ENVIRONMENTAL PROTECTION

ENVIRONMENTAL REGULATION

DIVISION OF AIR QUALITY

AIR QUALITY PERMITTING ELEMENT

Air Pollution Control

Control and Prohibition of Mercury Emissions

Adopted Amendments: N.J.A.C. 7:27-27.1, 27.2, 27.4 and 27.9; and 7:27A-3.10

Adopted New Rules: N.J.A.C. 7:27-27.5, 27.6, 27.7, and 27.8

Proposed: January 5, 2004 at 36 N.J.R.123 (a).

Adopted: xx xx, 2004 by Bradley M. Campbell, Commissioner, Department of Environmental Protection.

Filed: _____ as R.2004 d._____, with substantive and technical changes not requiring additional public notice and comment (see N.J.A.C. 1:30-6.3)

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

DEP Docket Number: 30-03-12/340

Proposal Number:

Effective Date: xx xx, 2004

Operative Date: xx xx, 2004

Expiration Date: Exempt N.J.A.C. 7:27; November 9, 2004, N.J.A.C. 7:27A.

The New Jersey Department of Environmental Protection ("the Department") is adopting new rules and amendments, which establish standards and procedures for the control and prohibition of mercury from municipal solid waste ("MSW") incinerators, hospital/medical/infectious waste incinerators, iron or steel melters, and coal-fired boilers. These new rules and amendments will significantly reduce or prevent mercury emissions in the state from the four regulated source categories. The proposal of these new rules and amendments was published on January 5, 2004, at 36 NJR 123(a), and the Department accepted public comment up to and including March 5, 2004.

Summary of Hearing Officer's Recommendation and Agency Responses:

The Department held a public hearing regarding the rule proposal at the Department, 401 E. State Street, Hearing Room, First Floor, East Wing, Trenton, New Jersey on March 4, 2004. William O'Sullivan, PE, Director of the Department's Division Office of Air Quality, served as the hearing

officer. The Department held this public hearing to provide interested parties with the opportunity to present comments on the Department's proposed rulemaking. The comment period for the proposal closed on March 5, 2004. The comments received by the Department are summarized and addressed below. The hearing officer recommended that the Department adopt the proposed amendments and new rules, with the changes described in the Response to Comments and the Summary of Agency-Initiated Changes sections below. The Department has accepted the hearing officer's recommendations, which are set forth in the hearing officer's report. A record of the public hearing is available for inspection in accordance with applicable law by contacting:

Department of Environmental Protection

Office of Legal Affairs

ATTN: Docket No. 30-03-12/340

401 East State Street

PO Box 402

Trenton, New Jersey 08625-0402

Summary of Public Comments and Agency Responses:

The Department received oral and/or written comments from the following persons:

1. Brian Bahor, Vice President – Environmental Permitting, Covanta Energy Corporation
2. Catherine Bowes, Northeast Coordinator, Clean the Rain Campaign, National Wildlife Federation

3. James C. Colman, Assistant Commissioner, Bureau of Waste Prevention, Commonwealth of Massachusetts
4. Charles S. Diestelkamp, Works Manager, Griffin Pipe Products Co.
5. Ronald Drewnowski, Director, Environmental Strategy & Policy, PSEG
6. Sharon Finlayson, Board Chair, New Jersey Environmental Federation
7. Lisa Fleming, Senior Environmental Specialist, Vineland Municipal Electric Utility
8. Chip Foley, Director, Government Relations, Steel Recycling Institute
9. Frank E. Giordano, Pollution Control Financing Authority
10. Derek Grasso, American Ref-Fuel
11. Janet Griffin-Wojtowicz, Director, Environmental Compliance, Schering-Plough Corporation
12. Richard A. Janicki, Plant Manager, United States Pipe & Foundry Company
13. Martha H. Keating, Air Toxics Scientist, Clean Air Task Force
14. Edward Knorr, Chairman, Greenaction
15. Theodore J. Korth, Director of Policy, New Jersey Audubon Society
16. Dr. George Lambert, Director, NIH/USEPA Center for Childhood Neurotoxicology and Exposure Assessment at Robert Wood Johnson Medical School
17. Angela Ledford, Executive Director, Clean the Air
18. Dr. Ronald J. Librizzi, Chief, Maternal Fetal Medicine, Virtua Health System
19. Karen Long, RN, APC, C, New Jersey State Nurses Association
20. Maureen Marchetta, Program Director, Children's Health Environmental Coalition
21. Hassan Nekoui, Novartis Pharmaceutical Corporation
22. Jane Nogaki, Secretary, Coalition Against Toxics

23. Timothy J. Porter, Director, Air Quality Management, Wheelabrator Technologies Inc.

24. Tracy A. Reed, Director, Volunteer Development & Public Affairs, March of Dimes

25. Emily Rusch, New Jersey Public Interest Research Group

26. Barbara Sachau

27. James D. Schultz, Vice President, Environment and Energy, American Iron and Steel Institute

28. Michael Shore, Senior Air Policy Analyst, Environmental Defense

29. John F. Spinello, Jr., Attorney, Kirkpatrick & Lockhart LLP

30. Rebecca D. Stanfield, Environmental Attorney, U.S. Public Interest Research Group and Illinois Public Interest Research Group

31. John Stanton, Vice President, National Environmental Trust

32. Denise Sticklepironti, Executive Director, Central New Jersey Maternal & Child Health Consortium, Inc.

33. Bruce C. Studley, Camden County Energy Recovery Associates, L.P.

34. Jeff Tittel, Director, New Jersey Chapter, Sierra Club

35. A. James Turner, Director, Environment and Quality, Gerdau Ameristeel

36. George J. Tyler, Attorney, Tyler & Carmeli, P.C.

37. John G. Waffenschmidt, Director, Business Development, American Ref-fuel

38. Bruce M. Wallington, Merck & Co., Inc

39. Stuart Widom, Senior Environmental Consultant, Conectiv Energy

40. Dr. Ann Wilson, Director, Prevention Coalition, The Arc of New Jersey

41. John L. Wittenborn, Attorney, Collier Shannon Scott, PLLC

42. Maria Zannes, President, Integrated Waste Services Association

The number(s) in parentheses after each comment corresponds to the commenter numbers above and indicate(s) the person(s) who submitted the comment. The comments specific to each industry regulated by these rules are presented first, followed by general comments:

A. MUNICIPAL SOLID WASTE INCINERATORS

1. COMMENT: The proposed amendments could lead to the shutdown of the Camden County Resource Recovery Facility ("Camden CRRF"). The reason for a potential shutdown is that the Pollution Control Financing Authority of Camden County ("PCFACC") will be unable to fund the installation and operation of a baghouse or compact hybrid particulate collector ("COHPAC") unit to comply with the proposed amendments. (9, 33)

RESPONSE: The Department does not believe that the implementation of the mercury rules will have the effect of shutting down the Camden CRRF. According to recent stack test data provided to the Department by the Camden CRRF, the Camden CRRF is already in compliance with rules that are not scheduled to be in effect for at least seven years. In 2003, the Camden CRRF achieved greater than 97 percent mercury control across the air pollution control device. The Camden CRRF has also achieved less than 3.4 μg/dscm mercury emissions from the stack.

Similarly, the Department has received stack test data from Essex Resource Recovery Facility ("ECRRF") with 7.3 pounds of carbon feed per million actual cubic feet air flow rate (lb/MMacf). Those data demonstrated more than 96 percent mercury control efficiency based on the average of three test runs, which also shows compliance with rules that do not become effective for at least seven years.

The rules do not mandate either a baghouse or a compact hybrid particulate collector (COHPAC), but rather require compliance with either the 28 μg/dscm or a certain percent mercury control efficiency from the air pollution control apparatus. Camden CRRF appears to already be able to meet the 95 percent mercury control which becomes effective seven years after the operative date of these rules, by adjusting its existing equipment and/or processes. Also, the Camden CRRF has the option of meeting the 28 μg/dscm standard, which has been in existence since 1994. The most recent stack test data show that the Camden CRRF achieved less than 3.4 μg/dscm based on annual average. Therefore, under either component of the standard, it appears that the Camden CRRF is already achieving compliance with the 2011 standards in these rules, and the effect of these rules should not lead to the potential shutdown of the Camden CRRF.

2. COMMENT: The capital cost of installing fabric filter type mercury air pollution controls would be between $14,000,000 to $18,000,000 at the Camden CRRF. Based on the most recent stack test data, the commenters estimated the additional mercury emission reductions. They further estimated the cost of mercury emission controls per pound of mercury reduced and expressed concern that it would be 10 times higher than the $6,000 per pound stated in the proposed rules. (9, 33)

RESPONSE: As discussed in the response to Comment 1 above, the Department believes that the Camden CRRF has already demonstrated its ability to achieve the emission standards in the rules, without installing fabric filter type mercury controls such as a compact hybrid particulate collector (COHPAC).

