

Recovering Mercury Devices From Appliances

Developed for MassDEP with support from
Alternative Recycling Resources Inc. &
Interstate Refrigerant Recovery Inc.

Massachusetts Mercury Management Act

- Chapter 190 of the Acts of 2006
- Remove all mercury devices from products before scrap recycling or disposal

What is Mercury?

- Found in nature
- Liquid at room temperature
- Good conductor of electricity
- Expands & contracts with temperature & pressure

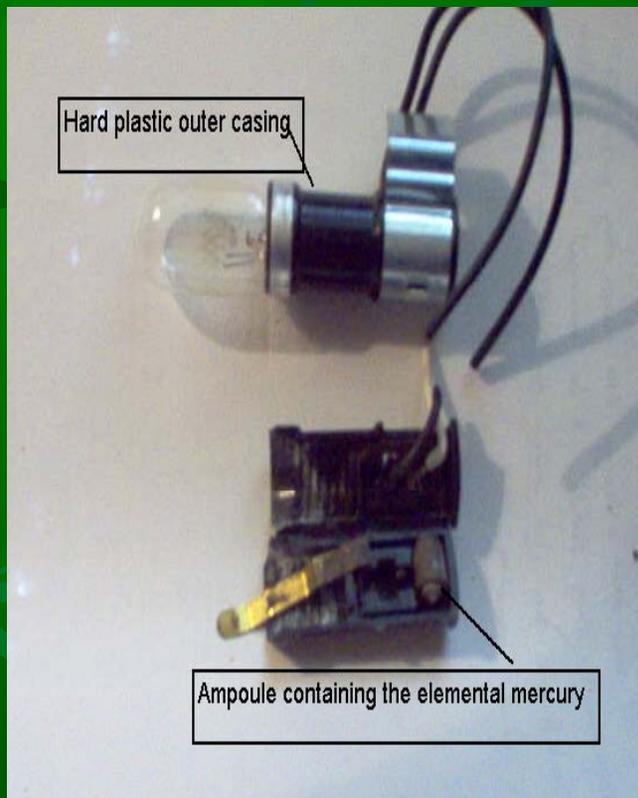
Why Care About Mercury?

- Toxic, especially to developing children
- Can leak from discarded products
- Emitted from coal-burning facilities
- Rain carries it into lakes & streams
- Fish become contaminated

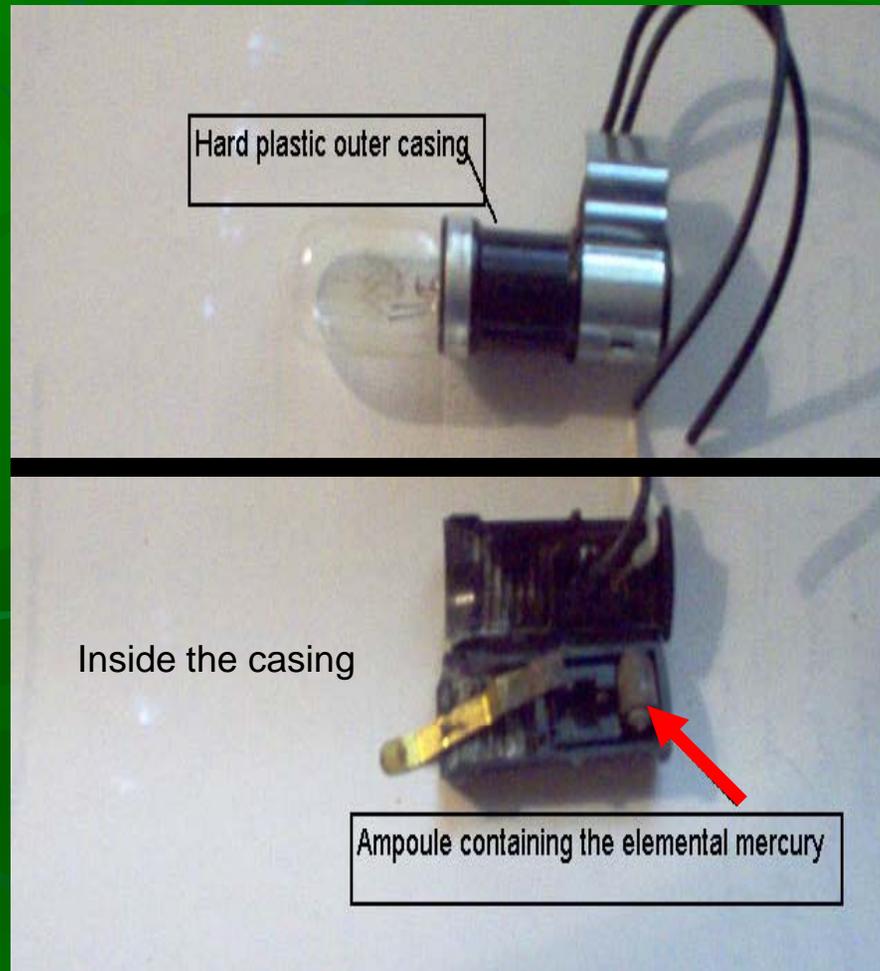
What is a Mercury Switch or Flame Sensor?

