ENVIRONMENTAL PROTECTION

ENVIRONMENTAL REGULATION

DIVISION OF AIR QUALITY

AIR QUALITY PERMITTING ELEMENT

Air Pollution Control

Control and Prohibition of Mercury Emissions

Proposed Amendments:	N.J.A.C. 7:27-27.1, 27.2, 27.4 and 27.9; and 7:27A-3.10
Proposed New Rule:	N.J.A.C. 7:27-27.5, 27.6, 27.7, and 27.8
Authorized By:	Bradley M. Campbell, Commissioner, Department of Environmental Protection.
Authority:	N.J.S.A. 13:1B-3(e), 13:1D-9 and 26:2C-1 et seq., in particular 26:2C-8 and 26:2C-9.2
Calendar Reference:	See Summary below for exception to calendar requirement
DEP Docket Number:	30-03-12/340
Proposal Number:	

A **public hearing** concerning this proposal will be held on **March 4, 2004,** at 10:00 A.M. at:

New Jersey Department of Environmental Protection

401 E. State Street

Hearing Room, First Floor, East Wing

Trenton, New Jersey

Submit written comments, identified by the DEP Docket Number given above, by close of business on **March 5, 2004** to:

Alice Previte, Esq.

Attn: DEP Docket No. 30-03-12/340

Office of Legal Affairs

New Jersey Department of Environmental Protection

PO Box 402

Trenton, N.J. 08625-0402

Written comments may also be submitted at the public hearing. It is requested (but not required) that anyone submitting written comments also include a diskette containing an electronic version, preferably in Word 6.0 or above or Word Perfect format, of the written comments with the submission. Also, it is requested (but not required) that anyone submitting oral testimony at the public hearing provide a copy of any prepared text to the stenographer at the hearing.

Comments on the rule Summary and impact statements should be included with the comments on the pertinent section of the rule text wherever possible in order to eliminate duplicate comments and facilitate the Department's task in organizing and responding to comments. Since

comments will be sorted electronically, the following format should be used for each comment: Citation COMMENT: Comment text.

Interested persons may obtain a copy of the proposed amendments and new rules through the following methods:

1. The proposed amendments and new rules may be downloaded electronically from the Department's Air Quality Regulations web site at http://www.state.nj.us/dep/aqm/.

2. The proposed amendments and new rules may be requested from the Department by e-mailing sunila.agrawal@ dep.state.nj.us or by telephoning (609)292-9202.

3. Look for the Department's proposal in the **xxxxx xx**, issue of the New Jersey Register.

4. The proposed amendments and new rules may be inspected during normal office hours at the Department's Public Information Center at 401 E. State Street in Trenton, or at one of the Department's Regional Enforcement Offices at the following locations:

Central Regional Office:
Horizon Center
Route 130, Bldg. 300
Robbinsville, NJ 08625-0407

Metropolitan Region:
2 Babcock Place
West Orange, NJ 07052-5504

Northern Region:

1259 Route 46 East, Bldg. 2

Parsippany, NJ 07054-4191

Southern Region:

One Port Center

2 Riverside Drive, Suite 201

Camden, NJ 08103

5. The proposed amendments and new rules may be inspected at one of the following public libraries:

Trenton Public Library
120 Academy Street
Trenton, NJ 08608

Atlantic City Public Library
1 North Tennessee Avenue
Atlantic City, NJ 08401

Newark Public Library
5 Washington Street
Newark, NJ 07102-0630

Alexander Library
Rutgers University
169 College Avenue
New Brunswick, NJ 08901

Camden Free Public Library
418 Federal Street
Camden, NJ 08103

New Brunswick Free Public Library
60 Livingston Avenue
New Brunswick, NJ 08901

Joint Free Public Library
Morrison and Morris County
1 Miller Road
Morrison, NJ 07960

Burlington City Library
23 West Union Street
Burlington, NJ 08016

Perth Amboy Public Library
193 Jefferson Street

Freehold Public Library
28½ East Main Street

Perth Amboy, NJ 08861 Freehold, NJ 07728

Toms River Public Library
101 Washington Street
Toms River, NJ 08753-7625

Somerville Public Library
35 W. End Avenue
Somerville, NJ 08876

Penns Grove/ Carney's Point Public Library Association
222 South Broad Street
Penns Grove, NJ 08069

Burlington County Library
3 Pioneer Blvd. and Woodlane Road
Mt. Holly, NJ 08060

Library of Science and Medicine
Rutgers University
P.O. Box 1029
Piscataway, N.J. 08855-1029

Pursuant to N.J.S.A. 26:2C-8, these proposed amendments and new rules will be effective 60 days after adoption by the Commissioner.
The agency proposal follows:

Summary

The notice of proposal is excepted from rulemaking calendar requirement pursuant to N.J.A.C. 1:30-3.3(a)5, inasmuch as the Department has provided a 60-day comment period.

The Department is proposing new rules and amendments at N.J.A.C. 7:27-27, Control and Prohibition of Mercury Emissions, which set forth the requirements and procedures for the control and prohibition of air pollution from mercury emissions. The Department is also proposing related

amendments at N.J.A.C. 7:27A-3.10, Air Administrative Procedures and Penalties, which set forth the penalties for violating N.J.A.C. 7:27-27. These proposed new rules and amendments would establish new requirements for municipal solid waste (MSW) incinerators, hospital/medical/infectious waste (HMIW) incinerators, iron or steel melters, and coal-fired boilers, in order to prevent or decrease emissions of mercury from these operations. Each section of the proposed new rules and amendments is intended to stand on its own. For each source category, the Department is proposing different standards, which are based on an independent evaluation of the source characteristics and mercury control methods that exists for each source category.

Pursuant to N.J.S.A. 13:1B-3(e), 13:1D-9, and 26:2C-1 et seq., the Department has the statutory authority to promulgate these rules. On November 7, 1994, the Department adopted regulations for owners and operators of MSW incinerators to reduce mercury emissions and reserved sections of the rules to evaluate and develop standards for other sources of mercury emissions, such as HMIW incinerators, sewage sludge incinerators, hazardous waste incinerators, and coal burning boilers. Limits for hazardous waste incinerators are not being proposed because there are no hazardous waste incinerators that treat mercury containing waste in New Jersey.

Background

Mercury is a toxic heavy metal that persists in the environment once it is released into the atmosphere. Concern about high levels of mercury deposition and subsequent bioaccumulation in aquatic ecosystems - a phenomenon that can pose serious health risks for humans and animals that eat mercury contaminated fish - has emerged as an important public health and environmental issue in recent years. Mercury moves through the environment as a result of both natural and human (anthropogenic) activities. The human activities that are chiefly responsible for causing mercury to enter the environment are burning fuels and wastes containing mercury, and industrial manufacturing processes. Once mercury enters waters, either directly or through air deposition, it can

bioaccumulate in fish and animal tissue as methylmercury, its most toxic form. Bioaccumulation means that the concentration of mercury in predators at the top of the food chain can be thousands or even millions of times greater than the concentrations of mercury found in the water. Exposure to high levels of mercury has been associated with serious neurological and developmental effects in humans.[1]

The operations that are proposed to be regulated contribute to the presence of mercury in the atmosphere, water and soil. Most of the mercury in water, soil, sediments, or plants and animals is in the form of inorganic mercury salts and organic forms of mercury (e.g., methylmercury). The inorganic form of mercury, when either bound to airborne particles or in a gaseous form, is readily removed from the atmosphere and brought to earth by precipitation or is dry deposited. Dry deposition is fallout of atmospheric particles and adsorption of gas-phase molecules to ground and plant surfaces. The organic form of mercury (methylmercury) accumulates most efficiently in the aquatic food chain. Predatory organisms at the top of the food chain generally have higher mercury concentrations. Nearly all of the mercury that accumulates in fish tissue is methylmercury. Fish consumption dominates the pathway for human and wildlife exposure to methylmercury. Several studies support a plausible link between anthropogenic releases of mercury from industrial and combustion sources in the United States and methylmercury in fish. [2, 3, 4] Mercury contaminates freshwater fish collected throughout New Jersey. The Second New Jersey Mercury Task Force (the "Second Task Force"), which was created by the Department in 1998, to study and make recommendations on ways to control mercury, found that mercury emissions to the air appear to comprise the largest group of releases entering the environment of New Jersey from which the mercury could eventually make its way to fish tissue.[5] As discussed below, elevation of the mercury concentration causes a variety of human health effects and is also harmful to animals. Adoption of the proposed new rules and amendments will help the State avoid potential adverse health and economic impacts.

Mercury is a known human toxicant. While humans are most likely to be exposed to methylmercury through fish consumption, exposure may also occur through other routes, such as methylmercury contaminated drinking water and food sources other than fish, and dermal uptake through contact with methylmercury contaminated soil and water. The primary targets for the toxic effects of mercury and mercury compounds are the nervous system, the kidneys and the developing fetus. Health problems caused by mercury are most severe for the developing fetus and young children.[6] Pregnant women who eat fish contaminated with methylmercury run the risk that their babies will have unhealthful changes in their central nervous system and possibly in their heart or blood vessels. Often babies born to women exposed to methylmercury during pregnancy exhibit a variety of developmental neurological abnormalities, including delayed onset of walking, delayed onset of talking, cerebral palsy, altered muscle tone and deep tendon reflexes, and reduced neurological test scores. Studies in humans and laboratory animals show that the most subtle indicators of methylmercury toxicity are neurological changes.[7,8] The neurotoxic effects in adults include subtle decreases in motor skills and sensory difficulties at comparatively low doses, to tremors, inability to walk, convulsions, possible adverse effects on the cardiovascular system, and death at extremely high exposures. Most of the effects typically take weeks or months to detect after an adult has been exposed. Based on human and animal data, the International Agency for Research on Cancer (IARC) and USEPA have classified methylmercury as a "possible" human carcinogen.[9,10] A public law signed on September 10, 2003, requires the Department of Health and Senior Services, in consultation with the Department, to prepare a mercury notice to be posted in doctor's offices providing care to pregnant women and children alerting them of the dangers from eating mercury contaminated fish.[11]

According to the report and recommendations prepared by the Second Task Force, New Jersey emissions of mercury are greater than what is deposited in New Jersey from the atmosphere; therefore, local mercury sources not only create local health problems, but also cause the State to be a net exporter of atmospheric mercury.[12]

Governmental Actions to Control Mercury Emissions

Section 112(n)(1)(B) of the Clean Air Act (CAA), as amended in 1990, and codified at 42 U.S.C. 7412(n)(1)(B), required the U.S. Environmental Protection Agency (USEPA) to submit to Congress a study on mercury emissions from electric utility steam generating units, municipal waste combustion units, and other sources, including area sources.[13, 14] The term "area source" means any stationary source of hazardous air pollutants that is not a major source. For the purposes of Section 112 of the CAA, the term "area source" does not include motor vehicles or non-road vehicles subject to regulation under Title II of CAA. The USEPA submitted the Mercury Study Report to Congress in 1997.[15] The Mercury Study Report estimated that MSW incinerators emitted 18.7 percent of total national mercury emissions into the air. The report also estimated that HMIW incinerators emitted 10.1 percent of total national mercury emissions into the air. The USEPA promulgated regulations applicable to municipal waste combustor units, also known as MSW incinerators (40 CFR Part 60 Subparts Ea and Eb, and 40 CFR Part 62 Subparts FFF and JJJ), and HMIW incinerators (40 CFR Part 60 Subpart Ec and 40 CFR Part 62 Subpart HHH). The Federal standard for mercury emissions from existing and new MSW incinerators is 80 micrograms per dry standard cubic meter (µg/dscm) based on annual average or 85 percent emission reduction based on annual averages as an alternative standard pursuant to 40 CFR Part 62.14103(a)(3) and 62.15160. The Federal standard for mercury emissions from HMIW incinerators is 550 µg/dscm based on annual average or 85 percent emission reduction based on annual averages as an alternative standard. Under Section 129 of the CAA, which is codified at 42 U.S.C.A. 7429, these emission standards are based on the maximum achievable control technology (MACT).

Section 112(n)(1)(A) of the CAA, which is codified at 42 U.S.C.A. 7412(n)(1)(A), mandated the USEPA to conduct a study to determine whether regulation of hazardous air pollutant (HAP) emissions from electric utility steam generating units was "appropriate and necessary." The USEPA

documented the results of its study in the Utility Air Toxics Report to Congress (RTC) and released it to the U.S. Congress and the public in February 1998. In its Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units published in Federal Register, the USEPA stated that for the utility industry, mercury from coal-fired electric utility steam generating units was the HAP of greatest potential concern to the public health.[16] To gather further information to support a decision on whether to regulate HAP emissions from electric utility steam generating units, the USEPA issued an Information Collection Request (ICR) under the authority of Section 114 of the CAA (42 U.S.C.A. 7414) to all coal-fired electric utility steam generating units requesting coal data from such units for the calendar year 1999 and stack testing data from select units.[17] As a result of the utility RTC and subsequent information obtained through the ICR, on December 14, 2000, the USEPA made a finding that the regulation of HAP emissions from coal-fired electric utility steam generating units is "appropriate and necessary."[18] In its finding, the USEPA stated that coal-fired electric utility steam generating units are the largest mercury air emissions source nationwide estimated to be about 30 percent of total mercury air emissions. 65 Fed. Reg. 79827.

The USEPA also formed the Utility MACT Working Group. The goal of the working group was to provide input to the USEPA regarding Federal air emissions regulations for coal and oil-fired electric utility steam generating units, including mercury emission limits, that would maximize environmental and public health benefits in a flexible framework at a reasonable cost of compliance, within the constraints of the CAA. The working group submitted its report to the USEPA in October 2002, recommending that mercury emission limits for coal combustion be determined as required by the CAA, Section 112(d) (42 U.S.C.A. 7412(d)). The Department's proposed new rules and amendments are consistent with the State and Local Air Pollution Control Officials Recommendations for Utility MACT Standards October 22, 2002, which were included in the Utility MACT Working Group recommendations. Under an existing settlement agreement between USEPA and Natural Resources Defense Council (NRDC), the regulations setting mercury emission limits for

coal-fired boilers are to be proposed by the USEPA by December 15, 2003, and promulgated by December 15, 2004.[19, 20]

In addition to the efforts of the Federal government, several Northeastern and Midwestern states are pursuing or considering independent regulatory actions to reduce mercury emissions, including emissions from coal-fired boilers, MSW incinerators and HMIW incinerators, at the state and regional level. The Mercury Action Plan of New England Governors/Eastern Canadian Premiers (NEG/ECP) established a first interim regional goal of 50 percent mercury air emission reduction for Northeastern states from MSW incinerators, HMIW incinerators, and coal-fired boilers in the region. A second interim goal was adopted for an overall reduction of 75 percent or greater by 2010, with an evaluation in 2005 to allow for new information to be taken into account and to revise the target, if necessary,[21, 22] and virtual elimination of mercury emissions, if feasible. In Connecticut, House Bill No. 6048 requires coal-fired power plants to reduce their mercury emissions by 90 percent below 2000 levels by July 1, 2008. The Wisconsin State Department of Natural Resources approved a mercury reduction plan on June 13, 2003, which mandates a 40 percent reduction in mercury emissions by 2010 and 80 percent cut by 2015. In September 2003, Massachusetts released proposed regulations to reduce 85 percent mercury emissions by October 1, 2006, and 95 percent by October 1, 2012, from coal-fired power plants.

In New Jersey, the Department convened two Mercury Task Forces in 1992 and 1998. The first Mercury Task Force found that emissions from MSW incinerators were, at the time, the main sources of mercury emissions in the State. Its recommendations and subsequent regulations for owners and operators of MSW incinerators, which were promulgated at N.J.A.C. 7:27-27.1 et seq., require an emission standard of 28 µg/dscm or 80 percent emission reduction as an alternative standard. The Department adopted regulations for MSW incinerators to reduce mercury emissions and reserved sections of the rules to evaluate and develop standards for other sources of mercury emissions, such as HMIW incinerators, sewage sludge incinerators, hazardous waste incinerators,

and coal-fired boilers. The current New Jersey rules reduced mercury emissions from MSW incinerators by about 94 percent over the last ten years.[23] Due to the Department's regulations,[24] the MSW incinerators in New Jersey have installed carbon injection emission controls which capture mercury by adsorbing it on the injected carbon. Measures to reduce mercury in MSW waste were also implemented.

The Second Task Force advocated an overall goal of the virtual elimination of anthropogenic uses and releases of mercury and recommended an 85 percent reduction in in-State mercury emissions from 1990 levels by 2011, from all sources, including coal-fired boilers, MSW incinerators, iron and steel manufacturing processes and HMIW incinerators.[25] The Second Task Force recommended that the State of New Jersey adopt a two-step milestone of a 75 percent reduction in air emissions below estimated 1990 levels by 2006 and an 85 percent reduction below 1990 levels by 2011. The Second Task Force listed the current mercury emissions from these sources, which are based on actual stack test data submitted to the Department, as follows: MSW Incinerators emit more than 300 pounds of mercury per year; HMIW incinerators emit five pounds of mercury per year; coal-fired boilers emit 700 ± 300 pounds of mercury per year and iron or steel melters emit approximately 1,000 pounds of mercury per year.[26] The new rules and amendments being proposed at N.J.A.C. 7:27-27 are intended to prevent or decrease emissions of mercury from these four mercury emitting source operations.

