

**SECTION 13284 – REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS
(PCB)-CONTAINING LIGHT BALLASTS AND MERCURY-CONTAINING
LAMPS**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies Contractor's responsibilities for controlling polychlorinated biphenyl (PCB) and mercury hazards that may be identified in the project areas.
- B. The Contractor is required to complete all PCB and Mercury related work in accordance with applicable Federal, State, and local regulations. The Contractor shall perform his work in accordance with the requirements specified herein. Where conflict or any inconsistency among the requirements or with this specification exists, the more stringent requirements shall apply.

1.02 DESCRIPTION

- A. Basis for specifications: This specification is based upon procedures and standards derived from U.S. regulatory agencies (EPA, OSHA, NIOSH, and U.S. Public Health) and the Hawaii State Division of Occupational Safety and Health as well as from industry and sound industrial hygiene practice. The Contractor must follow these procedures and standards to ensure that no measurable amount of PCB-containing materials are released to controlled work areas, uncontrolled work areas and public areas.
- B. In performing PCB and mercury removal, all possible safeguards, precautions and protective measures shall be utilized to prevent exposure of any individual to PCB-containing particulates or mercury vapor.
- C. The Contractor shall furnish all labor, materials and equipment necessary to carry out the safe removal and disposal of PCB-containing light ballasts, any PCB contaminated light fixtures and mercury-containing lamps throughout the project areas to be renovated in compliance with all applicable laws and regulations including all incidental and pertinent operations.
- D. It is the Contractor's responsibility to determine the amount of PCB-containing light ballasts, PCB contaminated light fixtures and mercury-containing lamps in the project areas to be renovated before start of any work.
- E. The work covered by this section includes the removal and disposal of mercury-containing fluorescent lamps and PCB-containing ballasts and the incidental procedures and equipment required to protect the workers in the project areas from exposure to mercury and PCBs.
- F. Contractor shall not be allowed to perform any on-site work unless the Contracting Officer's Authorized Representative is present. Contractor shall give no less than a 10 working day written notice, by facsimile, to the Contracting Officer of the actual start of work date and time.

- G. The Contractor shall comply with all applicable Federal, State and local regulations. Where requirements of this Specification and the referenced documents vary, the most stringent requirement shall apply.

1.03 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only, and include but are not limited to, the following.

- B. CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1000	Air Contaminants
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, and Training Requirements.
49 CFR 178	Shipping Container Specification

- C. HAWAII OCCUPATIONAL SAFETY AND HEALTH (HIOSH)

12-114.2	Personal Protective Equipment
12-121.2	Fall Protection
12-122.2	Materials Handling, Storage, Use, and Disposal
12-151	Hazardous Waste Operations and Emergency Response

1.04 DEFINITIONS

- A. Authorized Representative of the Construction Manager: the person or persons designated by the Construction Manager to act on its behalf.
- B. Contractor: The Contractor is that individual, or entity under contract to perform the herein listed work.
- C. Contracting Officer's Authorized Representative: Qualified Industrial Hygienist to perform project monitoring, work review, inspections, and other actions as designated in this Section.
- D. Leak: Any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface.
- E. Mercury-Containing Lamps: As used in this Specification shall mean all fluorescent and high-intensity discharge (HID) lamps without labeling stating "No Mercury".
- F. Polychlorinated Biphenyls (PCBs): PCBs as used in this Specification shall mean PCBs, PCB-containing light ballasts, and PCB containers, as defined in 40 CFR 761, Section 3, Definitions.

- G. PCB-Containing Ballasts: As used in this Specification shall mean all fluorescent and high-intensity discharge (HID) lamp ballasts without labeling stating "No PCBs".
- H. Spill: Both intentional and unintentional spills, leaks, and other discharges where the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source. This definition also includes the contamination resulting from these releases.

1.05 QUALITY ASSURANCE

- A. Training: Within one year prior to assignment to PCB and mercury work, each employee shall be instructed by an Industrial Hygienist or equivalent safety specialist concerning the hazards of PCB and mercury, necessary safety and health precautions, the use of and requirements for protective clothing, equipment and respirators, and the additional requirements of 40 CFR 761. Training shall include engineering and other hazard control techniques and procedures.
- B. The Contracting Officer's Authorized Representative, as an authorized representative of the Construction Manager, shall conduct the inspection of the PCB-containing light ballast and mercury-containing fluorescent lamp removal work during the removal operations to ensure that the requirements of the contract have been satisfied.