Even if the Camden CRRF were to need a COHPAC to comply with the emission standards in the rules, the Department disagrees with the commenters' calculation of the cost. The Department projected the cost of installing and operating fabric filter type mercury air pollution control equipment based on data from the SEMASS Resource Recovery Facility in Rochester, Massachusetts (SEMASS). The Department consulted with the vendor that provided the COHPAC for SEMASS, and learned the cost of the COHPAC at SEMASS. The vendor advised the Department that the cost of installing the COHPAC is generally proportional to the capacity of the facility.

The SEMASS plant has two units with a total capacity of about 2,000 tons per day. The Camden CRRF has three units with a total capacity of about 1,050 tons per day. Based on consultation with the SEMASS vendor, the Department projected the cost of purchasing and installing the COHPAC at Camden CRRF based on the cost at SEMASS and the relative capacities of the two facilities.

The SEMASS plant spent a total of $8,398,000 to purchase a COHPAC on both of its units, and to purchase replacements for the continuous emission monitoring and data acquisition system. Based

on the above cost and the capacity of the plants, the Department projected a price for the COHPAC only of approximately $4,500,000 for Camden.

The Department also relied upon the USEPA Air Pollution Control Cost Manual (http://www.epa.gov/ttn/catc/products.html#cccinfo), to adjust the estimated cost of the COHPAC upward to reflect installation costs, and to determine the annual costs. That adjustment yielded total capital costs of $5,455,000, and total annual costs of $965,000.

The commenters developed their cost per pound estimate based upon an annual mercury emissions reduction of 15 pounds per year. Using a projected reduction this small dramatically overstates the cost per pound. The average annual mercury emissions based on the actual stack test data at the inlet for five years (from 1998 to 2002) is 1,210 pounds per year. The rules previously in effect required 80 percent mercury control, or emissions of 242 pounds per year. The rules adopted herein require 95 percent mercury control, or emissions of 60.5 pounds per year. The difference between the two is about 180 pounds per year, rather than the 15 pounds per year used by the commenters. A worksheet showing the Department's calculation of costs is available upon request.

Finally, even if the cost of mercury control were significantly higher than the estimates provided herein or in the proposal, the regulation of mercury missions from MSW incinerators would be reasonable given the toxicity of mercury and the adverse impact on human health and the environment caused by such emissions. See the response to comment # 59.

3. COMMENT: The Second Mercury Task Force recommended changing the removal efficiency requirement from 80 percent to only 85 percent, not 95 percent. The current proposal fails to explain why the Department has proposed rules significantly more stringent than the one recommended by the Second Mercury Task Force. (10, 33)

RESPONSE: The commenters are correct that the Second Mercury Task Force recommended that the State consider revising the rules governing MSW incinerators to retain the 28 μg/dscm primary requirement, and to change the then existing alternative limit based on efficiency of the control device from 80 percent to 85 percent.

The Second Mercury Task Force outlined anticipated reductions in air emissions of mercury from a variety of source categories including MSW incinerators. The Second Mercury Task Force report stated that 1990 mercury emissions from MSW incineration totaled over 4,500 pounds per year and projected that in 2006 these emissions should be 200 pounds per year. In other words, the Second Mercury Task Force projected that mercury emissions from the MSW sector should actually be reduced by more than 95 percent. This regulation has been designed to achieve that result. See Task Force Report, Volume III, Page 23.

The Second Mercury Task Force concluded that these reductions would result from continuing existing programs. In reaching that conclusion, the Second Mercury Task Force recognized that some MSW incinerators equipped with baghouses were already achieving greater than 95 percent removal efficiency, and that technology was available to enable all five MSW incinerators in the

State to achieve that level. This conclusion coupled with the well-documented hazards to public health and the environment caused by mercury emissions, supported the Department's decision to require a 95 percent control efficiency standard.

Moreover, the Second Mercury Task Force also advocated an overall goal of the virtual elimination of anthropogenic uses and releases of mercury. These rules as adopted help to serve that goal, by taking full advantage of technology that is available today to reduce mercury emissions from MSW incinerators.

4. COMMENT: The MSW component of the rules should include an outlier provision to address unusually high inlet measurements of mercury. The commenter suggests that the Department should adopt one of the following options:

i. Consistent with 40 CFR 60.6(f), if one test run is an outlier, the remaining two test runs should be used to calculate the average results for the stack concentration and removal efficiency. The facility should be required to review the operating conditions during the sample period of the outlier so that an evaluation can be made relative to equipment status and operating conditions, confirming that normal equipment operating parameters were maintained during the test; or

ii. The facility should also have the flexibility to retest for the purpose of creating a separate and independent set of test results for determining compliance with the applicable standards.

(1)

5. COMMENT: The Department should adopt Massachusetts' approach of allowing a facility to discard a run where the inlet concentration exceeds 560 μg/dscm, as long as the facility can demonstrate that its mercury reduction equipment and programs were functioning at the time of the test. See Massachusetts Department of Environmental Protection, "Policy for Implementation of Mercury Emission Requirements under the Municipal Waste Combustor Rules," BWP-01-04, June 29, 2001. A test run with an inlet value exceeding the 99th percent upper confidence interval of the facility's inlet values for the previous three years should also be excluded as non-representative of normal operation and should not be used in the averaging calculation. A statistical process for excluding tests that are clearly not indicative of normal operation should be available. (10, 23, 33, 42)

6. COMMENT: Language addressing test results for mercury outliers should be included in the rules. Data from incinerator test runs in the mid-1990s indicate the potential for incoming mercury spikes and their magnitude. The commenter states that its ability to avoid an incoming mercury spike is extremely limited due to the fact that the fuel used, municipal solid waste is heterogeneous, and comes from many different generators. Although the commenter states that it prohibits the delivery of mercury-containing items such as mercury batteries, thermometers, fluorescent light fixtures, and injectable pharmaceuticals, follows waste inspection procedures to locate and remove such items, it remains almost impossible to identify and remove all of the items containing mercury. The current

and proposed mercury limits are so stringent that a small package of mercury batteries or thermometers can cause a violation of the 28 μg/dscm standard, even if every other test run is well within the standard. For example, the commenter stated that it recently experienced an inlet concentration of 904 μg/dscm. Although it was able to remove 90 percent of the incoming mercury prior to its exit from the stack, the stack concentration was still 134 μg/dscm, which made it arithmetically impossible to meet an annual average of 28 μg/dscm (134/4 = 33.5). (1, 33)

RESPONSE TO COMMENTS 4 THROUGH 6: The Department does not agree with the commenters' recommendation to exclude test runs that document high mercury emissions. The outlier test results the commenters are referring to are actual mercury emissions to the environment that have occurred. The Department understands that outlet mercury emissions may be highly variable, and one test result may be significantly higher (or lower) than the two other tests. A significant difference between one test and two others does not necessarily mean that the one test result is a statistical outlier. It is only reflective of the variability of the data. All data from emission tests that are conducted in accordance with the approved test methods and have good quality control should be used for compliance purposes. For these reasons and in order to encourage minimum mercury emissions to the environment, the Department does not allow excluding outlier test results.

Both the 28 μg/dscm and 95 percent mercury removal standards are annual averages. An annual average is the arithmetic average of all stack emission tests conducted for four consecutive quarters. To obtain the annual average of all actual emissions as tested, the arithmetic average of all test runs

conducted each quarter is determined. Quarterly testing requires a minimum of three test runs, but the facility may choose to conduct more tests if they feel it will more accurately represent the mercury emissions average. Also, sources have the option of using one of the commercially available continuous emissions monitoring systems if approved by the Department. Mercury CEMS are currently used in Europe for compliance purposes, primarily in Germany, where mercury CEMS are installed at over 100 facilities, including fossil-fuel boilers and municipal waste combustors. (MERCURY CEMS: TECHNOLOGY UPDATE by Jeffrey V. Ryan and James D. Kilgroe, U.S. Environmental Protection Agency, National Risk Management Research Laboratory, Air Pollution Prevention and Control Division, Research Triangle Park, North Carolina)

Also, the Department has provided the option for a facility to average the results of its emission tests over three years. Such averaging would also reduce the impact of individual high test runs on the average which is used for compliance determination.