In addition to the regulatory efforts discussed above, model legislation is being developed by a national coalition of environmental organizations and industries involved in vehicle recycling to achieve reductions in mercury emissions through the removal and collection of vehicle mercury switches, mercury sensors, and other mercury-added components from vehicles in commerce, and also by vehicle manufacturers to implement a Design For Recycling program for future vehicles to prohibit the use of mercury or mercury-added components in automobiles. On August 29, 2003, the USEPA adopted Maximum Achievable Control Technology (MACT) standards for iron or steel

melters. These standards include requirements for removing mercury containg switches from scrap prior to melting.

The Second Task Force estimated that over 1,000 pounds of mercury is contained in light switches in motor vehicles that are discarded yearly in New Jersey, and that this quantity of mercury is likely to enter the recycled metals waste stream.[27] Once present as a contaminant in the recycled metals waste stream, mercury is emitted when the recycled metals are melted down during the course of iron and steel melting. It may be that the most cost-effective way to prevent mercury present in end-of-life motor vehicles is to remove mercury switches before the vehicles are crushed, shredded, and melted.

The Department, supported in part by a grant from the USEPA, is currently carrying out a pilot project to determine effectiveness of removing mercury-containing switches from end-of-life vehicles. A number of members of the New Jersey Automobile Recyclers Association, Hugo Neu Schnitzer East of Jersey City, a major New Jersey shredder; Gerdau-Ameristeel of Sayreville, a steel manufacturer; and Comus International, of Clifton, a manufacturer of mercury and non-mercury switches, are participating in this project. This project includes measuring the effort and time involved to remove mercury-containing switches from end-of-life vehicles. The mercury-containing switches will be recycled through Comus International. The project will also assess the effectiveness of the switch removal project by comparing stack test results at the steel melting facility using shredded metal feed that has not had switches removed to shredded metal from vehicles from which the switches have been removed.

As stated above, New Jersey does not currently regulate mercury emissions from HMIW incinerators, iron or steel melters or coal-fired boilers. The Department is proposing to amend the existing MSW incinerator requirements at N.J.A.C. 7:27-27.4, and add new rules for HMIW incinerators at N.J.A.C. 7:27-27.5, iron or steel melters at N.J.A.C. 7:27-27.6, and coal-fired boilers at

N.J.A.C. 7:27-27.7. These proposed new rules and amendments will be discussed below in detail.

During the rule development process, the Department communicated with several government agencies, environmental groups, industry organizations, and the regulated community, including the USEPA, State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), Northeast States for Coordinated Air Use Management (NESCAUM), Natural Resources Defense Council, Independent Energy Producers of New Jersey, New Jersey Commerce and Economic Growth Commission, Department of Health and Senior Services, universities, MSW facilities (Camden CRRF and Essex CRRF), Pollution Control Financing Authority Camden County, Port Authority of NY and NJ, GerdauAmeristeel, US Pipe & Foundry Co., Atlantic States Cast Iron Pipe Co., Griffin Pipe Products Co., Hoeganaes Corp., Shredder & Safety, Metal Management Northeast, Inc., Camden Iron & Metal, Inc., Hugo Neu Schnitzer East, Cinelli Iron & Metal Co., Inc., PSEG Fossil LLC, Conectiv, City of Vineland, PG&E National Energy Group, and HMIW Incinerator facilities.

N.J.A.C. 7:27-27 Control and Prohibition of Mercury Emissions

The proposed new rules and amendments at N.J.A.C. 7:27-27 are consistent with the recommendations made by the Second Task Force Report, which can be obtained from http://www.state.nj.us/der/dsr/mercury_Task_force_htm. By requiring MSW incinerators to reduce their mercury emissions further, by ensuring that mercury emissions from HMIW incinerators will be maintained at low levels, and by requiring mercury emissions from iron or steel melters and coal-fired boilers to be reduced, the Department anticipates that approximately 1,500 pounds of mercury per year will be eliminated from the environment. This reduction will be in addition to the approximately 4,000 pounds per year mercury emission reductions that was achieved from MSW incinerators, as a result of the adoption of the first mercury rule on November 7, 1994. Also, additional reductions have been achieved with the shutdown of numerous HMIW incinerators over the last 20 years. If the proposed new rules and amendments are adopted, the total mercury emission reductions achieved in New Jersey since 1990 will be over 5,500 pounds per year.

The Department is proposing the following new rules and amendments to N.J.A.C. 7:27-27, as described below:

In N.J.A.C. 7:27-27.1, the Department has added new definitions of the terms "biologicals," "blood products," "body fluids," "chemotherapeutic waste," "co-fired combustor," "hospital," "hospital/medical/infectious waste incinerator," "hospital waste," "infectious agent," "low-level radioactive waste," and "pathological waste," and has modified the definition of "medical/infectious waste." These definitions will clarify the meanings of HMIW incinerator and co-fired combustor that are used in proposed new rule N.J.A.C. 7:27-27.5. These definitions are consistent with the Federal NSPS at 40 CFR Part 60 Subpart Ec and 40 CFR Part 62 Subpart HHH. The Department has added the term "iron or steel melter" to define those sources that will be subject to the proposed new rule at N.J.A.C. 7:27-27.6. The

Department has revised definitions of "coal burning boiler" to "coal-fired boiler," "preconstruction permit," and "compliance testing" to "stack emission testing." The Department has added the term "continuous emission monitoring system" to define the type of monitor that will be required to measure mercury emissions once it becomes commercially available and a Federal performance specification is developed as published in the Federal Register. The Department has modified the definition of the term "annual average" to be the arithmetic average of four consecutive quarters' averages, instead of the arithmetic average of all compliance tests conducted in any calendar year. This proposed definition of annual average allows facilities to average across two calendar years and will be more representative of the operation of regulated sources. The Department has added the definitions of "annual weighted average," "dry bottom utility boiler," "combined heat and power facilities," "mg/MW-hr," "operating permit," “optimized reagent feed rate," "quarter," "reagent," "USEPA," and "wet bottom utility boiler," for clarification.

In N.J.A.C. 7:27-27.2, the Department has amended the purpose and applicability provisions to expand the applicability of the mercury rules not only to MSW incinerators, but also to any HMIW incinerators (except co-fired combustors), iron or steel melters, and coal-fired boilers.

The Department proposes to amend the mercury emissions requirements for MSW incinerators at N.J.A.C 7:27-27.4. Under the current rules, at an incinerator with annual average mercury emissions exceeding 28 µg/dscm, the air pollution control apparatus must achieve a quarterly average 80 percent reduction efficiency in mercury emissions.

The proposed amendments also allow two alternatives for compliance. One alternative would be phased in, with the first phase beginning one year after the proposed amendments become operative, and the second phase beginning seven years after the proposed amendments

become operative. In the first phase, at an incinerator with annual average mercury emissions exceeding 28 µg/dscm, the air pollution control apparatus must achieve an annual average 85 percent reduction efficiency in mercury emissions. In the second phase, at an incinerator with annual average mercury emissions exceeding 28 µg/dscm, the air pollution control apparatus must achieve an annual average 95 percent reduction efficiency in mercury emissions. In both cases continued compliance with 28 µg/dscm requires no further action by the MSW incineration facility.

The 85 percent reduction is based on the Second Task Force's recommendation.[28] The annual average in place of quarterly average for the efficiency standard, is based on recommendations of MSW incineration facilities, to be consistent with the annual average for the 28 µg/dscm standard. Stack test data indicate that four out of the five MSW incinerator plants in New Jersey already comply with this 28 µg/dscm or 85 percent efficiency standard. The Department believes that the fifth facility can comply with this standard by adjusting its current activated carbon injection system, without major capital investment.

Of the five MSW incinerators currently operating in the State, the Department expects that three of them will continue to meet the 95 percent/28 µg/dscm standard in the first alternative without installing additional air pollution control technology. Those three incinerators currently use baghouses to control particulate emissions. The combination of baghouses with activated carbon injection provides effective control of mercury emissions. The three incinerators with baghouses already comply with the 28 µg/dscm component of the standard. One of these, Gloucester County Resource Recovery Facility, may need to increase its compliance margin by increasing its carbon injection rate. The ability to comply with the standard using currently available technology, the substantial reductions in mercury emissions that could be achieved at the two incinerators not yet meeting the proposed standard, and the importance of reducing mercury emissions to protect public health and the

environment are all strong arguments in favor of the 95 percent/28 µg/dscm standard.

Two incinerators currently control particulate emissions using electrostatic precipitators (ESPs), rather than baghouses. The Department believes that those two facilities may need to install additional mercury emissions control measures, such as a baghouse or compact hybrid particulate collector (COHPAC) system (sometimes referred to as a "polishing baghouse"), to comply with the 95 percent/28 µg/dscm standard. Stack emission test data from other incinerators indicate that these additional measures would enable them to meet the standard. The seven-year time frame for the 95 percent/28 µg/dscm standard allows sufficient time to plan and implement the installation of the additional control technology or improve the effectiveness of the existing control technology and waste management.

The Department is also proposing a second compliance alternative that possibly would not require additional control technology. The second alternative would deliver emission reductions comparable to what the 95 percent/28 µg/dscm standard would achieve, and would deliver those reductions several years earlier. For an MSW incinerator that chooses the second alternative, the 95 percent reduction efficiency requirement would not apply. Instead, the incinerator would provide early reductions of mercury emissions beyond what would be required by 28 µg/dscm or 85 percent control. Specifically, under this second alternative the incinerator's mercury emissions could not exceed 14 µg/dscm, averaged over three years. The three-year averaging period would make it less likely that isolated spikes in mercury emissions would cause an exceedance of the stricter 14 µg/dscm standard. The Department estimates that this option would provide an emissions reduction comparable to what the first alternative's second phase would achieve.

A combination of improved mercury separation in the facility's incoming waste stream, and substantial increases in the rate of carbon injection, may make it possible to achieve the 14

µg/dscm standard, especially considering the three-year averaging period. If the facility cannot achieve the standard, the 95 percent/28 µg/dscm standard under the first alternative would then apply to the facility seven years after the proposed amendments become operative.

Despite the effectiveness of the 1994 mercury rule in reducing mercury emissions, MSW incineration is the fourth largest source category of mercury emissions in New Jersey. About 90 percent of the total mercury emissions come from the two MSW incinerators facilities with ESP air pollution control, which is less effective at mercury reduction than the baghouses used by the other three facilities. Consequently, the Department is proposing a higher percentage reduction in mercury emissions or the 14 µg/dscm option for MSW incinerators facilities to be implemented over the next seven years.

The Department estimates that the proposed amendments would reduce mercury emissions from MSW incinerators by 200 to 300 pounds per year depending on the variability of mercury in the waste stream.

In N.J.A.C. 7:27-27.5, the Department is proposing a new rule to regulate the three HMIW incinerators which are still operating in this State. In New Jersey, mercury is emitted from hospitals and research facilities that incinerate medical waste, which includes infectious (red bag) and non-infectious waste from medical and veterinary offices, clinics, and hospitals. Over the last 20 years most of the approximately 50 HMIW incinerators that once operated have been shut down. The proposed new rule would specify that on or after the date that is one year from the operative date of this rule, the mercury emissions from any HMIW incinerator may not exceed 55 µg/dscm corrected to seven percent oxygen. Compliance shall be determined by the average of three stack emission tests run once every five years. The 55 µg/dscm mercury emission limit for HMIW incinerator is more stringent than USEPA's 550

µg/dscm standard. If New Jersey HMIW incinerators were allowed to meet the Federal standard, the HMIW incinerators would make up a significant source of mercury emissions relative to the rest of the State's mercury emissions inventory. The proposed 55 µg/dscm mercury emission limit for HMIW incinerators is based on the New England Governors/Eastern Canadian Premiers' Mercury Action Plan and standards adopted by several northeast states and is consistent with the recommendation of the Second Task Force.[29] In New Jersey, actual stack emissions testing data for all existing HMIW incinerators shows that the facilities are already achieving the 55 µg/dscm standards with a reasonable margin, using existing technology and pollution prevention measures. Therefore, the Department does not expect additional mercury emission reductions from the promulgation of this new standard. The Department is proposing this standard to prevent backsliding.

The proposed new rule also includes work practice standards for HMIW incinerators. Under N.J.A.C. 7:27-27.5(f), the owner or operator of a HMIW incinerator facility shall submit to the Department a certified written plan within one year after the operative date of these new rules for the purchasing of mercury free supplies, which will prevent the incineration of mercury contained in hospital/medical/infectious waste. Most HMIW incinerator facilities already have such plans in place, and it is these pollution prevention practices that have successfully reduced mercury emissions from this source category, as well as the replacement of incinerators with other disposal methods.

In N.J.A.C. 7:27-27.6, the Department is proposing a new rule applicable to the six iron or steel melters in New Jersey. This industry is the highest mercury emitting source category in New Jersey. According to the Second Task Force, iron or steel melters emit about 1,000 pounds of mercury per year when they produce steel by melting scrap, which includes recycled metals from discarded motor vehicles and home appliances, and waste metals from demolished building structures. Source separation, that is, removal of mercury switches from

discarded motor vehicles, has the potential to substantially reduce mercury emissions from the iron or steel melters. The Second Task Force report recommended a 75 percent overall mercury emission reduction from iron or steel melters in three years by promoting source separation. Under the proposed new rules, each facility would be required to start stack testing one year after the operative date of these new rules in order to provide the Department with data on the impact of any source separation efforts on their emissions. Under the proposed new rules, if source separation does not succeed in achieving the 35 milligram per ton of steel production (mg/ton), iron or steel melters would be required to install mercury control technology. The proposed new rules specify that within five years after the operative date of these new rules, each iron or steel melter of any size must reduce its mercury emissions by at least 75 percent as measured at the exit of the mercury control apparatus; in the alternative, mercury emissions may not exceed 35 mg/ton, based on the average of all tests performed during four consecutive quarters. This 35 mg/ton standard is also based on the Second Task Force's recommendation for a 75 percent reduction in mercury emissions from iron and steel manufacturers. It is based on the maximum estimated emissions after 75 percent control, divided by the maximum production rate in tons. The Department expects a reduction in mercury emissions of approximately 750 pounds per year upon implementation of the proposed new rules for this industry.

In N.J.A.C. 7:27-27.6(d) through (i), the proposed new rules also include work practice standards for iron or steel melters similar to the recently adopted Federal MACT rules applicable to iron and steel industry. The owner or operator of iron or steel melters shall submit to the Department for approval a written certified mercury minimization or source separation plan to minimize the amount of mercury in scrap processed at the facility. The proposed new rules require iron or steel melters to purchase and use only mercury-free scrap and requires each facility to implement a plan for inspecting incoming scrap to assure that it purchases only mercury-free scrap. The proposed new rules require each facility to maintain

on site copies of the mercury minimization and source separation plan, records reflecting the results of visual inspections, and a copy of the procedures that each supplier uses to remove mercury from scrap provided to the facility.

In N.J.A.C. 7:27-27.7, the Department is proposing a new rule applicable to the ten coal-fired boilers in this State. According to the Second Task Force, the coal-fired electric generating units in New Jersey emit approximately 700±300 pounds of mercury per year in the State. The source of the emissions is from the mercury contained in the coal. This industry is the second largest source category of mercury emissions in New Jersey. The proposed new rule would specify that as of December 15, 2007, the mercury emissions from any coal-fired boiler shall not exceed 3 milligrams per megawatt hour (mg/MW-hr), based on the annual weighted average of all tests performed during four consecutive quarters; or, in the alternative, the owner or operator of a coal-fired boiler must achieve 90 percent reduction in mercury emissions as measured at the exit of the air pollution control apparatus. Compliance is to be determined by averaging three stack emission test runs per quarter for four consecutive quarters, measuring the net megawatt hours for each quarter, and then calculating annual weighted averages using the quarterly averages and the net megawatt hours generated.

The proposed standard is based on the information available to the USEPA's Utility MACT Working Group, the Mercury Study Report to Congress, and the pilot tests conducted in New Jersey at coal-fired boilers for control of mercury emissions.[30] The standard is also consistent with Connecticut's mercury emission standard of 0.6 pounds per trillion BTU.[31] In September 2003, Massachusetts released proposed regulations to limit mercury emissions to 3.4 mg/MW-hr or 85 percent mercury control by October 1, 2006, and 1.135 mg/MW-hr or 95 percent control by October 1, 2012.[32]

The Department is proposing an extension of the December 15, 2007 compliance deadline to December 15, 2012, for any facility that by December 15, 2007, has become subject to an enforceable agreement with the Department requiring it to install and operate air pollution control systems to control: (1) the emissions of nitrogen oxides to less than 0.100 pounds per million BTU for dry bottom boilers and 0.130 pounds per million BTU for wet bottom boilers; (2) the emissions of sulfur dioxide to less than 0.150 pounds per million BTU; and (3) the emissions of particulate matter to less than 0.030 pounds per million BTU. This extension of the compliance deadline is only available for half of the New Jersey coal fired capacity of a company. The other half of the coal-fired capacity must achieve the mercury emission limits by December 15, 2007. The Department believes that compliance with these emission limits by December 15, 2007 is readily achievable with currently available air pollution control technology. The air pollution control devices that will be installed and operated by December 15, 2012 to meet the nitrogen oxides, sulfur dioxide, and particulate matter limits specified above are also expected to reduce some mercury emissions. PSE&G has already entered into a multi pollutant consent agreement with the Department to attain these emission limits at all three coal-fired units. This provision is available to other electric generating companies in New Jersey, as well.