- Small, sealed switch or ampoule containing a few drops of mercury
- Made from steel, plastic or glass; shape varies
- Turns a motor or light on & off, or senses heat from a flame

Two Types of Switches



Where is the Mercury?



What Appliances May Contain Mercury Switches or Sensors?

- Chest freezers
- Gas ranges & ovens
- Commercial water heaters
- Sump pumps
- Boilers, furnaces & space heaters
- Old washing machines
- Some RV equipment

Chest Freezer



Chest Freezer



A mark like this (sometimes a sticker) indicates that CFCs have been removed

Electrical wire out of lid

Chest Freezer Without Mercury Switches



If a plastic tab or button switch controls the light, there is no mercury switch.

Chest Freezer

Mercury tilt
switch ampoule
beneath plastic
casing



Chest Freezer



Chest Freezer



Gas Range Without Mercury Switches



Light switch

Gas Range with on/off Light Switch



Electric Range Without Mercury Switches

Button type pressure
switch, no mercury



Mercury Flame Sensor



Remove metal
plate

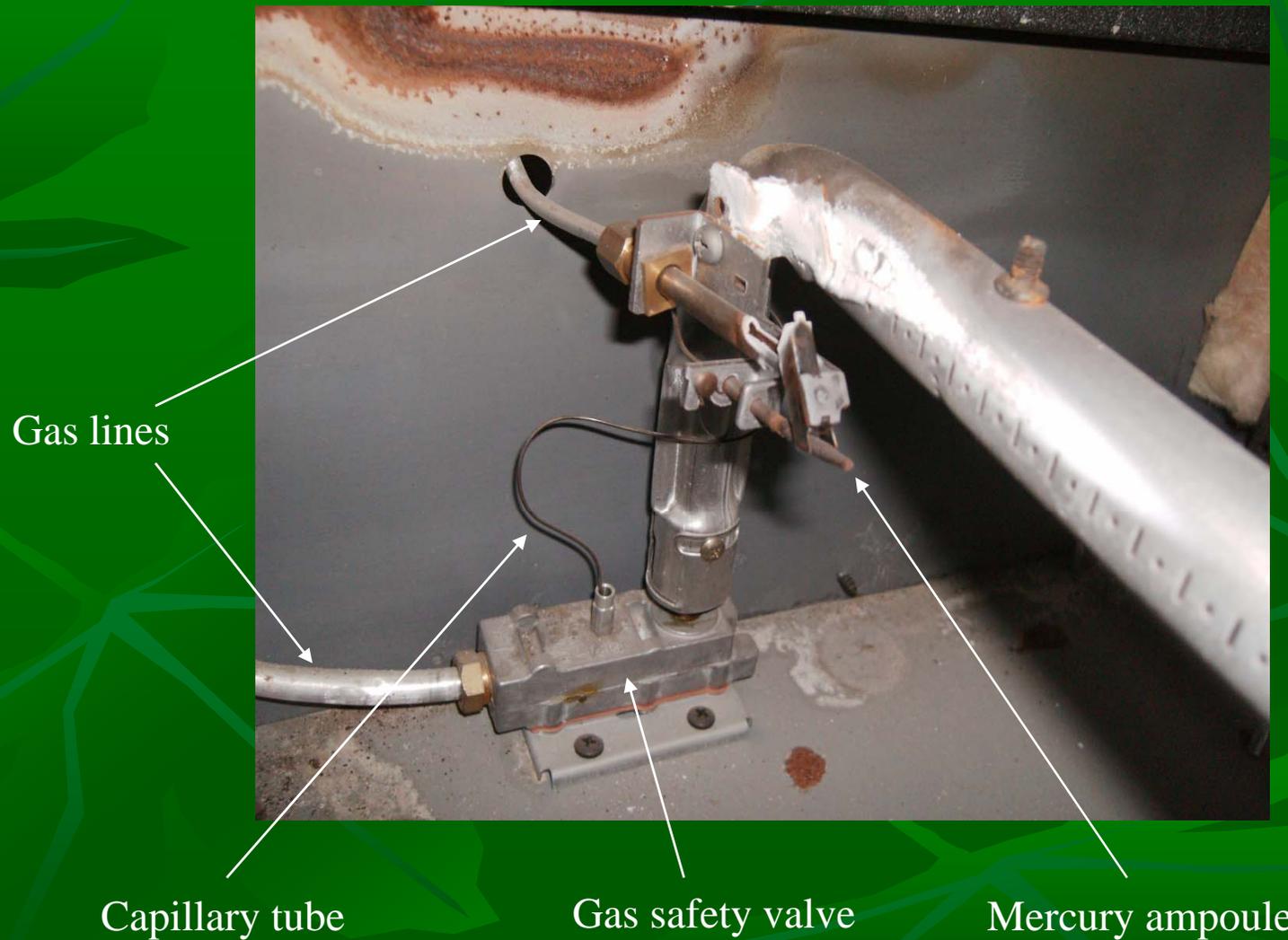
Mercury Flame Sensor



Disconnect gas line

