This fact sheet explains how to remove and handle mercury switches before you crush or shred a major appliance. It supersedes the June 2004 fact sheet and includes reference to recent legislation that changes appliance recycler requirements.

What are major appliances?
A major appliance is a machine you have in your home or business, like a
- washer or dryer
- water heater
- dehumidifier
- oven, stove, microwave
- refrigerator, freezer
- air-conditioner, or
- trash compactor

Why is there mercury in major appliances?
Mercury is a metal with special properties.
- It is liquid at room temperature and conducts electricity. This makes it work well in tilt switches that control motors and pumps. The mercury is inside a small capsule that can shut off a major appliance or a light when it is tilted.
- It expands when heated. This makes it perfect to use in flame sensors for pilot lights that are found in many major gas appliances. The mercury is in a wire tube close to the pilot light. If the pilot light goes out, the mercury cools and closes the gas safety valve.

How much mercury is in a major appliance?
It depends on the type of switch. A tilt switch in a chest freezer or washing machine has a drop or two of mercury. A flame sensor in a gas oven, gas furnace, or water heater has about two drops of mercury.

Is mercury dangerous?
Mercury is poisonous. If mercury is not disposed of safely, it can be released into the environment and harm people and wildlife.

Contact with mercury can cause:
- birth defects,
- nerve disorders,
- brain damage, or
- death.

How do people come in contact with mercury?
Mercury can be inhaled, absorbed through the skin, or eaten (in contaminated food).
**Do I have to remove mercury switches from major appliances?**

Yes. The law says you must remove mercury switches and other hazardous materials from discarded major appliances before you crush, bale, shear or shred them. If you do not, you are breaking the law.

**What are the new rules for mercury switches in major appliances?**

In 2003, DTSC adopted the “Mercury Waste Classification and Management regulations.” If you handle discarded major appliances with mercury switches, the new rules affect you in two ways:

1. Starting February 9, 2006, all discarded major appliances with mercury switches will be hazardous waste.
2. Mercury switches that were removed from discarded major appliances used to be considered regular hazardous waste. Now, they may be handled as **universal waste**.

In 2004, Assembly Bill 2277 changed the requirements for appliance recyclers beginning 2006. DTSC will issue a separate fact sheet to address the requirements of the bill.

**What is universal waste?**

Universal waste is a type of hazardous waste in which the rules for handling universal waste are simpler than for hazardous waste.

**Am I affected by the new rules?**

Yes, if you are a scrap metal recycler who accepts discarded major appliances. A scrap metal recycler is:

- a used appliance dealer,
- an appliance recycler,
- a scrap metal yard, or
- anyone who handles a major appliance after it is no longer used.

Scrap metal recyclers must verify that the mercury switches have been removed from the major appliances before crushing, baling, shearing or shredding them.

**Warning:** Mercury is dangerous. Do not try to remove a mercury switch unless you have the right training and equipment!

**Where can I learn more about these rules?**

To learn more, read these fact sheets:

- **Managing Universal Waste in California**
  [www.dtsc.ca.gov/PublicationsForms/HWM_FS_UWR.pdf](http://www.dtsc.ca.gov/PublicationsForms/HWM_FS_UWR.pdf)
- **Changes to California’s Universal Waste Regulations**
- **Summary of Universal Waste Handler Requirements**

**Which major appliances have mercury switches?**

Mercury switches can be in:

- **Chest Freezers**
  If the lid has a light and there is no plastic tab or button that turns the light on and off, the freezer may have a mercury tilt switch. But, freezers made after January 1, 2000 do not have mercury switches.

- **Washing Machines**
  Some washing machines may have 2 mercury tilt switches. One switch is used for switching off the power when the lid is raised. If a washing machine does not have a plastic tab or button in the lid to switch off the power, it probably has a mercury switch. The second switch is used for switching off the power if the load is not balanced. This switch is attached to the back wall inside the washing machine. Some washing machines built before 1980 may have mercury switches.
• **Gas Ovens**
  Mercury flame sensors that are used in some gas ovens are located near the back wall inside the broiler cavity. If there is a thin metal wire in the back of the broiler cavity, and it is connected to the pilot light assembly, it may be a mercury flame sensor. The thin metal wire is actually hollow and contains mercury. If you see insulated wires instead of a thin metal wire, it is not a mercury flame sensor. Ovens with lights that do not have an on/off switch may have mercury tilt switches.