Similarly, the Department is not requiring compliance with the mercury emissions limit in effect on and after December 15, 2007, for coal-fired boilers that have entered into an enforceable agreement with the Department by December 15, 2007 to shut down by December 15, 2012.

The Department is also providing an option for mercury emissions averaging among two or more coal-fired boilers located at the same facility. Averaging allows the facility to average emissions from multiple sources at the same site and to consider that average when determining compliance with the standard. For example, the sum of each annual weighted

average emission multiplied by net megawatt generated by each coal-fired boiler, is divided by the sum of the annual megawatt hours from two or more coal-fired units located within the same facility to not exceed 3 mg/MW-hr.

The Department expects the proposed new rules to result in a reduction in mercury emissions from coal-fired boilers of approximately 422 pounds per year by the end of 2013.

In N.J.A.C. 7:27-27.8, the Department is proposing a new rule to address testing to determine compliance with the proposed mercury emissions standards, revisions to pre-construction permits and operating permits to incorporate changes required by the proposed rules, and an option to install mercury continuous emissions monitoring system once they meet Federal specifications and become commercially available.

The proposed new rules incorporate the provisions of the existing rules concerning approval of compliance test protocols and compliance testing, which are being relocated with only minor technical changes from N.J.A.C. 7:27-27.4(f) and (g) to N.J.A.C. 7:27-27.8(a) and (b). The relocated subsections require compliance with the control efficiency or emission limit as determined by USEPA Reference Method 29, an equivalent method that is as conservative and reliable as USEPA Reference Method 29, or an approved CEM system.

USEPA Method 29 is used for the determination of metals emissions from stationary sources. A stack sample is withdrawn isokinetically from the source, particulate emissions are collected in the probe and on a heated filter, and gaseous emissions are then collected in an aqueous acidic solution of hydrogen peroxide (analyzed for all metals including mercury) and an aqueous acidic solution of potassium permanganate (analyzed only for mercury). The recovered samples are digested, and appropriate fractions are analyzed for mercury by cold vapor atomic absorption spectroscopy.

In N.J.A.C. 7:27-27.4(b), 27.6(b) and 27.7(b), of the proposed new rules and amendments, each MSW incinerator, HMIW incinerator, iron or steel melter, and coal-fired boiler would be required to perform at least three source emissions test runs at the inlet of the air pollution control apparatus and at least three source emission test runs simultaneously at the outlet of the air pollution control apparatus on a quarterly basis. The emission levels and control efficiencies would be determined on a quarterly basis by averaging the three source emission test run results. The proposed new rules base annual average emission rates, annual weighted average emission rates, and control efficiencies on an average of four consecutive quarterly average source emission test results performed.

In N.J.A.C. 7:27-27.4(c), 27.6(c) and 27.7(c), the proposed new rules allow any person who achieves and maintains compliance with the proposed standard for eight consecutive quarters for all applicable MSW incinerators, iron or steel melters, and coal-fired boilers, to reduce the frequency of compliance testing from each quarter to compliance testing performed every fourth quarter after the eighth quarter test in which annual average or annual weighted average compliance is determined. This is consistent with provision at N.J.A.C. 7:27-27.4(e) for MSW incinerators in the existing rule.

The Department is proposing the option of installing continuous mercury emission monitoring system at N.J.A.C. 7:27-27.8(c). After mercury continuous emission monitoring systems capable of meeting Federally developed and published performance specifications become available, the owners or operators of sources regulated by this subchapter may install and operate mercury continuous emission monitoring system to ensure continuous compliance with the proposed amendments and new rules. If approved by the Department, such system would replace the quarterly testing required by this rule.

The Department is proposing to relocate with minor technical changes the provisions of the existing rules concerning the optimization of the reagent feed rate for a reagent based mercury emission control system from N.J.A.C. 7:27-27.4(i), (j) and (k) to N.J.A.C. 7:27-27.8(d). "Reagent," for the purpose of this subchapter, means a substance used to adsorb mercury or to convert mercury into a form which is more easily captured by air pollution control devices. These provisions would require owners or operators of MSW incinerators, HMIW incinerators, iron or steel melters, and coal-fired boilers which use reagents to control mercury emissions to perform tests to determine the optimum reagent feed rate that minimizes the mercury emissions below the allowable level without using excessive amounts of reagent. This would then become the minimum reagent feed rate at which the sources would have to operate. The optimization tests would include operating each source at different reagent feed rates and determining the mercury control efficiencies that can be achieved using USEPA Reference Method 29. In approving a proposed optimum reagent feed rate, the Department would consider the reasonableness of the quantity of reagent used versus the mercury emission level achieved.

The proposed new rules incorporate the provisions of the existing rules concerning permit conditions, which are relocated with amendments from N.J.A.C. 7:27-27.4(h) to N.J.A.C. 7:27-27.8(e). The proposed modified provisions require owners or operators of MSW incinerators, HMIW incinerators, iron or steel melters, and coal-fired boilers are to apply for changes to pre-construction permits or operating permits to include the emission limitations, testing requirements, and source separation programs as applicable that are set forth in the proposed amendments and new rules.

In N.J.A.C. 7:27-27.9, the Department proposes to amend the existing "reporting and recordkeeping" requirements to make them applicable to owners or operators of HMIW incinerators (N.J.A.C. 7:27-27.5), iron or steel melters (N.J.A.C. 7:27-27.6), and coal-fired

boilers (N.J.A.C. 7:27-27.7), in addition to MSW incinerators. The proposed amended provisions require owners or operators to submit certified stack test reports to the Department within 60 days after completing source emissions tests. The proposed amendments also require owners and operators to keep all required records, such as test reports, on site for inspection by the Department for at least five years. These provisions are consistent with similar provisions in other air pollution control rules.

In N.J.A.C. 7:27-27.11, the Department proposes to include a "severability" provision. The provision is consistent with similar provisions in other air pollution control rules.

In N.J.A.C. 7:27A-3.10, the Department proposes to amend the existing penalty provisions for MSW incinerators, add new penalties for HMIW incinerators, iron or steel melters, and coal-fired boilers, civil administrative penalties for violation of rules adopted pursuant to the Act. The proposed new and amended penalties are consistent with existing penalties for similar violations. The Department is not proposing to amend the existing penalty matrix for MSW incinerators. Any owner or operator of a source subject to the proposed amendments and new rules who fails to comply with any applicable provision of this subchapter would be subject to civil administrative penalties in the amounts proposed in N.J.A.C. 7:27A-3.10(m)(27).

Social Impact

Adoption of the proposed new rules and amendments would have a beneficial social impact for the State's residents, and for persons who work in the State or who visit the State for business and recreation because the emission reduction anticipated from these proposed new rules and amendments is expected to improve the State's air, water and land quality, and public health in the State. These beneficial effects are discussed in the Environmental Impact statement.

Economic Impact

The proposed new rules and amendments would impose additional costs on three of the four industries regulated by this proposal. The specific economic impacts to these industries affected by the new rules and amendments are discussed separately below. The Department also expects that the recreational and commercial fishing industry in the State will benefit economically from the implementation of the proposed new rules and amendments, as discussed below.

Economic impact of the amendments to the municipal solid waste incinerators at N.J.A.C. 7:27-27.4

The proposed amendments to the MSW incinerators provisions at N.J.A.C. 7:27-27.4 would primarily impact the owners or operators of two MSW incinerator facilities. There are five MSW incinerator plants in New Jersey. Three of the five facilities are currently employing fabric filters (baghouses), and the other two facilities are using electrostatic precipitators (ESP), in addition to activated carbon injection, in order to meet the current emission standards. All of these facilities are in compliance with the current mercury emission standards, but the two facilities with ESP's have experienced emission exceedance in the past.

The proposed standards would require facilities to comply with more stringent mercury air emissions limits. One year after the operative date of N.J.A.C.7:27-27.4, all MSW incinerators would have to comply with 28 µg/dscm (annual, corrected to seven percent oxygen) or achieve a minimum 85 percent control efficiency (annual). The 85 percent option is more stringent than the current 80 percent option. According to stack test reports submitted to the Department, three of the facilities with fabric filters and one facility with an ESP (Camden County Resource Recovery Facility) already meet this standard. The Department expects that the other facility with an ESP (Essex County

Resource Recovery Facility) could also comply with the proposed requirements with adjustments to its activated carbon injection system without significant cost increase.

Seven years after the operative date of proposed amended N.J.A.C. 7:27-27.4, all MSW incinerators would have to comply with a 28 µg/dscm emission limit (annual, corrected to seven percent oxygen) or achieve a minimum 95 percent control efficiency (annual). One of the three facilities with a baghouse may need to increase its activated carbon injection rate to comply with the proposed requirements, but the other two facilities are already in compliance and therefore are not expected to incur additional costs to continue complying. The Gloucester County Resource Recovery Facility currently has a baghouse and injects much less carbon than the other two facilities with baghouses. Gloucester could decrease mercury emissions with more carbon injection to better ensure compliance with the proposed rule, with low increase in cost. The Department believes that the two facilities with ESPs would need to install additional mercury emissions control measures, such as a baghouse or a compact hybrid particulate collector (COHPAC) baghouse system (also known as a polishing baghouse) after the ESP, to comply with the 95 percent control efficiency the Department proposes. Stack emission test data from the facilities that are subject to the proposed rules indicate that installation of baghouses or retrofitting the ESP systems with COHPAC would be sufficient to comply with 95 percent control efficiency requirement.

No additional capital cost would be required if the two facilities with ESP's reduce mercury in waste or increase the efficiency of the existing carbon injection system. Based on recent stack emissions tests, Camden has had success in both these cases. If Camden maintains the low levels of mercury emissions achieved recently, no further capital investment is necessary.

The Department has estimated the costs of the proposed amendments for the owners or operators of the facilities who may need to install additional control technology. Retrofitting existing ESP technology with a polishing baghouse system would be less costly than installing a full

size fabric filter baghouse. Using the USEPA Control Cost Manual, the Department estimates that the cost for this option would be about $6,000 per pound of mercury removed.[33] This cost estimation is based on total of direct annual cost (purchased equipment cost and direct and indirect installation cost) and indirect annual cost (labor, material, electricity, and insurance). Based on the quantity of municipal solid waste processed at the one or two MSW incinerators that would require the additional control technology, the Department estimates this cost to translate to be about $2.00 per ton of municipal solid waste processed.

Proposed N.J.A.C. 7:27-27.4 may also bring additional stack emission testing costs to some existing MSW incinerators. Under the current rules, if a facility demonstrates compliance with the requirements based on quarterly stack test results for two consecutive calendar years, it would perform only one quarterly stack test for the following years provided it continued to be in compliance. If adopted, the proposed amendments may require additional stack tests because the annual average emission rates and control efficiencies would be determined by averaging four consecutive quarterly average source emission test results performed over eight consecutive quarters. If a facility continues to be in compliance for eight consecutive quarters, it could reduce the frequency of compliance testing from each quarter to compliance testing every fourth quarter after the eighth quarter test in which annual average compliance was determined. The Department estimates that stack emission testing would cost between $10,000 and $15,000 (one unit, inlet and outlet, three test runs). However, if a facility has more than one unit, stack tests would be less costly per unit at a given facility. For example, stack emission testing would cost a facility with three units between $25,000 and $35,000 (total cost for all three units) per quarter. Any owner or operator of a MSW incinerator who achieves and maintains compliance during eight consecutive quarters, may reduce the frequency of compliance stack emission testing from each quarter to compliance stack emission testing performed every fourth quarter after the eighth quarter test in which compliance was determined. One quarter stack testing in every four consecutive quarters would result in reduced stack emission testing cost.

If a facility chooses to comply with 14 µg/dscm, corrected to seven percent oxygen standard as described in proposed N.J.A.C. 7:27-27.4(d), the Department expects the facility to incur higher operating costs due to a higher carbon injection rate. However, an increase in capital cost is not expected because additional mercury control technology will not be required. Additional testing costs may occur because the reduced testing provision is not available for this option.

Economic impact of the new rules for hospital/medical/infectious waste incinerators at N.J.A.C. 7:27-27.5

The proposed new rules that would apply to HMIW incinerators would have no additional economic impact on the sources the rules would regulate. The three HMIW incinerators that the proposed new rules affect are already in compliance with the proposed standard. Pursuant to N.J.A.C. 7:27-22 et seq., these incinerators are required to obtain operating permits. The operating permit rules require these facilities to test their mercury emissions every five years. The proposed new rules also require compliance testing every five years. N.J.A.C. 7:27-27.5(c). The proposed new rule also includes work practice standards for HMIW incinerators which requires purchase of mercury free supplies to the extent feasible, and prevention of incineration of other mercury containing waste such as used fluorescent bulbs. These practices are currently in widespread use by hospitals. Therefore, this rule making would not cause additional expense to the HMIW incinerators to comply with the requirements.

Economic impact of the new rules for iron or steel melters at N.J.A.C. 7:27-27.6

The proposed new rules that apply to iron or steel melters at N.J.A.C. 7:27-27.6 would primarily impact the owners or operators of the six iron or steel melters in the State and also the suppliers of scrap to the iron or steel melters.

There are currently no uniform mercury emission standards for iron or steel melters in New Jersey. Air pollution control permits have facility specific limits which are widely different and ineffective at reducing high mercury emissions. Because this industry is the highest emitter of mercury in the State, the Second Task Force recommended that uniform standards which would result in significant mercury emission reductions be developed. The proposed new rules provide that five years after the operative date of these rules, iron or steel melters of any size would be required to comply with a 35 mg/ton mercury emission limit, or achieve a mercury emissions reduction efficiency of at least 75 percent across the air pollution control apparatus of any iron or steel melter. Under the proposed new rules, each facility would first attempt to achieve compliance by source separation (removing mercury containing material from its feedstock). Each facility would be required to start stack testing one year after the operative date of these new rules in order to provide the Department with data on the impact of any source separation efforts on their emissions. If a facility demonstrates the ability to comply with the 35 mg/ton standard through source separation, then it would not have to comply with the 75 percent reduction standard and would not have to install mercury controls. If source separation is not successful, the owners or operators of the iron or steel melters would need to submit permit applications pursuant to N.J.A.C. 7:27-27.8(e) to install mercury air pollution control technology.

A practical method of source separation is the purchase of mercury free shred by the iron or steel melters. Mercury free shred is a mixture of ferrous metal fragments with a maximum dimension of approximately six inches produced by hammer-mill shredding of light-iron and steel materials, including end of life motor vehicles (sometimes as hulks) and appliances. The purchasing of mercury free shred would require that mercury containing parts, such as switches, be removed from discarded motor vehicles before they are crushed and shredded. Although there is no current requirement that mercury switches be removed from motor vehicles prior to shredding, the Department believes that switches can be readily removed. Based on the preliminary findings of the New Jersey pilot project,

removal of each switch from an end of life vehicle takes less than one minute. The Department estimates that the cost to remove one pound of mercury through this type of source separation would be about $1140.00, assuming the cost of switch removal is $2.00 per switch ($1.00 for removal and $1.00 for program administration cost). These numbers are consistent with estimates provided to the Department by one of the iron or steel melters and the USEPA.

The proposed new rules at N.J.A.C. 7:27-27.6(d) also include work practice standards for iron or steel melters similar to the recently adopted Federal MACT rules applicable to iron or steel industry. The owner or operator of iron or steel melters will be required to minimize the amount of mercury in scrap processed at the facility. The proposed new rules require iron or steel melters to purchase and use only mercury free scrap and requires each facility to implement a plan for inspecting incoming scrap to assure that it purchases low mercury scrap. Low mercury scrap would be achieved by the mercury switch removal procedures discussed above. Since the Federal MACT rules already require these procedures, this would not be an additional cost of this proposed new rule.

The New Jersey proposed rule additionally sets emission limits for iron or steel melters, which in essence provides a quantitative measure of the success of mercury in scrap removal. Only if mercury in scrap removal is not successful would there be capital costs as a result of New Jersey rule. Four of the six facilities are currently employing fabric filters (baghouses) and the other two facilities have afterburners and venturi scrubbers. The Department expects that the four facilities that have baghouses can comply with the standard by injecting powdered activated carbon (PAC) if source separation alone does not reduce mercury emissions to the new limit. The facilities with scrubbers might either install baghouses with PAC, or add chemicals such as sodium hypochlorite to their scrubbing solution to remove mercury from the gas stream.

If the two facilities with scrubbers choose to install baghouses with PAC injection, the Department estimates that the cost of installation would range from $5,400 to $27,000 per pound

mercury removed, depending on the size of facility. In accordance with the USEPA Control Cost Manual, this cost estimation is based on the total of direct annual cost (purchased equipment cost and direct and indirect installation cost) and indirect annual cost (labor, material, electricity, and insurance). The Department also estimates that the cost of chemical additives for the facilities with scrubbers would range from $1,000.00 to $16,000 per pound of mercury removed, assuming the annualized operating cost of sodium hypochlorite additive is $1.40 per cubic meter per hour of flue gas flow rate.

If a facility with a baghouse needs to add PAC injection, this may cost the facility between $6,000 and $38,000 per pound of mercury removed. In accordance with the USEPA Control Cost Manual, this cost estimation is based on total of direct annual cost (purchased equipment cost and direct and indirect installation cost) and indirect annual cost (labor, material, electricity, and insurance). Costs vary due to the size of facility.