1.06 REQUIREMENTS

- A. The Contractor shall examine and have at all times in his possession at his office (one copy) and in view at each job site office (one copy) the following materials:
 - 1. Title 29 Code of Federal Regulations Part 1910.1000;
 - 2. Title 40 Code of Federal Regulations Part 761;
 - 3. Title 40 Code of Federal Regulations Part 262;
 - 4. Title 40 Code of Federal Regulations Part 263;
 - 5. Title 49 Code of Federal Regulations Part 172;
 - 6. Title 49 Code of Federal Regulations Part 178;
 - 7. Copies of any other applicable Federal, State and local regulations, standards, documents and codes;
 - 8. Copies of the Contractor's PCB-Containing Light Ballast and Mercury-Containing Lamp Removal Plan, PCB-Containing Light Ballast and Mercury-Containing Lamp Disposal Plan and Emergency Procedures; and
 - 9. Copies of all relevant training certificates held by workers and contractors/supervisors actively engaged in the project.
- B. Whenever approval of the authorized representative of the Construction Manager is required prior to proceeding with work, the Contractor shall comply with the following:

1. The Contractor shall allow the Contracting Officer's Authorized Representative and Construction Manager 24 hours from notification to respond to the request for site inspection(s).
2. The Contractor shall designate one person (either a foreman or superintendent) who shall be authorized to request inspections. The name of the designated person shall be submitted in writing to the Construction Manager prior to commencing work. Request from any other person shall not be considered an official request.
3. The designated person when requesting an inspection shall provide the following information:
 - a. Name of caller.
 - b. Building and rooms to be inspected.
 - c. Work phase of inspection, as specified.

1.07 SUBMITTALS

- A. Submit in accordance with SECTION 01330 - SUBMITTAL PROCEDURES.
- B. Pre-Project Submittal: Submit a Pre-Project Submittal to the authorized representative of the Construction Manager for approval, no more than 10 working days after the written notice to proceed is received by the Contractor. No work shall commence until the Pre-Project Submittal is approved by the authorized representative of the Construction Manager. The submittal shall include the following:
- C. Documentation of Instruction: Each worker and supervisor shall submit current training certificates required for removing PCB-containing light ballasts and mercury-containing fluorescent lamps, as described in Section 1.05, Quality Assurance. Certificates shall be signed and dated by the Industrial Hygienist or equivalent safety specialist providing the training.
- D. PCB-Containing Light Ballast and Mercury-Containing Lamp Removal Plan: The Contractor shall submit to the authorized representative of the Construction Manager a detailed job-specific plan of the work procedures to be used in the removal and disposal of PCB-containing light ballasts and mercury-containing lamps. The plan shall also include interface of trades, sequencing of PCB and mercury related work, respirator and protective equipment requirements, and a detailed description of pollution control methods. The plan shall be approved prior to the start of any PCB-containing light ballast and mercury-containing lamp removal work.
- E. PCB-Containing Light Ballasts and Mercury-Containing Lamp Disposal Plan: The plan shall comply with all applicable requirements of Federal, State, and local regulations. The plan shall also include:
 1. Identification of PCB and mercury waste associated with the work.
 2. Estimated quantities of waste to be generated and disposed of.
 3. Names and qualifications of personnel who shall be working on-site with PCB and mercury wastes.

4. Names, qualifications, facility locations and 24-hour point of contact information for each contractor that shall be transporting, storing, treating, disposing of waste. Furnish two copies of all applicable EPA, state, and local PCB waste permit applications, permits, and EPA identification numbers.
 5. List of waste handling equipment to be used in performing the work, including cleaning, volume reduction, and transport equipment.
 6. Spill prevention, containment, and cleanup contingency measures to be implemented.
- F. Emergency Planning Procedures: Emergency planning shall be developed prior to initiation of work and approved by the Contractor and the authorized representative of the Construction Manager. It shall include, but not be limited to, considerations of fire, explosion, electrical hazards, slips, trips and falls and heat related injuries. The Contractor shall develop written emergency procedures and provide employee emergency training.
- G. Notification: Notify the authorized representative of the Construction Manager 10 working days prior to the start of any removal work.
- H. Transporter Certification: Submit certification of notification sent to the EPA of PCB and mercury waste activities and EPA identification numbers.
- I. Permits: Submit copies of all permits and arrangements for transportation and disposal of PCB and mercury waste.
- J. Entry Log: Maintain a log of all persons who enter the work area while PCB and mercury abatement operations are in process. Submit copies weekly to the authorized representative of the Construction Manager.
- K. Waste Disposal Manifest Forms: Submit copies of all transport manifests, trip tickets and disposal receipts for all PCB and mercury waste removed from the work area during the abatement process.

