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Mercury Pollution: State Efforts to Regulate and Educate the Public

Mercury Pollution has recently received a great deal of attention by the federal and state governments and by environmental organizations. The states and federal government are recognizing the significant hazards posed by mercury to the environment and to humans, and are actively trying to find ways to regulate the sources responsible for mercury emissions. The goal of the present paper is to give a broad overview of some of the state efforts to regulate and educate the public about mercury with a particular emphasis on the most recent actions.

**I. Background Information on Mercury**

Mercury is a heavy metal that exists as a natural element in water, air, and soil.<sup>1</sup> Excessive amounts of mercury can enter bodies of water through a number of means, including direct discharge and atmospheric deposition.<sup>2</sup> The excessive discharges to the environment are a direct result of human activities.<sup>3</sup> Once mercury enters a body of water, bacteria absorb the inorganic mercury and convert into methylmercury, its organic form.<sup>4</sup> This toxic substance finds its way into the aquatic food chain where, through a

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<sup>1</sup> The Environmental Council of the States, *ECOS Mercury Activities* <<http://www.sso.org/ecos/projects/Mercury/ECOS%20Hg%20web%204-04-01.html>> (accessed Mar. 9, 2004).

<sup>2</sup> Id.

<sup>3</sup> US Environmental Protection Agency, *Mercury* <<http://www.epa.gov/mercury>> (accessed Mar. 9, 2004).

<sup>4</sup> Tom Atkeson and Don Axelrad, *2004 Everglades Consolidated Report: Chapter 2B: Mercury Monitoring, Research and Environmental Assessment* <[http://www.sfwmd.gov/org/ema/everglades/consolidated\\_04/final/chapters/ch2b.pdf](http://www.sfwmd.gov/org/ema/everglades/consolidated_04/final/chapters/ch2b.pdf)> (accessed Mar. 9, 2004).

process known as bioaccumulation, the concentrations of mercury in each tier in the food chain become progressively greater.<sup>5</sup> Methylmercury is extremely toxic to both humans and wildlife.<sup>6</sup> As a neurotoxin, exposure to large amounts of mercury can result in serious illness and in some extreme cases, it can cause death.<sup>7</sup>

Human exposure to methylmercury is primarily from the consumption of fish that have been contaminated.<sup>8</sup> For humans, one of the greatest concerns is pregnant women who consume fish since the human fetus is especially susceptible to the toxic effects of mercury.<sup>9</sup> Once born, these children often show poor performance in attention, fine motor skills, language development, visual-spatial abilities, and memory.<sup>10</sup> At present, the US Centers for Disease Control estimates that 1 out of 12 women of child-bearing age have elevated mercury levels which could be unsafe.<sup>11</sup>

Mercury pollution can have a significant impact on wildlife.<sup>12</sup> For example, research has recently shown the effects of mercury pollution on loons in the Adirondack

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<sup>5</sup> Id.

<sup>6</sup> Id.

<sup>7</sup> Vermont Department of Environmental Conservation, *Mercury Education* <<http://www.anr.state.vt.us/dec/ead/mercury/facts/index.htm>> (accessed Mar. 11, 2004).

<sup>8</sup> US Environmental Protection Agency, *EPA Proposes Options for Significantly Reducing Mercury Emissions from Electric Utilities* <<http://www.epa.gov/mercury/mercuryfact12-15final.pdf>> (accessed Mar. 9, 2004).

<sup>9</sup> Id.

<sup>10</sup> Id.

<sup>11</sup> Mercury Policy Project, *New at MercuryPolicy.org* <<http://www.mercurypolicy.org/>> (accessed Apr. 27, 2004).

<sup>12</sup> For additional information on the health effects on humans and wildlife, see US EPA, *Mercury Study Report to Congress* <<http://www.epa.gov/ttn/oarpg/t3/reports/volume7.pdf>> (accessed Apr. 27, 2004).

Mountains.<sup>13</sup> A study conducted by the BioDiversity Research Institute and the US Fish and Wildlife Service showed that 17% of the birds were contaminated with mercury at levels sufficient to affect both their behavior and their reproductive success.<sup>14</sup> The mercury's neurotoxic effects cause the birds to provide inadequate care for their offspring.<sup>15</sup>

## **II. Sources of Mercury Pollution**

There are a number of sources of mercury emissions to the environment. First, there are natural sources of emissions, such as from volcanoes, sea vents, and forest fires.<sup>16</sup> There are also unnatural sources of emissions where mercury that has already been deposited is re-emitted due to human activities.<sup>17</sup> Two of the most common unnatural sources are municipal waste incinerators and coal-fired power plants.<sup>18</sup> In the United States, coal-fired power plants are the largest source of mercury emissions.<sup>19</sup> The US Environmental Protection Agency (EPA) estimates that approximately 40% of human-made mercury emissions come from coal-fired power plants, which currently emit almost 48 tons of mercury each year.<sup>20</sup> Other major sources of mercury emissions include

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<sup>13</sup> Great Lakes Environmental Directory, *Conservationists Warn of Mercury Impact on Loons* <[http://www.greatlakesdirectory.org/children's\\_environmental\\_health/121203\\_great\\_lakes.htm](http://www.greatlakesdirectory.org/children's_environmental_health/121203_great_lakes.htm)> (accessed Mar. 9, 2004).

