# Mercury Reduction Report Addendum

**Maine Department of Environmental Protection**
17 State House Station
Augusta, Maine 04333-0017

**January 2010**

Contact: James Brooks, Maine DEP 207-287-2437

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

DAVID P. LITTELL
COMMISSIONER

January 5, 2010

Senator Seth A. Goodall, Co-Chair
Representative Robert S. Duchesne, Co-Chair
Members of the Natural Resources Committee
State House Room 214 A
Augusta, ME 04333

**RE: Mercury Reduction Report Update**

Dear Senator Goodall, Representative Duchesne, and members of the Joint Standing Committee on Natural Resources,

During last session, I presented the Department's Mercury Reduction Report to your Committee; and after a lengthy discussion the Committee requested (Public Law 2009, Chapter 338) the Department provide the Committee with a mercury report update (for the next session) in an effort to further evaluate:

- All of the information presented to the Committee;
- The recently proposed Cement kiln mercury emission standard; and
- Our recommendations based on the aforementioned.

Enclosed with this letter is the Department's update to the "***Mercury Reduction Report***" pursuant to your Committee's request.

The Department's update incorporates new data on health risks to children due to mercury, includes mercury emission estimates for 2007 and 2008, provides for mercury emission updates for two Maine sources - ecomaine and Dragon Products Company, LLC (including a review of EPA's proposed mercury emission standard), and proposes updated recommendations for the committee's consideration.

I will gladly present the report to the Committee at your convenience.

Sincerely,

James P. Brooks

James P. Brooks
Director, Bureau of Air Quality

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04679-2094
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

# Mercury Reduction Report Addenda

## 1. Introduction

The Maine Department of Environmental Protection (the Department) is submitting this report to the Joint Standing Committee on Natural Resources pursuant to 38 M.R.S.A. §585-B, as amended by Public Law 2009, Chapter338. The amendment required the Department to develop and submit an update to the *Mercury Reduction Report* originally submitted in March 2009.

The Department's update incorporates new data on health risks to children due to mercury, includes mercury emission estimates for 2007 and 2008, provides mercury emission updates for two Maine sources - ecomaine and Dragon Products Company, LLC (including a review of EPA's proposed mercury emission standard), and proposes updated recommendations for the committee's consideration.

## *1.1 Background information updates*

The following information in Section 3 has been updated:

- Newborn data updated and referenced (Section 3.1)
- Update to the mercury graph (Section 3.4 Graph 1)

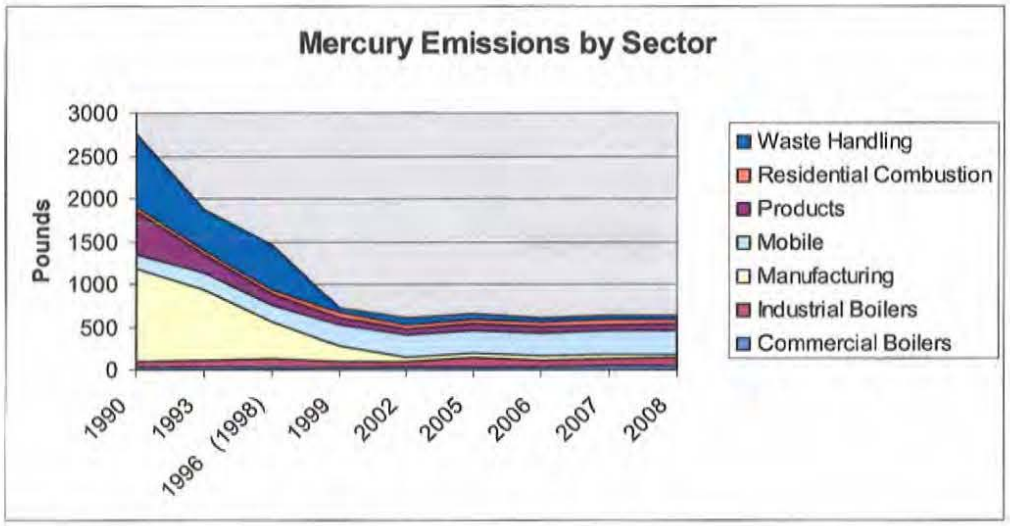
**Section 3.1.** In Section 3.1 of the Department's original report, the last sentence of this section estimated the number of newborns at risk of neurological deficits and cardiovascular abnormalities due to mercury. Based on updated risk data found on EPA's website, the following paragraph from page 5 of the original report is revised:

> "In 1999-2000, EPA research indicated that eight percent (8%) of United States women of childbearing age had levels of mercury in their blood above levels known to cause fetal damage. Recent analyses of maternal studies have indicated that a greater percentage of mercury is distributed to the fetus than previously estimated. " ~~The Northeast States for Coordinated Air Use Management (NESCAUM) estimates that, in the Northeastern United States, over 46,000 newborns are at risk for neurological deficits and cardiovascular abnormalities due to mercury~~[5]" *EPA estimates that more than 300,000 newborns each year may have increased risk of learning disabilities associated with in utero exposure to methyl mercury.*[1]

[1] EPA, 11/09/2009, Mercury – Human Exposure (http://www.epa.gov/mercury/exposure.htm)

**Section 3.4, Graph 1.** Graph 1 illustrates the reduction of mercury emissions in Maine (data from the Department's Mercury Emission Inventory):

Graph 1: Mercury Emissions by Sector has been updated with information through 2008.