7. COMMENT: According to proposed N.J.A.C. 7:27-27.4(a)(1), compliance with the mercury emission standard is based on an annual average, not on each quarterly stack test. Further clarification and/or confirmation is requested that when a facility fails to meet both the 28 μg/dscm and 85 percent removal in two quarters of one year, and also fails to meet the annual average for the entire year, it commits only one violation. (33)

RESPONSE: The rules states that compliance will be “based on the annual average of all valid stack

emission tests performed for each four consecutive quarters" for either of the standards. Any given municipal solid waste incinerator subject to the rules must comply with either the numerical concentration component of the standard or the control efficiency component of the standard. Four annual averages are required to be reported in a year, one after the end of each calendar quarter. Therefore, because compliance is measured on a rolling average, those two quarters referred to in the comment that were above the standards could be included in three annual averages, and two quarters of high mercury emissions could cause more than one annual average exceeding the mercury emission standard. Each such exceedance of the annual average would be a separate violation. How many annual averages would be above either 28 µg/dscm or the 85 percent removal efficiency requirement can not be predicted from the information in the comment. Compliance would be based either on the numerical standard or the control efficiency standard, not both simultaneously.

8. COMMENT: Proposed N.J.A.C. 7:27-27.4(c) seems intended to provide that once a facility is able to reduce its frequency of stack testing because it has been in compliance with the regulation for eight consecutive quarters, it will be required to revert to quarterly testing only if a subsequent test indicates that the facility met *neither* the 28 µg/dscm limit *nor* the percent removal requirement. However, the "or" between "(a)(1)" and "(a)(2)ii and iii" in the last sentence in the subsection could be read as requiring quarterly testing even if the facility satisfied one of the two compliance methods. This should be clarified. For example, the sentence could be rewritten to read: "However, if subsequent stack emission testing demonstrates failure to comply with both (a)(1) and (a)(2), then …" (33)

RESPONSE: The Department has clarified the last sentence in N.J.A.C. 7:27-27.4(c) on adoption by removing the specific references to (a)(1) and (a)(2)ii and iii, and just referencing (a). A similar clarification has been made in N.J.A.C. 7:27-27.6(c) and N.J.A.C. 7:27-27.7(c).

9. COMMENT: N.J.A.C. 7:27-27.4(c) maintains the intent of the existing N.J.A.C. 7:27-27.4(e), which allows for a facility that demonstrates long-term compliance to test annually, rather than quarterly. The Department should clarify that a facility testing annually, under the existing rules, can continue to test annually so long as it continues to demonstrate compliance with the standard in effect at the time of the test. For example, if and when the standard is changed to 28 µg/dscm or 85 percent, the facility could continue to test only annually so long as each succeeding annual test meets the 28 µg/dscm or 85 percent standard. It should be clarified that facilities testing annually, whose results demonstrate compliance with the applicable standard, do not need to revert to quarterly testing under the proposed rules. (1, 10, 23, 33, 42) The proposed rules should not require facilities to revert back to quarterly testing for the first two years after the effective date of the proposed rules. (23, 42)

RESPONSE: The Department agrees with the commenters in part. A facility that has already been authorized to reduce its stack test frequency to annual, based on eight consecutive quarters of stack test results complying with the 28 µg/dscm standard established in 1994 (and which remains in effect under the amended rules), need not revert to quarterly testing, provided that all of the annual

stack tests to date have continued to show compliance with the 28 µg/dscm standard. That facility has already satisfied the requirements of N.J.A.C. 7:27-27.4(c). Going forward, such a facility would be authorized to continue annual stack testing provided that it continues to comply with the applicable standard.

10. COMMENT: It should be clarified that only individual units failing to achieve the standard during their annual test need to revert to quarterly testing. (10, 42) Proposed N.J.A.C. 7:27-27.4(c) should be clarified to indicate which waste-to-energy ("WTE") boilers would be required to revert to quarterly testing in the event that one or more of the boilers meets the standard, while one or more of them fails. If one boiler fails to demonstrate compliance with proposed N.J.A.C. 7:27-27.4(a), then that single boiler should revert to quarterly testing, not the entire facility. Proposed N.J.A.C. 7:27-27.4(c) should be revised to read as follows: "…However, if subsequent stack emission testing fails to demonstrate compliance with both (a)1 and (a)2 <u>for any of the facility's incinerators</u>, then the frequency of stack emission testing <u>for those incinerator(s)</u> shall revert to that indicated in (b) above." (10, 33, 42) Another commenter suggested that the proposed N.J.A.C. 7:27-27.4(c) be amended as follows: "…However, if subsequent stack emission testing fails to demonstrate compliance with both (a)1 or (a)2ii and iii above, then the frequency of stack emission testing <u>for that affected incinerator</u> shall revert to that indicated in (b) above." (23)

RESPONSE: Quarterly stack emissions testing applies to each affected incinerator(s) that has failed to demonstrate compliance with N.J.A.C. 7:27-27.4(a) 1 and (a) 2ii and iii during the annual test pursuant to N.J.A.C. 7:27-27.4(c). It does not apply to other incinerators at a facility that have demonstrated compliance with N.J.A.C. 7:27-27.4(a) 1 or (a) 2ii and iii. Accordingly, the Department is making this clarification on adoption by adding "for the unit that failed" in the last sentence at N.J.A.C. 7:27-27.4(c).

11. COMMENT: The Department's alternative compliance option for waste-to-energy facilities, requiring early reductions is not viable because it moves the date of compliance with a stringent new standard (14.0 µg/dscm) forward by seven years without providing facilities with an incentive to participate in this alternative. (10, 42) In fact, it contains disincentives to participation. A facility would be required to test quarterly instead of annually, regardless of its environmental performance. Once committed, the facility could never revert back to annual testing and compliance with the 28 µg/dscm – 95 percent standard. Finally, consistently achieving the proposed level of 14 µg/dscm, or one-half of the normal standard, can not be guaranteed even with operational changes at a MSW facility. The commenters request that the Department establish a more realistic early alternative compliance option that provides several years of early mercury reductions that would provide a better incentive for facilities to participate. (10) The Department's alternative compliance option for WTE facilities, requiring early reductions, should be modified to provide participation incentives because the cost of quarterly testing (approximately $30,000 per quarter) in perpetuity is too high to

justify any potential benefit from the alternate limit. (33) A MSW incinerator facility that commits to early reductions should be provided two options for compliance:

1. Alternative Option: A 3-year, facility-wide average of 21 µg/dscm (a 25 percent reduction from the current and proposed standard of 28 µg/dscm) based on annual testing. Each annual test could require a minimum of six test runs per boiler if the Department desires a broader database. However, it should be recognized that from a statistical perspective, three test runs per boiler is sufficient;

OR

2. Standard Compliance: The standard as proposed - - an annual limit for each boiler of 28 µg/dscm or 85 percent reduction (95 percent after 7 years). Annual testing (minimum of 3 runs per boiler) can be done as long as a boiler demonstrates compliance with the standard during each test. Quarterly testing must resume if a boiler does not achieve the standard, until two years of compliance is again demonstrated. (10, 42)

RESPONSE: The alternative compliance standard at N.J.A.C. 7:27-27.4(d) is a three-year average limit, which provides the opportunity to spread the spikes over three years of data measurements (or 12 consecutive quarters) and among all units at the facility. This is designed to achieve at least a fifty percent additional actual mercury reduction from the MSW incinerator source category. This

alternative standard is entirely voluntarily, if a facility does not want to avail itself of this option, then it can comply with either standard set forth in N.J.A.C. 7:27-27.4(a).

Nonetheless, the Department believes that the alternative compliance standard is viable, if a facility chooses to use it. The incentive to participate is that a facility has three years in which to determine its average emissions.

Averaging of emissions over at least 108 data points for the entire facility (3 test runs per unit x 4 quarters x 3 years x 3 units = 108 data points) would tend to dampen the effects of high tests on the three year average. Also, this facility-wide averaging over a three year period provides data and time to assess the need for installation of controls. More frequent testing will show the trend in mercury emissions and whether source separation is being effective. There is also the option to install a mercury continuous emissions monitoring system in lieu of stack emission testing pursuant to N.J.A.C. 7:27-27.8, which would obviate the need for quarterly stack emission testing in perpetuity.

12. COMMENT: Camden CRRF is unable to qualify to use the alternate limit because it is impossible to have 12 consecutive quarters of compliant data within one year of the operative date of the rules. This facility has been able to revert to annual testing based on its compliance testing with the existing rules. Assuming the rules are adopted this year, and further assuming the facility voluntarily reverted to quarterly testing during the current quarter, it would have less than eight

consecutive quarters of results by the deadline set in this subsection to take advantage of the alternative compliance option in N.J.A.C. 7:27-27.4(d). (33)

RESPONSE: Camden CRRF can comply with the 28 µg/dscm or 85 percent standard while collecting 12 quarters of data to qualify for the alternate mercury emission limit in N.J.A.C. 7:27-27.4(d).