Remove
screws

Mercury Flame Sensor



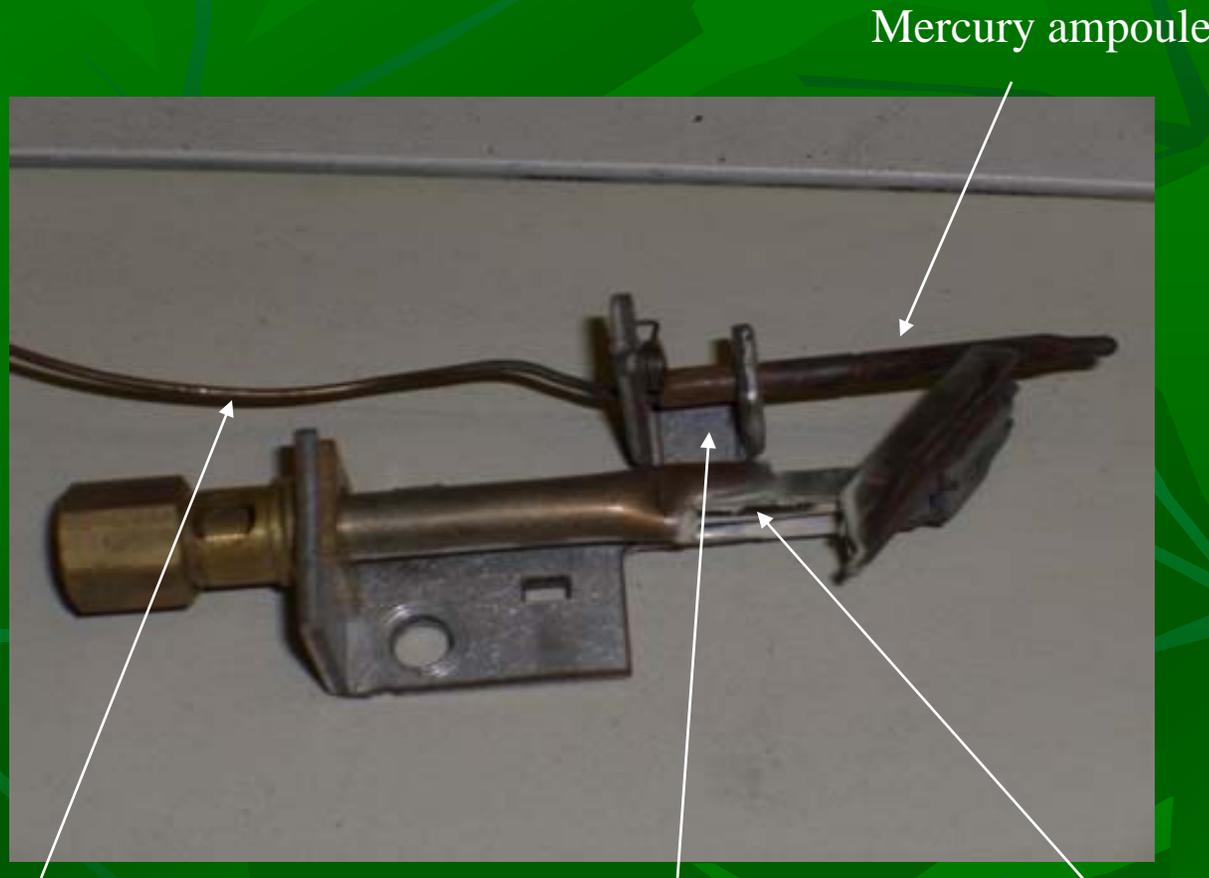
Flame Sensor Removal

Remove screws



Remove screws

Mercury Flame Sensor



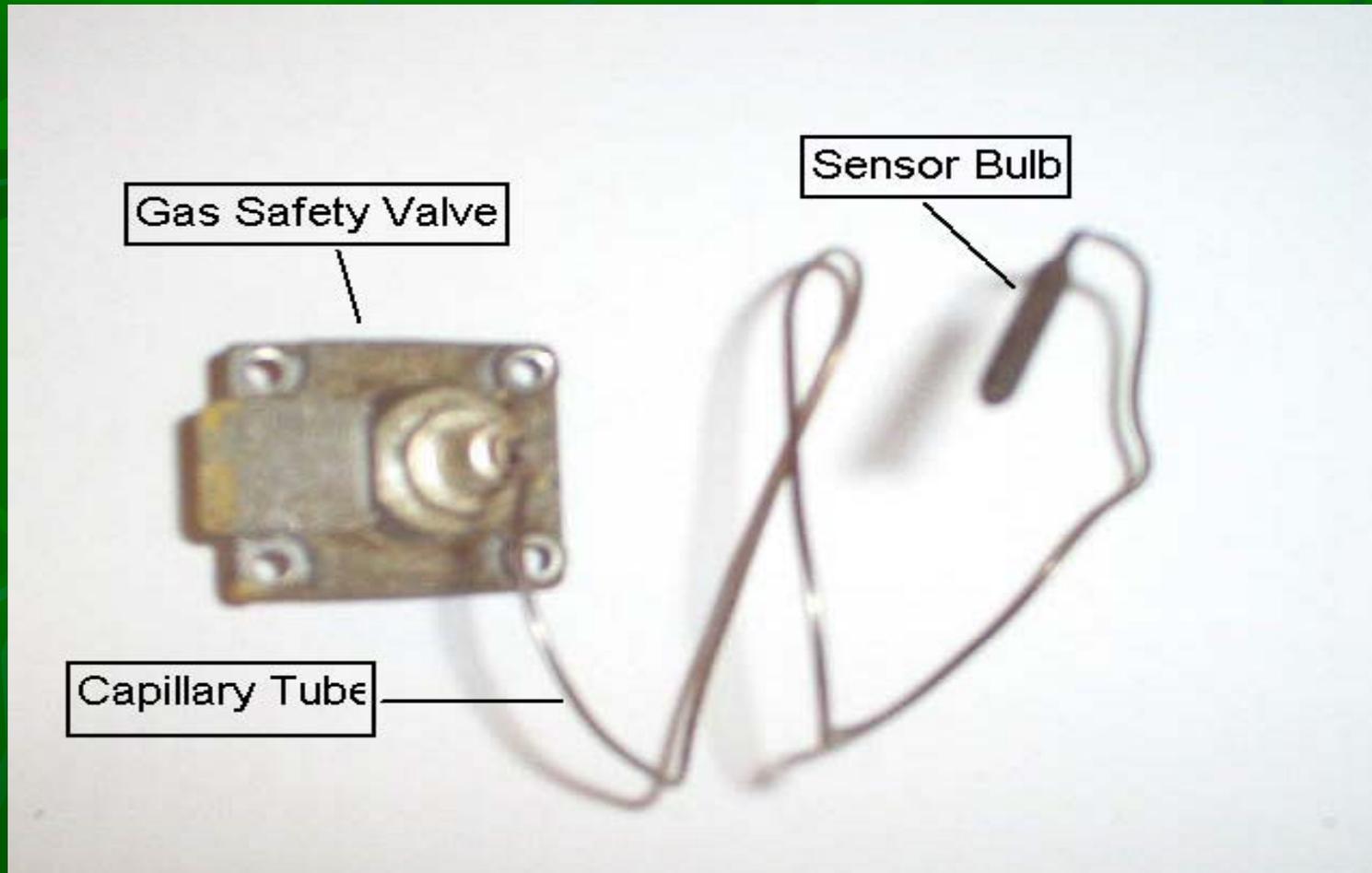
Mercury ampoule

Capillary tube containing mercury vapors, leading to safety valve

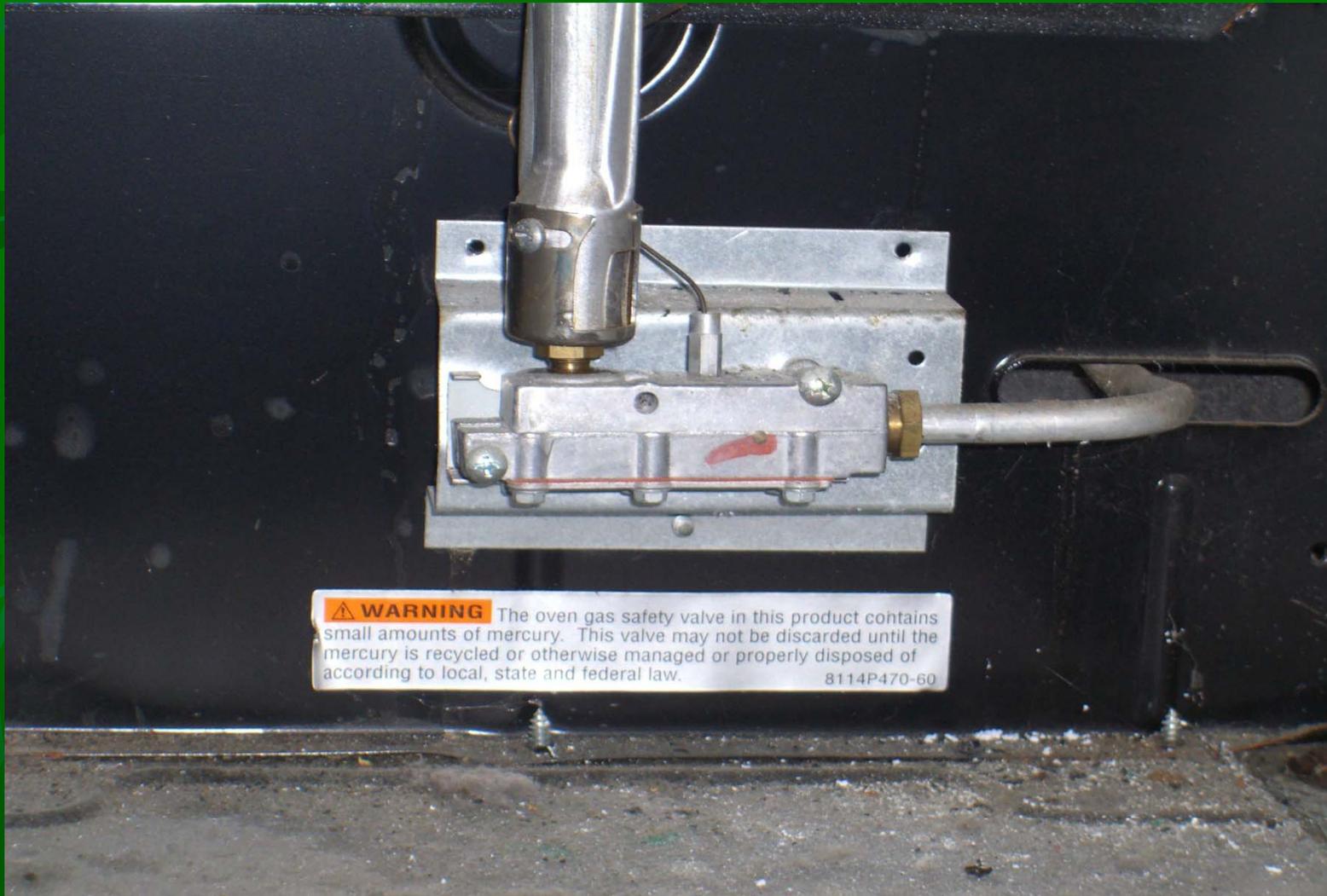
Clip attaching ampoule to pilot assembly