The proposed new rules may increase stack emission testing costs for the existing facilities. The Department estimates that stack emission testing costs between $10,000 and $15,000 for a single unit (inlet and outlet, three test runs). Any owner or operator of an iron or steel melter who achieves and maintains compliance during eight consecutive quarters, may reduce the frequency of compliance stack emission testing from each quarter to compliance stack emission testing performed every fourth quarter after the eighth quarter test in which compliance was determined. One quarter of stack testing in every four consecutive quarters would result in reduced stack emission testing cost. Air Pollution Control permits already require periodic mercury testing. Costs of testing only increase to the extent that the testing required by this rule increases the testing already required by the permit.

Economic impact of the new rules for coal-fired boilers provisions at N.J.A.C. 7:27-27.7

The proposed new rules that apply to coal-fired boilers at N.J.A.C. 7:27-27.7 would impact

the owners or operators of ten coal-fired boilers at seven facilities in New Jersey. Four of the 10 units are currently employing fabric filters (baghouses), and the other six units have ESPs. One PSE&G unit with an ESP will also add a baghouse. Four of the ten units are also currently employing scrubbers, and all three PSE&G units are commited to add scrubbers.

Currently, there are no mercury emissions standards for coal-fired boilers in New Jersey. The proposed new rules would require facilities to meet a 3 mg/MW-hr emission limit (annual) or achieve a minimum 90 percent control efficiency (annual) by December 15, 2007 or December 15, 2012, if a multi-pollutant control strategy is being implemented. Based on stack test results, most of the ten units subject to these rules will need to improve their control technology, to comply with the proposed mercury emissions limits. The amount of additional control depends on the current amount of air pollution control and additional control planned for other purposes. For example, PSE&G is committed to add both scrubbers and improved nitrogen oxide controls at all three of their coal-fired units and a baghouse at one unit. Also, PSE&G's multi-pollutant consent degree with the Department and USEPA already commits PSE&G to attempting to achieve 90 percent mercury removal at all three units. This rule would set a specific performance limit of 3 mg/ MW-hr or 90 percent control. Hence, the incremental cost of this rule would likely be the cost of reagent injection, if required to achieve the emission limits. PG&E National Energy Group's coal-fired units already have multi-pollutant air pollution control and therefore mercury emissions are already close to the proposed standard. Here again the incremental cost of control would likely be limited to reagent injection if required.

In order to achieve the proposed mercury emissions limits, each facility with an existing ESP would either retrofit its ESP system with a PAC injection system prior to ESP, or retrofit the existing ESP with a PAC injection system and a polishing baghouse following the ESP. In the latter option, the amount of injected PAC would be significantly less than the amount of PAC that would need to be injected prior to the ESP in the former option. The five facilities with baghouses can also lower

their current mercury emissions with PAC injection.

The information available to the Department indicates that almost all of the fly-ash generated by the coal-fired boilers in New Jersey is utilized for coal mine reclamation and not sold to cement industry. PAC injection would not interfere with that end use. Therefore, PAC injection would not cause revenue loss or disposal cost to the facilities. However, if a facility prefers to sell its fly-ash to the cement industry, as some facilities do, then mercury air pollution control technology can be applied such that the injected PAC would not cause mercury contamination of the fly-ash that is normally collected for sale. For example, in ESP systems, a polishing baghouse could be installed and PAC could be injected following the ESP, prior to the polishing baghouse. A similar approach could be applied to the facilities that currently have baghouses.

The Department has estimated the costs of complying with the proposed new rules for the owners or operators of the facilities that would need to install additional technology in order to meet the proposed standards. These estimates are general since the existing facilities in New Jersey vary in capacity, size, and control technology. The Department envisions three possible scenarios that would affect the cost of compliance with the proposed standards. These scenarios or outcomes are based on adding PAC injection to existing air pollution controls, retrofitting the existing ESP by installing a polishing baghouse after the ESP, or adding sodium hypochlorite to the scrubbing solution to units with wet scrubbers.

First, if a facility with a boiler capacity of 300 MW with an existing ESP retrofits its system with PAC injection, the retrofitting may cost the facility approximately $34,000 per pound of mercury removed, or $1.35 per MW-hr electricity generated. In this example, a PAC injection rate of 20 pounds per million cubic feet air per minute (lbs/MMacfm) was assumed. Second, if the same facility retrofits the existing ESP with a polishing baghouse, the capital cost would be higher, but the amount of injected PAC would be less. The overall cost would be approximately $39,000 per pound

of mercury removed, or $1.58 per MW-hr electricity generated. Under these scenarios, a PAC injection rate of 3 lbs/MMacfm was assumed. Third, if a facility with a boiler capacity of 110 MW with an existing baghouse injects PAC into the baghouse to lower its mercury emissions, the retrofitting may cost the facility approximately $28,000 per pound of mercury removed, or $1.90 per MW-hr electricity generated. In this example, a PAC injection rate of 3 lbs/MMacfm was used. In accordance with the USEPA Control Cost Manual, these cost estimations are based on total of direct annual cost (purchased equipment cost and direct and indirect installation cost) and indirect annual cost (labor, material, electricity, and insurance).

The Department is proposing an extension of the December 15, 2007 compliance deadline to December 15, 2012, for any facility that by December 15, 2007, has become subject to an enforceable agreement with the Department requiring it to install and operate multi-pollutant control systems for nitrogen oxides, sulfur dioxide control, and particulate matter control. Multi-pollutant control systems are already in place for PG&E National Energy Group's three units and will be installed for PSE&G's three units. The Department expects commitments from Atlantic Electric for its three units, if coal is to be burned in the future. The Department also expects that City of Vineland will shut down its coal-fired unit. The Departments expects hundreds of millions of dollars to be expended for the construction and operation for these multi-pollutant controls. Since these multi-pollutant controls also reduce mercury, fewer dollars will be required for mercury control. Also, allowing time for multi-pollutant control installation enables mercury control to be coordinated with the multi-pollutant controls resulting in lower mercury control costs. However, if a facility chooses not to install multi-pollutant controls, it will have to spend monies for mercury control as described above.

The Department is proposing an averaging provision, which allows the facility to average mercury emissions from multiple coal-fired boilers at a site and to use that average when determining compliance with the standard. The Department expects that an owner or operator of coal-fired boilers with an approved averaging plan would incur fewer expenses because different levels of

mercury control may be installed and operated on each coal fired boiler in an averaging plan.

In addition, the proposed new rules will impose additional stack emission testing costs to the ten facilities. The Department estimates that stack emission testing would cost between $10,000 and $15,000 per quarter for a single unit (inlet and outlet three test runs). However, if a facility has more than one unit, stack tests would be less costly per unit at a given facility. For example, stack emission testing would cost a facility with three units a total of between $25,000 and $35,000 per quarter. Any owner or operator of a coal-fired boiler who achieves and maintains compliance during eight consecutive quarters, may reduce the frequency of compliance stack emission testing from each quarter to compliance stack emission testing performed every fourth quarter, after the eighth quarter test in which compliance was determined. One quarter stack testing in every four consecutive quarters would result in reduced stack emission testing cost.

Economic Impact of Penalties on Regulated Sources

The proposed amendments to N.J.A.C. 7:27A-3.10 will have an adverse economic impact only upon persons who violate subchapter 27. The extent of economic impact on those persons will depend on a variety of factors, including the nature of the violation and the extent of its potential effect upon public health, welfare and the environment. The economic impact of the proposed amendments to N.J.A.C. 7:27A-3.10 will also depend on the existence of mitigating or aggravating circumstances in connection with the violation. In the Department's experience, mitigating circumstances occur more frequently than aggravating circumstances. Therefore, on average it is more likely that the flexibility in determining penalties will result in the economic impact of the proposed penalties for violation of the State's air pollution control laws and regulations being less than they would be without the flexibility provisions. The Department is proposing a substantial time frame to achieve compliance and allowing additional time to coordinate mercury control with multi-pollutant control. This makes violations less likely.

Economic Impact of Continuous Mercury Emission Monitoring

The proposed new rules provide that, if mercury continuous emission monitors (CEMs) become commercially available and Federal performance standards are published, a facility may choose to install mercury CEM. Since the mercury CEMs are not yet commercially available and there are no Federal performance standards, it is difficult to estimate the capital and operating costs that will be incurred by facilities that choose to install the CEMs. However, the Department expects facilities that choose to install the CEMs to have reduced stack emission costs since quarterly stack emission testing will no longer be required.

Economic Impact on Fishing Industry

As explained in the Environmental Impact section below, a significant reduction in inputs of mercury to New Jersey water bodies will eventually lead to lower levels of mercury in fish. There will be many economic benefits from lower levels of mercury in fish including, potentially, the relaxation or elimination of mercury-based fish consumption advisories that may result from the full implementation of the proposed new rules and amendments. Such relaxation or elimination could lead to greater attractiveness of sport fishing to recreational fishermen, with a corresponding increase in dollars spent in New Jersey on fishing gear, licenses, and travel and lodging for fishing trips. A recent study in New Jersey indicates that party and charter boat captains believe that fish advisories have some negative effect on their business.[34] The over 260,000 licensed anglers in New Jersey have been estimated to spend nearly $500.00 each per year on freshwater fishing, for a total of $130 million per year.[35] Recreational saltwater fishing is estimated to contribute $1.5 billion per year to the State economy. Lower levels of mercury in fish caught for sale could increase the marketability of fish and fish products, which would lead to higher value of commercial fishing activities. Commercial saltwater fishing is estimated to contribute over $590 million to the New Jersey economy.[36]

Environmental Impact

Effects of mercury emissions to the air

Mercury is a persistent, bioaccumulative, toxic pollutant. Mercury, in the form of methylmercury, contaminates freshwater fish caught throughout New Jersey. Concentrations exceeding 1.0 ppm have been found in higher trophic level fish, especially largemouth bass and chain pickerel, in about 40 percent of fifty-five New Jersey water bodies that have been sampled. Contaminated fish have been found in remote areas such as the Pine Barrens, as well as in industrialized areas of the State. Mercury concentrations in lower trophic level fish are also elevated in New Jersey and often are in the range of 0.2 to 0.5 ppm. Many tested water bodies exceed the surface water criterion of 0.3 ppm (as measured in fish tissue) promulgated by the USEPA.[37]

Human exposure to methylmercury comes primarily from eating contaminated fish. Exposure to methylmercury from fish is known to have a potentially profound impact on the developing nervous system, and mercury-contaminated fish in the mother's diet can significantly alter fetal development. Since contamination of fish represents a major health concern, it poses a significant economic threat to New Jersey's commercial and recreational fishing industries.

Deposition of mercury from air emissions plays an important role in the global cycling of mercury and in the bioaccumulation of mercury in lakes in temperate regions.[38] Worldwide, a three- to five-fold increase in the deposition of mercury to lake sediments has been observed since the advent of the industrial revolution. The timing and scope of the increase in mercury deposition implicate combustion of fossil fuels as the principal cause for the global increase in mercury deposition.[39] The Second Task Force found that, although there are likely large discharges of mercury

directly to some water bodies in New Jersey, air emissions containing mercury appear to make up the primary route of mercury entering the environment of New Jersey, which mercury could eventually make its way to fish tissue.[40] A recent study has found widespread and significant mercury contamination of sediments in New Jersey aquatic systems.[41]

New Jersey air emissions and atmospheric deposition

The Second Task Force found that emissions of mercury from in-State coal combustion are 700 $\pm$ 300 pounds per year, emissions from iron and steel manufacturing are in the range of 1,000 pounds per year, and emissions from MSW combustion are greater than 300 pounds per year. The Second Task Force estimated that well characterized in-State anthropogenic emissions of mercury to the air total about 3,500 pounds per year, so these three source categories contribute approximately 55 percent (about 2000 pounds per year) of New Jersey's anthropogenic air emissions.[42]

The Second Task Force estimated that deposition of mercury in New Jersey from air emissions is in the range of 1,100 pounds per year.[43] It based this estimate on measurements of mercury in precipitation[44] and from dry deposition (approximately 40 percent to 45 percent additional.)[45] (Dry deposition is fallout of atmospheric particles and adsorption of gas-phase molecules to ground and plant surfaces.) Further analysis of the New Jersey Atmospheric Deposition Network (NJADN) results indicates that annual deposition rates of mercury in precipitation range from approximately 14$\mu g/m^2$/year to 18 $\mu g/m^2$/year.[46] Additional data provide further evidence that dry deposition may be substantial [47,48]and may be greater than wet deposition.[49, 50] If an overall deposition rate, including both wet and dry deposition, of 20 to 30 $\mu g/m^2$/year is assumed, and the area of New Jersey is 19,200 km^2 (1.92×10^{10} m^2), it can be estimated that between $1.92 \times 10^{10} m^2 \times 20 \mu g/m^2$/year, and $1.92 \times 10^{10} m^2 \times 30 \mu g/m^2$/year or between approximately 800 and 1,300 pounds per year of mercury is deposited on the surface of New Jersey. This range is consistent with the Second Task Force mercury deposition estimate of approximately 1,100 pounds per year.

Existing data do not permit an exact determination of how much of the deposition of mercury on New Jersey is from in-State sources. Some reports and models, however, do provide some insight on the relative local and non-local share of deposition. It has been estimated, based on models, that perhaps one third of U.S. emissions to the air are deposited within the U.S., with the remainder joining the global atmospheric pool.[51] Other studies suggest that 50 percent of wet mercury deposition may be caused for by local or regional sources.[52,53,54] A study in Florida (which, because it is a peninsula, may not be typical of other regions) found that over 70 percent of the mercury deposition was from relatively local sources.[55] Confirmation that local sources impact deposition in Florida is based on the finding of sharp declines in concentrations of mercury in biota since major controls on mercury emissions from in-state medical and MSW incinerators were implemented in the early 1990s. In Florida, mercury emission reduction efforts have achieved dramatic results. Mercury concentrations in fish and wading birds in the Everglades have declined 60 to 70 percent in the last 10 years as a result of controls to reduce emissions of mercury from industries in southern Florida. The reductions in mercury concentrations in fish have enabled the Florida Department of Health to downgrade fish consumption advisories in central and northern areas of the Everglades.[56]

Another recent report indicates that deposition rates in relatively non-remote lakes in the upper Midwest have declined recently, but deposition in remote lakes has not declined.[57] This and another recent report[58] suggest that changes in mercury emissions from local sources do have a local impact. Further analysis of the preliminary NJADN results indicate that rain in New Jersey is enriched in mercury to a degree similar to that collected throughout Florida and around the Chesapeake Bay, and more enriched in mercury than rain in Delaware, Pennsylvania, and upper Midwestern states.[59] Because the fallout patterns of mercury are not uniform, the Department believes that local and regional sources are important contributors to the quantities of mercury deposited in New Jersey. (If the sources were primarily national and international, the fallout pattern would be expected to be more uniform over a broad geographic area.)

Mercury emissions from anthropogenic sources are typically either in the form of elemental mercury, oxidized mercury (also called reactive gaseous mercury or RGM, divalent mercury, ionic mecury, or Hg^{+2}), or mercury bound to particles. Of the species of mercury emitted by the facilities subject to the proposed new rules and amendments, RGM and particle-bound mercury are believed to deposit much closer to sources than elemental mercury, and much of the mercury deposited both through precipitation (wet deposition) and dry deposition is either oxidized or particle-bound.

A recent modeling study[60] estimates that four percent to seven percent of the emissions from two large coal-burning facilities, one in western Pennsylvania and the other in Texas, deposit within 50 km (31 miles) of these facilities. The USEPA has recently directed measurement of both the form and quantity of mercury emitted from these plants. The plant in western Pennsylvania is more similar to New Jersey facilities in terms of climate than the Texas plant. The model used in the study, ISCST3, is an updated version of the ISC3 dispersion model used earlier by the USEPA.[61] This ISCST3 model estimated that six percent of the RGM emitted by the Pennsylvania plant deposits within a 50 km radius of the plant. The rate of deposition is higher closer to the plant, although the area encompassed is smaller. Although the authors of the study noted that the model may be less accurate, especially near the source, the model predicted very high wet deposition of 91 $\mu g/m^2/y$ close to the stack (which the Department estimates to be one to two kilometers). Extrapolation of the reported model output by the Department, while subject to some uncertainty, suggests that twelve percent of the RGM emitted from the plant would deposit within 100 km, and that the majority of the emitted RGM would deposit within 500 km.

The Department believes that the rate of local mercury deposition from coal-fired power plants in New Jersey would be substantially higher than what the modeling study projected. The primary reason for the difference is that the plants included in the modeling study had much higher stacks than any coal-fired power plant in New Jersey. The modeled facilities were assumed to have stack heights of 223 meters (m). The New Jersey point sources considered in this proposed new

rules and amendments have stack heights lower than this. The stack heights of the five MSW incinerators range from 75 to 110 m, and stack heights of the four largest-emitting coal-burning plants range from 67 to 152 m. Lower stack heights lead to a greater portion of emissions depositing near the plant. One study[62] estimated that a reduction of stack height from 223 m to 81 m would approximately double the portion of emitted mercury deposited within 50 km of a coal-burning source.

It is also important to note that there are factors that add uncertainty to this model. These include the fact that certain parameters used for mercury, such as scavenging coefficient and dry deposition velocity, have not been measured for RGM, but are only inferred through comparison with other substances. Also, the model assumes that the distribution of elemental, RGM, and particle-bound mercury is equal to that measured at the exhaust stack. Further, numerous aspects of atmospheric chemistry relevant to mercury deposition such as ambient oxidant concentrations, ambient concentration of carbonaceous particles, ambient HCl concentration, and ambient SO_2 concentration,[63] are not included in the model.