13. COMMENT: The Department's alternative compliance option for MSW incinerators, proposed at N.J.A.C. 7:27-27.4(d)(5) potentially subjects a facility to four violations per year, instead of a single violation if a facility exceeded the emission standard, which is based on the annual average for the four quarterly stack emission tests. This potential increase in violations, coupled with the irrevocable commitment to utilizing N.J.A.C. 7:27-27.4(d) in perpetuity, as required by N.J.A.C. 7:27-27.4(d)(5), makes use of the alternate compliance method too expensive and risky. (33)

RESPONSE: The commenter is correct that very high emissions in one quarter could subject a facility to four violations per year, and possibly 12 violations over a three year period since compliance is based on an average of 12 consecutive quarters. On the other hand, since 14 µg/dscm is a facility-wide average standard, if a resource recovery facility fails to meet this standard and it has three incinerators, it will get one violation with one penalty, rather than three. Also, since compliance is determined by an average of 12 consecutive quarters, instead of just four quarters as

used for determining compliance with N.J.A.C. 7:27-27.4(a), the likelihood of high emissions in one quarter resulting in a violation of the 12 quarter average is lower.

Under N.J.A.C. 7:27-27.4(d)(4), if the facility fails to comply with the alternate standard in N.J.A.C. 7:27-27.4(d)(1), then N.J.A.C. 7:27-27.4(a)iii will apply. Also, N.J.A.C. 7:27-27.4(d)(5) says that the first seven years is a trial period for this alternative standard, and the facility can choose to continue to comply with this alternative standard, or revert back to N.J.A.C. 7:27-27.4(a)iii at the end of the seven years. This alternate standard will only apply in perpetuity if the facility so chooses after seven years of experience with this alternate standard.

14. COMMENT: Clarification should be given to confirm that MSW incinerator facilities that have already undergone optimization testing of reagent-based control systems do not need to retest if they have demonstrated compliance with the 28 µg/dscm standard and do not seek compliance with the proposed alternative mercury reduction efficiency requirements. The proposed optimization test requirements set forth in N.J.A.C. 7:27-27.8(d) should not apply to MSW incinerator facilities that have already conducted the analysis unless the changes have been made to the facility that would require carbon injection rate to be optimized again. The commenters suggest clarifying the language in N.J.A.C. 7:27-27.8(d) as follows:

"The owner or operator of any source subject to this subchapter that has a reagent based

mercury emission control system, except for municipal solid waste incinerators that have conducted an equivalent optimization test prior to the effective date of these rules, shall conduct optimization tests for mercury emissions control apparatus to determine the optimized reagent feed rate…." (1, 10, 23, 42)

RESPONSE: As discussed in more detail in the response to Comment 78, the Department has revised the rules upon adoption to address the commenters' concerns in part. Some MSW incinerators' stack test results have consistently demonstrated greater than the 95 percent control efficiency required under these rules. For those MSW incinerators that have not achieved this control efficiency, the failure to achieve that degree of control shows the need for further optimization to further reduce emissions.

15. COMMENT: A facility should not be held in violation of two separate mercury standards differing only in their units of measurement and resulting from one incident. Facilities may have both the 28 µg/dscm concentration /removal efficiency limit and a mass emission rate limit (lbs./hour) derived directly from the concentration limit. A single stack emissions test can result in noncompliance with both limits. Further, a facility could potentially demonstrate compliance with the alternative removal limit and be in violation of the lbs./hour limit. The end result is a certification of intermittent compliance and the issuance of a notice of violation for exceeding the lbs./hour limit, even though compliance was demonstrated with the removal limit. For effective implementation of the proposed rules, New Jersey must incorporate a lbs./hour limit in Title V

permits tied to the alternative removal limit or provide permit language stating that compliance with the alternative removal limits takes precedence over compliance with any lbs./hour limit. Further, enforcement policy should consider such apparent noncompliance to result in only one infraction rather than two. (10, 23, 42)

RESPONSE: Exceedance of each standard in the permit requirements will be considered a separate violation and will be included in an enforcement action, even if they pertain to the same contaminant. However, multiple violations of different limits for the same contaminant will not receive multiple penalties, but will receive the same penalty if there was only one cause of the exceedances. The penalty for the violation will be determined using the matrix in N.J.A.C. 7:27A-3.10(m), for the worst case excursion for the contaminant. For example, if a stack test showed a violation of both the µg/dscm and lbs./hour standards for mercury, the penalty will be determined using only the worst case exceedance, not both exceedances.

16. COMMENT: There should be equity among regulated sources. All affected sources should have the option to create an averaging plan with the same provisions as provided for coal-fired boilers. If a MSW facility is already meeting the 14 µg/dscm standard (half of the primary standard), why should the facility have to conduct quarterly testing? Coal-fired boilers are required to have quarterly testing, but the emission standard is the same for each unit and facility average. (1, 10, 42)

RESPONSE: The numerical standards and percent mercury control efficiency option or averaging

within the facilities vary for each regulated industry. This variation is based on the specific operation, technology and materials handled at each facility to achieve and maintain mercury emissions. For coal-fired boilers, the Department provided an option at N.J.A.C. 7:27-27.7(f), where an owner or operator may file for an averaging plan approval for two or more coal-fired boilers at the same facility. If approved, the averaging plan would require the annual weighted average of mercury emissions from coal-fired boilers 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 test results. This type of averaging plan is appropriate for coal-fired boilers because source separation is not an option, and Air Pollution Control Technology is expected to be used. By installing better air pollution controls on some units, lesser air pollution control upgrades on other units may be posssible with averaging.

MSW facilities and the iron and steel industry can source separate mercury containing substances from the process material used at the plants. MSW plants can average under N.J.A.C. 7:27-27.4(d). For MSW incinerators, a 14 µg/dscm average of valid stack emission test data from 12 consecutive quarters from all MSW incinerators at the facility is provided as an option.

17. COMMENT: The Department has expressed an interest in achieving reduction of mercury emissions sooner than later. Two facilities have already been achieving the proposed early reduction and their efforts should be recognized. The proposed rules should be clarified such that:

i. Another optimization test is not required for municipal solid waste incinerators;

ii. An annual test is appropriate if municipal solid waste incinerators demonstrate compliance

with the eight consecutive quarters; and

iii. If a municipal solid waste incinerator has already demonstrated compliance with the three-year average of 14.0 µg/dscm at seven-percent oxygen, the existing database should be available to demonstrate compliance with the proposed standard. (1, 10, 23, 33)

RESPONSE: As discussed in the response to Comment # 78, the Department has clarified the rules on adoption to explain when further optimization testing is not required.

Annual testing continues to be acceptable for the 28 µg/dscm or percent reduction standard, if compliance continues to be determined.

With respect to the 14.0 µg/dscm compliance option, the Department proposed basing the standard upon a large number of tests over a series of three-year periods in order to make it less likely that isolated spikes in mercury emissions would cause an exceedance of the stricter standard. Reducing the testing frequency to once per year would undermine the efficacy of this option.

With respect to the use of the existing database, the rules require not only that compliance with the 14.0 µg/dscm standard be demonstrated over a single three-year period, it also requires that a facility continue to demonstrate compliance with that standard going forward.

18. COMMENT: The annual average emission standards for municipal solid waste incinerators should be on a “block” basis, not on a “rolling” basis, especially because the proposed change of the

definition of "annual average" to "four consecutive quarters." (33)

RESPONSE: The rules at N.J.A.C. 7:27-27.4 (a) 2ii and iii establish the percent reduction efficiency requirements for the air pollution control apparatus of any municipal solid waste incinerator. The required reduction efficiency must be determined based on the annual average of all valid stack emission tests performed during each four consecutive quarters.

The rules that were adopted on November 7, 1994 required the reduction efficiency to be determined based on the average of all valid stack emission tests performed during each quarter. For the 80 percent reduction efficiency requirement of the air pollution control apparatus, this same requirement will continue to be effective until the date the 85 percent reduction efficiency becomes applicable.

For the 85 percent and the 95 percent reduction efficiency requirements, modifying the rules from determining compliance based on quarterly average to annual average would be acceptable only if the term annual average was revised from being based on a calendar year average of all tests to being based on the average of four quarterly stack emissions, rolling quarterly. Therefore, each quarter a control efficiency test will be performed. Four quarters of control efficiency will be averaged to determine the annual average control efficiency.

Compliance is required to be determined with the standard at N.J.A.C. 7:27-27.4 (a) 1 on an annual average basis. The numerical value of the standard is not affected. The monitoring, recordkeeping

and reporting periods for both numerical and control efficiency standards are now consistent.

Since mercury is a hazardous air pollutant, it is reasonable to determine compliance more frequently than once per calendar year. The definition of the "annual average" has been amended to reflect the fact that the annual average is now based on a rolling average.