<sup>14</sup> Id.

<sup>15</sup> Id.

<sup>16</sup> Vermont Department of Environmental Conservation, *Sources of Mercury* <<http://www.anr.state.vt.us/dec/ead/mercury/facts/sources.htm>> (accessed Mar. 11, 2004).

<sup>17</sup> Id.

<sup>18</sup> The Environmental Council of the States, supra n. 1

<sup>19</sup> US Environmental Protection Agency, supra n. 3

<sup>20</sup> US Environmental Protection Agency, *Frequent Questions* <<http://www.epa.gov/mercury/information/120emissions%20bills.doc>> (accessed Apr. 28, 2004).

the mining and smelting of metals, the use and disposal of mercury itself,<sup>21</sup> cement manufacturing, chlorine manufacturing, and the refining of petroleum.<sup>22</sup> Mercury pollution has become increasingly worse, and it is estimated that the pollution has increased 3 to 5 fold over the past century.<sup>23</sup> Today, almost every body of water in the United States is contaminated with mercury.<sup>24</sup>

Americans use a variety of products that contain mercury. Mercury can be found in household products, such as batteries, fluorescent lights, thermostats, and switches.<sup>25</sup> In hospitals, mercury can be found in a number of items, including thermometers, blood pressure gauges, dilation and feeding tubes, and even certain vaccines.<sup>26</sup>

Although mercury may be useful for many of the products we depend on, one problem with its use is how to properly dispose of these mercury-containing products. When mercury is disposed of in a landfill or poured down a drain, it eventually finds its way into aquatic ecosystems.<sup>27</sup> To prevent these products from causing greater damage to the environment, they need to be disposed of as hazardous waste.<sup>28</sup>

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<sup>21</sup> Thomas D. Atkeson, South Florida Mercury Science Program, *Mercury in Florida's Environment* <<http://www.dep.state.fl.us/labs/mercury/docs/flmercury.htm>> (accessed Mar. 9, 2004).

<sup>22</sup> Vermont Department of Environmental Conservation, *supra* n. 16

<sup>23</sup> Ohio Press Release, *Hagan Unveils Legislation Aimed at Drastic Reductions in Mercury Levels Throughout Ohio* <[http://www.ncel.net/news\\_uploads/96/OH-mercury%20press%20release.doc](http://www.ncel.net/news_uploads/96/OH-mercury%20press%20release.doc)> (accessed Mar. 9, 2004).

<sup>24</sup> *Id.*

<sup>25</sup> Virginia Hospitals for a Healthy Environment, *Pledging to Eliminate Mercury in your Healthcare Facility* <<http://www.deq.state.va.us/p2/vh2e/mercury.pdf>> (accessed Mar. 9, 2004).

<sup>26</sup> *Id.*

<sup>27</sup> Vermont Department of Environmental Conservation, *supra* n. 16

<sup>28</sup> Vermont Department of Environmental Conservation, *Proper Disposal of Mercury-Containing Products* <<http://www.anr.state.vt.us/dec/ead/mercury/dispose/index.htm>> (accessed Mar. 11, 2004).

In the healthcare industry, a large percentage of the mercury-containing products are not properly disposed of, and this failure is at such a level that the EPA has labeled the healthcare sector as the 4<sup>th</sup> largest source of mercury pollution to the environment.<sup>29</sup> It is interesting to note that there are effective alternatives to almost all of the mercury-containing products used in hospitals.<sup>30</sup>

Since mercury is a highly volatile substance, it can travel great distances in the air prior to being deposited on the soil or in bodies of water.<sup>31</sup> In fact, the mercury may even be able to travel in air currents up to 1 ½ years before being deposited on the earth.<sup>32</sup> Consequently, in order to effectively combat the problem, efforts to reduce mercury pollution will necessarily require a joint effort from all the states.<sup>33</sup>

### **III. Recent Federal Regulations/Decisions**

At present, mercury emissions from coal-fired power plants are not controlled by federal regulations.<sup>34</sup> The Clinton administration suggested that the plants be controlled by the MACT approach, which pursuant to Clean Air Act would require the installation of “maximum achievable control technologies.”<sup>35</sup> In December of 2003, however, the US Environmental Protection Agency (EPA) proposed a rule which would create a “cap-and

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<sup>29</sup> Virginia Hospitals for a Healthy Environment, supra n. 25

<sup>30</sup> Id.

<sup>31</sup> The Environmental Council of the States, supra n. 1

<sup>32</sup> Vermont Department of Environmental Conservation, supra n. 7

<sup>33</sup> The Environmental Council of the States, supra n. 1

<sup>34</sup> J.R. Pegg, Environment News Service, *Children’s Health Panel Red Flags Bush Mercury Plan* <<http://www.climateark.org/articles/reader.asp?linkid=28952>> (accessed Mar. 9, 2004).

