



## Quick Review: Compact Fluorescent Lamps

Compact fluorescent lamps (CFL's) are energy efficient alternatives to traditional incandescent light bulbs. Both national and state level organizations and governments encourage the purchase and use of CFL's because they reduce energy consumption. The U.S. Environmental Protection Agency (EPA) reports that CFL's use about 75% less energy than incandescent bulbs and last up to 10 times longer<sup>1</sup>. Although CFL's contain about 5 milligrams of mercury, reports say that these lamps reduce mercury emissions into the environment by reducing the demand from coal fired plants, which will emit 13.6 mg of mercury emissions to manufacture an incandescent lamp, versus 3.3 mg or mercury emissions to produce a CFL.<sup>1</sup>

Although CFL's reduce energy consumption, they still contain mercury which can be harmful to one's health. There are three chemical forms of mercury: methylmercury, elemental mercury, and other compounds.<sup>2</sup> Methylmercury exposure comes from consumption of fish or shellfish. Symptoms include impairment to peripheral vision; disturbances in sensations; lack of coordination; muscle weakness; and impairment of speech, hearing and walking.<sup>2</sup> Elemental mercury exposure occurs when mercury is inhaled as a vapor and absorbed through the lungs. This is the biggest concern when CFL's break in a household. Symptoms include tremors; insomnia; neuromuscular changes; headaches; disturbances in sensations; changes in nerve responses; and decreased cognitive function.<sup>2</sup> Higher or prolonged exposure may lead to kidney problems, respiratory failure, and even death. In other mercury compounds, damage to the gastrointestinal tract, nervous system and kidneys may occur.<sup>2</sup>

According to the EPA, CFL's are classified as universal waste because of the mercury they contain. Universal waste includes batteries, pesticides, mercury-containing equipment and lamps. Lamps are classified as the tube portion of a light that is specifically designed to produce radiant energy, and CFL's fall under this classification.<sup>3</sup> Should a lamp break, the EPA provides clean up guidelines and proper storage of broken and burnt out lamps, but proper recycling methods is still an issue.

Over 162 million CFL's have been sold nation wide since January 2007, 4 million alone in Virginia.<sup>4</sup> Dominion Virginia Power has been working with Home Depot and Honeywell to provide discounts on all CFL's purchased in Virginia, and their program

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<sup>1</sup> *Compact Fluorescent Light Bulbs*,

<<[www.deq.state.va.us/export/sites/default/waste/pdf/guidance/cflb.pdf](http://www.deq.state.va.us/export/sites/default/waste/pdf/guidance/cflb.pdf)>> (accessed May 2008).

<sup>2</sup> *Mercury Health Effects*, <<<http://www.epa.gov/mercury/effects.htm>>> (accessed June 2008).

<sup>3</sup> *Title 40: Protection of the Environment*, <<<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&rgn=div5&view=text&node=40:26.0.1.1.7&idno=40>>> (accessed May 2008).

<sup>4</sup> <<<http://www.18seconds.org>>> (accessed May 2008)



has yielded great success with almost 1.1 million bulbs sold.<sup>5</sup> This increase is due in part by the implementation of the Virginia Energy Plan. The Plan requires an analysis of the adequacy of electricity generation, transmission and distribution resources for the electric industries, and of the efficient use of energy resources and conservation initiatives in the Commonwealth.<sup>6</sup>

In 2003, of an estimated 670 million mercury containing lamps disposed of in the U.S., only 23% were recycled.<sup>7</sup> Of those 670 million, 145 million lamps were residential, and only 2% of those were recycled.<sup>8</sup> However, nationwide there were only 37 recycling facilities, defined as locations that process spent lamps, approved or permitted by states as Universal Waste Recycling Destination facilities.<sup>9</sup> With states such as Virginia encouraging the purchase of CFL's and offering them at discounted prices, recycling facilities and programs are becoming more widespread.

## **VIRGINIA'S RECYCLING POLICY**

Virginia incorporated by reference the U.S. EPA regulations that were set forth in 40 CFR Part 273. Virginia added that in addition to hazardous waste listed in the federal regulation, it shall also include those wastes listed in Part XVI of the Virginia Hazardous Waste Management Regulations.<sup>10</sup> The Virginia regulation states that a lamp is considered discarded and classified as waste when it is removed from its fixture. Households currently can dispose of these lamps in the trash. For a larger scale, once they reach a certain number, these lamps may be crushed on the site of their generation to reduce their volume, but it must be done in a safe and controlled manner to minimize the release of mercury; the waste handler must use a mercury-containing lamp crusher indoors with air pollution controls that capture the mercury.<sup>11</sup> The contents must then be stored in closed, non-leaking drums or containers, and they must be properly labeled "Universal Waste-Lamp(s)", "Waste Lamp(s)", or "Used Lamp(s)".<sup>12</sup> The Virginia Department of Environmental Quality provides a list of household hazardous waste information for all counties and independent cities in Virginia.<sup>13</sup> The policies and programs addressing CFL's vary by locality. Counties and cities in Central

