

REPORTED MERCURY SPILLS IN THE NORTHEAST STATES

Northeast Waste Management Officials' Association (NEWMOA)¹

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Executive Summary

The Northeast Waste Management Officials' Association (NEWMOA) compiled publicly available data from environmental and public health agencies in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont on the occurrence of spills of mercury.

The data indicates that over 320 mercury spills were reported to environmental agencies in these Northeast states each year for 1999 and 2000. There were over 1,100 phone calls per year for the past two years to six Poison Control Centers in the Region regarding incidents or suspected exposures concerning mercury. Most of the reports on mercury spills to the states do not include an estimate of the amount of mercury released or its fate in the environment.

Background

Mercury spills are a pervasive problem in the Northeast. As awareness and concern about the environmental and public health impacts of mercury has grown, mercury spills have been receiving more and more media attention in recent years. Mercury spills can occur in a variety of circumstances, including the breakage of mercury fever thermometers in homes, hospitals, and schools; the removal or disturbance of gauges that contain mercury; accidental spills at industrial and commercial facilities that use elemental mercury; and the mishandling and mismanagement of mercury in school classrooms. As anyone who has been involved in a mercury spill has found, these events can be difficult and expensive to cleanup.

The purpose of this report is to present data on reported mercury spills that occurred in the Northeast States during the past two years. By examining the number of spill incidents reported to state environmental agencies and Poison Control Centers and the number involving state emergency response personnel, the states can better understand the pervasiveness of the problem and the impact of mercury reduction and education activities on the incidence of these spills. The states are also interested in using this effort to improve their data collection and management efforts.

¹ NEWMOA is a non-profit interstate governmental association involving the states waste management and pollution prevention Program Directors from the environmental agencies in Connecticut, Maine, Massachusetts, New Jersey, New Hampshire, New York, Rhode Island and Vermont. NEWMOA has been involved in regional mercury reduction efforts during the past four years. The Association developed this report under the direction and at the request of its member states. This report was primarily written by Terri Goldberg with assistance from Karen Thomas and Reena Gupta.

Federal and state environmental agencies have requirements for reporting spills of oil and hazardous chemicals. The federal Comprehensive Environmental Response Compensation and Liability Act (CERCLA) established reportable quantities that trigger reporting requirements for facilities. Under CERCLA, the reportable quantity for mercury is one pound. States can establish their own spill reporting requirements, and in some cases have set reporting thresholds that are lower than the federal reportable quantities. Some states require reporting by citizens in addition to manufacturing, service and educational facilities. Table 1 shows the reportable quantities for mercury for each state in the Northeast.

Table 1: Mercury Reportable Quantity Thresholds for Each Northeast State

State	Reportable Quantity	Notes
Connecticut	All amounts down to zero	
Maine	Zero or one pound	The RQ is one pound provided the facility has filed an SPCC plan, otherwise it is zero. Spills of mercury used in household activity do not need to be reported under any circumstances.
Massachusetts	One pound released to the environment in a 24 hour period	Due to recent outreach efforts, citizens have recently started to report small spills (e.g., broken thermometers), which are not generally recorded in the spills database.
New Hampshire	All amounts down to zero	
New Jersey	All amounts down to zero	If no land or water was impacted by the spill, reporting is not required.
New York	One pound	State records all reported incidents, including those less than one pound.
Rhode Island	Any amount that triggers implementation of a contingency plan	Usually enables DEM to respond to small spills
Vermont	One pound	Applies only to releases to the environment and not spills that are contained.

Not all spills of mercury that occur are reported to environmental agencies for a number of reasons. The parties involved in the incidents may not be aware that they have to report the spills to the states. Many accidents involve quantities of mercury that are less than the reportable quantities. This report only covers incidents that were reported. There is no way to estimate the amount of underreporting that may be occurring.

In addition to contacting the state environmental agencies, NEWMOA also contacted the Poison Control Centers in all of the states in the Northeast. These Centers routinely receive phone calls from citizens reporting relatively small mercury spills, such as mercury fever thermometers breakages. Frequently, these calls are from citizens who are interested in understanding what they can do if they suspect that some potentially dangerous exposure has occurred or how to properly clean up the spill. NEWMOA contacted 12 Poison Control Centers in the Region (New York has six centers) and received data from 6 of them – Connecticut, Maine, New Hampshire, 2 in New York, and Vermont. It would not be appropriate to add the number of mercury spills reported to the environmental agencies with those reported to the state's Poison Control Centers, since there is a chance of double reporting and counting. Some individuals, businesses, institutions, or other entities might report mercury spill incidents to both types of agencies.