<sup>35</sup> Minneapolis Star Tribune, *Bush’s Mercury Rules: Another Retreat on Public Health* <<http://www.commondreams.org/views03/1227-05.htm>> (accessed Mar. 9, 2004).

trade program” to reduce mercury emissions from coal-fired utility plants.<sup>36</sup> The EPA projects that by 2018, this program would reduce mercury emissions from these plants by 69%, and it asserts that this approach would be more effective than the traditional MACT approach.<sup>37</sup> The rule is expected to go into effect in December of 2004.<sup>38</sup>

Under this “cap-and-trade program,” states would be allocated mercury emission allowances, which they would then allocate to their power plants.<sup>39</sup> More efficient utilities would be able to trade their unused allowances with less efficient facilities, but in the end, the cap on mercury emissions set by the EPA could not be exceeded.<sup>40</sup> The cap on emissions is planned to be set at 15 tons by 2018 (a 70% reduction from current emissions).<sup>41</sup> The Bush administration justifies this approach as being more efficient and less costly.<sup>42</sup>

This decision has been quite controversial. Those opposing the EPA’s new stance on mercury emissions suggest the MACT approach would reduce mercury emissions from power plants from 48 tons per year to almost 5 tons per year by 2007, whereas the emissions trading program proposed under the Bush administration would only reduce mercury emissions to 34 tons per year by 2018.<sup>43</sup> Furthermore, opponents of the decision

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<sup>36</sup> US Environmental Protection Agency, supra n. 20

<sup>37</sup> National Conference of State Legislatures, Environment, Energy and Transportation Program: *Air Quality* <<http://www.ncsl.org/programs/esnr/cleanair.htm>> (accessed Mar. 9, 2004).

<sup>38</sup> J.R. Pegg, supra n. 34

<sup>39</sup> National Conference of State Legislatures, supra n. 37

<sup>40</sup> Id.

<sup>41</sup> US Environmental Protection Agency, supra n. 20

<sup>42</sup> J.R. Pegg, supra n. 34

<sup>43</sup> Minneapolis Star Tribune, supra n. 35

point to the results obtained by the MACT approach in the past, which effectively reduced mercury emissions from medical and municipal waste incinerators more than 90% in a single decade.<sup>44</sup> In addition to the criticism that the proposed program would ultimately be less effective long-term, there is also concern that the cap-and-trade program could result in “hot spots” of mercury pollution, which may disproportionately impact certain communities.<sup>45</sup>

When the EPA proposed this new program, it announced that it was not going to treat mercury as a “hazardous pollutant,” which some say is a violation of the Clean Air Act.<sup>46</sup> If the EPA were to control mercury emissions as a toxic pollutant, emissions could be reduced by up to 90%.<sup>47</sup> The EPA’s decision is rather surprising since it recently indicated that its estimate of the number of infants born with elevated levels of mercury has doubled.<sup>48</sup>

#### **IV. State Action to Regulate the Emission of Mercury**

The most effective way to reduce mercury pollution is through regulations that regulate the emissions from industries, and regulations that either prohibit the use of mercury in certain products or set standards for the proper disposal of mercury-containing products. Below is a general overview of some of the types of regulations that have been passed and/or proposed by the states to reduce mercury pollution.

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<sup>44</sup> J.R. Pegg, *supra* n. 34

<sup>45</sup> *Id.*

<sup>46</sup> Wisconsin Legislature, *Lawmakers Push for Tougher Standards on Mercury Pollution* <<http://www.the-wheelerreport.com/releases/Feb04/Feb4/0204lawmakersmercury1.PDF>> (accessed Mar. 9, 2004).

<sup>47</sup> Ohio Press Release, *supra* n. 23

<sup>48</sup> Wisconsin Legislature, *supra* n. 46

### **A. Regulations for Incinerators, Power Plants, and Steel Smelters**

As noted above, coal-fired power plants are the largest source of mercury air emissions.<sup>49</sup> Not surprisingly, since there is an absence of federal regulations for emissions from power plants, many states are choosing to target the plants in their efforts to regulate mercury emissions. In general, the types of regulations passed and proposed from state to state are hardly distinguishable, but there are some unique differences. Most of the regulations and legislation discussed below are still pending.

In June of 2003, the Connecticut General Assembly passed legislation to regulate the mercury emissions from coal-fired power plants (House Bill 6048, enacted as Public Act 03-72).<sup>50</sup> The Act requires the plants to reduce mercury emissions to a rate of 0.6 pounds of mercury per trillion BTUs of heat input.<sup>51</sup> Alternatively, the plants must reduce emissions by 90%.<sup>52</sup> In order to achieve these results, the Act mandates the use of the best technologies available, and out of fairness, the Act allows the plants to emit more mercury than the required rate so long as the plants are using and properly maintaining the best available technology.<sup>53</sup> This was the first act passed by any state to regulate mercury emissions from power plants.<sup>54</sup>

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<sup>49</sup> US Environmental Protection Agency, supra n. 3

<sup>50</sup> National Conference of State Legislatures, supra n. 37

<sup>51</sup> Id.

<sup>52</sup> Id.

<sup>53</sup> Id.

<sup>54</sup> Id.

In December of 2003, the New Jersey Department of Environmental Protection proposed a new regulation<sup>55</sup> to reduce mercury emissions from its power plants, steel smelters, and solid waste incinerators.<sup>56</sup> Under the proposed rule, by December of 2007, power plants would have to reduce mercury emissions by 90%, which would be the equivalent of 3 milligrams per megawatt hour.<sup>57</sup> By 2009, iron and steel smelters would have to reduce emissions by 75%.<sup>58</sup> By 2011, municipal solid waste incinerators would have to reduce emissions by 95% (based on levels recorded in 1990).<sup>59</sup>

Similar regulations and legislation are currently pending in other states such as Hawaii (HI H.B. 195; HI S.B. 499), Iowa (IA H.B. 435),<sup>60</sup> and Wisconsin.<sup>61</sup> The Wisconsin Department of Natural Resources is currently working on regulations that would hopefully reduce mercury emissions from coal-fired power plants by 80% by the year 2015.<sup>62</sup>

Many of the states that are trying to regulate their coal-fired power plants tend to follow the “best available control technologies” approach taken by Connecticut. Colorado has proposed regulations that would require its power plants to install these

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<sup>55</sup> A copy of the proposal can be viewed at <<http://www.nj.gov/dep/aqm/hgprop.pdf>> (accessed Apr. 28, 2004).