• **Electric or Gas Space Heaters**
  These may have mercury switches and flame sensors.

• **Commercial Gas Water Heaters**
  Water heaters that hold 100 gallons or more may contain mercury flame sensors. If the water heater has a gas valve with a very thin metal wire plugged into it, it may have a mercury flame sensor. The metal wire is actually hollow and contains mercury.

• **Gas Furnaces**
  Like commercial gas water heaters, gas furnaces may have mercury flame sensors. The flame sensors may either be plugged directly into the gas valve or into a control box near the gas valve.

• **Other Commercial or Home Appliances**
  Like boilers, gas refrigerators, gas air conditioners, dryers, and microwave ovens may have tilt switches and flame sensors with mercury.

See page 5 for a list of the major brand names of these appliances. Mercury flame sensors in commercial gas water heaters and gas furnaces are similar. These parts may be used on models that do not typically use mercury flame sensors.

### How do I remove a mercury switch?

To learn how to remove mercury switches from appliances, read: *Self-Training Manual for Removing Mercury Switches from Major Appliances*. Download it at: [www.dtsc.ca.gov](http://www.dtsc.ca.gov).

### Is it hard to remove a mercury switch? How long does it take?

It depends on the major appliance. Some switches only take a minute to remove. Others can take longer. For example, it will take you longer to remove a switch from a gas stove than from a chest freezer. If the appliance is rusty or greasy, etc. it may be harder.

### When should I remove switches from major appliances?

The best time to remove the switches is as soon as you get the appliance, when you remove any CFCs or PCBs.

### What do I do with mercury switches after I remove them?

You can handle mercury switches as hazardous waste or as universal waste. Handling mercury switches as universal waste is simpler and easier than handling them as hazardous waste. To handle mercury switches as universal waste, see the rules in the Calif. Code of Regulations, Title 22, Chapter 23, Article 2. Or, read “Managing Universal Waste in California” at: [www.dtsc.ca.gov/PublicationsForms/HWM_FS_UWR.pdf](http://www.dtsc.ca.gov/PublicationsForms/HWM_FS_UWR.pdf)

### How do I store mercury switches?

1. Keep the mercury switches in a closed container in good condition.
2. Do not use a metal container. Mercury can react with metal or leak through the seams.
3. Wrap the switches in padding, like bubble wrap, so they won’t break.
4. Keep the containers where they won’t be disturbed.
How long can I keep mercury switches?
If you handle them as universal waste, you can keep mercury switches for up to a year. Write the date on the container when you first store a mercury switch in it. That way you can show an inspector that you have not kept mercury switches for more than a year.

Do I need an EPA identification number to handle mercury switches as universal waste?
You do not need an EPA ID number unless you have more than 11,000 pounds of universal waste at one time. But, you still have to:
- Have a system for cleaning up mercury, and
- Train employees on how to handle switches and what to do in an emergency.

Do I need a special carrier to transport mercury switches?
No. If you handle them as universal waste. You can transport the switches yourself. They have to be in sealed containers. If a switch is broken or damaged, put it in a sealed plastic bag inside the container. You do not have to use a hazardous waste manifest or a registered hazardous waste transporter.

If you handle other hazardous wastes, you can use your hazardous waste hauler to transport your mercury switches. You can also hire a commercial carrier that takes universal waste. Make sure the carrier knows and follows the rules for transporting universal waste.

If you ship packages of mercury switches by air or by water, you must follow the U.S. Department of Transportation (DOT) regulations for transporting hazardous materials. If you use ground shipment, your package must meet the DOT regulations only if it contains more than one pound of mercury.

Where can I ship mercury switches?
You have to ship mercury switches to an authorized mercury recycling facility. You can take your mercury switches to a recycler or to a universal waste handler who collects switches before sending them to a recycler.

See page 7 for a list of mercury switch handlers and transporting facilities in California.

See page 8 for a list waste destination facilities in California.