The form of mercury emitted by New Jersey facilities is also a factor in determining the deposition of mercury in New Jersey caused by air emissions. The USEPA has collected coal combustion speciation data and made these data available to public.[64]Analysis of these data indicates that, of the tested facilities burning bituminous coal, 40 $\pm$ 10 percent of the mercury emitted is oxidized mercury, and 5 $\pm$ 2 percent is particle-bound. Based on these data, and information provided to the Department that most New Jersey coal-fired facilities burn bituminous coal,[65] it is likely that approximately 40 percent of the mercury emitted by New Jersey coal-burning facilities is oxidized mercury. The form of mercury emitted by iron and steel manufacturing plants is less certain. A stack test at one New Jersey iron manufacturing plant found that approximately 62 percent of the emissions was oxidized mercury.[66] Another report suggests that the speciation of mercury emitted from iron and steel production is 80 percent elemental, 10 percent oxidized, and 10

percent particulate.[67] It is expected that a significant portion of the emission of mercury from MSW combustion is also oxidized mercury. Overall, based on its analysis of the data, the Department has estimated that about 30 to 40 percent of the total emissions from the three source categories subject to the proposed new rules and amendments is oxidized mercury. As stated above, the Department believes that oxidized mercury is expected to deposit close to the source from which it is emitted.

As a result of the implementation of the proposed new rules and amendments, the Department expects the yearly emission from coal-fired facilities to decline to approximately 75 pounds per year since the proposed rule would limit mercury emissions from coal-fired power plants to 3 mg/MW-hr or 90 percent reduction of influent stack gas.[68] Emissions from iron or steel manufacturing facilities are expected to decline by 75 percent to approximately 250 pounds per year. Emissions from MSW incinerators are also expected to decline by about 50 percent. The overall emission reduction would thus be over 1,500 pounds per year, which represents approximately a 75 percent reduction of emissions from these sources. It can further be assumed that the fraction of the emissions of oxidized mercury would decline at a 90 percent rate.[69] The yearly deposition of oxidized mercury from these sources after implementation of the proposed new rules and amendments is also expected to decline.

The Department also anticipates a reduction in emissions of elemental mercury as a result of the proposed new rules and amendments. Although only a small portion of elemental mercury emitted from New Jersey facilities is expected to deposit locally, elemental mercury eventually becomes oxidized in the atmosphere and deposits somewhere. Thus, reductions in elemental mercury emissions, especially if accomplished at a national and international scale, will lead to decreased mercury deposition over broad geographic areas. As a net exporter of mercury emissions, it is appropriate for New Jersey to take a leadership role on mercury emissions reductions. Then as other jurisdictions follow New Jersey's example, greater reduction in mercury deposited in New Jersey will occur.

Estimating the benefits of emission reductions

The Department expects reduction in emissions of mercury in New Jersey to lead to a significant reduction in inputs of mercury to New Jersey water bodies.

Studies have shown that between 1.5 percent and five percent of the yearly inputs of mercury to a water body accumulate in fish.[70,71,72] Research has also shown that modest increases in atmospheric mercury loading can lead directly to enhanced levels of mercury in biota,[73] and that reductions of anthropogenic emissions of mercury will lead to relatively rapid reductions in concentrations in aquatic species. Reduced atmospheric deposition of mercury in New Jersey can be expected to lead to lower levels of mercury in New Jersey freshwater fish. Declines in mercury concentration of saltwater fish that spend a significant portion of their life cycle in near-shore waters could also occur.

Lower mercury concentrations in the environment will also minimize human health impacts caused by ingesting mercury contaminated fish. Health impacts which will be lessened as a result of implementation of the proposed new rules and amendments include neurological and developmental damages to fetuses and children, as well as health impacts on adults. Benefits of increased ecological health and greater viability of some species of wildlife are also expected.

Federal Standards Analysis

Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c.65) require State agencies that adopt, readopt or amend State regulations which exceed any Federal standards or requirements to include in the rulemaking document a Federal Standard Analysis.

The Department compared the proposed new rules and amendments at N.J.A.C. 7:27-27, Control and Prohibition of Mercury Emissions, to analogous Federal regulations, namely 40 CFR Part 62 Subparts FFF and JJJ (Federal Plan Requirements for Large and Small Municipal Waste Combustors Constructed on or Before September 20, 1994 and August 30, 1999, respectively), 40 CFR 62 Subpart HHH (Federal Plan Requirements for Hospital/Medical/Infectious Waste Incinerators Constructed on or Before June 20, 1996), and 40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries (also known as melters). These Federal regulations were promulgated pursuant to the CAA and set forth the substantive Federal standards governing MSW incinerators, HMIW incinerators, and iron or steel melters.

The Federal regulations apply to large MSW incinerators capable of combusting 250 tons per day of municipal solid waste and small MSW incinerators capable of combusting 35 to 250 tons per day of municipal solid waste. The current Federal requirements for large and small MSW combustors are 80 µg/dscm (annual, corrected to seven percent oxygen) or 85 percent reduction (annual) in mercury emissions, 40 CFR Parts 62.14103(a)(3) and 62.15160. Compliance was to be demonstrated by December 19, 2000, for large MSW combustors and January 31, 2004, for small MSW combustors (in certain circumstances it can be extended to November 6, 2005, for small MSW combustors).

The existing New Jersey standard for mercury emissions is 28 µg/dscm (annual, corrected to seven percent oxygen) or 80 percent reduction (each quarter) in mercury emissions. The Department is now proposing a more stringent efficiency limit, which is 28 µg/dscm or 95 percent reduction (annual based on the average of all tests performed during four consecutive quarters), to be effective seven years after the operative date of these proposed new rules and amendments. One of the three facilities with a baghouse may need to increase its activated carbon injection rate to comply with the proposed requirements, but the other two facilities are in compliance and could continue to comply without any adjustments. The two MSW facilities with ESPs can achieve 95 percent mercury control

efficiency with additional mercury emissions control measures, such as a COHPAC baghouse system available at a reasonable cost as discussed in the Economic Impact statement above.

An interim standard of 85 percent mercury reduction is also being proposed with a compliance date one year after the operative date of the proposed amendments. Existing MSW incineration is still the fourth largest source category of mercury emissions in New Jersey, and further reduction in mercury emissions from this industry can be achieved with current technology and at a reasonable cost, as discussed in the Economic Impact statement above. As compared to the Federal requirement of annual average of three test runs every calendar year, the Department is requiring compliance annually based on the average of four quarterly averages (each quarter average is average of three test runs) in order to demonstrate compliance more frequently. Due to the adverse health effects caused by consuming mercury contaminated fish, the Department believes that the proposed more effective standards are needed to protect public health. Stack test data indicate that all MSW incinerators in New Jersey do comply with the Federal standard (e.g., the 85 percent reduction) when adjustments are made to their current activated carbon injection system, with no significant cost increase. Therefore, the one year time frame to achieve this alternative efficiency limit (if the 28 µg/dscm part of the standard is not achieved) is reasonable.

The current Federal requirement for all HMIW incinerators is 550 µg/dscm (annual corrected to seven percent oxygen) or 85 percent reduction (annual) in mercury emissions by August 15, 2001. 40 CFR Part 62, Subpart HHH, Table 1. In New Jersey, there is no State mercury emission standard for HMIW incinerators. The Department is proposing that HMIW incinerators in New Jersey meet a 55 µg/dscm mercury emission limit, which is more stringent than the Federal standard. The 55 µg/dscm limit is based on the standard recommended by the New England Governors/Eastern Canadian Premiers. Several New England states have already adopted this limit. In New Jersey, actual stack emissions testing for all existing HMIW incinerators shows that the facilities are already achieving the proposed standards using existing mercury reduction measures, primarily ensuring that

mercury containing waste is not incinerated. Therefore, the proposed new rules and amendments will not cause any increase in costs to the owners or operators of HMIW incinerators. If New Jersey HMIW incinerators were regulated only to the Federal standards, the HMIW incinerators could make up a significant source of mercury emissions relative to the rest of the State's mercury emissions inventory. Therefore, keeping mercury emissions from this source category low is an important part of the State's overall mercury emissions reduction strategy. Because of New Jersey's unique status as the most densely populated state in the nation[74] and the potential adverse health risk from excessive mercury emissions in a densely populated state, additional air pollution control measures beyond the Federal regulations are necessary to continue to protect the health of New Jersey residents.

On August 29, 2003, the USEPA issued a final rule to reduce emissions of toxic air pollutants from iron and steel foundries. The Federal standards for iron or steel melters set emissions limits for total metal hazardous air pollutants (HAP) as alternatives to the particulate matter limit. Mercury is one component of HAPs. The final rule requires stack testing once every five years. The final rule includes work practice standards, but does not specifically set mercury emissions limits. The final rule requires that facilities must meet certification requirements for charged materials or develop and implement a scrap selection and inspection program to minimize the amount of HAP metals in furnace charge material. New Jersey's proposed rule incorporate these same requirements.

In New Jersey, there is no State mercury emission standard for iron or steel melters. Individual permit limits vary significantly and are largely ineffective at reducing mercury emissions. The Department is proposing that iron or steel melters would be required to comply with a 35 mg/ton mercury emission limit, or achieve a mercury emissions reduction efficiency of at least 75 percent across the air pollution control apparatus within five years after the operative date of these new rules. Both components of this standard are based on annual averages of quarterly testing. The proposed new rules require more stack testing than Federal requirement of once every five year in order to provide sufficient data on mercury emissions and to better determine the effect of source separation

efforts on mercury emissions. The Department expects that compliance with the proposed standards can be achieved by mercury reduction in scrap and demonstrated by annual stack testing at a reasonable cost, as discussed in the Economic Impact statement. By defining a specific performance standard, New Jersey has taken the Federal rule to the next logical step and made it meaningful. The 35 mg/ton component of the standard provides a quantifiable measure of success of mercury in scrap removal requirements. If a facility is able to comply with 35 mg/ton through source separation, then it would not have to comply with the 75 percent reduction component of the standard and would not have to install mercury controls. If source separation is not successful, the owners or operators of the iron or steel melters would need to install mercury air pollution control technology.

Iron or steel melters are the highest mercury emitters in New Jersey. This industry can reduce its mercury emissions by source separation at an estimated cost of $1,140 per pound of mercury removed, which is essentially the same as USEPA's estimate of $1,286 per pound of mercury removed. However, the Federal requirements have no emission standard to determine the success of mercury switch separation, or to require add-on air pollution control if switch separation does not significantly reduce mercury emissions. Due to the adverse health effects caused by consuming mercury contaminated fish, and the existence of technology at a reasonable cost discussed in the Economic Impact statement to meet the proposed standards, the proposed standards are reasonable and necessary to protect public health.

Currently, there are no Federal standards applicable for the coal-fired boilers. The USEPA is obligated to propose its new “Utility MACT Standards” for coal-fired boilers in December 2003. Therefore, a Federal standard analysis is not applicable to the proposed new rules and amendments addressing coal-fired boilers. USEPA has also indicated that it prefers that utility MACT standards be superceded with a mercury emission cap and trade program proposed as part of the "Clear Skies initiative." However, this is inconsistent with the current requirement of the Federal Clean Air Act which requires that each facility control hazardous air pollutant to the maximum extent achievable.

The Department's proposed rules are consistent with the requirements of the Federal Clean Air Act.

Jobs Impact

The proposed new rules and amendments are expected to have a very small, but positive impact on employment and jobs in New Jersey. The Department does not anticipate that the proposed new rules and amendments would cause a noticeable change in business creation, elimination or expansion, or business competitiveness in New Jersey. The costs expected to be incurred by MSW incinerators, HMIW incinerators, iron or steel melters and coal-fired boilers to comply with the proposed new rules and amendments are not anticipated to affect their operations in such a way as to significantly impact employment.

Four of the five of MSW incinerator facilities in New Jersey already comply with the first phase of the proposed standards, which would require the MSW incinerators to achieve an 85 percent control efficiency (annual based on the average of all tests performed during four consecutive quarters) or 28 µg/dscm (annual based on the average of all tests performed during four consecutive quarters, corrected to seven percent oxygen) within one year after the operative date of these new rules and amendments. The Department anticipates that only one facility may need to increase its activated carbon injection to achieve the requirements, which is not expected to have any impact on jobs. Two of the five MSW incinerator facilities already comply with the second phase of the proposed standards, which would require the MSW incinerators to achieve a 95 percent control efficiency (annual based on the average of all tests performed during four consecutive quarters) or 28 µg/dscm (annual based on the average of all tests performed during four consecutive quarters, corrected to seven percent oxygen) within seven years after the operative date of these proposed new rules and amendments. The Department expects that one or two MSW incinerators equipped with ESP's in New Jersey may need to install control technology to achieve the proposed standards. They may hire workers or consultants to design, install, operate, and test the control technology, which

may have a positive impact on jobs.

The proposed new rules for HMIW incinerators would not require changes at the affected facilities which would be required to continue to purchase mercury free supplies and prevent incineration of waste contaminated with mercury. Therefore, the Department does not expect any change in employment at the affected HMIW facilities as a result of these proposed new rules and amendments.

Four of the six iron or steel melters in New Jersey are equipped with fabric filters (baghouse), and the other two facilities have venturi scrubbers. Stack emission tests show that the facilities with fabric filters may need to retrofit their systems with PAC injection. The Department expects one of the two facilities with scrubbers may need to either install a baghouse or utilize its existing scrubber by adding a chemical such as sodium hypochlorite. The other facility with a scrubber is currently complying with the proposed new standards because of the low mercury scrap being used. Based on the Department's cost analysis, the Department estimates the cost to implement source separation, add PAC injection to an existing baghouse, or inject a chemical additive to a scrubber to be less than $1.80 per ton of shred processed. The estimated cost to install a new baghouse installation with PAC injection would be approximately $4.00 per ton of shred processed. For the six iron or steel melters, the source separation plan required by the proposed new rules may increase jobs in New Jersey because recyclers must remove mercury switches from the shred before it is sold to the iron or steel melters. The number of jobs added will depend on the number of mercury switches removed. The proposed new rules also requires melters to implement a plan for visually inspecting and testing incoming scrap. This may increase employment slightly. The facilities that will be required to retrofit their existing systems or install additional controls (e.g., a baghouse or COHPAC), the Department expects that additional workers and consultants would be hired to design, install, operate, and test the control technology.

Three of the ten coal-fired boilers in New Jersey are equipped with selective catalytic reduction (SCRs), dry scrubbers and baghouses, and one coal-fired boiler is equipped with a baghouse without SCR. Stack emission tests for these coal-fired boilers show that these four facilities would meet the proposed requirements if they implement PAC injection. The remaining six coal-fired boilers that are subject to the proposed new rules are equipped with ESP. In addition, one coal-fired boiler will also install a baghouse by December 31, 2006. Facilities with ESPs would need to lower their mercury emissions with either PAC injection or PAC injection in combination with baghouse or COHPAC installation to achieve the proposed standards. As discussed in the Economic Impact statement, the estimated cost of compliance with the proposed new rules would be less than $2.00 per MW-hr electricity generated. Because coal-fired electric generation costs will not increase substantially as a result of this rule, the Department does not anticipate that facilities will reduce their workforce. They will hire workers or consultants to design, install, operate, and test the control technology.

As discussed above, except for a possible small increase in jobs associated with the design, installation, operation, and testing of new equipment, or source separation efforts, the Department anticipates no overall positive or negative impact on employment as a result of the proposed new rules and amendments.

Agricultural Industry Impact

Pursuant to P.L. 1998, c. 48, adopted on July 2, 1998, codified at N.J.S.A. 52:14B-4(a)(2), the Department has evaluated the proposed new rules and amendments to determine the nature and extent of their impact on the agricultural industry.

The Department expects the proposed new rules and amendments to have no detrimental impact on the State's agricultural industry. Rather, these rules will have a positive impact. As

discussed in the Environmental Impact statement above, one of the primary environmental benefits expected to result from the proposed rules and amendments will be a reduction in emissions of mercury, which accumulates in air and deposits in soil, as well as in water. The proposed new rules and amendments will have a positive impact on agriculture by reducing emissions of mercury from MSW incinerators, iron or steel melters and coal-fired boilers, and maintaining at low levels the emissions of mercury from HMIW incinerators, which will reduce contamination of air, soil, and water by mercury. This will reduce the bioaccumulation of mercury in plants and animals.

Regulatory Flexibility Statement

As required by the New Jersey Regulatory Flexibility Act, N.J.S.A. 52:14B-16 et seq., the Department evaluated the reporting, recordkeeping, and other compliance requirements that the proposed new rules and amendments would impose upon small businesses. The Regulatory Flexibility Act defines the term "small business" as "any business which is a resident in this State, independently owned and operated and not dominant in its field, and which employs fewer than 100 full time employees." Based upon this definition, the Department does not expect that small businesses will be subjected to additional requirements by the proposed new rules and amendments. The proposed amendments to N.J.A.C. 7:27-27.4 would apply to five MSW incinerator plants. The proposed new rules at N.J.A.C 7:27-27.5 would apply to three HMIW incinerators, the proposed new rules at N.J.A.C. 7:27-27.6 would apply to six iron or steel melters, and the proposed new rules at N.J.A.C. 7:27-27.7 would apply to ten coal-fired boilers in New Jersey. The Department has determined that none of these facilities is a small business, therefore, a regulatory flexibility analysis is not required.