<sup>56</sup> National Conference of State Legislatures, supra n. 37

<sup>57</sup> Id.

<sup>58</sup> Id.

<sup>59</sup> Id.

<sup>60</sup> National Conference of State Legislatures, *Environmental Health Legislation Database* <<http://www.ncsl.org/programs/ESNR/cehdb.htm>> (accessed Feb. 15, 2004).

<sup>61</sup> Wisconsin Legislature, supra n. 46

<sup>62</sup> Id.

technologies by 2014.<sup>63</sup> The state of Minnesota recently proposed legislation that would require the plants to install the technologies by 2010.<sup>64</sup> Under Minnesota's proposed rule, if the installation is not economically feasible, the facility has the option to either upgrade the facility to comply with the new standards promulgated under the Federal Clean Air Act, or it can convert the facility to use natural gas rather than coal.<sup>65</sup>

The Florida Department of Environmental Protection (FDEP), in response to the mercury emissions from solid waste combustors and medical waste incinerators, adopted regulations, such as the 1993 Florida Solid Waste Management Act to prohibit mercury-containing devices from being incinerated.<sup>66</sup> These regulations have been extremely successful, and over recent years, the levels of mercury concentrations in fish and birds that consume fish have decreased by at least 60%.<sup>67</sup>

North Carolina's regulations on mercury emissions from medical waste incinerators draw distinctions between the types of incinerators.<sup>68</sup> Emissions from small, medium, or large incinerators must be reduced by at least 85%, and can't exceed 0.55 milligrams per dry standard cubic meter.<sup>69</sup> Emissions from small remote incinerators can't exceed 7.5 milligrams per dry standard cubic meter.<sup>70</sup>

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<sup>63</sup> National Caucus of Environmental Legislators, *Compilation of State Regulations* <[http://www.ncel.net/news\\_uploads/96/Mercury.Power%20Plant%20emissions%20bills.doc](http://www.ncel.net/news_uploads/96/Mercury.Power%20Plant%20emissions%20bills.doc)> (accessed Mar. 9, 2004).

<sup>64</sup> Id.

<sup>65</sup> Id.

<sup>66</sup> Tom Atkeson and Don Axelrad, supra n. 4

<sup>67</sup> Id.

<sup>68</sup> North Carolina Administrative Code, 15A NCAC 02D .1206

<sup>69</sup> Id.

<sup>70</sup> Id.

Since the US Environmental Protection Agency (EPA) appears to be falling short in regulating the primary sources of mercury emissions (power plants, incinerators, and steel smelters), the states are responding by passing regulations on their own. Hopefully, all the states will begin taking an active role in regulating emissions from these sources, which would certainly result in a substantial decrease in mercury pollution.

### **B. Hospitals and Health Care**

Like power plants, the healthcare industry has also been a target for regulations. As discussed above, the industry, in general, has not used proper care in the disposal of the mercury-containing products it uses. Many of these products have been disposed of in landfills, and consequently the mercury ultimately ends up in the aquatic food chain. In addition, these products have also been incinerated, which, as discussed above, also results in mercury pollution. Medical waste incinerators used to be a much bigger problem than they are today.<sup>71</sup> Even though the industry does not pose the same threat it once did, it is still a major contributor of mercury emissions, and states are adopting regulations to control the use and disposal of mercury in the industry.

Interestingly, dentist offices have been one of the primary targets for regulation in the healthcare industry. Alabama proposed a bill in April of 2003 (AL A.B. 495) that would prohibit the use of dental fillings containing more than 50% mercury on children or pregnant women.<sup>72</sup> In addition, the proposed regulation would mandate warnings to patients that the filling contained mercury.<sup>73</sup> Similar legislation has been enacted in Arizona (AZ H.B. 2467) and Maine (ME S.B. 429), and is still pending in Georgia (GA

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<sup>71</sup> US Environmental Protection Agency, *supra* n. 20

<sup>72</sup> National Conference of State Legislatures, *supra* n. 60

<sup>73</sup> *Id.*

H.B. 442), Illinois, (IL S.B. 455) and Massachusetts (MA H.B. 3521).<sup>74</sup> A similar bill pending in Oregon (OR S.B. 681) is a bit more stringent and would prohibit the use of mercury-containing dental materials on women who are of child-bearing age or on persons who are using metal orthodontic devices.<sup>75</sup>

Since effective alternatives now exist, mercury thermometers are also being targeted by a number of states. In July of 2003, Illinois enacted legislation (IL H.B. 1530) prohibiting the sale and distribution of mercury fever thermometers.<sup>76</sup> This legislation also prohibits hospitals in the state from distributing them to patients.<sup>77</sup> Similarly, Nebraska has a bill pending (NE L.B. 136) that would ban the distribution of mercury thermometers.<sup>78</sup>

Some states are even going so far as to totally prohibit the use of mercury in hospitals. Michigan currently has a bill pending that was introduced in January of 2003 (MI S.B. 94) that would prohibit hospitals from using mercury.<sup>79</sup> Michigan already prohibits the sale of mercury thermometers.<sup>80</sup>

Even though the healthcare industry does not pose the same risk that it once did, it is certainly worthwhile for states to regulate the use of mercury in the industry. As mentioned above, there are effective alternatives to almost all of the mercury-containing

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<sup>74</sup> Id.

