



Evelyn Swain, U.S. EPA

Web Cast

May 2009

Scope of the Problem

- **Currently in the US, there are:**
 - 132 million household refrigerators
 - 54 million stand-alone freezers
- **15% - 20% of households have 2nd refrigerator/ freezer in basement or garage (~23 million units)**
 - Typically, these are older units that are not energy efficient
- **~ 5% of units are disposed each year (~8 million refrigerators/freezers)**
 - Few are disposed in an environmentally-sound manner
- **A household refrigerator made about 20 years ago consumes more than twice the energy of a unit that has earned the government's ENERGY STAR[®] label**

Why Take Old Appliances Off the Grid?

- Reduce energy demand
 - Replacing an energy-inefficient unit with a new unit with the ENERGY STAR® label can save 700 kWh/year or more
- Save consumers money
 - Removing an energy-inefficient unit can save over \$140/year
 - Replacing an energy-inefficient unit with a new energy-efficient unit can save more than \$70/year
- Impact air quality
 - Reduced electricity generation leads to reduced emissions of some criteria air pollutants

Why Properly Dispose of Appliances?

- **Prevent emissions of ODS & GHGs**
 - Refrigerant and foam insulation contain ODS/GHGs
- **Prevent the release of harmful substances**
 - PCBs, mercury, and used oil
- **Save landfill space and energy by recycling (not landfilling) durable materials**
 - Recycling metals, glass, and plastics reduces energy needed to manufacture virgin materials; recycling also reduces demand for landfill space

A Single Refrigerator Manufactured Prior to 1995 Typically Has...

Metal, Plastic, and Glass Casing/Refrigerator Shell

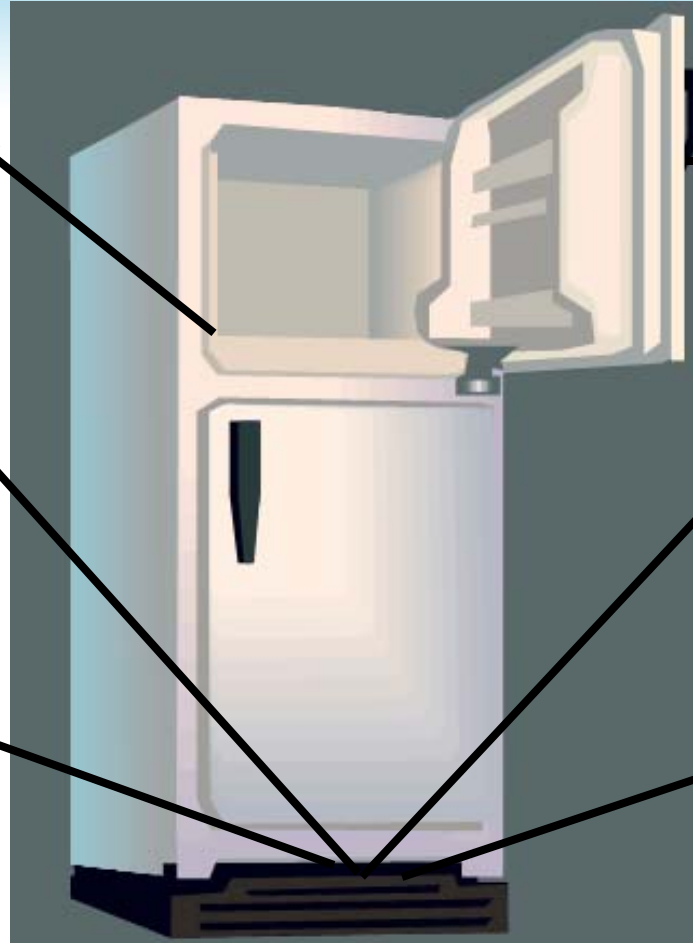
140 lbs metal
20 lbs plastic
3 lbs glass

Used Oil

(May be contaminated)
0.5 lb

PCBs

(Capacitor)
Small quantities



CFC-11

Foam Insulation
1.0 lb

CFC-12

Refrigerant
0.5 lb

Mercury Switch

0.003 lb

Proper recycling/destruction of these substances is key

RAD Program Objectives

Work in partnership with utilities, retailers, manufacturers, and municipalities to:

- **Reduce emissions of ozone depleting substances (ODS)**
 - Through recovery and proper disposal of ODS refrigerants and foam blowing agents from disposed appliances
- **Reduce greenhouse gas (GHG) emissions**
 - By reducing energy demand associated with the use of old refrigerators
 - By reducing emissions of refrigerants and foam blowing agents that have high global warming potentials
- **Support and recognize industry**
 - Monitor progress and increase standards for recovering ODS refrigerant and foam by promoting best available technologies and practices
 - Publicly recognize industry leaders going above and beyond legal requirements

Benefits of Responsible Appliance Disposal

For every 1,000 refrigerators that are permanently retired and disposed under the RAD Program, greenhouse gas emissions are reduced by 7,700 MtCO₂eq.

This is equivalent to:

- annual electricity use of over 1,000 homes
- 10.8 million kWh of electricity saved



RAD Utility Partners



Nebraska Public Power District
Always there when you need us



Partners cover AZ, CA, CO, ID, IL, NM, NV, OR, TX, UT, WA, WY



RAD Retailer Partners

The Sears logo is displayed in a blue, italicized serif font with a red swoosh underneath. It is centered on a white rectangular background that is partially overlaid by a large, light green recycling symbol.

U.S. EPA RAD Program Contact

Evelyn Swain

202-343-9956

swain.evelyn@epa.gov

www.epa.gov/ozone/partnerships/rad/index.html