B. HOSPITAL/MEDICAL/INFECTIOUS WASTE INCINERATORS

19. COMMENT: The Department should provide an explicit exemption in the mercury rules for hospital/medical/infectious waste ("HMIW") incinerators firing only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste similar to the exemption provided in 40 CFR 62.14400(b)(1) (Subpart HHH). (11)

RESPONSE: The Department agrees with the commenter. The Department intends to make HMIW that fire only pathological waste, low-level radioactive waste, and/or chemotherapeutic waste exempt from the mercury rules just as USEPA has in 40 CFR 62.14400(b)(1) (Subpart HHH). The Department cannot make this change in adoption now because the Department believes that adding an exemption that was not part of the original proposal is too substantial a change to be made in adoption, and would be a violation of N.J.A.C. 1:30-6.3(b). The Department plans to propose the requested exemption in a future revision to these rules, in accordance with N.J.A.C. 1:30-6.3(a).

20. COMMENT: According to the Department's mercury emission estimates, the three remaining HMIW incinerators in the state contribute only 0.22 to 0.25 percent of the total mercury emissions. The Department should focus its efforts on reducing emissions from the other three main source categories (MSW Incinerators, Coal-fired Boilers, Iron or Steel Manufacturing). The proposed rules imply that existing HMIW incinerators will operate with emissions closely approaching the Federal standard of 550 μg/dscm. Instead of the proposed rules, the Department can use its existing authority under N.J.A.C. 7:27-8.13(c), its existing enforcement authority, and/or the emissions from the facilities using their annual emission statements, as required under N.J.A.C. 7:27-21. (38)

RESPONSE: The 55 μg/dscm mercury emission limit for HMIW incinerators is more stringent than the United Stated Environmental Protection Agency's ("USEPA") 550 μg/dscm standard. If New Jersey HMIW incinerators were allowed to meet the Federal standard, then HMIW incinerators would be 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 Premier's Mercury Action Plan, which has been adopted by several New England states, and is consistent with the recommendation of the Second Mercury Task Force. In New Jersey, actual stack emissions testing data for all existing HMIW incinerators shows that facilities are already achieving the 55μg/dscm standards with a reasonable margin, using existing technology and pollution prevention measures. The Department proposed this standard to prevent backsliding to higher emissions of the past.

21. COMMENT: The language in the Jobs Impact section of the rules (36 N.J.R. 133) implies that all three of the existing HMIW incinerators in the State are located at hospital or medical facilities. In the case of our facility, where our HMIW incinerator supports our pharmaceutical research facility, it is not always possible to use mercury-free materials, given the needs of research. (38)

RESPONSE: The Department did not intend to imply that all of the HMIW incinerators in New Jersey are only located at Hospitals or Medical facilities. As stated in the proposal, all of the HMIW incinerators in the State are currently meeting the 55 μg/dscm standard with in a reasonable margin with existing technolgy and/or pollution prevention techniques. There is no reason to distinguish between HMIW incinerators located at hospitals, medical centers and research facilities. Therefore, the Department expects pharmaceutical research facilities to comply with the standard by ensuring that materials containing mercury are not being charged to the incinerator.

22. COMMENT: The waste management plan requirement is duplicative of the Federal requirement at 40 CFR 62.14430, thus achieving no real environmental benefit. (38)

RESPONSE: Waste management has been effective in New Jersey at reducing mercury emissions, especially from HMIWIs. For this reason, the Department believes it is important for the State rules to include a waste management requirement in its mercury rules. Even though the waste

management plan is required by the Federal rules, the Department does not believe that such a plan will enable a facility to meet the New Jersey standard since the Federal standard of 550 µg/dscm is ten times the New Jersey standard.

23. COMMENT: The “medical/infectious waste” definition should be consistent with the definition in the final “Hospital/Medical/Infectious Waste Incinerator” NSPS and guidelines (Federal Register September 15, 1997). Specifically, the final HMIWI NSPS guideline contains the provision that the pharmaceutical wastes, such as “off-spec” or “out-of-date” drugs returned by a hospital to a pharmaceutical company for disposal are not considered hospital waste. (21)

RESPONSE: The definition of "hospital waste" adopted in these rules includes discards generated at a hospital, and does not include unused items returned to the manufacturer. This definition is identical to the definition of "hospital waste" at 40 CFR §60.51 (c). The rules also contain amendments to the definition of "medical/infectious waste" in order to be consistent with the definition at 40 CFR §60.51 (c). Since HMIW incinerators combust HMIW, and since the definition in the State rules are consistent with the Federal rules, the Department believes that its rules are clear as to what types of wastes can be combusted in an HMIW incinerator, and are consistent with the Federal rules in this regard. Therefore, the definitions in these rules are consistent with the Federal rules.

24. COMMENT: The rules language should clearly define what the stack testing requirements is

for HMIW incinerators.

RESPONSE: Stack testing requirements for HMIW incinerators are included at N.J.A.C. 7:27-27.5(c), (d), and (e). Stack testing requirements listed at N.J.A.C. 7:27-27.8 are not applicable to HMIW incinerators.

C. IRON & STEEL MELTERS

25. COMMENT: The best way to address the mercury emissions issue is a switch removal program and for automobile manufacturers to discontinue mercury switch usage. The burden of addressing mercury switches should be directed towards the automotive industry, because they elected to use mercury switches in automobiles.

The outcome of the New Jersey Mercury Switch Data Collection Pilot Project ("Pilot Project") shows that a voluntary program is insufficient for the removal of switches and that a mandatory program should be implemented. (4, 8, 12, 27, 29, 35, 41)

RESPONSE: The Department agrees that removing mercury-containing switches from end-of-life-vehicles ("EOLVs") will help to reduce mercury emissions from iron and steel melters that use EOLV scrap. That strategy complements the emission standards in these rules.

The Department therefore supports proposed legislation (S1292, introduced March 1, 2004 and A2482, introduced March 11, 2004) requiring the automotive industry to assist in the mercury switch removal from EOLVs. These bills currently propose that vehicle manufacturers pay a minimum of $2.00 per mercury switch removed by a vehicle recycler or scrap recycling facility, as partial compensation for the labor and other costs incurred by these facilities.

The Department has received a report on a Pilot Project undertaken to determine the effectiveness of removing mercury switches from EOLVs. The Pilot Project report is available on the Department's web site at: http://www.state.nj.us/dep/dsr/mercury. The Pilot Project demonstrated that removal of mercury switches from EOLVs was feasible, because mercury switches used for convenience lights, e.g. trunk and hood lights, are generally easy to find and remove, and mercury switches used in most anti-lock brake systems are not difficult to remove. The project found that removal of these switches could result in a significant reduction of mercury emissions from iron and steel melters.

The Department has also proposed rules that would require dismantlers of EOLVs to remove mercury-containing switches from EOLVs. 36 N.J.R. 3963 (September 7, 2004).

Although removing mercury-containing switches from EOLVs will certainly help to reduce mercury emissions from iron and steel melters in the State, that strategy alone will not necessarily bring mercury emissions from this sector to the levels envisioned by the Second Mercury Task Force. Accordingly the rules provide that if source reduction alone is not sufficient to reduce a facility's

emissions to 35 mg/ton, then the facility would need to combine the source reduction strategy with the installation of air pollution controls, or to install controls that yield the required emission reductions themselves.

26. COMMENT: The primary mercury emission from melting mercury switches in cars is elemental mercury. Based on research, end-of-pipe controls are used for ionic mercury. The Department needs to provide additional information as to how this fact was addressed in the 35 mg/ton of production or 75 percent reduction requirements in the regulation. Further, the Department should provide documentation proving a control method exists for the iron and steel industry; the Department and the USEPA have both failed to identify any currently available and proven control technology for this industry. Compliance with the 35 mg/ton produced or the 75 percent removal efficiency may not be technologically feasible based upon currently available control technologies. How did the Department arrive at the 75 percent reduction figure without promulgating a mercury switch removal program, when the United States Department of Energy ("USDOE") did research on activated carbon sorbents which showed approximately 40 percent efficiency? (4, 12, 27, 29, 35, 41)

RESPONSE: The Department agrees that, although data are limited and there is considerable uncertainty, there is some evidence that mercury emissions from iron and steel plants include a relatively large portion of elemental mercury. One stack test done at the United States Pipe & Foundry Company facility found that 75 percent of the inlet mercury concentration was elemental. One stack test at one facility, however, may not be sufficient to support a conclusion that mercury

emissions from this type of facility will always be primarily elemental.

Activated carbon injection ("ACI") is a technology that is commercially available today, based on experience with MSW incinerators using ACI. Activated carbon effectively controls both ionic and elemental mercury.

Three of the five MSW incinerators in New Jersey were built with fabric filters. After those facilities were retrofitted with ACI, they achieved well over 90 percent mercury emission reduction, with two of the three achieving 99 percent with higher carbon injection rates than the third.