<sup>75</sup> Id.

<sup>76</sup> Id.

<sup>77</sup> Id.

<sup>78</sup> Id.

<sup>79</sup> Id.

<sup>80</sup> Michigan Press Release, *DEM Legislators Unveil Michigan Mercury Initiative: Regional press conferences address multi-state mercury pollution* <[http://www.ncel.net/news\\_uploads/96/MI%20mercury%20press%20release.DOC](http://www.ncel.net/news_uploads/96/MI%20mercury%20press%20release.DOC)> (accessed Mar. 9, 2004).

products used in hospitals. By placing significant regulations on the use and disposal of mercury, it will inevitably encourage the industry to move away from the mercury-containing products and instead use the safer alternatives.

### **C. Schools**

Regulating the use of mercury in schools seems to be a much more recent trend in state regulations. Mercury spills in schools, such as from a broken thermometer, have helped to improve awareness of the risks posed by mercury.<sup>81</sup> A number of states have taken measures to clean out their schools and remove mercury-containing devices.<sup>82</sup>

In 2000, the Department of Environmental Protection (DEP) in Connecticut organized a school cleanout, and in the initial pilot cleanout, successfully removed 75 pounds of mercury from 6 schools.<sup>83</sup> Due to the success, the DEP continued with its efforts in other schools in the state.<sup>84</sup> Of the 37 schools that were cleaned out, the program removed 156 pounds of elemental mercury, 75 pounds of mercury compounds, 1 gallon of liquid mercury, and 1,447 mercury-containing devices and thermometers.<sup>85</sup>

In February of 2004, the Michigan House of Representatives announced its new legislation initiative for regulating mercury.<sup>86</sup> As part of the initiative, the state plans to make efforts to gradually phase out the use of mercury in schools.<sup>87</sup> The state of Illinois

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<sup>81</sup> Connecticut Department of Environmental Protection, *School Lab Cleanout Program in Connecticut* <<http://dep.state.ct.us/wst/mercury/mcleanout.pdf>> (accessed Mar. 11, 2004).

<sup>82</sup> Id.

<sup>83</sup> Id.

<sup>84</sup> Id.

<sup>85</sup> Id.

<sup>86</sup> Michigan Press Release, supra n. 80

<sup>87</sup> Id.

proposed legislation in February of 2004 (S.B. 2551) that would prohibit schools from buying elemental mercury, chemical mercury compounds, and mercury-containing measuring devices for use in the classroom.<sup>88</sup>

Even though schools are not likely to be regarded as being major contributors of mercury emissions to the environment, states should actively pursue removing mercury from the schools. The risk of students being exposed to mercury, alone, should be an adequate reason. In addition, there is always a legitimate risk that if a spill were to occur, the clean-up may not be performed in a way to properly dispose of the mercury.

#### **D. Waste Disposal**

Since a fairly significant amount of mercury emissions come from the improper disposal of mercury-containing products, a number of states are adopting mercury specific regulations to keep mercury out of manufactured products, and also to set standards for the proper disposal of the products.

Under the Virginia Hazardous Waste Management Regulations, the disposal of mercury-containing light bulbs must comply with state hazardous waste provisions, but must also comply with additional standards to minimize the risk of releasing mercury into the environment.<sup>89</sup> Legislation is currently pending in California, which would require manufacturers of mercury-containing fluorescent bulbs to submit plans that would ensure the bulbs would be collected and recycled in compliance with California law.<sup>90</sup>

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<sup>88</sup> Michael Bologna, The Bureau of National Affairs, Inc., *Regional Campaign Announced to Limit Mercury-Containing Products, Emissions* <<http://www.mercurypolicy.org/new/documents/GreatLakesStatesHgLegislation0204.pdf>> (accessed Mar. 9, 2004).

<sup>89</sup> Virginia Administrative Code, VAC 20-60-1505

<sup>90</sup> National Conference of State Legislatures, *supra* n. 60

The state of Vermont prohibits the sale of any mercury-containing product unless it is labeled as containing mercury and the consumer is informed of how to properly dispose of the product.<sup>91</sup> The state further prohibits disposing of these products in landfills, and places duties on consumers to separate mercury-containing products from other waste.<sup>92</sup> Vermont was the first state in the northeast to enact a labeling law, and Connecticut, Maine, Rhode Island, and Washington have all followed Vermont's lead.<sup>93</sup> The purpose of the labeling requirement is to inform consumers that the product will have to be disposed of in a way other than through municipal solid waste, with the hope that less of these products will end up in landfills.<sup>94</sup>

One of the mandates of the 1993 Florida Solid Waste Management Act is that mercury be eliminated from certain commercial products, such as packaging materials, with the hope of reducing the amount of mercury released into the environment from solid waste disposal.<sup>95</sup> In addition, the Act promotes recycling of mercury-containing products, and it seeks to gradually phase out batteries that contain mercury.<sup>96</sup> Similar legislation is pending in California which would prohibit manufacturers from selling any packaging component that includes mercury.<sup>97</sup>

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<sup>91</sup> 10 V.S.A. § 6621d

<sup>92</sup> 10 V.S.A. § 6621a

<sup>93</sup> NEWMOA, *State Mercury-Added Product Notification and Labeling – An Overview* <<http://www.newmoa.org/Newmoa/htdocs/prevention/mercury/imerc/plnotification.cfm>> (accessed Mar. 11, 2004).