This report begins by presenting a perspective on the number of mercury spill incidents reported to environmental agencies in the Northeast states for calendar years 1999 and 2000, which is followed by a state-by-state review of the available data from each state agency. The next section presents a state-by-state review of the available mercury spill data from Poison Control Centers in the Northeast. The report ends with a summary of the findings.

Overview of Mercury Spills Reported to Environmental Agencies in the Northeast

Table 2 shows the number of mercury spills of any size that were reported to the environmental agencies' emergency response programs for each Northeast state during calendar years 1999 and 2000.

Table 2: Mercury Spills Reported to Environmental Agencies in the Northeast

State	Number of Spills	
	1999	2000
Connecticut	196	271
Maine	17	8
Massachusetts	5	3
New Hampshire	17	6
New Jersey	33	29
New York	45	58
Rhode Island	5	2
Vermont	6	4
Total	324	381

The Table shows a slight overall increase in the number of reported spills from 1999 to 2000 in the region. This is largely due to an increase in the number of reported spills in Connecticut. There are a number of factors that could explain the difference in the number of mercury spills reported in each state. As shown in Table 1, the reportable quantity varies from state to state. Even among the states with similar reportable quantities, they may advertise the requirements for reporting spills differently. There may also be differences in the number of available locations where mercury and mercury products are present. Finally, state agencies collect and use spill data for different purposes, and they differ in the level and type of detailed information collected for the spills as revealed in the state-by-state reports provided below.

State-By-State Data on Mercury Spills Reported to Environmental Agencies

This section presents the data that was available from each state environmental agency on mercury spill incidents. The data provided by all the states contained the number of spills and either the type of facility where the spill occurred or the source of the spill (e.g., broken thermometer, vial of elemental mercury, etc.). In some cases both the type of facility and the source information was available. In general, except for Rhode Island, the quantities of mercury released for each incident was not available. In some cases examples of typical “per incident” release amounts or examples of certain release amounts was available. Releases are reported in pounds, gallons, grams and milliliters (ml). Based on this data, the most common locations for the spills were schools, residences, industrial/commercial facilities, hospitals and clinics, and water supply/pumping stations.

Connecticut

The reportable quantity for mercury spills in Connecticut is “all amounts down to zero.” Mercury spills reported to the Connecticut Department of Environmental Protection (CT DEP) increased between 1999 and 2000, from 196 to 271. This increase may be due, at least in part, to a concentrated mercury outreach campaign in 2000 by the CT DEP.

Connecticut reports the largest number of spills of any state in the region. The exact reason for this large number was not obvious during the research for this report. The reasons may include a combination of the following: the low threshold for reporting spills, heightened awareness among citizens due to media attention on recent spill incidents, and an active mercury outreach campaign in the state.

Connecticut also provided data on the number of spills where cleanup was overseen by the Emergency Response Program, and where that Program participated in the cleanup. The number of spills requiring a response increased, from 36 in 1999 to 115 between January 1, 2000 and February 16, 2001.

Three recent spills (two in December 2000 and one in January 2001) occurred at schools. One of these was due to a broken blood pressure device, another to a broken barometer, and the last from a vial of mercury brought to the school by a student. In each case, the CT DEP was notified, and the spills were cleaned up by private contractors.

Maine

According to the Maine Department of Environmental Protection, reported mercury spills in Maine decreased from 1999 to 2000, from 17 to 8. The number and sources of mercury in reported incidents between 1997 and 2000 are listed in Tables 3 and 4 respectively. Under Maine law, spills of less than one pound of mercury do not need to be reported if the facility where the spill occurred has filed a spill prevention control and clean-up plan with the Department and the plan covers mercury spills. Spills of mercury used in household activity do not need to be reported under any circumstances.

The amount of mercury spilled is not available for all incidents. A few incidents of particular note include: recovery of over three quarts of mercury, two drums of mercury spill debris and two drums of mercury-containing devices from the boiler room of a vacant state mental hospital; recovery of over 200 pounds of mercury that had been stockpiled in a vacant warehouse and tracked around the neighborhood by trespassing children; and the discharge of over 50,000 gallons of mercury-containing wastewater to ground and surface water over several years at the now-decommissioned HoltraChem chlor-alkali plant in Orrington.