Pilot

Another Type of Flame Sensor



Some Appliances are Marked



Mercury-Free Ranges



Electronic Ignition Label

Older Ranges



More Mercury Flame Sensors

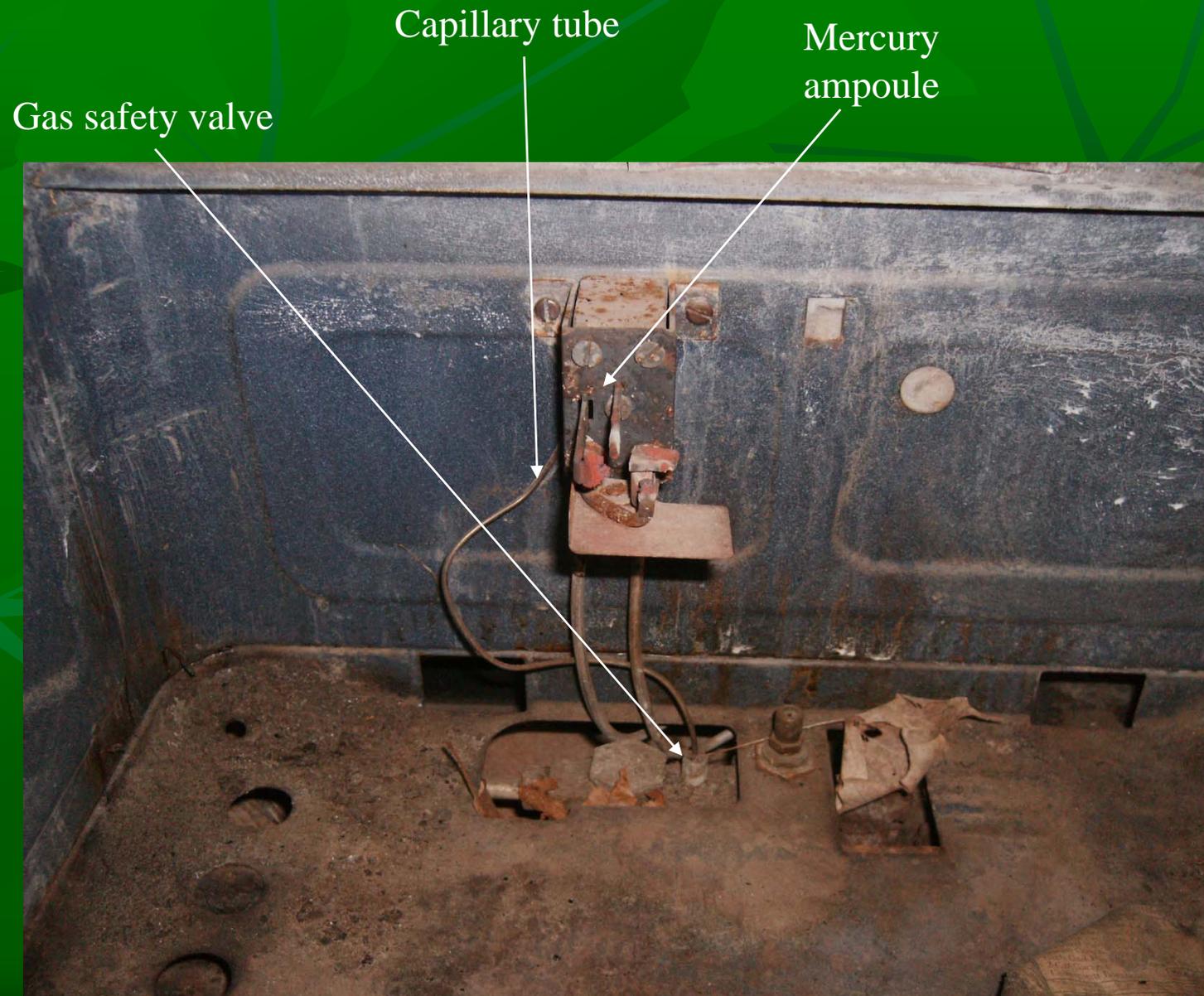
Safety valve

Capillary tube

Mercury ampoule



More Mercury Flame Sensors

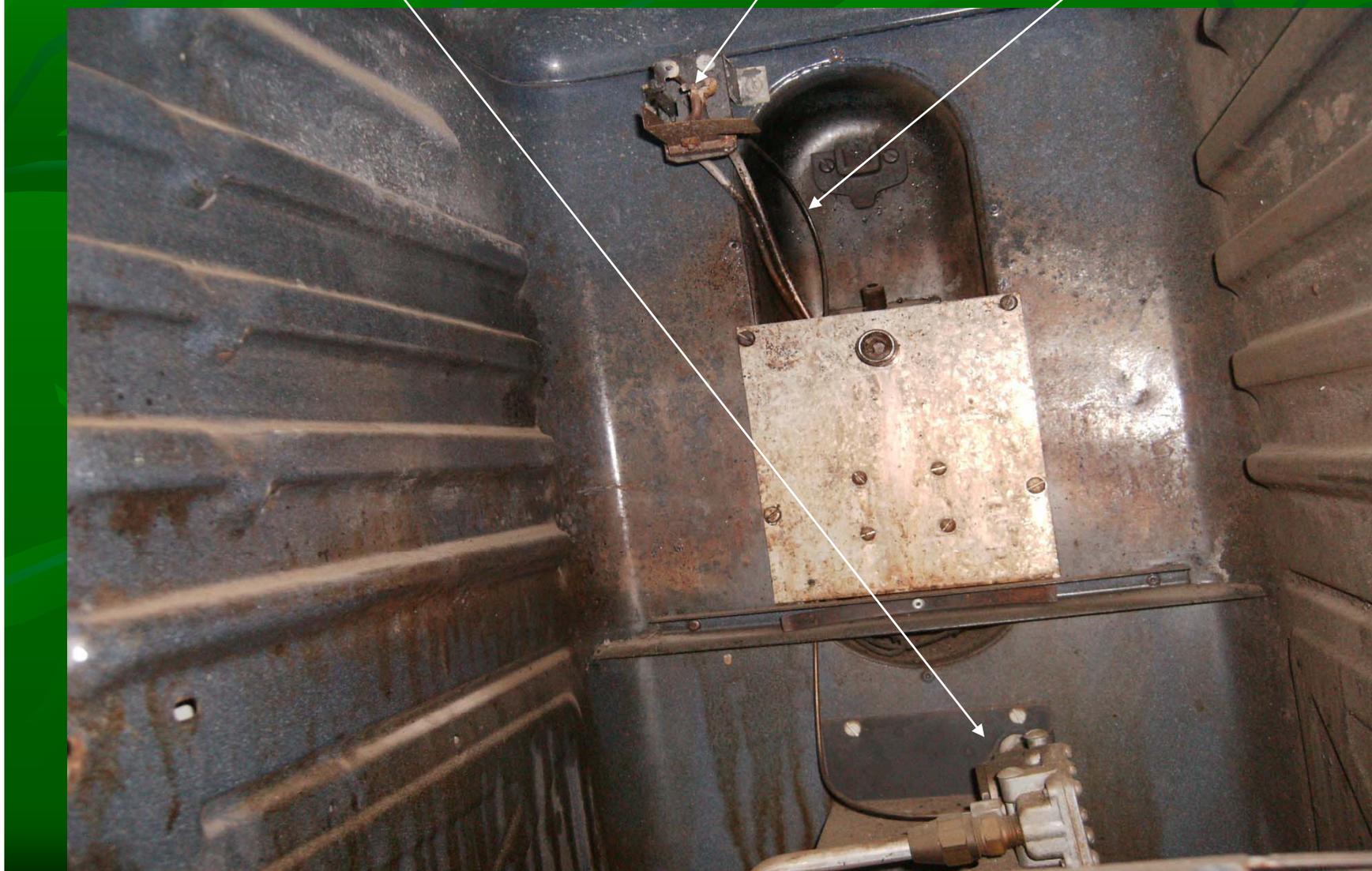


More Mercury Flame Sensors

Mercury ampoule

Gas safety valve

Capillary tube