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<sup>5</sup> *Compact Fluorescent Light Bulbs are getting the Green Light*, <<<http://www.hamptonroads.com/2008/04/compact-fluorescent-bulbs-are-getting-green-light>>> (accessed May 2008)

<sup>6</sup> 9 VAC 67-201

<sup>7</sup> *National Mercury-Lamp Recycling Rate and Availability of Lamp Recycling Services in the U.S.*, <<[http://www.nema.org/lamprecycle/docs/ALMR\\_capacity\\_statement.pdf](http://www.nema.org/lamprecycle/docs/ALMR_capacity_statement.pdf)>>

<sup>8</sup> Id.

<sup>9</sup> Id.

<sup>10</sup> 9VAC20-60-273

<sup>11</sup> Id.

<sup>12</sup> Id.

<sup>13</sup> See *Household Hazardous Waste Information for the Counties and Independent Cities in the Commonwealth of Virginia*,

<<[www.deq.state.va.us/export/sites/default/recycle/documents/HHWContactsVA.pdf](http://www.deq.state.va.us/export/sites/default/recycle/documents/HHWContactsVA.pdf)>>



Virginia, including Chesterfield, City of Colonial Heights, Goochland, Hanover, Henrico, New Kent, and Richmond, can recycle their CFL's through their counties electronics recycling program. Counties and cities surround the Hampton Roads area including Hampton, Essex, James City, Middlesex, and Williamsburg offer recycling programs five days a year at certain county locations. Cities and counties along the eastern shore including Chesapeake, Franklin, Isle of Wright, Norfolk, Portsmouth, Suffolk, and Virginia Beach, accept fluorescent light tubes at their counties recycling centers. Other counties, such as Augusta, Bristol, Buchanan, Dinwiddie, Harrisonburg, Loudon, and Spotsylvania, provide annual household hazardous waste days, while others, such as Buena Vista and Emporia offer no recycling programs for CFL's.

In addition to local recycling options, hardware stores, such as Ace or TrueValue, offer recycling programs for CFL's, but they vary depending on locations. However, IKEA offers recycling programs at all their stores nationwide. There is no statewide policy mandating the recycling of these lamps.

## **RECYCLING PROGRAMS NATIONWIDE**

Like Virginia, most other state's delegate the responsibility of recycling programs to their localities. Residents can visit their states environmental quality agency website and find a list of all the programs offered by the locality, or they can contact the locality directly. Alaska offers a unique program specifically for CFL's; residents can purchase kits that come with pre-paid shipping labels. They properly clean up their broken or burnt out CFL, place it in the container, and drop it off at the local post office.

These containers are then shipped to Anchorage where recycling is handled.<sup>14</sup> Oregon has a program in place for residents whose localities do not offer a one-day event or recycling program; these residents can call their Oregon regional DEQ office for a free pick-up of these materials from their home.<sup>15</sup>

There are four states that by law are prohibited from disposing of their mercury bulbs in the trash: Maine, Massachusetts, New Hampshire, and Vermont.<sup>16</sup> In Washington, the City of Seattle and King, Kitsap and Snohomish Counties are also prohibited from disposing of their mercury bulbs in the trash.<sup>17</sup> In these states and counties, most localities have recycling programs in place or local annual events where residents can bring their house hold waste. In Maine, if your locality does not offer one-day collection events, non-residents can call Androscoggin Valley Council of Governments to schedule

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<sup>14</sup> *Mercury-Containing Light Bulb (Lamp) Collection and Recycling Programs Where You Live*, <<<http://www.epa.gov/epaoswer/hazwaste/id/univwast/lamps/live.htm>>> (accessed May 2008).

<sup>15</sup> Id.

<sup>16</sup> Id.

<sup>17</sup> Id.

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a time to drop off the hazardous waste for a small fee.<sup>18</sup> In New Hampshire, most TrueValue hardware stores collect CFL's for free.

CFL recycling programs vary from state to state, but the trend seems to be very similar: the state provides the general information regarding clean-up and storage, but it is up to the locality to decide whether they offer a CFL program.

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<sup>18</sup> Id.