**Table 3: Number of Mercury Incidents Reported to
Maine Department Environmental Protection, 1997-2000**

Year	# of incidents
2000	8
1999	17
1998	18
1997	21

Source: Maine Department of Environmental Protection

**Table 4: Sources of Reported Mercury Incidents in Maine,
1997-2000**

Source of Mercury	Number of Incidents
elemental mercury	18
fever thermometers	10
other thermometers	7
HoltraChem chlor-alkali	5
sphygmomanometers	5
barometers	5
switches -industrial applications	4
clock pendulums	2
flow meters	2
chemistry lab	1
dairy manometer	1
other manometers	1
thermostat in stove	1

Source: Maine Department of Environmental Protection

Massachusetts

There were five mercury spills reported to the Massachusetts Department of Environmental Protection (DEP) in 1999, and three in 2000. The reportable quantity for mercury spills in Massachusetts is one pound released into the environment in a 24-hour period. The majority of these spills occurred in industrial or commercial facilities (six incidents), with the remaining occurring in municipal facilities and schools (two incidents). Data on the amount of mercury released during the spills is not available. Massachusetts DEP does not generally track spills of quantities smaller than the reportable quantity. This may be why the spill reports for Massachusetts are lower than those for the other large NE states.

New Hampshire

Mercury spills in New Hampshire have been reported to the Department of Environmental Services (DES) and the Department of Health and Human Services. The reportable quantity for mercury spills in New Hampshire is “all amounts down to zero.” Table 6 shows the breakdown of incidents by year, incident type, and the agency/facility to which the incidents were reported. The majority of these spills were related to broken thermometers, with the remaining due to broken sphygmomanometers, broken barometers in schools, broken fluorescent lamps, spilled bottles of mercury in schools and two cases of antique mirrors leaking mercury. The amount of mercury released from these spills was not reported.

For the purposes of this report and in an attempt to be consistent with data from other states, NEWMOA decided to use only the total number of spills responded to by the NH DES in the regional presentation in Table 2. It would not be appropriate to add the number of mercury spills reported to the NH DES to those reported to the Department of Health and Human Services because there is a high chance of double reporting and counting. Some individuals, businesses, institutions, or other entities might report mercury spill incidents to more than one agency.

Table 6: Mercury Spills Reported to New Hampshire Department of Environmental Services and NH Health and Human Services

Source of Information and Type of Incident	# of Incidents, 1999	# of Incidents, 2000
Bureau of Health Risk Assessment, Department of Health & Human Services, Mercury Spill Information Requests		
Thermometers	14	7 ^a
Other	3	1 ^a
Total	17	8 ^a
Office of Emergency Management & Special Investigation Section, NH DES		
Mercury Spill Responses	17 ^b	6 ^b

^aIncludes data from January 2000 through September 2000 only

^bThere is an estimated 25 percent overlap of Risk Assessment inquiries and Office of Emergency Management/Special Investigation Section (OEM/SIS) responses where the spill was called in to Risk Assessment and merited an on-site investigation by SIS.

Source: New Hampshire Department of Environmental Services

New Jersey

The New Jersey Department of Environmental Protection (NJ DEP) Emergency Action Hotline received reports of 33 mercury spill incidents in 1999 and 29 mercury spill incidents in 2000. In 1999, the spill amounts ranged from 0.02 milligrams to 1 gallon; in 2000 the amounts ranged from 1 gram to 1 pint. Table 7 shows the types of facilities where these incidents occurred.

Table 7: Mercury Spills Reported to New Jersey Department of Environmental Protection Emergency Action Hotline, 1999 and 2000

Year	Facility Type	# of Mercury Spills Reported
2000	Residences	18
	Commercial (3 Health Care Facilities, 3 Transportation)	6
	Industrial	5
	Total	29
1999	Residences	11
	Industrial (2 pump stations, 2 military, 2 private, 1 unknown)	7
	Health Care Facilities	3
	Schools	3
	Other (9 dumping, 6 related to contaminated potable well investigations)	9
	Total	33

Source: New Jersey Department of Environmental Protection

New Jersey does not have a reportable quantity per se. As a hazardous substance, mercury is subject to the state reporting requirements for hazardous substances. Discharges of mercury, regardless of quantity, that impact NJ lands and waters must be reported to the NJ DEP within 15 minutes. If no land or water is impacted, the spill is not required to be reported.

