in accordance with the requirements of Section 1.05, 1.06 and 1.07 of this Article.
2. Take special care when removing waste from the site in order to avoid environmental contamination or injury to workers. Containers shall be moved and packed into the truck with care. When possible, use hand trucks, dollies, or pull carts, along with ramps or trucks with lift gates. These procedures will help minimize container breakage.
3. All vehicles hauling material shall comply with applicable Federal DOT and MDOT regulations. Vehicles shall be properly licensed under and comply with all applicable federal, state, and local laws and regulations.
4. Trucks and trailers used for transporting material shall be in good repair, free from holes, have tailgates in good working order, and have tarps that cover the truck's box and trailers.



5. Vehicles found to be leaking vehicle fluids shall not be loaded until the source of the leak is located, contained, and repaired to the satisfaction of the Owner's Representative. Report all spills immediately to the Owner's Representative. Cleanup of vehicle fluids released to the ground is the Contractors' responsibility.
 6. Prior to loading, provide Owner's Representative with one manifest for each load of material. Each manifest will be pre-printed with the site EPA ID number, the site name and address, the Owner's name and address, the name of the approved disposal facility, the name of the approved transporter, and the disposal facility approval number. Also, if applicable, include the information required by 40 CFR 761.207, including the number and type of each item in each container, the earliest date an item within each container was removed from service, and the container's unique identifying number.
 7. During loading, the Owner's Representative will provide a manifest signed on by or on behalf of LPS for each load.
 8. Within 24 hours of the load arriving at the disposal or recycling facility, provide to the Owner's Representative an original manifest signed by the disposal or recycling facility. Also provide a corresponding Certificate of Disposal, which includes the actual weight of each container.
- B. Hazardous Materials, Universal Waste, and/or Non-Hazardous Waste Disposal
1. Transport hazardous materials, universal waste and non-hazardous waste to a licensed treatment storage and disposal facility or recycling facility for disposal.
- C. Hazardous Waste and/or PCB Waste Disposal
1. Transport hazardous waste and/or PCB waste in accordance with the requirements of 40 CFR 263, 40 CFR 761 and other applicable state and federal requirements.
 2. Use only licensed transporters. Transporters shall have an EPA ID Number and must meet DOT requirements for shipping containers.
 3. Dispose of waste in accordance with 40 CFR Part 761, 40 CFR 264 and 40 CFR 268 at a disposal facility licensed to accept waste with the concentrations of PCBs and the TSCA regulatory status.



4. If the waste is both asbestos and PCB containing, follow the most stringent requirements for both types of waste.

D. PCB Disposal Summary Report

1. Provide a summary report on items disposed of for compliance with 40 CFR 761.180 (a). For each PCB waste container (including trucks carrying bulk waste), include at a minimum, the unique number identifying assigned to each container, the manifest number used for disposal (if applicable), the type of item(s) in the container, the number of items of each type within the container, serial numbers for each Article in the container (if applicable), the weight of the container, the date the first item within was first removed from service, the date the container placed into transport, and the date of disposal.

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