Do I have to keep any records?
Yes. If you choose to manage mercury switches as universal waste, then you must keep the following records for at least three years:
- The total number mercury switches you remove,
- The total number of major appliances destined for crushing, baling, shearing or shredding, and
- The total number of major appliances you found to contain one or more mercury switches.

What if there is a mercury spill?
Be very careful! It is dangerous to inhale, swallow, or handle mercury. If you see a broken, leaking, or damaged mercury switch, put it in a sealed plastic bag and then into a container.

Do not try to vacuum a mercury spill! Vacuuming spreads mercury vapors into the air. It can do more harm than good.

Write a plan of what to do if there’s a mercury spill. Keep personal protective equipment and a mercury spill kit nearby when you remove mercury switches. Make sure that the staff knows exactly how to use them. You can get affordable spill kits from laboratory and safety supply stores.
What if someone is exposed to mercury?

**Mercury on the Skin**
Wash the skin with soap and water. Remove all clothes that touched the mercury. Seal the clothes in a plastic bag. Put the plastic bag in a hazardous waste container. See a doctor right away!

**Mercury in the Eye**
Flush eyes with water for 15 minutes. See a doctor right away!

**Swallowed Mercury**
Get medical help right away! Call poison control or your doctor for more information.

Where can I get more information?
For information about mercury, how to handle mercury switches, and regulatory requirements, contact a DTSC Public and Business Liaison. Call: 1-800-728-6942. Or, go to www.dtsc.ca.gov

For general information about mercury and mercury switches:
- **U.S. EPA - RCRA, Superfund & EPCRA Call Center**
  800-424-9346, or www.epacallcenter@bah.com
- **U.S. EPA**
  www.epa.gov/mercury/
- **U.S. EPA-Region 5**
  www.epa.gov/region5/air/mercury/mercury.html
- **Association of Municipal Recycling Coordinators**
  www.amrc.guelph.org
- **Appliance Recycling Information Center**
  www.aham.org/aric/aric.cfm

Disclaimer
This fact sheet was prepared in March 2005 and is based on the statutes and regulations in effect at that time. You should always review the most current statutes and regulations. Mention of product names in this fact sheet is not to be construed as an endorsement of that product.
## Major Appliances that have Mercury Tilt Switches

### Chest Freezers

All freezers listed below that were made before 2000 have the switch in the light socket in the lid.

- Baycrest
- Beatty
- Belwood
- Bradford
- Cdn. Appliance Manu.
- Continental
- Coronado
- Deep Freeze
- Derby/Denby
- FHH8
- Franklin
- Frigidaire
- GE*
- General Freezer
- Hotpoint
- Kelvinator
- Kenmore
- McLeary
- McGraw-Edison
- Montgomery Ward
- Norseman
- RCA
- Sears Coldspot
- Simpson Sears
- Supreme
- Viking
- Westinghouse
- Wood
- Zenith

*New models of these brands may also have mercury switches.

### Washing Machines

- Kenmore
- Maytag
- RCA Whirlpool

For pre-1990 models, the switch is in the arm on the lid under left side of cover. Models manufactured before 1972 may also have a mercury switch mounted to the inside face of the back wall.