<sup>94</sup> Id.

<sup>95</sup> Tom Atkeson and Don Axelrad, supra n. 4

<sup>96</sup> Id.

<sup>97</sup> National Conference of State Legislatures, supra n. 60

New York has a bill that has been pending since March of 2003 that would establish the Mercury Free Vehicle Act of 2004.<sup>98</sup> Pursuant to this Act, car manufacturers would have to create and put into action plans for the removal and collection of mercury-containing components from vehicles currently in use or about to be scrapped.<sup>99</sup>

The Connecticut Department of Environmental Protection has imposed regulations that require manufacturers of mercury-containing products to develop plans to collect and dispose of the products, and these plans must be approved by the DEP.<sup>100</sup> Other states, such as Washington<sup>101</sup> and Rhode Island,<sup>102</sup> are also considering proposed regulations that would require manufacturers of mercury-containing products to develop plans that would ensure these products would be properly collected and recycled.

The state of Michigan recently announced its new initiatives in reducing mercury pollution and it plans to work with its businesses and industries to gradually phase out the use of mercury in manufacturing by finding alternatives to its use.<sup>103</sup> Furthermore, the state plans to work with businesses and households to make certain that mercury is disposed of in a safe manner.<sup>104</sup> To facilitate the proper disposal, the state is following

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<sup>98</sup> National Conference of State Legislatures, supra n. 60

<sup>99</sup> Id.

<sup>100</sup> Connecticut Department of Environmental Protection, *Mercury Product Collection System Plan* <<http://dep.state.ct.us/wst/mercury/merccollect.htm>> (accessed Mar. 11, 2004).

<sup>101</sup> National Conference of State Legislatures, supra n. 60

<sup>102</sup> NEWMOA, *State Mercury-Added Product Collection Plan Information* <<http://www.newmoa.org/Newmoa/htdocs/prevention/mercury/imerc/collectioninfo.cfm>> (accessed Mar. 11, 2004).

<sup>103</sup> Michigan Press Release, supra n. 80

<sup>104</sup> Id.

Vermont's lead in requiring all mercury-containing products to be labeled as such and in requiring manufacturers to inform consumers about proper disposal.<sup>105</sup>

Other examples of waste disposal regulations include the state of Wisconsin's recent ban (February of 2004) on the use of mercury-containing thermostats in new construction projects.<sup>106</sup> Another example is the state of Illinois' recently proposed legislation (S.B. 2551) that would prohibit salvage operations from processing scrap metal without first removing mercury-containing light switches and headlights.<sup>107</sup>

### **E. Programs and Groups**

Many states have specific programs and groups, some of which are formed by a collection of states, which focus solely on researching and finding ways to address environmental concerns. The programs can be beneficial in advising the state legislatures about appropriate legislation, and can also be beneficial in working to educate the public about the role they play in addressing the environmental concerns. A few examples are briefly discussed below.

As part of Virginia's Department of Environmental Quality, the Department has an office devoted to pollution prevention (known as P2), which develops programs aimed at specific environmental issues.<sup>108</sup> One of P2's programs is "Virginia Hospitals for a Healthy Environment," which has as one of its goals to eliminate the use of mercury-

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<sup>105</sup> Id.

<sup>106</sup> Wisconsin Legislature, supra n. 46

<sup>107</sup> Michael Bologna, supra n. 88

<sup>108</sup> Virginia Department of Environmental Quality, Office of Pollution Prevention, *P2 Programs* <<http://www.deq.state.va.us/p2/programs.html>> (accessed Mar. 9, 2004).

containing devices in healthcare.<sup>109</sup> Another program, the Hg Mercury Reduction Program, tries to organize statewide efforts to reduce the use of mercury and products containing mercury.<sup>110</sup> The group also tries to promote the recycling of mercury.<sup>111</sup>

The state of Vermont, by statute, created its own advisory committee, which has the duty to advise the general assembly and the public on matters relating to the reduction of mercury emissions and efforts to clean up past pollution.<sup>112</sup> The committee has to make an annual report on a number of issues, including: the status of mercury pollution in the state; the latest available methods to reduce mercury pollution and minimize risk to the public; ways to raise funds needed to reduce pollution and pay for clean-up efforts; and the effectiveness of programs that are currently in place.<sup>113</sup>

The National Caucus of Environmental Legislators (NCEL) is a national organization of state legislators who work together in their efforts to address specific environmental issues.<sup>114</sup> In February of 2004, state legislators from Illinois, Iowa, Michigan, Minnesota, Ohio, and Wisconsin, all of whom are participants in NCEL, announced that they were going to increase their efforts to reduce mercury pollution.<sup>115</sup> **#**

**16.** The group expressed disappointment with the federal government in its failure to

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<sup>109</sup> Virginia Department of Environmental Quality, Office of Pollution Prevention, *Virginia Hospitals for a Healthy Environment* <<http://www.deq.state.va.us/p2/vh2e/homepage.html>> (accessed Mar. 9, 2004).