Smart Growth Impact

Executive Order No. 4 (2002) requires State agencies that adopt, amend or repeal State

regulations to include in the rulemaking document a Smart Growth Impact statement that describes the impact of the proposed rule on the achievement of smart growth and implementation of the State Development and Redevelopment Plan (State Plan). The proposed new rules and amendments to the State's Control and Prohibition of Mercury Emissions rules do not relate to the State's land use and development policies in a way that would either encourage or discourage any development or redevelopment in this State contrary to the guiding principles of the State Plan. As a result, the Department does not expect this rulemaking to have an impact on the State's achievement of smart growth or implementation of the State Plan.

End Notes:

1. Mercury Study Report to Congress White Paper. http://www.epa.gov/airlinks

2. USEPA Mercury Study Report to Congress, Volume I: Executive Summary, EPA-452/R-97-003, December 1997.

3. Mercury Study Report to Congress White Paper. *http://www.epa.gov/airlinks* December 1997.

4. Background Document, Massachusetts, Adoption of a State Plan to Regulate Emissions from Municipal Waste Combustors, April, 1998.

5. New Jersey Mercury Task Force, Volume III: Sources of Mercury in New Jersey, January, 2002

6. NJDEP, 2002, New Jersey Mercury Task Force Report, Volume II, Impacts of Mercury in New Jersey, page 114, NJDEP, Trenton, NJ.

7. USEPA Mercury Study Report to Congress, Volume I: Executive Summary, EPA-452/R-97-003, December 1997.

8. USEPA Mercury study Report to Congress: Volume V: Health Effects of Mercury and Mercury Compounds, EPA Document #452R97007. December 1997.

9. Draft for Public Comment, Washington State Mercury Chemical Action Plan, www.ecy.wa.gov/pubs/0203042.pdf August 31, 2002.

10. USEPA, Mercury study Report to Congress: Volume V: Health Effects of Mercury and Mercury Compounds, EPA Document #452R97007. December 1997.

11. P.L.2003, Chapter 174 Signed into law on 9/10/03 Buono/Smith, R./Van Drew - Notification to pregnant women about mercury health advisories in consumption of fish. S1202(2R) (sub for A2826) (2000:A570; 1998:A1033).

12. New Jersey Mercury Task Force, Volume III: Sources of Mercury in New Jersey, January, 2002.

13. Clean Air Act Law and Explanation. (Third printing, April 1994).

14. Recommendations for the Utility Air Toxics MACT (Final Working Group Report), October

2002.

15. USEPA Mercury Study Report to Congress, Volume III: Fate and Transport of Mercury in the Environment. December 1997, EPA Document # 452R97005.

16. USEPA to Regulate Mercury and other Air Toxics Emissions From Coal-and Oil- Fired Power Plants (65 FR 79825, December 20, 2000).

17. Recommendations for the Utility Air Toxics MACT (Final Working Group Report), October 2002.

18. USEPA to Regulate Mercury and other Air Toxics Emissions From Coal-and Oil- Fired Power Plants (65 FR 79825, December 20, 2000).

19. NESCAUM, Environmental Regulation and Technology Innovation: Controlling Mercury Emissions From Coal-Fired Boiler, Executive Summary, September 2000.

20. Settlement between USEPA and NRDC dated 11/16/1998.

21. Mercury Action Plan, New England Governors/Eastern Canadian Premiers, June, 1998.

22. "Technology Recommendations for Reducing Mercury and Acid Rain Precursor Emissions from Boilers" (the Joint Boiler Report). http://www.scics.gc.ca/pdf/850084012_e.pdf August 27, 2001

23. Agrawal, S., Atay, I., O'Sullivan W., Reduction of Mercury Emissions at New Jersey Facilities. The Air and Waste Management Association Specialty Conference on Mercury Emissions: Fate, Effects, and Control. August 20-23, 2001, Chicago, Illinois.

24. N.J.A.C. 7:27-27.4.

25. NJDEP, 2002, *New Jersey Mercury Task Force, Volume I*, page 7, NJDEP, Trenton, NJ.

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Full text of the proposal follows(additions indicated in boldface **thus**; deletions indicated in brackets **[**thus**]**):

CHAPTER 27

AIR POLLUTION CONTROL

Subchapter 27. CONTROL AND PROHIBITION OF MERCURY EMISSIONS

7:27-27.1 Definitions

The following words and terms, when used in this subchapter, shall have the following meaning, unless the context clearly indicates otherwise.

…

"Annual average" means the arithmetic average of all **[**compliance**]** **stack emission** tests conducted **[**during a calendar year**]** **for four consecutive quarters**. The annual average is obtained by first determining the arithmetic average of all test runs conducted each quarter and then determining the arithmetic average of the quarterly averages.

"Annual weighted average" is calculated as follows:

Annual weighted average mercury emission (H) =

$$H = \frac{\sum_{q=1}^{4} \left(\left(\sum Hg_r / \sum P_r \right)_q \times P_q \right)}{\sum_{q=1}^{4} P_q}$$

Annual weighted average mercury reduction efficiency (?) =

$$? = \frac{\sum_{q=1}^{4} \left(\sum \left(((\text{inlet } Hg_r - \text{outlet } Hg_r) \times 100/(\text{inlet } Hg_r))/3 \right)_q \times P_q \right)}{\sum_{q=1}^{4} P_q}$$

Annual weighted average mercury emission for an averaging plan for multiple coal-fired boilers:

$$= \frac{\sum_{u} (H_u \times P_u)}{\sum_{u} P_u}$$

where: H is annual weighted average mercury emission of a iron or steel melter, or coal-fired boiler

H_u is annual weighted average mercury emission of each of the coal-fired boilers in averaging plan

Hg_r is milligrams of mercury tested for each of the three mercury stack emission test runs in a quarter

P_r is net iron or steel production in tons for iron or steel melters or megawatt hour generated from a coal-fired boiler during each stack test run in a quarter

P_q is net iron or steel production in tons for iron or steel melters or megawatt hour generated from a coal-fired boiler for a quarter

P_u is net megawatt hour generated for a coal-fired boiler in four consecutive quaters

q is quarter

u is number of coal-fired boilers

"Biologicals" means preparations made from living organisms and their products, including but not limited to vaccines and cultures, intended for use in diagnosing, immunizing, or treating humans or animals or in research pertaining thereto.

"Blood products" means any product derived from human blood, including but not

limited to blood plasma, platelets, red or white blood corpuscles, and other derived licensed products, such as interferon.

"Body fluids" means liquid emanating or derived from humans and limited to blood; dialysate; amniotic; cerebrospinal, synovial, pleural, peritoneal and pericardial fluids; and semen and vaginal secretions.

"Chemotherapeutic waste" means waste material resulting from the production or use of antineoplastic agents used for the purpose of stopping or reversing the growth of malignant cells.

"Coal **[**burning**]-fired** boiler" means a furnace used in the process of burning coal for the purpose of producing steam by heat transfer.

"Combined heat and power facilities" for the purpose of this subchapter means steam produced from the same coal-fired boiler is partly used to generate electricity and partly used for heating or cooling in industrial processes or buildings.

"Continuous emission monitoring system" or "CEM system" means a device that continuously measures the emissions from one or more source operations.

…

"Co-fired combustor" means a unit combusting hospital/medical/infectious waste (HMIW) with any other fuels or wastes, such as coal, municipal solid waste, and subject to an enforceable requirement by the Department and USEPA limiting the unit to combust a fuel feed stream, 10 percent or less of the weight of which is comprised, in aggregate, of HMIW as

measured on a calendar quarter basis. For the purposes of this definition, pathological waste, low level radioactive waste, and chemotherapeutic waste are not considered HMIW when calculating HMIW combusted.

"Dry bottom utility boiler" means a utility boiler equipped with an ash disposal hopper bottom with sufficient cooling surface so that ash particles, when removed from the hopper, are in a solid state.

…

"Hospital" means any facility which has an organized medical staff, maintains at least six inpatient beds, and where the primary function of the institution is to provide diagnostic and therapeutic patient services and continuous nursing care primarily to human inpatients who are not related and who stay on average in excess of 24 hours per admission. This definition does not include facilities maintained for the sole purpose of providing nursing or convalescent care to human patients who generally are not acutely ill but who require continuing medical supervision.

"Hospital/medical/infectious waste incinerator" or "HMIW incinerator" means any device that combusts any amount of hospital waste and/or medical/infectious waste.

"Hospital waste" means discards generated at a hospital except unused items returned to the manufacturer. The definition of hospital waste does not include human corpses, remains, and anatomical parts that are intended for interment or cremation.

...

"Infectious agent" means any organism, such as virus or bacteria, that is capable of being communicated by invasion and multiplication in body tissues and capable of causing

disease or adverse health impacts in humans.

"Iron or steel melter" means a source where shredded metals or other ferrous materials are melted to produce steel or iron products.

"Low-level radioactive waste" means waste material that contains radioactive nuclides emitting primarily beta or gamma radiation, or both, in concentrations or quantities that exceed applicable Federal or State standards for unrestricted release. Low-level radioactive waste is not high-level radioactive waste, spent nuclear fuel, or by-product material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2014 (e)(2)).

…

"Medical**/infectious** waste" means any solid waste **[**which**]** **that** is generated in the diagnosis, treatment (for example, provision of medical services), or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals **that is listed in paragraphs (1) through (7) of this definition**. **[**The term**]** **Medical/infectious waste** does not include **[**any**]** hazardous waste identified or listed under 40 CFR Part 261**; [**or any**]** household waste**, [**generated from home self-care as defined in N.J.A.C. 7:26-3A.5.**]** **as defined in 40 CFR Part 261.4(b)(1); ash from incineration of medical/infectious waste once the incineration process has been completed; human corpses, remains, and anatomical parts that are intended for interment or cremation; and domestic sewage materials as identified in 40 CFR Part 261.4(a)(1);**

1. Cultures and stocks of infectious agents and associated biologicals, including cultures from medical and pathological laboratories; cultures and stocks of infectious agents from research and industrial laboratories; wastes from the production of biologicals; discarded live and attenuated vaccines; and culture dishes and devices used to transfer, inoculate and mix cultures;

2. Human pathological waste, including tissues, organs, and body parts and body

fluids that are removed during surgery or autopsy, or other medical procedures, and specimens of body fluids and their containers;

3. Human blood and blood products including:

i. Liquid waste human blood;

ii. Products of blood;

iii. Items saturated and/or dripping with human blood; or

iv. Items that were saturated and/or dripping with human blood that are now caked with dried human blood, including serum, plasma, and other blood components, and their containers, that were used or intended for use in either patient care, testing and laboratory analysis or the development of pharmaceuticals. Intravenous bags are also included in this category;

4. Sharps that have been used in animal or human patient care or treatment or in medical, research, or industrial laboratories, including hypodermic needles, syringes (with or without the attached needle), pasteur pipettes, scalpel blades, blood vials, needles with attached tubing, and culture dishes (regardless of presence of infectious agents). Also included are other types of broken or unbroken glassware that were in contact with infectious agents, such as used slides and cover slips;

5. Animal wastes including contaminated animal carcasses, body parts, and bedding of animals that were known to have been exposed to infectious agents during research (including research in veterinary hospitals), production of biologicals or testing of pharmaceuticals;

6. **Isolation wastes, including biological waste and discarded materials contaminated with blood, excretions, exudates, or secretions from humans who are isolated to protect others from certain highly communicable diseases, or isolated animals known to be infected with highly communicable diseases; and**

7. **Unused sharps including hypodermic needles, suture needles, syringes and scalpel blades.**

…

"mg/MW-hr" means mercury emissions in milligram per megawatt of net electricity generation.

"Operating permit" means a permit issued pursuant to N.J.A.C. 7:27-22.

“Optimized reagent feed rate” means the reagent feed rate such that a higher reagent feed rate will not appreciably reduce mercury emissions compared to the amount of reagent added.

"Preconstruction permit" means a **[**"Permit to Construct, Install, or Alter Control Apparatus or Equipment" issued by the Department pursuant to the Air Pollution Control Act of 1954, specifically N.J.S.A. 26:2C-9.2**] permit issued pursuant to N.J.A.C. 7:27-8**.

"Pathological waste" means waste material consisting of only human or animal remains, anatomical parts and/or tissue, the bags or containers used to collect and transport the waste material, and animal bedding.

"Quarter" means a period of three consecutive months (non-overlapping) beginning on January 1, April 1, July 1, or October 1, in any year.

"Reagent" for the purpose of this subchapter means a substance used to adsorb mercury or to convert mercury into a form which is more easily captured by air pollution control devices.

…

"**[**Compliance**]** **Stack emission** testing" means a series of no fewer than three test runs conducted in a calendar quarter **in accordance with a protocol approved by the Department.** The results of **[**compliance**]** **stack emission** testing shall be expressed as the arithmetic average of the results of all test runs conducted during the quarter**.**

"USEPA" means United States Environmental Protection Agency

"Wet bottom utility boiler" means a utility boiler in which the ash is removed from the boiler in a molten state.

7:27-27.2 Purpose and Applicability

(a) This subchapter establishes the requirements and procedures concerning the control and prohibition of air pollution by mercury. This subchapter applies to the following:

(1) Any municipal solid waste incinerator, including any municipal solid waste

incinerator located at an apartment building or commercial facility, regardless of size **[**, is subject to all applicable provisions of this subchapter.**];**

(2) Any hospital/medical/infectious waste incinerator, except co-fired combustors;

(3) Any iron or steel melter; and

(4) Any coal-fired boiler.

7:27-27.3 General provisions

(a)-(c) (No change.)

7:27-27.4 Municipal solid waste (MSW) incinerators

[(a) Each owner or operator of a MSW incinerator, which is capable of incinerating 9.6 tons or more of MSW per day, shall install and operate mercury emission control apparatus by December 31, 1995, designed to reduce at a minimum 80 percent of the emissions of mercury from any MSW incinerator. Such design shall be capable of reducing the concentration of mercury in the flue gas from the MSW incinerator from 140 µg/dscm (corrected to seven percent oxygen) to 28 µg/dscm (corrected to seven percent oxygen) or less after the control apparatus. Compliance with this section shall be determined by comparing the design of the mercury emission control apparatus with the design of the control apparatus installed on similar operating facilities.**]**

[(b)**]** **(a)** Each owner or operator of **[**a**]** **an** MSW incinerator of any size shall operate the MSW incinerator in accordance with provisions specified in either **[**(b)**]** **(a)** 1 or 2 below**[**:**]**. **Compliance with this standard shall be measured pursuant to (b) below.**

1. The emissions of mercury from any MSW incinerator **[**, as determined pursuant to (c) below,**]** shall not exceed **[**:

i. Commencing on January 1, 1996 through and including December 31, 1999, 65 µg/dscm, based on an annual average and with each test run corrected to seven percent oxygen, as tested in accordance with a test protocol approved pursuant to (f) and (g) below; and**]**

[ii. On and after January 1, 2000,**]** 28 µg/dscm, **[**based on an annual average and with each test run**]** corrected to seven percent oxygen, **[**as tested in accordance with a test protocol approved pursuant to (f) and (g) below**]** **based on the annual average of all valid stack emission tests performed for four consecutive quarters**; or

2. **[**On or after January 1, 1996 mercury emissions at the exit of the control apparatus of any MSW incinerator,**]** **The reduction efficiency for control of mercury emissions of the air pollution control apparatus of any MSW incinerator shall be at least [**as determined pursuant to (c) below, shall not exceed**]:**

i. **[20] 80** percent **until (the date which is one year after the operative date of these amendments) determined quarterly based on all valid stack emission testing performed during each quarter;**

ii. **85 percent on and after (the date which is one year after the operative date of these amendments) based on the annual average of all valid tests performed for each four consecutive quarters; and**

iii. **95 percent on and after (the date which is seven years after the operative date of these amendments) based on the annual average of all valid tests performed for each four consecutive quarters.**

[of the mercury emissions in the effluent from the MSW incinerator, prior to the inlet to the control apparatus, based on each quarterly average**]**.

(b) [(c) Commencing in January 1996, the**] The owner or operator of a MSW incinerator that is demonstrating compliance with the mercury emission standard of N.J.A.C. 7:27-27.4(a)1 shall conduct stack emission testing every quarter to measure mercury in the gas stream at the exit of the control apparatus. The** owner or operator of a MSW incinerator **that is demonstrating compliance with the control efficiency standards of N.J.A.C. 7:27-27.4(a)2i, ii, or iii [**served by control apparatus**]** shall **[**perform**] conduct [**compliance**] stack emission** testing every quarter to measure mercury in the gas stream at the inlet of the air pollution control apparatus serving each incinerator and simultaneously **[**perform**] conduct [**compliance**] stack emission** testing every quarter to measure mercury in the gas stream at the exit of the control apparatus. There shall be at least **three valid tests per quarter and at least [**a**]** 45 **[**calendar**-]** day**s [**interval**]** between the **stack emission** testing performed for a given quarter and the **stack emission** testing performed for the preceding quarter, unless a shorter period is approved by the Department. **[**Any MSW incinerator without control apparatus shall perform compliance testing every quarter to measure mercury in the gas stream in the stack.**]** The **[**compliance**] stack emission** testing shall be conducted in accordance with a **stack emission** test protocol approved pursuant to **[**(f) and (g)**] N.J.A.C. 7:27-27.8 (a) and**

(b) [below**]**.

