

Appliances: Refrigerators & White Goods

Your guide to managing and disposing of household appliances.

EPA regulations require the safe management and disposal of refrigeration and air-conditioning appliances.^{1, 2} EPA requires proper refrigerant management practices by appliance disposal facilities, reclaimers, technicians, and air conditioning and refrigeration systems operators. These requirements are designed to minimize refrigerant emissions during normal use, maintenance or disposal.

What's an Appliance?

Appliances are devices used to perform household tasks and are often powered by electricity, propane, or natural gas. Major appliances are household machines, typically with an enamel metal body, often called white goods.

Major appliances or white goods include:

- Refrigerators
- Freezers
- Air conditioners
- Water heaters
- Washing machines
- Dryers
- Stoves
- Microwaves



EPA regulations use **appliance** to describe any device which contains and uses an ozone-depleting substance that is listed in 40 CFR Part 82 Subpart A Appendix A or B, or substitute as a refrigerant and which is used for household or commercial purposes, including any air conditioner, motor vehicle air conditioner, refrigerator, chiller, or freezer.³

Small appliance refers to any appliance that is fully manufactured, charged, and hermetically sealed in a factory with five pounds or less of refrigerant, including, but not limited to, refrigerators and freezers (designed for home, commercial, or consumer use), medical or industrial research refrigeration equipment, room air conditioners (including window air conditioners, portable air conditioners, and packaged terminal air heat pumps), dehumidifiers, under-the-counter ice makers, vending machines, and drinking water coolers.

Appliance Management

Discarded major appliances are often a valuable source of scrap metal. The amount of metal in the appliance often determines if the appliance is sent for recycling or disposed of as solid waste. Containers or designated areas are used for customers or staff to sort appliances and other scrap metal. During storage, major appliances such as refrigerators must be stored upright with the doors off.

¹ [40 CFR Part 82 Subpart F](#)

² [EPA's CAA Section 608 Refrigerant Management](#)

³ [40 CFR Part 82 Subpart A](#)

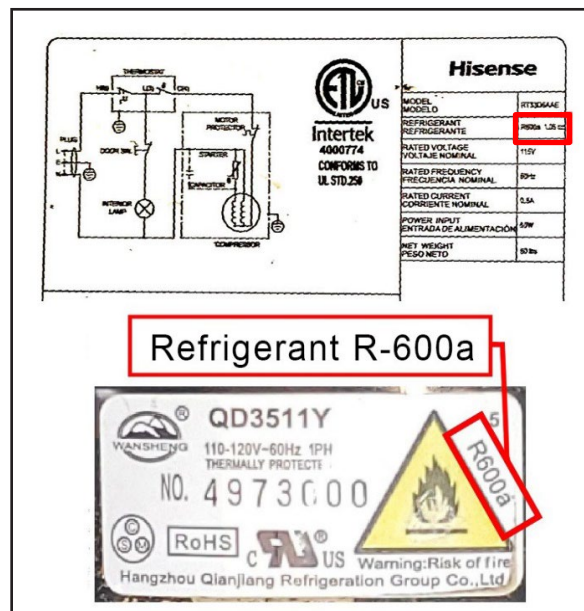
Hazardous Materials in Appliances

Some appliances contain hazardous materials that may need to be removed before recycling or landfilling to avoid release to the environment. Hazardous materials found in appliances include refrigerants, used oil, mercury switches, capacitors, and other hazardous materials. States may also require removal of mercury and PCB containing capacitors from appliances.

Do not place appliances containing refrigerants in collection containers or roll-offs mixed with other trash that will be directly disposed of at a landfill.

Refrigerants

Appliances that contain refrigerants include refrigerators, freezers, air conditioners, dehumidifiers, and some motor vehicle air conditioning systems. Schematic diagrams and labels in the units may provide clues to the type of refrigerants used. Most refrigerants are identified with an "R" followed by numbers, as indicated in the image to the right.



How to identify refrigerants

Common refrigerants include:

- ✓ Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), gases known to deplete the ozone layer.
- ✓ Hydrofluorocarbons (HFCs) and hydrofluoroolefins (HFOs), used as substitutes for ozone depleting chemicals.
- ✓ Sulfur dioxide (SO₂), corrosive upon contact with water and extremely irritating to skin, eyes, nose, throat, and lungs. This is typically used in older refrigeration units.
- ✓ Flammable gases, used in many smaller, newer refrigeration units, like portable refrigerators and wine chillers. These flammable refrigerants are increasing in use.

EPA requires that the final processor of appliances (such as a scrap metal recycler or landfill owner) is responsible for ensuring that refrigerant is recovered from an appliance before its final disposal. If you are sending appliances that no longer hold a refrigerant charge to a scrap metal recycler or landfill, that entity, as the final processor, is required by EPA to have either a:

- a) signed statement⁴ containing the name and address of the person who recovered the refrigerant and the date that the refrigerant was recovered; or
- b) signed contract between the supplier (such as the Tribal transfer station) and the final processor which attests that the supplier will recover any remaining refrigerant from the appliance prior to delivery to the recycling facility or landfill.^{4, 5}

⁴ [EPA Stationary Refrigeration Safe Disposal Requirements](#)

⁵ [40 CFR 82.155\(b\)\(2\)](#)

Clean Air Act (CAA) Section 608

- Prohibits any person maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration from knowingly venting or otherwise releasing into the environment any refrigerant from such appliances.⁶
- Requires that any person that could reasonably be expected to violate the integrity of a refrigerated circuit to receive a certification from an approved certification program – Type I, Type II, Type III, or Universal certification.
- Permits technicians to recover the refrigerant from small appliances at disposal without a section 608 certification.⁷

Used Oil

Oil and lubricants are commonly used in motors and compressors found in refrigerators and air conditioning units. Refrigerants in these appliances should be removed *before* removing motors to drain the oil. These oils may absorb refrigerants to a level that might contaminate other collected used oil.

Mercury Switches

Mercury is a liquid metal that conducts electricity. It was used in some older appliances with thermostats and capillary tubes flame sensors and thermocouples for ovens, furnaces, water heaters, tilt switches for washers, freezer lids, and vehicles. If the sensor or thermocouple is magnetic, it is commonly mercury-containing. Copper and other non-magnetic sensors or thermocouples are not commonly mercury-containing.

Capacitors

Electric motors and compressors in appliances often contain capacitors, small electrical devices that store an electric charge to power a device during start up. Capacitors manufacturing pre-1979 used polychlorinated biphenyls (PCBs). These capacitors are small metal or plastic encased devices and are usually cylindrical or oval-shaped. Some appliances have more than one capacitor.

Other Hazardous Materials

Other hazardous materials may be present in appliances, such as asbestos wiring and insulation in furnaces and stoves. These hazardous materials may need removal prior to processing the appliances.

For more information on environmental concerns associated with hazardous materials, review [EPA's Frequently Asked Questions about Safe Disposal of Refrigerated Household Appliances](#).

This document is intended to raise awareness of best practices that can help Tribal governments comply with the existing Clean Air Act's Section 608 safe disposal requirements. It is NOT intended to set forth a policy on a statutory, regulatory, or technical issue, or provide an interpretation of a statute or regulation.

⁶ [40 CFR 82.154\(a\)](#)

⁷ [40 CFR 82.161](#)