New York

Mercury spills reported to New York State Department of Environmental Conservation (NYS DEC) increased from 45 in 1999 to 58 in 2000. Reports of mercury spills are recorded by the DEC even if they are lower than the reportable quantity (RQ), which is one pound in New York.

Table 8 shows the number of reported spills for each type of facility. In 2000, 14 of these spills occurred in city water supply and/or pumping stations, 8 occurred in schools and colleges, with the remaining occurring in hospitals or clinics, residences, airports, city meters, other, or were not reported.

**Table 8: Mercury Spills Reported to the
New York Department of Environmental Conservation**

Year	Facility Type	# of Mercury Spills Reported
2000	City water supply and/or pumping stations	14
	Schools and colleges	8
	Hospitals or clinics	4
	Residential meters	5
	Soil contamination during site investigation	2
	Airport	1
	City meter	1
	Other/Not available	23
Total		58
1999	Total	45
1992-1997	Total	78

Source: New York State Department of Environmental Conservation

The majority of the spills are due to broken thermometers, manometers, blood pressure devices, valves, and meters. For those spill reports that included the quantity spilled, most of the incidents involved less than one ounce of mercury.

Rhode Island

There were a relatively small number of mercury spills reported to the Rhode Island Department of Environmental Management in 1999 and 2000. The reportable quantity for mercury spills in Rhode Island is considered to be any amount that would require a facility to implement a contingency plan. Table 9 shows the facility type, nature of the spill, and amount released. Two spills occurred at schools, three at residences, one at a clinic, and one at a landfill. The amount of mercury spilled ranged from 30 milliliters to 5 pounds.

Table 9: Mercury Spills Reported in Rhode Island

Date	Facility Name	Nature of Spill	Amount
2/18/1999	RI Training School - Clinic	Blood Pressure Device	1 pound
3/4/1999	Woonsocket High School	Other	NA*
4/7/1999	Truck-Away Landfill	Other	NA
7/29/1999	Resident	Container of Mercury	1 pound
10/12/1999	Resident	Thermostat in stove	NA
6/8/2000	Resident	Container of Mercury	4 pounds
6/8/2000	St Cecelia School	Not Available	5 pounds

Source: Rhode Island Department of Environmental Management; *NA: not available

Vermont

There were six mercury spills reported to the Vermont Department of Environmental Conservation (VT DEC) in 1999, and four in 2000. The reportable quantity for mercury spills in Vermont is one pound for

releases to the environment. This does not apply to accidental spills that are contained. Table 10 shows the number of spills reported in Vermont by year. Table 11 shows the number of spills reported by facility type since 1973. Most of these spills occurred in schools and involved less than one pound of mercury. Other spills (since 1973) have occurred in residences, wastewater/water facilities, industrial/business facilities, medical facilities, and transportation incidents. The largest spill that the VT DEC is aware of occurred in a residence and involved 50 pounds of mercury. All except for one of the mercury spills in schools were reported in 1997 or later and were less than one pound. One elemental mercury spill of six pounds occurred at a battery manufacturer.

Table 10: Mercury Spills Reported to the Vermont Department of Environmental Conservation

Year	# of Spills
1973-1990	4
1991	2
1992	2
1993	0
1994	0
1995	1
1997	1
1998	5
1999	6
2000	4

Source: Vermont Department of Environmental Conservation

Table 11: Mercury Spills Reported in Vermont by Facility Type, 1973-2000

Facility Type	# of Spills
School	10
Residence	4
Wastewater/water facility	4
Industrial/business facility	5
Medical facility	1
Transportation Incident	1
Total	25

Mercury Incidents Reported to Poison Control Centers in the Northeast

As stated in the Introduction to this Report, not all of the Poison Control Centers in the Region were able to report on the number of calls that they received on mercury spill incidents. However, data from six Centers was provided and is summarized in Table 12.