### Major Appliances with Mercury Switches in Flame Sensor or Safety Valve*

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Manufacturer</th>
<th>Switch Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranges/Ovens/ Stoves</td>
<td>Cholson/Colson</td>
<td>Front of broiler</td>
</tr>
<tr>
<td>(With or Without Electric</td>
<td>Coloric</td>
<td>Rear of burner</td>
</tr>
<tr>
<td>Connections)</td>
<td>GE</td>
<td>Rear of burner</td>
</tr>
<tr>
<td></td>
<td>Glenwood</td>
<td>Rear of broiler</td>
</tr>
<tr>
<td></td>
<td>Magee</td>
<td>Rear of broiler</td>
</tr>
<tr>
<td></td>
<td>Magic Chef</td>
<td>Boiler burner</td>
</tr>
<tr>
<td></td>
<td>Preway</td>
<td>Burner</td>
</tr>
<tr>
<td></td>
<td>Sears</td>
<td>Rear of broiler</td>
</tr>
<tr>
<td></td>
<td>Whirlpool</td>
<td>Rear of broiler</td>
</tr>
<tr>
<td>Gas Ranges w/Space Heater</td>
<td>Coloric</td>
<td>Heater burner</td>
</tr>
<tr>
<td></td>
<td>Magee</td>
<td></td>
</tr>
<tr>
<td>Space Heaters</td>
<td>Presto</td>
<td>Inside bottom</td>
</tr>
<tr>
<td></td>
<td>Thermo Pride</td>
<td>On burner</td>
</tr>
<tr>
<td>Commercial Water Heaters</td>
<td>GE</td>
<td>On burner</td>
</tr>
<tr>
<td></td>
<td>Rheem</td>
<td>On burner</td>
</tr>
<tr>
<td>Furnaces &amp; Boilers</td>
<td>Thermo Pride</td>
<td>On burner</td>
</tr>
<tr>
<td></td>
<td>White Rodgers</td>
<td></td>
</tr>
<tr>
<td>Gas Refrigerators</td>
<td>All except Norcold 1082,</td>
<td>On burner</td>
</tr>
<tr>
<td>Gas Air Conditioners</td>
<td>600, 900, 1200</td>
<td></td>
</tr>
</tbody>
</table>

Sources:
- Mercury Switches in Appliances: Final Report. Prepared for Massachusetts Department of Environmental Protection by Franklin County Solid Waste Management District

Disclaimer: Mention of product names is not to be construed as an endorsement of that product.
### Companies that Handle and Transport Mercury Switches in California

<table>
<thead>
<tr>
<th>Company</th>
<th>Address</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERC-MTI (Advanced Environmental Recycling Co. – Mercury Technologies Int'l)</td>
<td>30677 Huntwood Ave. Hayward, CA 94555</td>
<td>Tel: 800-628-3675 Fax: 510-429-1498 <a href="http://www.aercycling.com">www.aercycling.com</a></td>
</tr>
<tr>
<td>Chemical Waste Management</td>
<td>35251 Old Skyline Road Kettlemen City, CA 93239</td>
<td>Tel: 323-277-2500 Fax: 323-277-2523 <a href="http://www.cleanharbors.com">www.cleanharbors.com</a></td>
</tr>
<tr>
<td>Clean Harbors Los Angeles, LLC Los Angeles Facility</td>
<td>5756 Alba Street Los Angeles, CA 90058</td>
<td>Tel: 408-451-5000 Fax: 408-453-6045 <a href="http://www.cleanharbors.com">www.cleanharbors.com</a></td>
</tr>
<tr>
<td>Clean Harbors of San Jose, LLC San Jose Facility</td>
<td>1040 Commercial St., Suite 109 San Jose, CA 95112</td>
<td>Tel: 714-738-8516 Fax: 714-441-0857 <a href="http://www.kinsbursky.com">www.kinsbursky.com</a></td>
</tr>
<tr>
<td>Kinsbursky Brothers, Inc.</td>
<td>1314 North Anaheim Blvd. Anaheim, CA 92801</td>
<td>Tel: 619-409-9292 <a href="http://www.kinsbursky.com">www.kinsbursky.com</a></td>
</tr>
<tr>
<td>Kinsbursky Environmental Management</td>
<td>101 North Glover Ave., Suite B Chula Vista, CA 91909</td>
<td>Tel: 888-923-7252 Fax: 909-923-7510 <a href="http://www.lightingresourcesinc.com">www.lightingresourcesinc.com</a></td>
</tr>
<tr>
<td>Lighting Resources, Inc. Ontario Branch</td>
<td>805 East Francis Street Ontario, CA 91741</td>
<td>Tel: 909-875-9288 Fax: 909-875-9813 <a href="http://www.north-state.com">www.north-state.com</a></td>
</tr>
<tr>
<td>North State Environmental – Southern California</td>
<td>2776 South Lilac Ave. Bloomington, CA 92316</td>
<td>Tel: 858-273-8669 Fax: 858-273-8678 <a href="http://www.north-state.com">www.north-state.com</a></td>
</tr>
<tr>
<td>North State Environmental</td>
<td>5519 Clairemont Mesa Blvd. San Diego, CA 92117</td>
<td>Tel: 650-588-2838 Fax: 650-588-1950 <a href="http://www.north-state.com">www.north-state.com</a></td>
</tr>
<tr>
<td>North State Environmental – Northern California</td>
<td>90 South Spruce Ave., Ste. C3 South San Francisco, CA 94080</td>
<td>Tel: 510-651-2964 Fax: 510-656-4926 <a href="http://www.onyxes.com">www.onyxes.com</a></td>
</tr>
<tr>
<td>Onyx Environmental Services, Inc. Fremont</td>
<td>4227 Technology Drive Fremont, CA 94538</td>
<td>Tel: 714-379-6000 Fax: 714-379-6010 <a href="http://www.onyxes.com">www.onyxes.com</a></td>
</tr>
<tr>
<td>Onyx Environmental Services, Inc. Azusa</td>
<td>1704 West First Street Azusa, CA 91702</td>
<td>Tel: 510-233-8001 Fax: 510-235-9427 <a href="http://www.onyxes.com">www.onyxes.com</a></td>
</tr>
<tr>
<td>Onyx Environmental Services, Inc. Huntington Beach</td>
<td>5202 Oceanus Drive Huntington Beach, CA 92649</td>
<td>Tel: 800-884-8982 Fax: 510-782-8984 <a href="http://www.onyxes.com">www.onyxes.com</a></td>
</tr>
<tr>
<td>Recyclights, Inc.</td>
<td>1205 West Barkley Ave. Orange, CA 92868</td>
<td>Tel: 714-997-8090 Fax: 714-997-3561 <a href="http://www.tgainc.com">www.tgainc.com</a></td>
</tr>
</tbody>
</table>