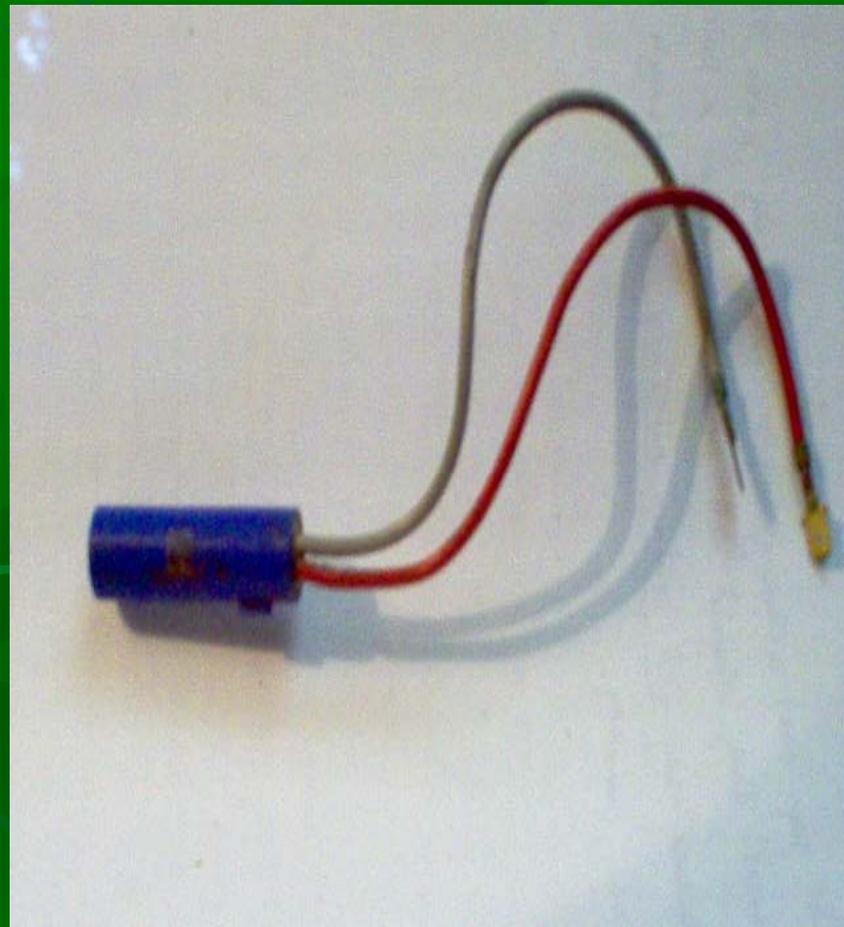


Washing Machines



Plastic button on the lid to activate switch on machine at the left

Mercury Tilt Switch



Sump Pump



Mercury-containing
float switch

Space Heater

Safety Tilt Switch for Space Heater



Other Appliances Containing Mercury

- Gas furnaces
- Gas refrigerators, air conditioners, water heaters & dryers
- Microwave ovens
- Recreational vehicles

