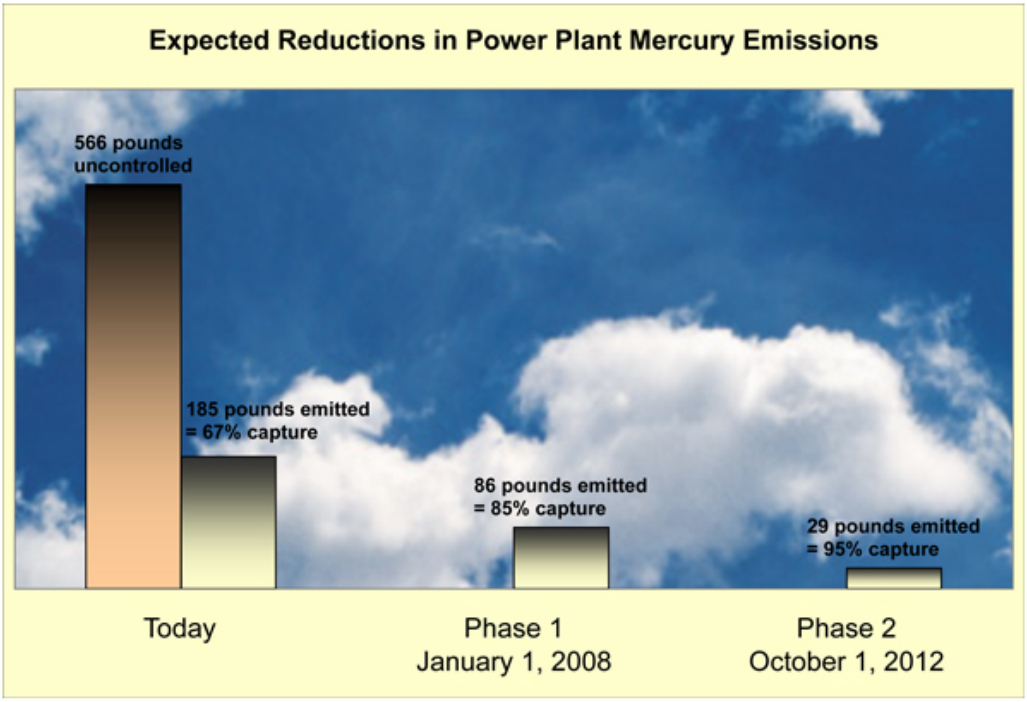
Massachusetts Department of ENVIRONMENTAL PROTECTION

f a c t s h e e t

Mercury Emission Limits for Coal-fired Power Plants

On May 26, 2004, the Executive Office of Environmental Affairs and the Department of Environmental Protection (DEP) announced the adoption of new regulations that limit mercury emissions from four large coal-fired power plants in Massachusetts. These regulations take effect on June 4, 2004.

Why do we need these regulations?
Mercury is a naturally occurring element that is toxic to people and wildlife. Coal contains mercury, which is released into the air when the coal is burned. Conventional air pollution control equipment captures some of the mercury from coal-fired power plants, but significant quantities are still released. Once mercury is released into the environment, it persists for long periods of time and does not degrade into harmless chemicals. When mercury falls from the air into water bodies, it can be transformed by natural processes into a more toxic form called methylmercury. Small organisms absorb methylmercury, and are in turn eaten by fish. Methylmercury becomes concentrated in fish, which in turn can affect peoples' health when eaten. Almost half of the lakes and ponds that have been tested in Massachusetts have one or more types of fish with unsafe levels of mercury.



What will these regulations accomplish?
The regulations will ultimately result in the reduction of about 155 pounds of mercury emissions into our air from the four coal-fired power plants each year. This regulation supplements a series of standards that DEP has adopted and continues to develop to limit air pollution from the Commonwealth's six highest emitting power plants (two of the six do not burn coal and are not covered by the mercury regulation). Standards for emissions of sulfur dioxide, nitrogen oxide, and carbon dioxide, and initial emission caps for mercury, were adopted in May 2001 (see DEP's web site, mass.gov/dep/bwp/daqc/daqcpubs.htm#regs). The mercury rule establishes long-term standards and more detailed

requirements for calculating limits on mercury emissions. DEP continues to develop requirements for implementing the carbon dioxide standards in the regulations.

The mercury rule will help the Commonwealth meet State and Regional goals for reducing mercury releases into the environment. Massachusetts adopted a "Zero Mercury Strategy" in 2000, which aims for a 75% reduction in mercury emissions by 2010 and virtually eliminating the use and release of mercury from human activities over the long term. This Strategy was adopted to ensure that the Commonwealth would meet the goals of a Regional Mercury Action Plan, adopted by the New England Governors and Eastern Canadian Premiers in 1998, which set goals of a 75% reduction in regional mercury releases by 2010, and virtual elimination of releases of mercury from human activities over the long term.