1.08 PROTECTION

- A. Site Security:
1. The work area is to be restricted to authorized, trained, and protected personnel, including the Contractor's employees, any Subcontractors' employees, the authorized representative of the Construction Manager and any other designated individuals.
 2. Entry to the work area by unauthorized individuals shall not be permitted without the express approval of the authorized representative of the Construction Manager. Any such entry shall be reported immediately to the authorized representative of the Construction Manager by the Contractor.
 3. Subject to the approval of the authorized representative of the Construction Manager, the Contractor shall have control, of security in the work areas and areas surrounding the Contractor's equipment and materials.

- B. Eating, drinking, applying make-up and using tobacco shall not be permitted within the work area.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Respirators: Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing PCB and mercury material. Respirators shall comply with the requirements of 29 CFR 1910.134.
- B. Protective Clothing: Furnish personnel exposed to PCB and mercury material with fire-retardant, disposable protective whole body clothing, head covering, gloves, and foot coverings. Furnish disposable plastic or rubber gloves and footwear.
- C. Chemical Safety Goggles: Furnish personnel exposed to PCB and mercury material with chemical safety goggles for eye protection.
- D. Warning Signs and Labels: Warning signs shall be visibly posted at all approaches to the PCB and mercury control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Provide and affix labels to impermeable bags, PCB and mercury waste drums, and other containers containing PCB and mercury materials, scraps, waste, or debris. The labels shall be clearly legible. PCB labels shall display the following: "CAUTION: Contains PCBs (Polychlorinated Biphenyls)." mercury labels shall display the following: "Caution: Contains Mercury". Signs and labels shall comply with the requirements of 29 CFR 1910.145 and 40 CFR 761, Subpart C.
- E. Furnish the authorized representative of the Construction Manager with two pairs of protective clothing daily, for entry to and inspection of the PCB control area. The personal protective equipment shall include respirators, disposable protective whole body covering including disposable rubber gloves, and chemical safety goggles.
- F. PCB and Mercury Spill Kit: Assemble a spill kit to include several pairs of the following items:
 - 1. Disposable coveralls, PCB impermeable aprons, and polyethylene gloves and foot covers;
 - 2. Chemical safety glasses or face shields;
 - 3. PCB caution signs displaying "PCB Spill -- Authorized Personnel Only;"
 - 4. Mercury caution signs displaying "Mercury Spill -- Authorized Personnel Only;"
 - 5. 100 foot caution tape;
 - 6. Absorbent material;

7. Aspirator bulbs;
8. Disposable plastic dustpan;
9. Polyethylene waste bags;
10. Cloth backed tape;
11. PCB and mercury resistant sponges;
12. Paper and writing equipment; and
13. Non-breakable, wide-mouth waste containers with airtight-seal lids.

PART 3 - EXECUTION

3.01 WORK PROCEDURE

- A. The Contractor shall furnish labor, materials, services, and equipment necessary for the removal of PCB-containing light ballasts, PCB contaminated light fixtures, and mercury-containing lamps located throughout the buildings in accordance with Federal, State and local regulations.
- B. Personnel shall wear and use protective clothing and equipment as outlined in Section 2.01.
- C. Eating, drinking, applying make-up or using tobacco shall not be permitted in the PCB and mercury control area.
- D. No one shall be permitted in the PCB and mercury control areas unless the person is provided with appropriate training and protective equipment.
- E. Personnel shall package and mark PCB and mercury materials as required by EPA, and DOT regulations and dispose of in accordance with all Federal, State, and local regulations.
- F. PCBs shall not be exposed to open flames or other high temperature sources since toxic decomposition by-products may be produced.
- G. Mercury-containing lamps shall not be broken since mercury may be released into the environment.
- H. PCB and Mercury Control Area Requirements
 1. Establish a PCB and mercury control area by roping off the area or providing curtains, portable partitions or other enclosures.
 2. Except in instances of immanent danger, should the employees exiting the controlled area shall be required to remove their disposable coveralls and place them in an approved impermeable disposal bag.