[(d) Compliance with (b) above shall be determined as follows:

1. Compliance with (b)1 above shall be determined annually based on the average of all compliance testing performed in a calendar year; or

2. Compliance with (b)2 above shall be determined quarterly based on the compliance testing performed during that quarter.**]**

(c) [(e)**]** Notwithstanding the provisions of **(b) [**(c)**]** above, any **[**person**] owner or operator** who achieves and maintains compliance with **(a) [**(b)**]** 1 **[**or 2**] or (a)2ii and iii** above, for all applicable incinerators located at a facility, during **[**two**] eight** consecutive **[**calendar years**] quarters**, may reduce the frequency of **[**compliance**] stack emission** testing from each quarter to **[**compliance**] stack emission** testing performed **[**only in the first**] every fourth** quarter **[**of each calendar year**] after the eighth quarter test in which annual average compliance was determined**. However, if subsequent **[**compliance**] stack emission** testing fails to demonstrate compliance with **(a) [**(b)**]** 1 **[**or 2**] or (a)2ii and iii** above, then the frequency of **[**compliance**] stack emission** testing shall revert to that indicated in **(b) [**(c)**]** above.

(d) An MSW incinerator that complies with the requirements of this subsection is not subject to the requirements of (a)2iii above.

1. Beginning on (date that is the first day of the first full quarter one year after the operative date of this rule), the average emissions of mercury from the entire MSW incinerator facility calculated under (d)3 below shall not exceed 14.0 µg/dscm, corrected to seven percent oxygen.

2. In each quarter, three valid stack emission tests shall be conducted for each

unit at the MSW incinerator facility.

3. The average emissions of mercury from the entire MSW incinerator facility shall be calculated for each period of 12 consecutive quarters. The average emissions shall be equal to the sum of the mercury emissions in all valid stack emission tests for all units, divided by the number of stack emission tests conducted during the 12 quarter period.

4. If the facility fails to demonstrate mercury emissions less than the 14.0 µg/dscm (corrected to seven percent oxygen) average for any 12 consecutive quarter period up until (7 years from the operative date of this rule), the requirements of (a)2 iii above shall apply starting (7 years from the operative date of this rule).

5. If the facility demonstrates mercury emissions less than the 14.0 µg/dscm (corrected to seven percent oxygen) average for all rolling 12 consecutive quarter periods up until (7 years from the operative date of this rule) and the facility chooses to continue to comply with this standard after this trial period, the 14.0 µg/dscm limit (corrected to seven percent oxygen) shall apply for every 12 consecutive quarter period thereafter. Compliance shall be determined using valid stack emission test data from the first quarter after the end of the trial period and using the valid stack emission test data from the eleven quarters immediately preceding the first quarter. Thereafter, the facility shall not revert back to compliance with (a)2iii above.

[(f) Compliance testing performed pursuant to (c) and (e) above shall be conducted in accordance with a test protocol approved by the Department. To obtain the approval of the Department of a test protocol, the owner or operator shall submit to the Department a proposed test protocol, setting forth all test methods, including, but not limited to, sampling and analytical procedures; a description of sampling equipment and the source sampling location(s); and provide

sample calculations that will be used to determine the concentration of mercury in the gas stream. The owner or operator shall submit for review and approval a proposed test protocol each year, no less than 90 calendar days prior to the conduct of first quarter compliance testing for that calendar year to the following address:

Chief
Bureau of Technical Services
Department of Environmental Protection
CN-411
Trenton, New Jersey 08625-0411

(g) The Department shall not approve any proposed test protocol submitted pursuant to (f) above unless the test method proposed to measure mercury is:

1. EPA Reference Method 29, including all supplements and amendments thereto. This method is published in the EPA Main Bulletin Board, the Technical Transfer Network of the USEPA, under the area of Emissions Measurement Technical Information, with the file name of "M-29.ZIP-Multiple Metals" under the access number of (919) 541-5742; or

2. An equivalent method demonstrated, to the satisfaction of the Department, to be as conservative and reliable as EPA Reference Method 29 for measuring mercury.

(h) Any person who is required to alter any equipment or control apparatus in order to operate in conformance with any requirement of this subchapter shall apply to the Department for a preconstruction permit in accordance with N.J.A.C. 7:27-8.3, by December 27, 1994.

(i) The owner or operator of any MSW incinerator that has a reagent based mercury emission

control system shall conduct optimization tests to determine the optimized reagent feed rate, for mercury emissions control apparatus, to determine the reagent feed rate at which the emissions of mercury below the applicable limits of (b) above are optimally minimized, as follows:

1. The optimization tests shall be performed during first quarter compliance testing required pursuant to (c) above.

2. If the owner or operator of any MSW incinerator owns or operates more than one identical incinerator at the same facility, then optimization tests may be performed on one incinerator, and the results applied to the other incinerators which are identical to that incinerator at that facility.

(j) The owner or operator of any MSW incinerator that has a reagent based mercury emission control system shall, within 60 calendar days of the conclusion of the optimization tests, submit to the Department for approval a proposed optimized reagent feed rate which minimizes mercury emission below the applicable limits, while considering the amount of reagent used. The optimized reagent feed rate is the reagent feed rate such that a higher reagent feed rate will not appreciably reduce mercury emissions compared to the amount of reagent added.

(k) The owner or operator of any MSW incinerator that has a reagent based mercury emission control system shall operate each MSW incinerator at, or above, the optimized reagent feed rate approved by the Department.**]**

7:27-27.5 Hospital/medical/infectious waste (HMIW) incinerators [(Reserved)]

(a) Each owner or operator of an HMIW incinerator of any size shall operate the incinerator in accordance with (b) below. The owners or operators of co-fired combustors are not subject to the requirements of this section. Any co-fired combustors which are co-fired

with municipal solid waste are subject to the mercury emission standards of N.J.A.C. 7:27-27.4 for MSW incinerators.

(b) On and after (one year from the operative date of this rule), the emissions of mercury from any HMIW incinerator shall not exceed 55.0 µg/dscm corrected to seven percent oxygen.

(c) For any HMIW incinerator existing as of (the operative date of the rule), compliance with (b) above shall be determined by valid stack emission testing within one year after (the operative date of the rule) and every five years thereafter.

(d) For any HMIW incinerator constructed, reconstructed, or modified after (the operative date of the rule), compliance with (b) above shall be determined by valid stack emission testing within 180 calendar days after the start-up of the constructed, reconstructed, or modified incinerator and every five years thereafter.

(e) All stack emission tests shall consist of a minimum of three valid test runs. Compliance with (b) above shall be based on the average of all test runs conducted during stack emission testing. The stack emission testing shall be conducted in accordance with a test protocol approved pursuant to N.J.A.C. 7:27-27.8 (a) and (b), except the protocol submittal deadline shall be 90 calendar days prior to the performance of stack emission testing for any HMIW incinerator.

(f) The owner or operator of an HMIW incinerator shall submit to the Department a written plan prior to (the date which is one year after the operative date of these new rules), certified pursuant to N.J.A.C. 7:27-1.39, for the purchasing of mercury-free supplies that will be used at the facility and preventing mercury containing waste from being incinerated to the

maximum extent feasible. The owner or operator of a HMIW incinerator shall submit to the Department the plan at the following address:

Chief, Bureau of Pre-Construction Permits
Air Quality Permitting Element
Division of Air Quality
Department of Environmental Protection
P.O. Box 027
Trenton, New Jersey 08625-0027

(g) For supplies for which mercury-free substitutes are not reasonably available, such as fluorescent bulbs, the owner or operator shall send waste from such supplies to an appropriate facility for disposal to prevent the incineration of any such waste in an HMIW incinerator.

7:27-27.6 [Sewage sludge incinerators (Reserved)] Iron or steel melters

(a) On and after (the date which is five years after the operative date of these new rules), each owner or operator of an iron or steel melter of any size shall operate the iron or steel melter in accordance with the provisions specified in either (a)1 or 2 below. Compliance with this standard shall be measured pursuant to (b) below.

1. The emissions of mercury from any iron or steel melter shall not exceed 35.0 mg/ton (milligram of mercury emissions per ton of iron or steel production), based on the annual weighted average of all valid stack emission tests performed for four consecutive quarters weighted for the production each quarter, or

2. The reduction efficiency for control of mercury emissions of the air pollution control apparatus of any iron or steel melter shall be at least 75 percent, based on the annual weighted average of all valid stack emission tests performed for four consecutive quarters weighted for the production each quarter.

(b) On and after (the date which is one year after the operative date of these new rules), the owner or operator of an iron or steel melter who is determining compliance with (a)1 above shall conduct stack emission testing every quarter to measure mercury in the gas stream in the stack. On and after (the date which is one year after the operative date of these new rules), the owner or operator of an iron or steel melter who is determining compliance with (a)2 above shall conduct stack emission testing every quarter to measure mercury in the gas stream at the inlet of the air pollution control apparatus serving each iron or steel melter, and simultaneously conduct stack emission testing every quarter to measure mercury in the gas stream at the exit of the air pollution control apparatus. There shall be at least three valid stack emission tests per quarter, and at least 45 days between the stack emission testing performed for a given quarter and the stack emission testing performed for the preceding quarter, unless a shorter period is approved by the Department. The stack emission testing shall be conducted in accordance with a stack emission test protocol approved pursuant to N.J.A.C. 7:27-27.8 (a) and (b). Compliance is to be determined by averaging three stack emission test runs per quarter for four consecutive quarters, measuring the net steel production for each quarter, and then calculating annual weighted averages using the quarterly averages and the net steel production.

(c) Notwithstanding the provisions of (b) above, any owner or operator who achieves and maintains compliance with (a)1 or 2 above for eight consecutive quarters for all applicable iron or steel melters located at a facility, may reduce the frequency of stack emission testing from each quarter to stack emission testing performed every fourth quarter after the eighth

quarter test in which annual weighted average compliance was determined. However, if the annual stack emission testing fails to demonstrate compliance with (a)(1) or 2 above, then the frequency of stack emission testing shall revert to that indicated in (b) above.

(d) The owner or operator of an iron or steel melter shall submit to the Department a written plan prior to (the date which is one year after the operative date of these new rules), certified in accordance with N.J.A.C. 7:27-1.39, establishing a mercury in scrap minimization program. The owner or operator shall submit the plan to the Department at the following address:

Chief, Bureau of Pre-Construction Permits
Air Quality Permitting Element
Division of Air Quality
Department of Environmental Protection
P.O. Box 027
Trenton, New Jersey 08625-0027

(e) Each mercury minimization and source separation plan must include the information specified in the paragraphs below:

1. A materials acquisition program specifying that the iron or steel melter will only purchase mercury free scrap or will purchase scrap only from scrap suppliers that remove accessible mercury switches from the trunks and hoods of any automobile bodies contained in the scrap. The owner or operator shall obtain and maintain on site a copy of the procedures used by the scrap supplier for either removing accessible mercury switches, or for purchasing automobile bodies that have had mercury switches removed, as applicable.

2. Procedures for visual inspection of a representative portion, but not less than 10 percent, of all incoming scrap shipments to ensure that mercury has been removed from scrap.

i. The inspection procedures shall identify the location(s) where inspections are to be performed for each type of shipment. The selected location(s) shall provide a reasonable vantage point, considering worker safety, for visual inspection.

ii. The inspection procedures shall include maintaining records that document each visual inspection and the results of the inspection.

iii. The inspection procedures shall include provisions for rejecting or returning entire or partial scrap shipments from which mercury has not been removed, and limiting purchases from scrap suppliers whose shipments fail to provide mercury-free scrap for more than three inspections in one calendar year.

(f) The owner or operator shall operate at all times according to the mercury minimization and source separation plan to minimize, to the extent practicable, the amount of mercury in the charge material used by the iron or steel melters.

(g) The mercury minimization and source separation plan is subject to Department approval and may be incorporated into a pre-construction or operating permit.

(h) The owner or operator shall maintain a copy of the mercury minimization and source separation plan on site and make it readily available to all plant personnel with materials acquisition or inspection duties.

(i) The owner or operator shall provide a copy of the materials acquisition program described in (e)1 above to each of its scrap suppliers.

7:27-27.7 [Hazardous waste incinerators (Reserved)] Coal-fired boilers

(a) On and after December 15, 2007, each owner or operator of a coal-fired boiler of any size shall operate the coal-fired boiler in accordance with the provisions specified in either (a) 1 or 2 below, except as specified in (d) and (e) below. Compliance with this standard shall be measured pursuant to (b) below.

1. The emissions of mercury from any coal-fired boiler shall not exceed 3.00 mg/MW- hr, based on an annual weighted average of all valid stack emission tests performed for four consecutive quarters weighted by megawatt hours produced each quarter; or

2. The reduction efficiency for control of mercury emissions of the air pollution control apparatus for control of mercury of any coal-fired boiler shall be at least 90 percent, based on the annual weighted average of all valid stack emission tests performed for four consecutive quarters weighted by megawatt hours produced each quarter.

(b) On and after December 15, 2007, the owner or operator of any coal-fired boiler determining compliance with (a)1 above shall conduct stack emission testing every quarter to measure mercury in the gas stream in the stack. On and after December 15, 2007, the owner or operator of a coal-fired boiler determining compliance with (a)2 above shall conduct stack

emission testing every quarter to measure mercury in the gas stream at the inlet of the air pollution control apparatus serving each coal -fired boiler, and simultaneously conduct stack emission testing every quarter to measure mercury in the gas stream at the exit of the air pollution control apparatus. There shall be at least three valid stack emission tests per quarter and at least 45 days between the stack emission testing performed for a given quarter and the stack emission testing performed for the preceding quarter, unless a shorter period is approved by the Department. The stack emission testing shall be conducted in accordance with a stack emission test protocol approved pursuant to N.J.A.C. 7:27-27.8 (a) and (b). Compliance is to be determined by averaging three stack emission test runs per quarter for four consecutive quarters, measuring the net megawatt hours for each quarter, and then calculating annual weighted averages using the quarterly averages and the net megawatt hours generated. If the steam produced by two or more coal-fired boilers is used to run a common electric generator, the stack emission testing of all of the boilers shall be done simultaneously. The relative contribution to the amount of electricity generated from each of the coal-fired boilers shall be determined during stack emission testing for the purpose of determining compliance with the mercury emission limit in mg/MW-hr. For combined heat and power facilities, the MW-hr shall include useful heat which is not used for electric generation in determining mercury emission per MW-hr.

(c) Notwithstanding the provisions of (b) above, any owner or operator who achieves and maintains compliance with (a)1 or 2 above for eight consecutive quarters for all applicable coal-fired boilers located at a facility, may reduce the frequency of stack emission testing from each quarter to stack emission testing performed every fourth quarter after the eighth quarter test in which annual weighted average compliance was determined. However, if annual stack emission testing fails to demonstrate compliance with (a)1 or 2 above, then the frequency of stack emission testing shall revert to that indicated in (b) above.

(d) The mercury emissions standard specified in (a)1 or (2) above are applicable on and after December 15, 2012, for each owner or operator of a coal fired boiler who has entered into an enforceable agreement with the Department by December 15, 2007, to install and operate air pollution control systems to meet the following standards by December 15, 2012, provided compliance with (a) above is achieved by December 15, 2007 for approximately 50 percent of the total coal-fired megawatt capacity of the company:

1. The emissions of nitrogen oxides shall not exceed 0.100 pounds per million BTU for dry bottom utility boilers and 0.130 pounds per million BTU for wet bottom utility boilers;

2. The emissions of sulfur dioxide shall not exceed 0.150 pounds per million BTU; and

3. The emissions of particulate matter shall not exceed 0.030 pounds per million BTU;

(e) The December 15, 2007 deadline for compliance with the mercury emissions standards specified in (a) above is not applicable to an owner or operator of any coal-fired boiler who has entered into an enforceable agreement by December 15, 2007, with the Department to shut down the coal-fired boiler by December 15, 2012.

(f) The Department may authorize an owner or operator of any coal-fired boiler to comply with an averaging plan approved by the Department pursuant to this section. An owner or operator in compliance with such an approved averaging plan is not required to have each coal-fired boiler comply with any emission limit set forth in this subchapter that would be applicable in the absence of an approved averaging plan. An owner or operator of two or more

coal-fired boilers at the same facility may request the Department to authorize an averaging plan for two or more coal-fired boilers designated by the owner or operator. The owner or operator seeking authorization for averaging shall submit a written application to the Department at the following address:

Chief, Bureau of Pre-Construction Permits
Air Quality Permitting Element
Division of Air Quality
Department of Environmental Protection
401 East State Street
PO Box 027
Trenton, NJ 08625-0027

(g) The person seeking approval under (f) above shall include the following information in the application for averaging:

1. The maximum energy generation rate of each coal-fired boiler in the averaging plan, expressed in MW-hr; average energy generated by each coal-fired boiler in the averaging plan, expressed in MW-hr;

2. The type of coal and any other fuel, if any, combusted in each coal-fired boiler;

3. The proposed method to calculate the weighted average mercury emissions per MW-hr for the coal-fired boilers on a site;

4. A certification of the application, satisfying the requirements of N.J.A.C. 7:27-1.39; and

5. Any other information which the Department requests, which is reasonably necessary to enable it to determine whether the coal-fired boilers designated by the owner or operator will comply with the requirements of this section.

(h) The Department shall approve an averaging plan only if the owner or operator of the coal-fired boilers to be included in the averaging plan enters into an enforceable agreement with the Department (such as the inclusion of conditions in the applicable permits or operating certificates, or both) requiring the annual weighted average of mercury emissions from the coal-fired boilers at a facility to not exceed 3.00 mg/MW-hr, based on the net megawatt generated each quarter and mercury emissions using the results of the valid stack emission tests required at N.J.A.C. 7:27-27.7(b).