The Department believes that the experience in the MSW sector can be applied to iron and steel melters, and understands that the ACI technology has already been successfully applied to iron and steel melters in Europe. Even assuming that the proportion of mercury at the MSW facilities is 90 percent ionic and 10 percent elemental, to achieve 99 percent overall control, those facilities must be controlling elemental mercury by at least 90 percent. These reductions have been achieved even with greatly variable fuel entering the MSW incinerators.

Furthermore, more recent studies in the United States have shown that powdered ACI used with a COHPAC has been very effective in controlling emissions of elemental mercury. ADA-ES, Inc., a vendor of air pollution controls, has demonstrated that this technology has reduced elemental emissions from bituminous coal-fired powered plants by more than 99 percent, while also removing more than 85 percent of ionic mercury. See Presentation by Michael D. Durham, Ph.D., MBA, to

The commenter refers to a USDOE study evaluating the efficacy of activated carbon injection with respect to coal-fired power plants. The commenter is apparently referring to a study performed for year USDOE entitled "Evaluation of Carbon Injection for Mercury Control at Coal-Fired Power Plants." The study did reflect some lower rates of mercury removal, as noted by the commenter. However, those lower rates were associated with lower rates of carbon injection. More recent USDOE reports (Control of Mercury Emissions from Coal-Fired Electric Utility Boilers, Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Reasearch Triangle Park, February 27, 2004) show that with the appropriate level of carbon injection, mercury removal with this technology exceeds 90 percent. An even more recent study has shown that power plants burning subbituminous coal, which yields a much higher proportion of elemental mercury than bituminous coal, have achieved mercury removal rates at or near 90 percent. ("Accumulated Power-Plant Mercury-Removal Experience with Brominated PAC Injection," Nelson et al., presented at Combined Power Plant Air Pollutant Control Mega Symposium, August 30-September 2, 2004).

The fundamentals of ACI technology are essentially the same in different types of facilities. In an MSW incinerator, in a coal-fired boiler, or in an iron and steel melter, ACI involves injecting carbon into the flue gas, where mercury adsorbs to the carbon and is captured in a particulate control device. MSW incinerators have used the technology successfully for more than a decade, and the USDOE has demonstrated that coal-fired boilers can also use the same technology successfully. The

Department has not identified any circumstances specific to iron and steel melters that would indicate that such facilities could not use the same technology. However, by promulgating a 75 percent removal standard for iron and steel melters, which is significantly lower than the 90 percent or more that other types of facilities have achieved with ACI, the Department has sought to accommodate possible (but unproven) differences in the effectiveness of ACI in iron and steel melters.

27. COMMENT: The 35 mg/ton of production is an arbitrary number based on the background documentation of the proposed rules and the rules meetings. The Department has provided no data supporting the 35 mg/ton produced or the 75 percent removal efficiency.

RESPONSE: The Second Mercury Task Force recommended a reduction of 75 percent in emissions of iron and steel melters. To provide flexibility in compliance, the Department offered two alternative means to achieve this reduction: using a control device to achieve 75 percent removal efficiency, or reducing the emission rate to 35 mg/ton of production. The 35 mg/ton of production standard represents a 75 percent reduction from recent levels. Stack test data show that the mean mercury emission rate from iron and steel melters, weighted based on production capacity, was 137 mg/ton. Reducing that figure by 75 percent results in an emission rate of approximately 34 mg/ton.

The rules provide five years for iron and steel melters to achieve these mercury emission reductions. The Department expects that during this time period, strategies can be implemented to remove

mercury from scrap, such that facilities will be able to comply without having to install additional air pollution controls. However, if stack emission tests indicate that mercury emissions are not meeting the 35 mg/ton standard after source separation, then there are air pollution control technologies available, as discussed in Comment 26. Moreover, the Second Mercury Task Force also recognized the availability of mercury controls for this sector. See Second Mercury Task Force, Vol. III, p. 104.

Furthermore, the 35 mg/ton standard does not require that control technology alone achieve the standard. Source reduction, even if it does not completely achieve compliance with the standard, will still provide a reduction in emissions. Accordingly, the question is not whether control technology is available to meet the 35 mg/ton standard; it is whether control technology, in conjunction with some degree of source reduction, can meet the 35 mg/ton standard.

As discussed above, the Department expects that retrofitting the iron and steel furnaces with ACI and baghouses (or polishing baghouses) can achieve mercury emission reductions of over 90 percent. However, the Department has taken a more conservative approach, consistent with the recommendations of the Second Mercury Task Force, by requiring only a 75 percent reduction.

Although retrofits with a baghouse or polishing baghouse are expected to achieve the required reductions, the Department does not believe baghouses are the only way to achieve the 35 mg/ton or 75 percent control efficiency. Those New Jersey facilities without baghouses currently operate with scrubbers, and those facilities may be able to treat scrubber water with additives such as sulfides and sodium hypochlorite to remove mercury from the flue gases. These rules allow five years for this

alternative to be explored and implemented, along with source separation.

28. COMMENT: Any mercury emissions limit should be based on the results of the stack tests that are being performed as part of the Department Mercury Switch Removal Pilot Project. Because that data does not show compliance with the Department's proposed limit of 35 mg/ton, and additional stack testing may be performed soon, the proposed emission limits for the Iron and Steel Melters should be withdrawn and a new proposal should be made, based on the data from the new Mercury Switch Removal Pilot Project stack emissions test. (20).

RESPONSE: The 50 percent reduction finding is based on one test that was not formally a part of the Pilot Project, but was performed on a voluntary basis by a facility that used the reduced mercury shred generated by the Pilot Project. The Pilot Project was a preliminary effort which showed that removal of mercury switches has the potential to achieve significant reductions in mercury emissions. The results of this one stack test should not be used as a basis for an assumed emissions reduction percentage from switch removal. The Mercury Switch Data Collection Pilot Project final report stated that "preliminary data… suggest that removal of mercury switches prior to shredding results in a reduction in mercury emissions of approximately 50 percent." Additional mercury removal efforts and stack testing, associated with oversight and review by the Department, would be appropriate to determine the effectiveness of mercury switch removal after further effort to reduce mercury in scrap.

As discussed above, the 35 mg/ton standard is based not on stack tests associated with the Pilot

Project, but on the recommendations of the Second Mercury Task Force. If removal of mercury switches proves insufficient by itself to achieve 35 mg/ton, facilities will still have the option to add control technology to achieve either 35 mg/ton in conjunction with switch removal, or 75 percent removal of mercury from the inlet to the outlet of the control device.

29. COMMENT: The basis for the 35 mg per ton of production is unclear. Background documentation stated that the Second Mercury Task Force "recommended an 85 percent reduction in in-State mercury emissions from 1990 levels by 2011, in two phases 75 percent by 2006 and 85 percent by 2011. Based on the stack test data for one facility, a 35 mg per ton mercury standard would require the facility to meet between 89.01 and 91.7 percent mercury reduction efficiency depending on their production rate. This demonstrates that the facility would be required to exceed the reductions recommended by the Second Mercury Task Force. The Department states that the proposed reduction levels are based on 1990 stack emission levels. This places a more burdensome requirement upon individual facilities to meet reductions based upon other facilities' emission levels at that point in time. (4)

RESPONSE: As explained in response to Comment # 26, the Second Mercury Task Force recommended a 75 percent reduction of mercury emissions from New Jersey iron and steel melters overall. The Second Task Force did not suggest capping any individual facility's emission reduction obligation at 75 percent. Accordingly, if 35 mg/ton represents a reduction greater than 75 percent at a particular facility, but results in an overall reduction of 75 percent by all facilities, that result is

consistent with the Second Task Force's recommendations.

If 35 mg/ton were the sole standard, different facilities would have to achieve different percentage reductions depending upon their current emissions. However, 35 mg/ton is not the sole standard. The rules provide for an alternative of 75 percent mercury control across the air pollution control apparatus. Based on the facts cited by the commenter, the 75 percent part of the standard would apply, rather than the approximately 90 percent reduction that would result from meeting the 35 mg/ton in the example provided by the commenter.

30. COMMENT: The job analysis section states additional jobs will be required for installing controls. The consulting jobs are not permanent, and the cost of additional controls may force facilities to close, resulting in job loss. (4)

RESPONSE: The cost to implement source separation, add powdered activated carbon ("PAC") injection to an existing baghouse, or inject a chemical additive to a scrubber is estimated to be less than $1.80 per ton of shred processed. The estimated cost to install a new baghouse with PAC injection would be $4.00 per ton of shred processed. The cost of scrap is approximately $300 per ton. One ton of scrap produces 0.9 ton of steel and sold for $360 to $780 dollars per ton. The cost of compliance with the rules is minimal compared to the price of a ton of steel, and is therefore, not expected to cause any facility to close. As stated at the Job Impact Section of the basis and background document of the proposal, the new rules and amendments are expected to have a very

small, but positive, impact on the employment and jobs in New Jersey.

