



Guide for Removal, Storage, and Disposal of PCB Small Capacitors

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Introduction

In order to comply with federal regulations governing the disposal of PCB contaminated materials, the Connecticut Department of Environmental Protection (DEP) has produced this document to assist landfills and scrap yard in their disposal of appliances (white goods) and other equipment that may contain PCB small capacitors. Past practices of processing (shredding, crushing, and bailing) white goods which contain small PCB capacitors have resulted in contamination of entire waste piles, processing equipment, soils and surface waters where these materials are stored. Instituting proper removal and storage procedures for PCB small capacitors will significantly reduce the volume of PCB contaminated waste generated during white goods processing, prevent violations of state and federal PCB requirements and minimize costly cleanup projects.

To ensure that all capacitors are removed prior to processing, the DEP is requesting the establishment of a check station which will inspect white goods and other electrical items as they are accepted at any designated solid waste area. Each station will be responsible for inspection these items commonly found to contain PCB capacitors and for removing, storing, and disposing of these capacitors at a chemical waste landfill.

Oil-filled or running capacitors are predominantly, but not exclusively, found in air conditioners, fluorescent light ballasts, dehumidifiers, microwave ovens, submersible pumps, mercury vapor lamps, copy machines and electrical control panels. Oil capacitors are less commonly found in refrigerators, washing machines, dryers and fans. The procedures for identification, removal, storage and disposal of PCB small capacitors are contained in the following sections of this guide.

Special attention should be given to safety precautions listed in the removal procedures. Certain appliances contain strong acids which can cause serious burns if their reservoirs are ruptured.

Dry capacitors are not known to contain PCBs. They do not need to be handled as such.

Household Appliances That Contain Oil-Filled Capacitors

Air Conditioners

Copy Machines

Dehumidifiers

Fluorescent Light Ballasts - Fluorescent stove lights have been found to be serviced by a transformer ballast filled with a PCB-laden asphalt resin. Please be advised that resins found in resistors, fluorescent light ballasts and other electrical equipment also are likely to contain PCBs

Mercury Vapor Lamps

Microwave Ovens

Oil-filled Space or Portable Heaters - The issue with these items is not the presence of a PCB capacitor, but the presence of PCBs in the actual oil inside of the heater. This condition is present in a very few manufacturers products, however, PCB levels present in these can be quite serious. Testing of the oil is recommended prior to disposal, crushing, shredding or baling.

Submersible Well Pumps (depending on manufacturer) - Refer to the DEP document [PCBs and Submersible Well Pumps](#) or available free by calling (860) 424-3368.

Household Appliances That Predominantly Contain Dry Capacitors

Clothes Dryers

Fans

Refrigerators

Stoves

Televisions

Washing Machines

Various Electronic Equipment

Identification of Capacitors

A. Starting Capacitors

Starting or electrolytic capacitors are used to assist a single phase electric motor in starting. These components are used for short periods of time during operation of the motor. Consequently, starting capacitors do not need to dissipate heat and are, therefore, primarily dry capacitors. Starting capacitors are most easily identified by black plastic casing or outer shell. If the capacitor is dry, the casing is not hermetically sealed or totally enclosed, but generally contains a porous plug at one end.

B. Running Capacitors

Running or oil-filled capacitors are designed to stay in a motor circuit for the entire cycle of operation. The oil helps to dissipate the heat in the capacitor during operation and maximizes the running efficiency of a motor. Running capacitors are identified by rectangular or oval metal casings. An oil-filled capacitor manufactured after 1979 may have "NO PCB's" stamped on its casing. These are filled with oil which does not contain PCB's and may be treated as a starting capacitor for disposal purposes.

Removal of all small capacitors when dismantling air conditioners

Air conditioners may have one or two oil-filled capacitors. You must remove the casing which may require removal of 10-30. One capacitor will be wired to the fan motor. The other capacitor will be wired to the compressor.

- **Warning:** Air conditioners contain high pressure freon which produces acid if the compressor has failed. If you detect an odor, move away from the appliance until the odor dissipates. Because it is under pressure, this acid can spray out if the item is punctured.
- **Wear** goggles and acid resistant gloves.

Microwave ovens have one capacitor located directly behind the control panel and wired to the transformer. You can access the capacitor by removing the front panel.

Fluorescent light ballasts are located in the housing of the light fixtures. You may have to unscrew the back panel to access the ballast.

Appliances which contain motors, such as washing machines and refrigerators, will usually have the motor located near the bottom and can be accessed from the rear. The capacitor, which is usually dry, will be attached to the housing of the motor and may be covered by a protective casing. This cover must be removed to access the capacitor.

Storage Requirements

Regulations require the use of DOT-approved 55-gallon drums for disposal of PCB capacitors once they are removed. Drums should contain absorbent material (speedi-dry or kitty litter) at the bottom in case some of the capacitors are damaged or leaking. There should be a PCB M_L label placed on each drum that contains PCB capacitors. Drums should be sealed and stored in a secure area that would minimize inadvertent damage or vandalism. DEP recommends having two such drums, one to contain intact capacitors and one to contain any capacitors found to be leaking. This is beneficial because leaking capacitors must be disposed within 30 days, however, intact capacitors can be stored until the drum is full.

Disposal Requirements

A transporter permitted to haul PCB waste should be contacted for disposal of drums filled with capacitors. Records should be maintained including the date of pick-up, the number of drums, names of transporters and destination of the PCB waste for disposal.

For more information contact the PCB Program at (860) 424-3368, e-mail the [PCB Coordinator](#) or write to:

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Bureau of Waste Management

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