(i) The owner or operator of the coal-fired boilers included in the averaging plan shall maintain the records listed below for five years from the date on which each record was made. The owner or operator shall maintain such records in a permanently bound log book or an electronic method, in a format that enables the Department to readily determine whether the coal-fired boilers included in the averaging plan are in compliance. The owner or operator shall maintain the following records:

1. The identifier for each coal-fired boiler included in the averaging plan specified in (g)1 above;

2. The time period for which the data is being recorded;

3. The date upon which the data was recorded;

4. The amount of coal and/or other fuels, if any, consumed over the subject time period;

5. The actual annual weighted average of mercury (expressed in mg/MW-hr) emitted and the net megawatt generated by each coal-fired boiler in the averaging plan over the subject time period;

6. The weighted average of the amounts listed in (i)5 above for all coal-fired boilers at a facility in the averaging plan; and

7. Any other information required to be maintained as a condition of approval granted pursuant to (f) above.

(j) Within 30 days after the end of each quarter, the owner or operator of a facility with an approved averaging plan shall provide the Department with a report setting forth the information required to be kept under N.J.A.C. 7:27-27.7(i)1 through 7.

7:27-27.8 [Coal-fired boilers (Reserved)] Stack emission testing, permit applications and continuous emission monitoring.

(a) Stack emission testing performed pursuant to this subchapter shall be conducted in accordance with a test protocol approved by the Department. To obtain the approval of the Department of a test protocol, the owner or operator of any source subject to this subchapter shall submit to the Department a proposed test protocol setting forth all test methods, including, but not limited to, sampling and analytical procedures; a description of sampling equipment and the source sampling locations; and provide sample calculations that will be used to determine the concentration of mercury in the gas stream, mercury in milligrams per ton of iron or steel production, and mercury in mg/MW-hr, as appropriate. The owner or operator of a source subject to this subchapter shall submit for review and approval a proposed test protocol each year, no fewer than 90 calendar days prior to conducting its first quarter stack emission testing, to the following address:

Chief
Bureau of Technical Services
Department of Environmental Protection
P.O. Box 437
Trenton, New Jersey 08625-0437

(b) The Department shall not approve any proposed stack emission test protocol submitted pursuant to (a) above unless the stack emission test method proposed to measure mercury is:

1. The USEPA Reference Method 29, including all supplements and amendments thereto. This method can be downloaded from the USEPA website:

http://www.epa.gov/ttn/emc/methods/method29.html;

2. An equivalent method demonstrated to the satisfaction of the Department to be as conservative and reliable as the USEPA Reference Method 29 for measuring mercury; or

3. A CEM approval pursuant to (c) below.

(c) When a Federal performance specification is developed and published in the Federal Register, and a mercury continuous emission monitoring system capable of meeting the Federal specifications is available, an owner or operator of a source regulated by this subchapter may propose and install a mercury continuous emission monitoring system to determine compliance with this subchapter if approved by the Department. The owner or operator must demonstrate that the mercury continuous emission monitoring system that is installed complies with the quality assurance requirements detailed in the Federal specifications. After the Department determines conformance with quality assurance requirements, the owner or operator may thereafter use the CEM to demonstrate compliance with the emission standards of this subchapter in accordance with the conditions of approval for the CEM. Thereafter, quarterly stack testing is not required.

(d) The owner or operator of any source subject to this subchapter that has a reagent based mercury emission control system shall conduct optimization tests for mercury emissions control apparatus to determine the optimized reagent feed rate at which emissions of mercury for those sources are reasonably minimized below the applicable limits, as follows:

1. The optimization tests shall be performed during the first quarter that stack emission testing as required by this subchapter;

2. If the owner or operator of any source subject to this subchapter owns or operates more than one identical applicable source at the same facility, the optimization tests may be performed on one source selected in the test protocol, and the results applied to the other identical sources at that facility;

3. Within 60 calendar days of the conclusion of the optimization tests, the owner or operator shall submit to the Department for approval a proposed optimized reagent feed rate which minimizes mercury emissions below the applicable limits, while considering the amount of reagent used; and

4. The owner or operator shall operate each applicable source at or above the optimized reagent feed rate approved by the Department.

(e) Any owner or operator of a source subject to this subchapter who is required to make changes to a current preconstruction permit or to an operating permit in order to operate in conformance with any requirements of this subchapter shall submit a timely air pollution control permit application to the Department for any required preconstruction permit actions, or for any required operating permit actions.

7:27-27.9 Reporting and recordkeeping

(a) Unless prior approval is granted by the Department for later submittal, the owner or

operator **of any source** subject to **this subchapter [**the testing requirements of N.J.A.C. 7:27-27.4(c) or (e)**]** shall submit a copy of the report of the results of **[**compliance**[the stack emission** testing, including all test runs, conducted **[**at any MSW incinerator pursuant to this subchapter**]** within 60 calendar days after completion of the **[**compliance**[stack emission** testing required for that quarter to **the regional air compliance and enforcement office for the county which the facility is located and** the following address:

Chief
Bureau of Technical Services
Department of Environmental Protection
[CN-411**] P.O. Box 437**
Trenton, New Jersey 08625-**[**0411**] 0437**

(b) Unless prior approval is granted by the Department for later submittal, the owner or operator **of any source** subject to the optimization requirements of N.J.A.C. 7:27-27.**[**4(i)**] 8(d)** shall submit a copy of the report of the results of optimization tests conducted **[**at any MSW **incinerator]** pursuant to this subchapter within 60 calendar days after completion of the required tests, to the following address:

Chief
Bureau of **[**Air Quality Engineering**] Pre-construction Permits**
Department of Environmental Protection
[CN-027**] P.O. Box 27**
Trenton, NJ 08625-0027

(c) If compliance is based on annual averages pursuant to N.J.A.C. 7:27-27.4(**a [**d**]**)1**, 2ii and**

iii or (**c** **[**e**]**))**, or annual weighted average pursuant to N.J.A.C.7:27-27.6, and 27.7**, an owner or operator of **[**a MSW incinerator**]** **any source subject to this subchapter** shall report, for the preceding **[**calendar**]** year, the annual average **or annual weighted average** mercury emissions **[**by February 28, or the next business day if February 28 falls on a weekend or holiday, of each year**]** **within 60 calendar days after the end of the last quarter of the preceding year.** If compliance is based on quarterly averages pursuant to N.J.A.C. 7:27-27.4**(a)2i [**(d)2 or (e)**]**, an owner or operator of a MSW incinerator shall report the quarterly average control efficiency within 60 calendar days after completion of each calendar quarter. **An owner or operator of an HMIW incinerator subject to this subchapter shall report mercury emissions test results within 60 calendar days after the end of the stack emission testing.** Such reports shall be submitted to **the regional air compliance and enforcement office for the county which the facility is located. [**:

[Assistant Director
Air and Environmental Quality Enforcement
Department of Environmental Protection
CN-422
Trenton, NJ 08625-0422**]**

(d) Any owner or operator of **[**a MSW incinerator**]** **any source subject to this subchapter** that submits to the Department a report of **[**compliance**]** **stack emission** testing, including all test runs, **[**for a MSW incinerator**]** shall have such report reviewed prior to submission and certified by a licensed professional engineer or an industrial hygienist certified by the American Board of Industrial Hygiene.

(e) Any owner or operator of **[**a MSW incinerator**]** **any source subject to this subchapter** shall maintain at the facility a complete record, including all test reports of all **[**compliance**]** **stack**

emission testing, including all test runs, conducted at the facility on equipment subject to this subchapter. The Department may specify in writing that such reports be maintained in a specific format.

(f) Any owner or operator of **[**a MSW incinerator**]** **any source subject to this subchapter** who submits to the Department a report of **[**compliance**]** **stack emission** testing, including all test runs, shall certify that report in accordance with N.J.A.C. 7:27-**[**8.24**]1.39**.

(g) The owner or operator **of any source subject to this subchapter** shall make any record made pursuant to (e) above available to the Department, or its authorized representatives, for inspection for a period of five years after the date the record is made.

7:27-27.10 Penalties

(a) Failure to comply with any provision of this subchapter shall subject the owner or operator to civil **administrative** penalties in accordance with N.J.A.C. 7:27A-3 and applicable **civil and** criminal penalties including, but not limited to, those set forth at N.J.S.A. 2C-28.3 and N.J.S.A. 26:2C-19**[**(f)1 and 2**]**.

7:27-27.11 Severability

If any portion of this subchapter or the application thereof to any person or circumstance is adjudged invalid or unconstitutional by a court of competent jurisdiction, the remainder of this subchapter and the application thereof to other persons or circumstances shall not be affected thereby, and shall remain in full force and effect.

Chapter 27 A AIR ADMINISTRATION PROCEDURES AND PENALTIES

Subchapter 3. CIVIL ADMINISTRATIVE PENALTIES AND REQUESTS FOR ADJUDICATORY HEARINGS.

7:27A-3.10 Civil administrative penalties for violation of rules adopted pursuant to the Act

(a) - (l) (No change.)

(m) The violations of N.J.A.C. 7:27 and the civil administrative penalty amounts for each violation are as set forth in the following Civil Administrative Penalty Schedule. The numbers of the following subsections correspond to the numbers of the corresponding subchapter in N.J.A.C. 7:27. The rule summaries for the requirements set forth in the Civil Administrative Penalty Schedule in this subsection are provided for informational purposes only and have no legal effect.

CIVIL ADMINISTRATIVE PENALTY SCHEDULE

1. - 26. (No change.)

27. The violations of N.J.A.C. 7:27-27, Control and Prohibition of Mercury Emissions, and the civil administrative penalty amounts for each violation are as set forth in the following table:

Citation	Rule Summary	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
[N.J.A.C. 7:27-27.4(a)	Install/Operate Air Pollution Control Equipment	$4,000	$8,000	$20,000	$50,000**]**

Citation	Rule Summary	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
	Municipal Solid Waste Incinerators (MSW)				
N.J.A.C. 7:27-27.4**[**(b)**]** **a**1 N.J.A.C. 7:27-27.4**[**(b)**]****a** 2	Mercury Emissions Detected by Compliance Testing from Source Operation				
	1. Less than 25 percent over the allowable standard	$8,000 [3]	$16,000 [3]	$40,000 [3]	$50,000 [3]
	2. From 25 through 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
	3. Greater than 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
N.J.A.C. 7:27-27.4**[**(c)**]** **b**	[Perform]**Conduct Stack Emission** **[**Compliance**]** Testing to Measure Mercury	$3,000	$6,000	$15,000	$45,000
N.J.A.C. 7:27-27.4(d)i	**Average Mercury Emissions**				
	1. Less than 25 percent over the allowable standard	**$8,000 [3]**	**$16,000 [3]**	**$40,000 [3]**	**$50,000 [3]**

Citation	Rule Summary	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
	2. From 25 through 50 percent over the allowable standard	**$10,000 [3]**	**$20,000 [3]**	**$50,000 [3]**	**$50,000 [3]**
	3. Greater than 50 percent over the allowable standard	**$10,000 [3]**	**$20,000 [3]**	**$50,000 [3]**	**$50,000 [3]**
N.J.A.C. 7:27-27.4(d)ii	**Conduct Stack Emission Test**	**$3,000**	**$6,000**	**$15,000**	**$45,000**
[N.J.A.C. 7:27-27.4(f)	Submit Compliance Testing Protocol	$1,000	$2,000	$5,000	$15,000]
[N.J.A.C. 7:27-27.4(h)	Submit Application for Preconstruction Permit	$2,000	$4,000	$10,000	$30,000]
[N.J.A.C. 7:27-27.4(i)	Conduct Optimization Tests	$1,000	$2,000	$5,000	$15,000]
[N.J.A.C. 7:27-27.4(j)	Submit Optimized Reagent Injection Rate	$500	$1,000	$2,500	$7,500]
[N.J.A.C. 7:27-27.4(k)	Operate at Optimized Reagent Injection Rate	$2,000	$4,000	$10,000	$30,000]
	Hospital/medical/infectious waste incinerators				
N.J.A.C. 7:27-27.5(b)	**Mercury Emissions Detected by Compliance Testing from Source Operation**				
	1. Less than 25 percent over the allowable standard	**$8,000 [3]**	**$16,000 [3]**	**$40,000 [3]**	**$50,000 [3]**

Citation	Rule Summary	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
	2. From 25 through 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
	3. Greater than 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
N.J.A.C. 7:27-27.5(c) or N.J.A.C. 7:27-27.5(d)	Conduct Compliance Testing to Measure Mercury	$3,000	$6,000	$15,000	$45,000
N.J.A.C. 7:27-27.5(f)	Submit Plan	$2,000	$4,000	$10,000	$30,000
N.J.A.C. 7:27-27.5(g)	Dispose of Properly	$500	$1,000	$2,500	$7,500
N.J.A.C. 7:27-27.6(a)1 N.J.A.C. 7:27-27.6(a)2	Iron or steel smelters Mercury Emissions Detected by ComplianceTesting from Source Operation				
	1. Less than 25 percent over the allowable standard	$8,000 [3]	$16,000 [3]	$40,000 [3]	$50,000 [3]
	2. From 25 through 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
	3. Greater than 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
N.J.A.C. 7:27-27.6(b)	Conduct Compliance Testing to Measure Mercury	$3,000	$6,000	$15,000	$45,000

Citation	Rule Summary	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
N.J.A.C. 7:27-27.6(d)	Submit Plan	$2,000	$4,000	$10,000	$30,000
N.J.A.C. 7:27-27.6(f)	Operate According to Plan	$2,000	$4,000	$10,000	$30,000
N.J.A.C. 7:27-27.6(h)	Maintain Plan Onsite	$500	$1,000	$2,500	$7,500
N.J.A.C. 7:27-27.7(a)1 N.J.A.C. 7:27-27.7(a)2	Coal -fired Boilers Mercury Emissions Detected by Compliance Testing from Source Operation				
	1. Less than 25 percent over the allowable standard	$8,000 [3]	$16,000 [3]	$40,000 [3]	$50,000 [3]
	2. From 25 through 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
	3. Greater than 50 percent over the allowable standard	$10,000 [3]	$20,000 [3]	$50,000 [3]	$50,000 [3]
N.J.A.C. 7:27-27.7(b)	Conduct Compliance Testing to Measure Mercury	$3,000	$6,000	$15,000	$45,000
N.J.A.C. 7:27-27.7(f)	Comply with Approved Averaging Plan				

Citation	Rule Summary	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
	1. Less than 25 percent over the allowable standard	**$8,000 [3]**	**$16,000 [3]**	**$40,000 [3]**	**$50,000 [3]**
	2. From 25 through 50 percent over the allowable standard	**$10,000 [3]**	**$20,000 [3]**	**$50,000 [3]**	**$50,000 [3]**
	3. Greater than 50 percent over the allowable standard	**$10,000 [3]**	**$20,000 [3]**	**$50,000 [3]**	**$50,000 [3]**
N.J.A.C. 7:27-27.7(i)	**Maintain Records**	**$500**	**$1,000**	**$2,500**	**$7,500**
N.J.A.C. 7:27-27.7(j)	**Submit Reports**	**$500**	**$1,000**	**$2,500**	**$7,500**
N.J.A.C. 7:27-27.8(a)	**Submit Stack Emission Test Protocol**	**$1,000**	**$2,000**	**$5,000**	**$15,000**
N.J.A.C. 7:27-27.8(d)1	**Conduct Optimization Tests**	**$1,000**	**$2,000**	**$5,000**	**$15,000**
N.J.A.C. 7:27-27.8(d)3	**Submit Optimized Reagent Injection Rate**	**$500**	**$1,000**	**$2,500**	**$7,500**
N.J.A.C. 7:27-27.8(d)4	**Operate at Optimized Reagent Injection Rate**	**$2,000**	**$4,000**	**$10,000**	**$30,000**
N.J.A.C. 7:27-27.8(e)	**Submit Application for Preconstruction Permit**	**$2,000**	**$4,000**	**$10,000**	**$30,000**
N.J.A.C. 7:27-27.9(a)	Submit Compliance Testing Report	$500	$1,000	$2,500	$7,500
N.J.A.C. 7:27-27.9(b)	Submit Optimization Test	$500	$1,000	$2,500	$7,500

Citation	**Rule Summary**	**First Offense**	**Second Offense**	**Third Offense**	**Fourth and Each Subsequent Offense**
	Report				
N.J.A.C. 7:27-27.9(c)	Submit Report	$500	$1,000	$2,500	$7,500
N.J.A.C. 7:27-27.9(d)	Certify Compliance Testing Report	$300	$600	$1,500	$4,500
N.J.A.C. 7:27-27.9(e)	Maintain Records	$500	$1,000	$2,500	$7,500
N.J.A.C. 7:27-27.9(f)	Certify Compliance Testing Report	$300	$600	$1,500	$4,500
N.J.A.C. 7:27-27.9(g)	Make Records Readily Available	$500	$1,000	$2,500	$7,500

[3] Revoke Certificate to Operate Under N.J.A.C. 7:27-8 or Revoke Operating Permit Under N.J.A.C. 7:27-22 (if applicable).

28. - 31. (No change.)

(n) - (p) (No change.)

Based on consultation with staff, I hereby certify that the above statements, including the Federal Standard Analysis, addressing the requirements of Executive Order 27 (1994) and N.J.S.A. 52:14B-23, permit the public to understand accurately and plainly the purposes and expected consequences of this proposal. I hereby authorize this proposal.

Date:_____ _____

Bradley M. Campbell,
Commissioner
Department of Environmental Protection

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