Which facilities are subject to the requirements of these regulations?
The four facilities that are subject to the mercury rule are: Brayton Point (in Somerset), Mt. Tom (in Holyoke), Salem Harbor (in Salem), and Somerset Station (also in Somerset). Together, these facilities contribute about 17% of the annual mercury emissions from Massachusetts' point sources.

What are the mercury standards in the 2004 regulation?
The regulations limit mercury emission rates based on the capture of mercury or on amount of electricity generated by the facility. The new limits are established in two phases:

- In Phase 1, each facility must capture at least 85% of the mercury in the coal burned by the facility or emit no more than 0.0075 pounds of mercury per net gigawatt-hour of electricity generated (calculated as a rolling annual average).
- In Phase 2, each facility must capture at least 95% of the mercury in the facility's coal or emit no more than 0.0025 pounds of mercury per net gigawatt-hour of electricity generated (calculated as a rolling annual average).

What are the deadlines for meeting these standards?
The Phase 1 standards take effect on January 1, 2008, and the Phase 2 standards take effect on October 1, 2012. For facilities with an Administrative Consent Order from DEP in effect when these regulations take effect (June 4, 2004 or earlier), the compliance deadline is 15 months after the compliance date for nitrogen oxide and sulfur dioxide established in the Order.

These deadlines will allow the facilities to gain experience with the new pollution control equipment they are installing to meet the nitrogen oxide and sulfur dioxide requirements of the 2001 emission standards, which established strict limits on the emissions of sulfur dioxide, nitrogen oxide, mercury, and carbon dioxide. While this new equipment may reduce mercury emissions, additional steps may need to be taken to meet the strict mercury limits that DEP is announcing in May 2004.

How will the mercury emissions cap for each facility be calculated?
The emission standards adopted by DEP in May 2001 for coal-fired power plants established caps on the total mass of mercury that can be emitted by each affected facility annually. The mercury regulations announced in May 2004 provide more specific requirements about how these caps are

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determined (facilities will typically base their calculation on stack testing performed in 2001 and 2002, and on the amount of fuel burned from 1997-99).

How much mercury will the regulations prevent from being released into the air?
The regulations will reduce the amount of mercury emitted from the affected facilities by more than 50% by January 1, 2008, and by approximately 85% by October 1, 2012, compared with the facilities' capped mercury emissions. Ultimately, mercury emissions will be reduced by over 155 pounds per year. Note: these proportional reductions are different from the 85% and 95% control efficiency requirements because existing pollution control equipment currently in place at Massachusetts' power plants already captures some mercury.

Does each facility have to reduce its mercury emissions?
Yes, although any unit that terminates operations before January 1, 2010 can demonstrate its compliance with the mercury emission rate limits by using "early" or "off site" reductions. "Early" reductions are those that a facility has achieved by changing its operating practices (e.g., switching fuel to natural gas) before the regulation's compliance dates. "Off site" reductions allow a facility to count mercury air emission reductions at other facilities located in the same DEP region on a pound-for-pound basis, or on at least a 10 pounds reduced for one pound credited basis for other types of mercury reductions in the same DEP region. Any facility that emitted less than 5 pounds of mercury on an annual basis based on stack testing in 2001-2002 may also demonstrate its compliance with the 2001 mercury regulation cap by using early or off site reductions through September 30, 2012.

Is averaging of emissions between more than one facility permitted by the regulation?
No.

Is averaging between units at the same facility permitted under the regulation?
Yes.

Overall, how will DEP's Emission Standards for Power Plants affect air quality in the Commonwealth?
Together, the standards adopted in 2001 and the 2004 mercury standard will reduce annual emissions from affected facilities by:

- 50-75% from historic levels for sulfur dioxide (about 56,000-84,000 tons),
- 50% from historic levels for nitrogen oxide (about 15,000 tons),
- 10% for carbon dioxide (about 1,954,000 tons, implemented on-site or off-site), and
- 85% for mercury (about 155 pounds).

How does DEP's 2004 mercury regulation compare to recent proposals for mercury controls at power plants made by the U.S. Environmental Protection Agency?
The new Massachusetts' regulation establishes more stringent limits on mercury emissions than were proposed by the U.S. EPA on January 30, 2004 (69 Federal Register 4651). DEP believes that its approach will achieve more

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certain reductions in mercury emissions, compared to the “trading” approach that the U.S. EPA has proposed.

For More Information:

- The 2004 Mercury Regulations and a “Response to Comments” document are available from DEP’s web site, http://www.mass.gov/dep/bwp/daqc/daqcpubs.htm#regs.

- For a discussion of the technical feasibility of DEP’s requirements, see *Evaluation of the Technological and Economic Feasibility of Controlling and Eliminating Mercury Emissions from the Combustion of Solid Fossil Fuel* at http://www.mass.gov/dep/bwp/daqc/other .

- For more information on mercury and its environmental impacts, visit: http://www.mass.gov/dep/bwp/hgres.htm.

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