**Note:** Most hazardous waste transporters registered with DTSC handle and transport mercury switches.

**Disclaimer:** This list includes commercial firms found to offer mercury-containing switch handling services. DTSC does not endorse or recommend any specific vendor. In addition, this list is for informational purposes only and is not meant to be a complete or up-to-date list of companies that provide mercury-handling and recycling services in California. Contact companies directly to obtain information regarding services provided, company-specific packaging and labeling requirements, and costs.
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<tbody>
<tr>
<td>AERC-MTI (Advanced Environmental Recycling Co. – Mercury Technologies Int’l)</td>
<td>2591 Mitchell Avenue, Allentown, PA 18103</td>
<td>Tel: 800-554-2372, Fax: 610-791-7696, <a href="http://www.aercrecycling.com">www.aercrecycling.com</a></td>
</tr>
<tr>
<td>Bethlehem Apparatus Company, Inc.</td>
<td>890 Front Street, PO Box Y, Hellerton, PA 18055</td>
<td>Tel: 610-838-7034, Fax: 610-838-6333, <a href="http://www.bethlehemapparatus.com">www.bethlehemapparatus.com</a></td>
</tr>
<tr>
<td>Lighting Resources, Inc.</td>
<td>498 Park Drive, Greenwood, IN 46143</td>
<td>Tel: 317-888-3889, Fax: 317-888-3890, <a href="http://www.lightingresourcesinc.com">www.lightingresourcesinc.com</a></td>
</tr>
<tr>
<td>Mercury Waste Solutions, Inc. National Processing Center</td>
<td>21211 Durand Avenue, Union Grove, WI 53182-9711</td>
<td>Tel: 800-741-3343, Fax: 262-878-2699, <a href="http://www.mercurywastesolutions.com">www.mercurywastesolutions.com</a></td>
</tr>
<tr>
<td>NSSI Sources and Services, Inc.</td>
<td>P.O. Box 34042, Houston, TX 77234</td>
<td>Tel: 713-641-0391, Fax: 713-641-6153, <a href="http://www.nssihouston.com">www.nssihouston.com</a></td>
</tr>
<tr>
<td>Onyx Environmental Services, Inc. (dba: Onyx Special Services, Inc.)</td>
<td>5736 West Jefferson Street, Phoenix, AZ 85043</td>
<td>Tel: 800-368-9095, <a href="http://www.superiorserv.com">www.superiorserv.com</a></td>
</tr>
</tbody>
</table>

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1 These facilities have a mercury retort to recover mercury from switches.