31. COMMENT: The dollars per ton reduced value already exceeds the Department's cost estimate, without including the cost for disposal of mercury-contaminated baghouse dust or permitting.

The cost of removing a pound of mercury is more than four times the Department's maximum cost estimate of $27,000/lb of mercury removed. (4, 12, 27, 29, 35, 41)

RESPONSE: The disposal cost for the baghouse dust has been included in the cost calculations. Based on calculations provided by Griffin Pipe and Products for the replacement of facility's existing Venturi scrubber with baghouse and activated carbon injection, the cost is $34,407 per pound of mercury removal. Although this cost is greater than the Department's previous maximum cost estimate of $27,000/lb of mercury removed, the difference is far from what the commenters suggests.

Even the cost cited by the commenters is reasonable for mercury control. The cost of complying with the emission standards and/or control efficiency in these rules must be evaluated in light of the adverse health effects caused by consuming mercury-contaminated fish and the existence of air pollution control technology at a reasonable cost to meet the standards contained herein. The total capital cost and annual operating costs are reasonable and comparable to the capital costs of air pollution control equipment installed to control other air pollutants, such as particulate matter. The Department recognizes that the cost per pound appears relatively high compared to costs for

controlling criteria pollutants. Inasmuch as mercury is toxic when emitted in far smaller amounts than criteria pollutants, the higher cost is justified because mercury is an extremely harmful pollutant, which bioaccumulates in the environment and causes very severe health effects in humans and animals that eat mercury-contaminated fish. Also, see the response to Comment #59 concerning comparing the cost of controlling mercury to the cost of controlling criteria pollutants, such as nitrogen oxides, sulfur dioxide or particulates.

32. COMMENT: The Department did not address additional costs for off-site water disposal in their cost analysis. The commenter stated that disposing of the effluent off-site would cost between $0.30 to $0.40 per gallon. (4)

RESPONSE: Two out of the six iron and steel melters have afterburners and venturi scrubbers. These facilities with scrubbers can either install baghouses with ACI injection, or add chemicals such as sodium hypochlorite to their scrubbing solution to remove mercury from the gas stream. The cost of installing baghouses with ACI injection was discussed in the proposal. See 36 NJR 129. The costs for handling the scrubbing solution are discussed below.

First, as discussed in the proposal (36 NJR 129), the cost of chemical additives to the scrubbing solution would range from $1,000 to $16,000 per pound of mercury removed, estimating the annualized operating cost of sodium hypochlorite additive to be $1.40 per cubic meter per hour of flue gas flow rate.

Second, the facility would incur costs to manage the scrubbing solution, which would have become contaminated with mercury. The Department does not view offsite disposal as a practical way to manage the contaminated solution. To manage the contaminated solution, the more likely approach would be to remove the mercury from it so that it can be reused in the same manner that facilities are currently employing, or are otherwise properly managing it before it is discharged.

The Department has identified several remedial processes, which would allow the treatment of scrubber effluent on-site. With on-site treatment, the costs and liabilities of moving large volumes of waste water and the profit required by the plant operator are eliminated. These processes include the use of activated carbon, ion exchange resins, and precipitation/solids removal. Activated carbon can be used to remove mercury from scrubber effluent and other wastewater streams. Achievable effluent concentrations typically range from 0.5 to 20 micrograms per liter. (Aqueous Mercury Treatment-AMT, Office of Research and Development, United States Environmental Protection Agency, Document USEPA/625/R-97/004, July 1997) The mercury is adsorbed into the pours of the carbon and the activated carbon is effective in removing mercury until it is saturated. At saturation, the activated carbon is spent and either has to be regenerated or disposed of. Activated carbon has an adsorptive capacity of 380 gram of Hg^{2+} per liter of carbon (Mercury Treatability Study Final Report -MTSFR, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee, TN & Associates, Prepared for the United States Department of Energy, June 1998). The cost of carbon is approximately $0.80 per pound.

Ion exchange resins can be used to remove mercury from waste water. One resin, which is used in

practice, has a adsorptive capacity of 140 gram of Hg^{2+} liter of resin (MTSRF). Its cost is $34 per liter. This ion exchange resin has been reported to remove mercury in any of its three-oxidation states. The ion exchange resin works through the cation exchange of mercury.

For precipitation, an additive is used to change the mercury from a soluble form to an insoluble form, which can subsequently be removed. During the sulfide precipitation process, a sulfide salt is added which reacts with the Hg^{2+} ion to produce mercury sulfide, which is insoluble in water. The mercury sulfide can subsequently be removed from the wastewater stream through adding flocculent or coagulants. The mercury sulfide then settles out and can be removed from the wastewater stream as sludge (AMT).

For each type of treatment system, costs would depend on the initial capital costs of the equipment, maintenance and replacement costs, amount of additives needed, volume of waste water to be treated, mercury concentration, and disposal cost of any spent materials. Each of these treatment systems has been used on a full-scale basis. Sulfide precipitation has been used to remove mercury from wastewater at many chlor-alkali plants at removal rates of 95 to 99.9 percent. Costs, exclusive of sludge management, reported for the treatment of chlor-alkali waste wastewater were reported to be $0.79/1000 gallons (1987 dollars). Capital cost (1995 dollars) for a chlor-alkali plant utilizing sodium sulfide addition plus diatomaceous earth filtration for a 100 gallons per minute flow was $2,767/1000 gallon per day capacity. Activated carbon addition has been employed on a full-scale basis. The use of ion exchange resin has been identified at 4 ground water treatment facilities with initial mercury concentrations ranging from 11-15 micrograms per liter (ug/l) and at one defense

facility with initial mercury concentrations ranging from 200 to 70,000 ug/l (AMT).

One New Jersey facility has been identified which pumps its facility waste water to a gravity settler, the solids fall to the bottom, these solids are mixed with an additive which binds the heavy metals, and the treated solids are shipped off-site. (October 20, 2004 email from Keshav Murthy, P.E., Environmental Manager, Atlantic States Cast Iron Pipe Company, Phillipsburg, New Jersey to Sunila Agrawal, Section Chief, NJDEP). An incinerator in Duluth, Minnesota successfully used polymer precipitation to remove mercury from its waste water stream. (October 21, 2004 email from Edward Swain, State of Minnesota to Narinder Ahuja, NJDEP).

There are many on-site, full-scale wastewater treatment systems used to control mercury using a variety of technologies. Consequently, the commenter's argument that it is cost prohibitive to treat its effluent stream is not supported.

33. COMMENT: The Department is prohibited from establishing a mercury emission limit and/or work practice standards that are more stringent than the recently promulgated USEPA MACT requirements for the iron or steel melters. New Jersey cannot establish a state-of-the-art control that goes beyond source separation for the iron and steel foundries within the state, but requiring additional controls beyond source separation does establish a more restrictive state-of-the-art than that established by USEPA in its MACT standard. (4, 12, 27, 29, 35, 41)

RESPONSE: The New Jersey Air Pollution Control Act directs the Department to require newly constructed, reconstructed, or modified equipment and control apparatus to incorporate advances in the art of air pollution control as developed for the kind and amount of air contaminant emitted by the applicant's equipment and control apparatus. N.J.S.A. 26:2C-9.2. This state-of-the-art ("SOTA") requirement is implemented through air pollution control permits issued by the Department. These mercury rules are entirely independent of any SOTA requirement.

The SOTA mandate does not limit the Department's ability to promulgate regulations establishing emission limits for a source category. N.J.S.A. 26:2C-8 gives the Department broad power to promulgate regulations preventing, controlling and prohibiting air pollution. "Air pollution" includes the presence of air contaminants in the outdoor atmosphere in quantities and duration as are, or tend to be, injurious to human health or welfare, or unreasonably interfering with the enjoyment of life or property. N.J.S.A. 26:2C-2.

The emission of mercury into the outdoor air, from which it is deposited into New Jersey waterways, without question, falls within the definition of "air pollution." Nothing in the SOTA provisions of the Air Pollution Control Act limits the Department's authority and its duty to prevent, control, and prohibit this air pollution.

On the contrary, the SOTA provisions establish technology based emission limits for newly constructed, reconstructed, or modified equipment or control apparatus. If a piece of equipment were to continue to emit air contaminants that would be injurious to human health or welfare even

after the installation of technology that would be considered SOTA, the Department would be obligated to go beyond SOTA to require the reduction or elimination of those emissions.

In addition, some of the same commenters (see Comment 34 below) point out that only facilities that are considered "major" for hazardous air pollutants ("HAPs") are subject to the scrap inspection plan pursuant to USEPA MACT for iron and steel foundries. For minor facilities or synthetic minor facilities that are not subject to the USEPA MACT, the argument raised by the commenters is not relevant. Also, the USEPA has not regulated mercury emissions from electric arc furnaces, which are three of the six major scrap melting facilities in New Jersey.

