

Fact Sheet

The mission of DTSC is to protect California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products.

Guidance on Major Appliances for Scrap Recycling Facilities

Discarded major appliances are valuable sources of scrap metal. Under California law, a major appliance is defined as:

Any domestic or commercial device, including, but not limited to, a washing machine, clothes dryer, hot water heater, dehumidifier, conventional oven, microwave oven, stove, refrigerator, freezer, air conditioner, trash compactor, and residential furnace.¹

Major appliances are composed mostly of metal and do not include electronic devices such as televisions, computers, telephones, stereo equipment, calculators, etc.²

Hazardous Wastes in Major Appliances

Many major appliances contain materials – known as “materials that require special handling,” or “MRSH” – that can harm human health and the environment if they are not properly removed and managed before the major appliance is recycled. California law requires that MRSH be removed by a Certified Appliance Recycler **before** a major appliance is crushed, baled, shredded, sawed or sheared apart, disposed of, or otherwise processed in a manner that could result in the release or prevent the removal of these materials.³ A person who removes MRSH becomes the generator of hazardous waste and must comply with generator requirements, such as getting an ID number and properly storing and labeling the hazardous waste.⁴

Typical MRSH found in major appliances include the following:

- **Metal-encased capacitors and components containing polychlorinated biphenyl (PCB) or di(2-ethylhexylphthalate) (DEHP)** found in room and central air conditioners, heat pumps, stoves, microwave ovens, etc. All metal-encased capacitors must be managed as MRSH. Some appliances contain PCBs or DEHP. Even though the manufacturing of PCBs in the United States was phased

¹ [California Public Resources Code section 42166.](#)

² [See California Code of Regulations, title 22, division 4.5, section 66260.10](#) (definition of “Electronic device”).

³ [California Health and Safety Code section 25212\(a\).](#)

⁴ [California Health and Safety Code section 25212\(b\).](#)

out in 1979, they can still be found in older major appliances.⁵ Additionally, some fluorescent light ballasts manufactured prior to 1978, such as fluorescent stove lights, may contain small PCB capacitors and/or PCBs in their potting compound. Components that contain PCBs in concentrations that equal or exceed California regulatory limits for toxicity must be managed as hazardous waste.⁶

- **Refrigerants** are found in refrigerators, freezers, and air conditioning units. They include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and alternative refrigerants, such as ammonia. CFCs and HCFCs are known to deplete the ozone layer. These refrigerants are commonly combined with a refrigerant oil in the compressor. To remove refrigerants from major appliances, you must be a certified appliance service technician per section 82.161 of Title 40 of the Code of Federal Regulations. For more information on Section 608 Technician Certification, please refer to the [U.S. EPA webpage addressing technician requirements](#).



Figure 1: Drained Refrigerant lines will have a puncture mark.

- **Oils** are used to lubricate motors and parts in most major appliances and must be removed and properly handled and managed.⁷ Oils commonly found in major appliances include:
 - Compressor oil – a lubricating oil contained in compressors that must be drained from major appliances, such as refrigerators or air conditioners.
 - Transmission oil – oil that must be drained from the transmissions of major appliances, such as clothes washers and dryers.
 - Capacitor oil – oil in capacitors is a hazardous waste. Capacitors must be removed from major appliances.

For more information on the management of used oil, please refer to this [used oil fact sheet](#).

- **Mercury** tilt switches, pilot light sensors, thermocouples, and flame switches are found in washers, dryers, chest freezers, furnaces, water heaters, ovens, boilers, space heaters, etc. Mercury-containing items such as thermostats, mercury switches, counterweights, etc. are

⁵ [See Code of Federal Regulations, title 40, section 761.20.](#)

⁶ [See California Code of Regulations, title 22, division 4.5, section 66261.24.](#)

⁷ [California Health and Safety Code, chapter 6.5, division 20, article 13 \(commencing with section 25250\).](#)

hazardous wastes that may be managed as universal wastes.⁸ For more information, please visit the [Mercury Waste](#) webpage.