Table 12: Summary of Reports to Poison Control Centers in the Northeast

Center	1999	2000
Connecticut		
Reported Mercury Exposure	144	89
Reported Broken Thermometer	89	312
Maine	110	49
New Hampshire	172	140
Hudson Valley New York	365	365
Long Island New York	327	322
Vermont	NA	137
TOTAL	1118-1207*	1325-1414*

*Upper range assumes no double counting for calls to CT (233 in 1999; 401 in 2000); lower range assumes all calls were double counted (144 in 1999; 312 in 2000); NA – not available.

The Table shows that there were over 1,100 phone calls documented per year for the past two years to six Poison Control Centers in the Region regarding incidents or suspected exposures concerning mercury.

Connecticut

The Poison Control Centers in Connecticut have two categories for mercury spill reporting. The first category is for those people who think they might have been exposed to mercury. In this category, there were 144 reports in 1999 and 89 reports in 2000. The second category is those people who called to report a broken thermometer. In this category there were 89 reports in 1999 and 312 in 2000. There may be some overlap between these two reporting categories, so they should not be summed.

Maine

Table 13 shows the number of spills reported to the Poison Control Center in Maine. There appears to be a substantial increase in the number of reported cases in the first six months of 2001 over the previous two years. This increase could be a result of an increased awareness amongst the general public or an improved reporting database that the Center implemented this year.

Table 13: Mercury Spills Reported to Poison Control Center in Maine

Year	Number of Reported Cases
1999	110
2000	49
2001 (First 6 months)	102
Total	261

Source: Poison Control Center of Maine, August 2001.

New Hampshire

Table 14 shows the number and type of mercury spill incidents that were reported to the Poison Control Center in New Hampshire. Thermometer poisonings are almost entirely cases of mercury thermometers breaking in the mouths of users, generally children. The amount of mercury released from these spills was not reported.

Table 14: Mercury Spills Reported to the Poison Control Center in New Hampshire

Source of Information and Type of Incident	# of Incidents, 1999	# of Incidents, 2000
Poison Control Center, Dartmouth Hitchcock Medical Center		
Thermometer-related	146	117
Other	26	23
Total	172	140

Source: Poison Control Center, New Hampshire

New York

The Hudson Valley Poison Control Center (HVPCC) is one of six poison control centers operating in NY State and has jurisdiction over 22 counties. Poison Control Center data based on spills that exceed the RQ are not compiled, but the HVPCC estimates that they receive one report a year on average that exceeds the NYS reportable quantity threshold. According to the HVPCC, approximately one mercury spill (usually from thermometers breaking) is reported to the Center every day. According to DEC, the other five poison controls centers in New York receive reports of mercury spills at about the same rate. The Long Island Poison Control Center reported to NEWMOA that they received reports on 327 mercury exposures in 1999 and 322 in 2000.

Vermont

In 2000, the Poison Control Center Hotline received 137 calls relating to mercury. Of these, 72 were human exposure (i.e., a mercury thermometer breaking in someone's mouth or spills), 4 were animal exposures (i.e., ingestion or spill), and 61 were information calls (i.e., how to clean up a mercury spill).

Conclusions

Overall the data available on reports of mercury spills in the Northeast indicates that a significant number of spills are occurring each year. There were over 320 reports of mercury spills per year reported to the state environmental agencies in the northeast during this two year time period. There were over 1,100 phone calls per year for the same period of time to six Poison Control Centers in the Region regarding incidents or suspected exposures concerning mercury.

The data on reported spills described in this report may not provide an accurate picture of mercury spills that occurred in the region in 1999-2000. Some spills that exceed reporting thresholds may not have

been reported. Also, in the states with reportable quantities of one pound, spills of smaller quantities may not have been reported.

The available data from two years is not sufficient to identify any trends in the number of reported spills in the states. In addition, the available data does not indicate the level of exposure that the employees, students, or homeowners that were involved in these reported spills incidents may have experienced. However, mercury spills can be difficult and expensive to completely clean up. The state environmental agencies in the Northeast have made a commitment to the virtual elimination of mercury discharges to the environment, and reducing the number and magnitude of spills is an important component of their mercury reduction strategy.

The type of data collected by the participating state environmental agencies on their reports of mercury spill incidents varies widely. Some collect data on the amount of mercury involved in the spill and the type of facility/institution in which the spill occurred. If the NEWMOA-member state environmental agencies plan on compiling this data for the region in the future, such an assessment would be enhanced if the agencies tracked common data elements.