Older Furnace & Boiler Controls May Contain Mercury



Safety

- Protect the ground with plastic sheeting
- Protect yourself with safety gloves & goggles
- Protect others from using dangerous appliances

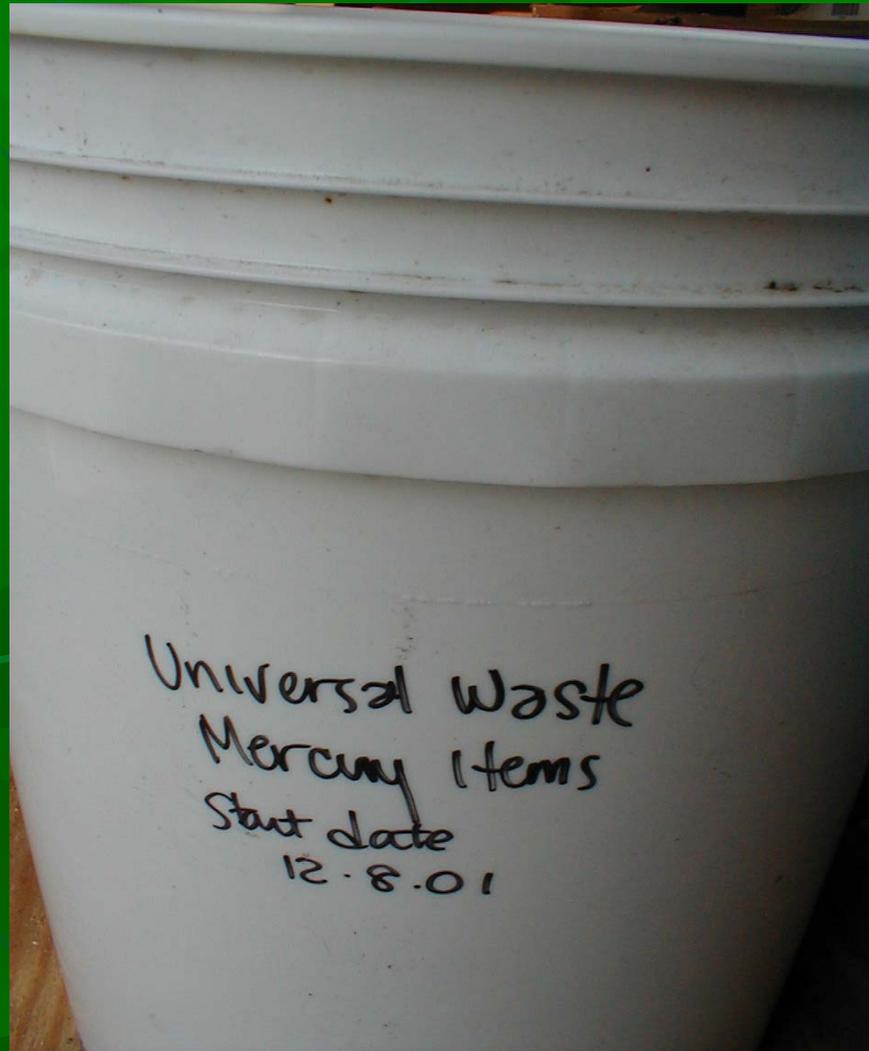
Protect Yourself

- Safety glasses
- Work gloves & latex gloves
- Work boots
- Respirator w/Hg cartridges (optional)
- Eye wash & first aid stations or kits
- Portable mercury spill cleanup kit

Tools You'll Need

- Pry & flat bars
- Hammer
- Manual & power screwdrivers (flat & Phillips)
- 1/4" & 5/16" nut drivers
- Vise grips
- Wire cutters & tin snips
- Wrenches: 3/8" & 11/16" open-end & adjustable
- Magnet

Universal Waste Rule



Recycle Mercury Components

- Store until you have enough mercury devices to send for recycling
- Use only licensed mercury processing facilities
- Companies with Massachusetts locations:
<http://www.mass.gov/dep/toxics/stypes/hgcycle.htm>

Resources

- MassDEP Mercury Home Page
<http://www.mass.gov/dep/toxics/stypes/hgres.htm>
- Report on Removal of Mercury Devices from Appliances
www.epa.gov/region5/air/mercury/appliancereport.html
- Universal Waste Rule Fact Sheet
<http://www.mass.gov/dep/recycle/hazardous/univrul.doc>

Credits

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