- **Metal compressors** can be recycled for their scrap metal value if they meet the definition of scrap metal. Compressors must be drained of free-flowing hazardous waste oils by a CAR before they are recycled.⁹ Compression refrigeration systems found in refrigerators, freezers, and air conditioning units may contain both refrigerants and compressor oil, both of which must be drained and properly handled by a CAR (recycled or managed as hazardous waste).



Figure 2: Compressor being drained of oil on a drain rack

- **Circuit boards** are common in many products, including major appliances. Circuit boards that are removed from major appliances meet the definition of scrap metal and are excluded from hazardous waste management **as long as they are recycled**.¹⁰ If a circuit board is not recycled, it could exceed toxicity thresholds, making it a characteristic hazardous waste that would need to be managed as such. Please also note that printed circuit boards that have been removed from electronic waste (e-waste) by a universal waste handler are subject to universal waste standards.¹¹ For more information, please visit the [E-Waste webpage](#) and the [Universal Waste webpage](#).
- Any other material that, when removed from a major appliance, is a hazardous waste.

While the type and amount of MRSW contained in a major appliance will depend on several factors, the primary factor is age. If you are unsure what types of MRSW the major appliance you are handling contains, please contact the manufacturer for additional guidance.

⁸ [California Code of Regulations, title 22, division 4.5, section 66273.4\(a\)](#).

⁹ See [California Code of Regulations, title 22, division 4.5, section 66260.10 \(part \(b\)\(5\)\)](#) in the definition of “Scrap metal” excludes “any metal contaminated with an oil that is a hazardous waste and that is free-flowing”); [Health and Safety Code section 25250.4](#) (provides that, unless otherwise excluded, used oil must be managed as a hazardous waste).

¹⁰ [California Code of Regulations, title 22, division 4.5, section 66260.10 \(part \(a\)\(4\)\)](#) in the definition of “Scrap metal”); [California Code of Regulations, title 22, division 4.5, section 66261.6\(a\)\(3\)\(B\)](#).

¹¹ [California Code of Regulations, title 22, division 4.5, section 66260.10 \(part \(b\)\(7\)\)](#) in the definition of “Scrap metal”); [California Code of Regulations, title 22, division 4.5, sections 66273.71 — 66273.73](#).

Certified Appliance Recycler Program

In California, if you remove MRSH from appliances, you must be certified by DTSC through the Certified Appliance Recycler (CAR) program. As a CAR, it is your responsibility to know how to inspect for MRSH and determine if and how an appliance must be de-polluted prior to recycling. CAR certification is not required for federally certified appliance service technicians who are only removing refrigerant.¹²

You can read more about DTSC's CAR program and MRSH management on the DTSC [CAR webpage](#) and in this [CAR fact sheet](#). CalRecycle has also developed an [appliance recycling guide](#), which addresses removal of some MRSH. Please be aware that the guidance was developed several years ago, and some of the regulatory explanations may not be current. As always, it is your responsibility to make sure you are complying with current hazardous waste management laws and regulations.

Consequences of not removing MRSH from a major appliance

Improper removal or mismanagement of MRSH can lead to hazardous wastes and/or hazardous waste constituents being released into the environment. Some MRSH components, like PCBs, can travel freely in air, water, soil, vegetation, and animals and deposit on soil and in water. Hazardous wastes can enter the body through ingestion or inhalation of gases, dusts, vapors, fumes, liquids, or solids. In addition to the health and environmental consequences, failing to remove MRSH from major appliances before they are processed is a violation of the law.

Additional information:

For additional information or questions regarding metal containing wastes and scrap metal, you can contact your local Certified Unified Program Agency (CUPA). To find your local CUPA, follow this link and enter your ZIP code: [CUPA Directory](#)

You can also contact the DTSC Regulatory Assistance Office at:

Phone: 1-800-728-6942

Email: RAO@dtsc.ca.gov

Webpage: [Regulatory Assistance Webpage](#)

¹² [California Health and Safety Code section 25211.1\(b\)](#).