<sup>110</sup> Virginia Department of Environmental Quality, *supra* n. 108

<sup>111</sup> *Id.*

<sup>112</sup> 10 V.S.A. § 6621e

<sup>113</sup> *Id.*

<sup>114</sup> National Caucus of Environmental Legislators, *State Legislators Work Together to Limit Mercury Pollution in the Great Lakes/Midwest Region* <[http://www.ncel.net/news\\_uploads/96/National%20Press%20Release.final.web.doc](http://www.ncel.net/news_uploads/96/National%20Press%20Release.final.web.doc)> (accessed Mar. 9, 2004).

<sup>115</sup> *Id.*

take necessary action.<sup>116</sup> In particular, the group objected to the US EPA's recent decision that it would not regulate mercury as a hazardous pollutant as required by the Clean Air Act.<sup>117</sup> Jane Krentz, who is the NCEL Midwest Coordinator, indicated that NCEL hoped its combined efforts could "send a collective message to Washington that state policymakers are concerned about protecting the environment."<sup>118</sup> The regulations proposed by the group included regulations on emissions from coal-fired power plants and even bans on selling certain mercury-containing products.<sup>119</sup>

#### **V. State Action to Inform and Educate the Public**

Educating the public on the dangers of mercury is necessary in a number of respects. First, the public needs to be aware of the dangers of being exposed to mercury and likewise needs to be informed of the sources where they may be exposed. Further, by increasing awareness, the public may take a more active role in reducing mercury pollution by properly disposing of mercury-containing products, and perhaps choosing to use products that do not contain mercury.

Unfortunately, the public is not well informed on the seriousness of the mercury pollution problem. Even health advisories on fish consumption are not widely disseminated by state or federal governments.<sup>120</sup> The FDA estimates that 30 to 50% of women of childbearing age are unaware of the risks of consuming fish contaminated with

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<sup>116</sup> Id.

<sup>117</sup> Id.

<sup>118</sup> Id.

<sup>119</sup> Id.

<sup>120</sup> Ohio Press Release, supra n. 23

mercury.<sup>121</sup> States are beginning to recognize the public's ignorance to the mercury pollution problem and are beginning to take actions to better inform the public. For example, as part of its recent legislation initiatives, the state of Michigan, recognizing that its residents are unaware of the serious health risks of mercury pollution, seeks to inform the public of their role in protecting themselves and society from the dangers of mercury.<sup>122</sup>

### **A. Fish Advisories**

Since human exposure to mercury is primarily through the consumption of fish, most of the states issue fish advisories in areas where fish are contaminated with mercury at levels that could be detrimental to health. The marshes of the Florida Everglades have been a particular concern for mercury pollution in recent years.<sup>123</sup> Largemouth bass have been found to be contaminated with extremely high levels of mercury, and many fish eating birds are ingesting mercury at levels that could have a negative impact on their population size.<sup>124</sup> The mercury problem was first realized in 1989, and in response, the Florida Department of Health began to issue health advisories warning fisherman not to consume fish caught.<sup>125</sup>

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<sup>121</sup> Id.

<sup>122</sup> Michigan Press Release, supra n. 80

<sup>123</sup> Florida Department of Environmental Protection, *South Florida Mercury Science Program* <<http://www.dep.state.fl.us/labs/mercury/index.htm>> (accessed Mar. 9, 2004).

<sup>124</sup> Id.

<sup>125</sup> Tom Atkeson and Don Axelrad, supra n. 4

In 2003, 44 of the states issued health advisories warning people about the consumption of fish contaminated with mercury.<sup>126</sup> Some of the fish that are likely to be contaminated include: shark, swordfish, tuna, lobster, red snapper, trout, freshwater bass, catfish, grouper, northern pike, and largemouth bass.<sup>127</sup> Many of the commercially caught fish, such as salmon, cod, shrimp, mussels, and scallops usually have lower levels of mercury and are therefore safer to eat.<sup>128</sup> Other commercially caught fish, such as shark, swordfish, and tuna have higher levels of mercury and should be eaten less frequently.<sup>129</sup> Canned tuna is the most consumed fish in the United States.<sup>130</sup> Eleven states currently warn women and young children to reduce their consumption of canned tuna to no more than 1 to 2 cans per week.<sup>131</sup>

The FDA advises women of childbearing age to completely refrain from eating shark, king mackerel, tilefish, and swordfish, and also to consume no more than 12 ounces of all other fish per week.<sup>132</sup> The FDA advises others to consume no more than 7 ounces of shark or swordfish per week.<sup>133</sup>

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<sup>126</sup> Ohio Press Release, supra n. 23

<sup>127</sup> Id.

<sup>128</sup> Vermont Department of Environmental Conservation, *Mercury in Fish* <<http://www.anr.state.vt.us/dec/ead/mercury/fish/index.htm>> (accessed Mar. 11, 2004).

<sup>129</sup> Id.

<sup>130</sup> Ohio Press Release, supra n. 23

<sup>131</sup> Id.