- I. The Contracting Officer's Authorized Representative shall perform daily inspections during the entire PCB, mercury and mercury removal operation. If any area is contaminated, the contaminated area shall be cleaned, and visually inspected.

3.02 WORK OPERATIONS

- A. Ensure that work operations or procedures involving PCB, mercury or PCB-contaminated materials are conducted in accordance with 40 CFR 761 and the applicable requirements of this Specification, including but not limited to:
 1. Obtaining suitable PCB and mercury-containing lamp storage sites;
 2. Notifying the authorized representative of the Construction Manager prior to commencing the operation;
 3. Reporting leaks and spills to HDOH, EPA and to the authorized representative of the Construction Manager;
 4. Cleaning up any spills;
 5. Inspecting PCB and PCB-contaminated items and waste containers for leaks; and
 6. Maintaining inspection, inventory and spill records.

3.03 PCB AND MERCURY REMOVAL PROCEDURES

- A. Select PCB and mercury removal procedure that minimize contamination of work areas with PCB, mercury or other PCB contaminated debris/waste. Handle PCBs and mercury such that neither skin contact nor inhalation occurs. PCB and mercury removal procedures should be described in the work plan.
- B. Removal of PCB-Containing Light Ballasts and Mercury Containing Lamps
 1. Signs shall be visibly posted at a distance from the work area sufficient to permit a person to read the sign and take the necessary protective measures to avoid exposure.
 2. All light fixtures shall be de-energized by a licensed electrician prior to the light fixture removal.
 3. Workers shall wear rubber gloves, safety glasses, and other necessary personal protective equipment at all times during the light fixture removal process.
 4. Remove light fixtures whole and intact. Remove PCB-containing ballasts whole and unleaking. Inspect all ballast labels. Ballasts labeled "No PCBs" shall be segregated from the hazardous waste stream and disposed of as normal demolition debris. Ballasts without the "No PCBs" label, or not labeled, shall be assumed to contain PCBs.
 5. Inspect light fixtures for leaks. Avoid ingestion and inhalation of, and contact with any material leaking from light ballasts. Dispose of the entire fixture as PCB contaminated waste if it is impossible and infeasible to clean the leaking light fixture ballast.

6. Remove, package and dispose of/recycle mercury containing lamps as specified in this section. Lamps shall be handled in a manner that prevents breakage. Inspect all lamp labels. Lamps labeled "No Mercury" shall be segregated from the hazardous waste stream and disposed of as normal demolition debris. Lamps without the "No Mercury" label shall be assumed to contain mercury.

3.04 PCB SPILL CLEANUP REQUIREMENTS

- A. PCB Spills: Immediately report to HDOH, EPA and the authorized representative of the Construction Manager any PCB spills or leaks.
- B. PCB Spill Control Area: Rope off an area around the edges of any PCB leak or spill and post a "PCB Spill -- Authorized Personnel Only" caution sign. Immediately transfer leaking items to a drip pan or other container.
- C. PCB Spill Cleanup: The PCB cleanup shall be in accordance with disposal requirements and procedures outlined in 40 CFR 761, SUBPART G. Initiate cleanup of spills as soon as possible, but no later than 24 hours after discovery. Cleanup personnel shall wear personal protective equipment specified in this specification. The spent absorbent and any other item that came in contact with PCBs shall be properly contained and disposed of as solid PCB waste.
- D. Record and Certification: Document the cleanup with records of decontamination in accordance with 40 CFR 761, Section 125, Requirements for PCB Spill Cleanup. Provide certification of decontamination.