*Estimates as of 9/9/09*

Graph 1 illustrates a *77% decrease* ~~decreases~~ in mercury emissions from 1990 to *2008* ~~2005~~. *Maine has met its mercury reduction goal established by the Conference of New England Governors & the Eastern Canadian Premiers.* This is the result of tighter emission controls on point sources and the removal of mercury from our product waste streams.

## 2. Status of facilities that submitted mercury reduction plans

### *2.1 ecomaine*

ecomaine submitted to the Department a Chapter 115 license amendment application, which the Department deemed complete for processing on November 30, 2009. ecomaine's application included the new provision in 38 M.R.S.A. 585-B (5) requiring them to reduce their mercury emissions by 90% utilizing their carbon injection system, or meet a mercury emission limit of 25 pounds per year. ecomaine will withdraw its pending application before the Board of Environmental Protection (BEP) requesting an alternative mercury emission limit, once the license application amendment has been incorporated into the air emission license.

### *2.2 Dragon Products Company, LLC (Dragon)*

### *2.2.1 Update*

On May 6, 2009, EPA proposed amendments to the *National Emissions Standards for Hazardous Air Pollutants from Portland Cement Manufacturing* (Portland Cement NESHAP). Maine's only cement manufacturing facility is the Dragon facility located in Thomaston. EPA anticipates the rule will become final in the spring of 2010 and the compliance date for the regulated emission sources will be three years later, in early 2013.

EPA proposed the following standards regarding mercury:

- For cement kilns or in-line kilns/raw mills an emissions limit of 43 lb/million (MM) tons clinker for existing sources and 14 lb/MM tons clinker for new sources. Both proposed limits are based on a 30 day rolling average; and
- Performance specifications for use of mercury continuous emission monitors (CEMS), including updated recordkeeping and testing requirements.

According to EPA's proposed rule, the intent of the proposed Portland Cement NESHAP is for most existing kilns to install both a wet scrubber and activated carbon injection for control of mercury, hydrogen chloride (HCl), and total hydrocarbons (THC).

**NOTE:** *Unlike Maine's mercury emission limit, which is based on a lbs/yr standard, EPA's mercury emission standard is based on clinker production rate (lbs/MM tons clinker). For comparison purposes, EPA's proposed 43 lbs of mercury/MM tons of clinker emission standard would equate to 33 lbs mercury emissions/yr if Dragon operated at their maximum licensed clinker production rate of 766,500 tons/year.*

The following table is a review of annual mercury emission estimates based on Dragon's most recent annual clinker production and mercury emission rates calculated from the limited CEMS data they collected in the fall of 2008. Dragon reported that clinker production has been significantly lower than the licensed allowed annual production rate due to the recession. In fact, Dragon's cement kiln has operated only 37% of the time in 2009 with the kiln being entirely shut down since October 13, 2009.

**Dragon's Estimated Annual Emissions based on CEMS data**

| Calendar year | Annual Clinker Production (tons/year) | CEMS Hg Emission Factor (lb/ton of clinker) | Estimated Annual Hg Emission Rate (lb/yr) |
|---|---|---|---|
| (Maximum annual license allowed) | 766,500 | 5.24E-05 | 40.16 |
| 2008[2] | 496,383 | 5.24E-05 | 26.02 |
| 2009[2] | 316,769 | 5.24E-05 | 16.60 |

Dragon's CEM emission factor equates to 52.4 lbs of Hg per MM tons of clinker, which is above EPA's emission standard of 43 lb of Hg/MM tons of clinker. The Department believes this comparison indicates that Dragon will need to implement additional mercury control measures to meet the proposed Portland Cement NESHAP limit.

### *2.2.2 License application status*

In December 2008, Dragon submitted a license amendment application to the BEP for an alternative mercury emission limit as allowed by statute. In accordance with the provisions of 38 M.R.S.A. §585-B, Dragon's mercury emission limit will remain at 35 lbs/year until the BEP finalizes action on their license amendment application. Dragon is currently in compliance with this mercury emission limit. The Department requested that the BEP delay action on Dragon's license amendment application until the EPA Portland Cement NESHAP is finalized in the spring of 2010 and the Natural Resources Committee has had an opportunity to review the Department's updated mercury reduction report.