<sup>132</sup> Id.

<sup>133</sup> Id.

## **B. Education, Recycling, and State Projects**

Rather than just provide specific warnings in fish advisories about the consumption of fish that may be contaminated, some states are taking on a more active role to educate the public on the hazards of mercury and things that the public can do to reduce mercury emissions.

In January of 2004, Vermont state government officials joined efforts with the Vermont Advisory Committee on Mercury Pollution (ACMP) to try to better inform the public on the hazards of mercury.<sup>134</sup> ACMP sponsored a seminar in the Statehouse to educate the public on mercury pollution.<sup>135</sup> In addition, a poster was created about mercury in fish, which was sent out to numerous businesses so that the public could be better informed about the levels of mercury in the fish that they consume.<sup>136</sup> Furthermore, ACMP also plans to create a video to teach high school students about the sources of mercury pollution and about actions that can be taken to prevent it.<sup>137</sup>

Some states, such as Massachusetts, are attempting to educate the public by passing legislation which will establish educational programs for the public.<sup>138</sup> The Wisconsin Legislature has also taken legislative action, and in February of 2004,

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<sup>134</sup> Gary Moore, *Mercury Education is a Joint Effort* <[http://www.caledonianrecord.com/pages/gary\\_moore/story/08cd911fa](http://www.caledonianrecord.com/pages/gary_moore/story/08cd911fa)> (accessed Mar. 11, 2004).

<sup>135</sup> Id.

<sup>136</sup> Id.

<sup>137</sup> Id.

<sup>138</sup> National Conference of State Legislatures, supra n. 60

proposed legislation that would require the state Department of Natural Resources to find ways to improve public awareness of the dangers of mercury.<sup>139</sup>

One effective way to reduce mercury emissions into landfills is to promote recycling of mercury-containing products. The state of Illinois recently introduced legislation (S.B. 2551) which would create the Illinois Mercury Reduction Act.<sup>140</sup> As part of this act, the Illinois Pollution Control Board would be required to create rules allowing for the collection and recycling of mercury-containing products.<sup>141</sup> The state of Wisconsin is currently taking similar action, and has instructed the Department of Natural Resources to develop plans to improve awareness of the hazards created by mercury pollution, and also to find ways to intercept mercury-containing products which would otherwise end up in landfills.<sup>142</sup>

Another effective way to prevent the improper disposal of mercury-containing products is to have mercury collection days. In May of 2001, North Carolina state officials joined with local officials for the town of Tryon's first ever mercury collection day.<sup>143</sup> In order to improve the success of the project, the N.C. Division of Pollution Prevention, working together with Waste Reduction Partners (WRP), developed a campaign to educate the public.<sup>144</sup> This campaign published educational articles in local

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<sup>139</sup> Wisconsin Legislature, supra n. 46

<sup>140</sup> Michael Bologna, supra n. 88

<sup>141</sup> Id.

<sup>142</sup> Id.

<sup>143</sup> North Carolina Department of Environment and Natural Resources, *State/Local Partnership Assists Town of Tryon in Mercury Reduction Efforts* <[http://www.p2pays.org/news/press\\_releases/81601.asp](http://www.p2pays.org/news/press_releases/81601.asp)> (accessed Mar. 10, 2004).

<sup>144</sup> Id.

newspapers prior to the mercury-collection day, and encouraged residents to bring mercury-containing products, such as thermometers, fluorescent lights, and batteries.<sup>145</sup> The efforts resulted in the collection of more than 175 pounds of mercury-containing products.<sup>146</sup>

Although not likely to remove large amounts of mercury from the environment (especially in comparison to emission sources like power plants), a number of states set up thermometer exchanges. In February of 2003, the Environmental Health Division in the state of Washington set up a mercury thermometer exchange, where residents could bring their mercury thermometers to various pharmacies and health clinics and exchange them for solar thermometers.<sup>147</sup> In addition to exchanging the thermometers, the program also sought to educate the residents by providing them with handouts discussing the hazards of mercury and ways that the public could help to reduce mercury pollution.<sup>148</sup> The exchange in Thurston County alone resulted in collection of almost 4,000 mercury-thermometers, which was the equivalent of more than 4 pounds of mercury that may have otherwise ended up in a landfill.<sup>149</sup> The Connecticut Department of Environmental Protection regularly sets up thermometer exchanges.<sup>150</sup>

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<sup>145</sup> Id.

<sup>146</sup> Id.

<sup>147</sup> Health Education Resource Exchange, *Thurston County Mercury Thermometer Exchange Project* <[http://www.doh.wa.gov/here/Projects/Projects\\_Detail.asp?ID=250](http://www.doh.wa.gov/here/Projects/Projects_Detail.asp?ID=250)> (accessed Mar. 11, 2004).

<sup>148</sup> Id.

<sup>149</sup> Id.

<sup>150</sup> Connecticut Department of Environmental Protection, *Environmental Program Fact Sheets and Applications Mercury Education and Reduction* <<http://dep.state.ct.us/wst/mercury/mercury.htm>> (accessed Mar. 11, 2004).

The state efforts discussed in this paper only scratch the surface of all that is being done to learn about mercury pollution and regulate sources of emissions to prevent pollution. Hopefully the states that have been active in regulating mercury will continue to implement new regulations and find new ways to prevent the pollution, and those other states that have not been as active will become more involved.