3.05 MERCURY LAMP DEBRIS CLEANUP REQUIREMENTS

- A. Mercury Lamp Breakage: Immediately report to the authorized representative of the Construction Manager any mercury lamp breakage.
- B. Mercury Lamp Debris Control Area: Rope off an area around the edges of any mercury lamp debris and post a "Mercury Spill -- Authorized Personnel Only" caution sign.
- C. Mercury Lamp Debris Cleanup: The mercury lamp debris cleanup shall be in accordance with all applicable Federal, State and local regulations. Initiate cleanup of spills as soon as possible, but no later than 24 hours after discovery. Cleanup personnel shall wear gloves that prevent both mercury exposure and physical injury due to broken glass. All debris shall be placed in a non-breakable container with an airtight-seal lid. Any items that came in contact with the mercury lamp debris shall be cleaned, labeled and disposed of as mercury contaminated waste.

3.06 STORAGE FOR DISPOSAL

- A. Storage Containers for PCBs: The Contractor shall comply with requirements and procedures outlined in 40 CFR 178. Store PCB in DOT Packing Group II containers.
- B. Storage Containers for Mercury Lamps: The Contractor shall store mercury lamps in appropriate transport containers. The boxes shall be stored and labeled for transport in accordance with 40 CFR 262 and 40 CFR 263.
- C. Labeling of Waste Containers: Label with the following:

1. Date the item was placed in storage.
2. PCB Caution Label (i.e. ML label), conforming to paragraph entitled "PCB Caution Label." 40 CFR 761 SUBPART C. Affix ML labels to PCB waste containers.
3. Label mercury-containing lamp waste in accordance with 49 CFR 172. Affix labels to all lighting waste containers.

3.07 APPROVAL OF TEMPORARY STORAGE SITE

- A. Obtain approval from the authorized representative of the Construction Manager to store PCB and mercury materials and containers.
- B. The following criteria shall be used to select a storage site. The storage sites shall have:
 1. An adequate roof and walls to prevent rainwater from reaching the stored PCBs or mercury;
 2. Smooth floors constructed of material impervious to PCBs and mercury.
 3. No drain valves, floor drains, expansion joints, sewer lines or other openings that would permit liquids to flow from the controlled area.
 4. Temporary onsite storage shall not exceed 10 working days from the end of removal work.

3.08 CLEANUP

- A. Clean surfaces within PCB and mercury control areas daily. Do not allow PCB or mercury material, debris and dust to accumulate.
- B. Restrict the spread of dust, debris, vapors and fumes; keep waste from being distributed over the general area.
- C. Do not remove PCB and mercury control areas, roped-off perimeters or warning signs prior to the authorized representative of the Construction Manager's certification. The authorized representative of the Construction Manager shall visually inspect the affected areas for any residual PCB and mercury material and accumulated dust before the removal of PCB and mercury controlled areas.
- D. The Contractor shall re-clean areas showing dust or residual PCB or mercury material at no additional cost to the State.

3.09 DISPOSAL

- A. PCB and mercury disposal shall comply with requirements and procedures outlined in 40 CFR 761 and 40 CFR 263. Local waste disposal facilities do not accept PCB and mercury wastes.
- B. Identification Number: Federal regulations 40 CFR 761 and 40 CFR 263 require that generators, transporters, commercial storers, and disposers of PCB and mercury-containing waste possess U.S. EPA identification numbers.

- C. Transporter Certification: Comply with disposal requirements and procedures outlined in 40 CFR 761 and 40 CFR 263. Before transporting the PCB and mercury lamp waste, sign and date the manifest acknowledging acceptance of the PCB and mercury-containing waste. The Contractor shall submit transporter certification of notification sent to EPA of PCB and lamp waste activities.
- D. Certificate of Disposal and/or Recycling: Certificates for the disposal of mercury lamps, PCBs and PCB items, shall be submitted to the authorized representative of the Construction Manager within 30 days of the date of completion of disposal identified in the manifest was completed. Certificates of Disposal shall include:
 - 1. The identity of the disposal and/or recycling facility, by name, address, and EPA identification number.
 - 2. Identification of PCB and mercury waste affected by the Certificate of Disposal including reference to the shipment manifest number.
 - 3. A statement certifying disposal and/or recycling of the identified PCB and/or mercury lamp waste that includes the date(s) of disposal, and the disposal process used.
 - 4. A certification as defined in 40 CFR 761, Section 3.

3.10 MEASUREMENT AND PAYMENT

- A. Payment for transportation and disposal of mercury wastes will not be made until a signed copy of the Certificate of Disposal is furnished to the authorized representative of the Construction Manager.

END OF SECTION