[2] Dragon Mercury Information Update submitted to the Department, dated December 3, 2009

## 3. Department Recommendations – update

Based on the Department's review of the information summarized in this report, the Department makes the following recommendations:

- **Retain the existing annual mercury limit provisions – 25 lb/yr mercury emission limit or achieve a ninety percent mercury emission control limit beginning January 1, 2010, with the option to apply for an alternative higher emission limit with the Board of Environmental Protection;**

- **Amend 38 MRSA §585-B to require any mercury emission source emitting greater than 10 lb/yr to conduct mercury stack testing twice per year for two years, and to submit a mercury reduction plan at the end of the two-year period. The plan must contain the information currently required in the statute and the results of the four (4) stack tests. For determining compliance with the statute, results of individual stack test runs may be averaged in accordance with DEP protocols. Stack tests must be done at least 4 months apart.**

  - This requirement compels facilities to re-evaluate their mercury emissions on a regular basis and to submit a mercury reduction plan containing the requirements outlined in the statute.

- **Reporting Requirement for the Department. By June 2013, provide the Joint Standing Committee on Natural Resources an updated mercury emissions report.**

**NOTE:** *There are two changes to the list of recommendations included in this updated report:*

- *The reporting requirement was changed from 2012 to 2013 in order to reflect the compliance deadlines of the EPA Portland Cement NESHAP; and*
- *'The 25 lb/yr mercury emission reduction standard or 90% controlled by weight' recommendation was eliminated because this language was incorporated into the statute via Public Law 2009, Chapter 338.*

## 4. Statutory Requirements

38 MRSA §585-B (5) and (6)

### §585-B. Hazardous air pollutant standards

**5. Standards for mercury.** Notwithstanding subsection 1, an air emission source may not emit mercury in excess of 45.4 kilograms, or 100 pounds, per year after January 1, 2000; 22.7 kilograms, or 50 pounds, per year after January 1, 2004; 15.9 kilograms, or 35 pounds, after January 1, 2007; and 11.4 kilograms, or 25 pounds, after January 1, 2010. *As an alternative to not emitting mercury in excess of 11.4 kilograms, or 25 pounds, after January 1, 2010, an air emission source may reduce mercury emissions by 90 percent by weight after January 1, 2010.* Compliance with these limits must be specified in the license of the air emission source. The board shall establish by rule testing protocols and measurement methods for emissions sources for which the board has not established such protocols and methods for determining compliance with the emission standard for mercury. These rules are routine technical rules under Title 5, chapter 375, subchapter 2-A.

An air emission source may apply to the board for an extension or modification of the 11.4-kilogram, or 25-pound, limit as follows.

A. An emission source may submit an application to the board no later than January 1, 2009 for a 6-month extension of the January 1, 2010 deadline to meet the 11.4-kilogram, or 25-pound, limit. The board shall grant the extension if the board determines, based on information presented by the source, that compliance with the limit is not achievable by the deadline due to engineering constraints, availability of equipment or other justifiable technical reasons.

B. An emission source may submit an application to the board no later than January 1, 2009 for a license modification establishing an alternative emission limit for mercury. The board shall grant the license modification if the board finds that the proposed mercury emission limit meets the most stringent emission limitation that is achievable and compatible with that class of source, considering economic feasibility.

Pending a decision on an application for an extension or a license modification under this subsection, the 15.9-kilogram, or 35-pound, limit applies to the emission source.

Notwithstanding the January 1, 2000 compliance date in this subsection, a resource recovery facility that is subject to an emissions limit for mercury adopted by rule by the board before January 1, 2000 shall comply with the 45.4-kilogram, or 100-pound, mercury emissions limit after December 19, 2000.

**6. Mercury reduction plans.** Any air emission source emitting mercury in excess of 10 pounds per year after January 1, 2007 must develop a mercury reduction plan. The mercury reduction plan must be submitted to the department no later than September 1, 2008. The mercury reduction plan must contain:

A. Identification, characterization and accounting of the mercury used or released at the emission source; and [2005, c. 590, §2 (NEW).]

B. Identification, analysis and evaluation of any appropriate technologies, procedures, processes, equipment or production changes that may be utilized by the emission source to reduce the amount of mercury used or released by that emission source, including a financial analysis of the costs and benefits of reducing the amount of mercury used or released.

C. The department may keep information submitted to the department under this subsection confidential as provided under section 1310-B.

The department shall submit a report to the joint standing committee of the Legislature having jurisdiction over natural resources matters no later than March 1, 2009 summarizing the mercury emissions and mercury reduction potential from those emission sources subject to this subsection. In addition, the department shall include an evaluation of the appropriateness of the 25-pound mercury standard established in subsection 5. The evaluation must address, but is not limited to, the technological feasibility, cost and schedule of achieving the standards established in subsection 5. *The department shall submit an updated report to the committee by January 1, 2010.* The joint standing committee of the Legislature having jurisdiction over natural resources matters is authorized to report out to the 124th Legislature legislation relating to the evaluation *and the updated report.*