34. COMMENT: Facilities major for hazardous air pollutants ("HAPs") are only subject to the scrap inspection plan, pursuant to USEPA MACT. Therefore, the Department's proposed rules go beyond USEPA MACT for minor or synthetic minor facilities. Additional costs will be incurred, contrary to the Department's claims of no additional costs. Mercury switch inspection is impractical because switches are the size of a dime. (4, 12, 27, 29, 35, 41)

If New Jersey's neighboring states do not promulgate similar rules, then scrap suppliers will supply other states, resulting in the closure of New Jersey facilities. (4, 29)

If the Department requires iron and steel foundries to employ end-of-pipe controls, at their expense, without requiring any remedial actions by the automotive industry, steel melters will be penalized for the actions of another industry. (4, 41)

RESPONSE: The MACT standard referenced here is in 40 CFR Part 63 Subpart EEEEE: National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Iron and Steel Foundries. Only facilities that are major sources of HAPs and are engaged in melting "scrap, ingot, and/or other forms of iron and/or steel" and pouring the molten metal into molds for introduction into commerce are subject to these rules. A major source of HAPs is defined by Section 112 of the Clean Air Act as a source emitting greater than 10 tons per year of a single HAP or 25 tons per year of all HAPs combined. After proposing the rules, the Department learned that as a result of this major source cutoff and USEPA's failure to regulate electric arc furnaces, none of the iron and steel facilities in New Jersey is currently covered by the Federal regulation.

The Department has ten years of successful experience with New Jersey's municipal waste incinerators in reducing mercury emissions through a combination of pollution prevention, source separation, and available controls. Transfer of pollution prevention, source separation, and air pollution control technology is clearly feasible for iron and steel manufactures. The New Jersey Mercury Switch Data Collection Pilot Project also revealed a 50 percent reduction in mercury emissions while utilizing low mercury content shredded scrap in place of normal scrap based on early efforts to remove switches from cars. Therefore, scrap metal inspection and source separation are an effective method for reducing mercury emissions from iron and steel melters to prevent mercury contamination of the furnace discharge. The mercury minimization and source separation plan required at N.J.A.C. 7:27-27.6(e) is consistent with USEPA's MACT standard. USEPA, in its final rules for the MACT standard, stated that the cost for such a plan would be $1,285 per pound of

mercury removed. The Department estimated that the cost to remove one pound of mercury through source separation would be about $1,140.00, 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. Data recently obtained by the Department through completion of its Mercury Switch Data Collection Pilot Project indicate that the total cost per switch is likely to be approximately $3.00. The project also found that each switch contains an average of approximately 1.2 grams of mercury. The earlier cost estimate had been made with the assumption that each switch contained 0.8 grams of mercury. The newer data indicate that the cost to remove one pound of mercury through source separation is about $1135.00, approximately the same as the earlier estimate. This evaluation indicates that source separation and minimization is a reasonable and cost effective alternative for non-MACT iron and steel melters, since these sources are the largest source category of mercury emissions in New Jersey and can have significant impact on the health, environment, and economy of fishing industry.

The Department disagrees that scrap suppliers will simply supply other states, resulting in the closure of New Jersey facilities. The USEPA MACT rules apply to all major iron and steel melters nationwide. Those facilities will need to purchase scrap with the mercury switches removed, thus supporting a nationwide market for such scrap and narrowing opportunities to sell scrap that did not have mercury switches removed. Therefore, scrap suppliers that refuse to remove mercury switches will have a significantly limited market for their scrap, not only in New Jersey, but throughout the rest of the nation as well.

The commenters are correct in pointing out that the Department incorrectly stated in the proposal that there would be no additional costs associated with the work practice standards set forth in N.J.A.C. 7:27-27.6(d). As noted above, the Department learned after the rules were proposed that none of the iron or steel melters subject to these rules is subject to the recently adopted Federal MACT rules applicable to the iron or steel industry. Accordingly, the facilities will incur additional costs to comply with the work practice standards. The Department has reevaluated the economic impacts of the rules, and has quantified the following additional costs. Each facility will be required to implement a plan for inspecting incoming scrap to assure that it purchases low mercury scrap or mercury-free scrap. In the USEPA's "Economic Impact Analysis of Proposed Iron and Steel Foundries NESHAP" (November 2002), the USEPA determined that the scrap selection and inspection requirements would increase a typical foundry's inspection process by 0.5 hours per day or 182 hours per year (assuming 365 operating days per year). The USEPA also determined that a one-time scrap selection plan must be prepared and communicated within the foundry, requiring an additional 10 hours per year for a total of 192 hours per year. The USEPA determined that the cost of this labor, including overhead and fringe benefits, was $59.83 per hour. Therefore, using the USEPA's approach, a facility large enough to be subject to the MACT standard would incur total annual costs of $11,487.36 per year to comply with the work practice standards. For a non-major facility, it is reasonable to expect that the cost may be less. In any event, the USEPA estimates indicate that the cost of the work practice standards will not materially affect the cost of complying with the rules.

The Department agrees with the commenters that the automotive industry bears responsibility for the

presence of mercury in automobiles, and therefore supports pending legislation that would require automobile manufacturers to contribute to the cost of removing mercury switches from end-of-life vehicles. Even without that legislation, however, the severity of the threat to public health posed by mercury levels in the environment makes it necessary for the problem to be addressed, whether the cost is borne by the automotive industry, scrap yards, iron and steel melters, or some combination of these industry sectors.

35. COMMENT: It is impossible to certify mercury-free scrap if mercury is put into the objects being recycled. Also, there is no definition of mercury-free scrap in the proposed rules. (4) Certification of mercury-free scrap is impossible. Visual inspection of 10 percent of incoming scrap shipments to steel mills is futile and unwarranted. (35)

RESPONSE: The Department agrees that a definition of "mercury-free scrap" would help to clarify the rules. Accordingly, the Department has added such a definition to the rules upon adoption. "Mercury-free scrap" is defined to mean scrap solely from sources that do not contain any intentionally added mercury. For example, automobile scrap, even when mercury switches have been removed, would not be considered "mercury-free scrap." In contrast, steel beams obtained from demolished buildings would be considered "mercury-free scrap." The Department believes that this definition addresses the commenter's concerns about the ability to certify mercury-free scrap, and about the efficacy of visual inspections.

Inspection of "mercury-free scrap" can verify that the scrap is a type that would be expected to be mercury free. For example, scrap from steel beams is readily identifiable as such. The Department acknowledges that inspection of other scrap, such as automobile scrap, will not ensure that the scrap is entirely free of mercury switches. However, it is also worthwhile to ensure that the scrap is as specified. For example, the scrap can be visually checked for mercury switches, thermostats, and other potentially mercury containing devices that are visible. This visual inspection requirement is modeled after the Federal MACT for iron and steel foundries. The Department did not intend to suggest that visual inspection of such scrap will yield a quantitative determination of mercury in the scrap. Accordingly, the Department has revised the rules upon adoption to clarify that visual inspection is not intended to "ensure" that scrap, other than mercury-free scrap, is entirely free of mercury.

Visual inspection has efficacy as a secondary means to confirm that mercury switches have been removed. Visual inspection supports scrap specifications by the melters, and requirements for scrap dealers to remove mercury switches, whether to meet manufacturer's specifications or any legal requirements mandating switch removal. Finally, stack testing quantitatively demonstrates the amount of mercury in the scrap.

The Department has also clarified N.J.A.C. 7:27-27.6(e)2 upon adoption. N.J.A.C. 7:27-27.6(e)2iii had referred to actions to be taken against suppliers that failed to provide certain types of scrap shipments. However, the introductory language to N.J.A.C. 7:27-27.6(e)2 referred only to scrap from which mercury had been removed, and neglected to mention mercury-free scrap. Accordingly,

the Department has clarified that introductory language upon adoption so that it refers to both types of scrap. The Department clarified visual inspection of all incoming mercury-free scrap shipments to ensure that the shipments contain only mercury-free scrap, and procedures for visual inspection of a representative portion, but not less than 10 percent, of all other incoming scrap to assist in verifying that mercury has been removed from the scrap.

36. COMMENT: Stack emissions testing is impossible on the inlet side of some sources, because of the isokinetic testing requirements in the test method of the proposed rules. (4, 27, 41)

RESPONSE: Two iron and steel melting facilities that are controlled by scrubbers may be unable to test the flue gas stream at the inlet to the scrubber. As discussed in the response to Comment 51**,** test methods can usually be adapted to address non-optimum test conditions, such as short ductwork between a cupola and the scrubber, especially when gases are being tested, as would be the case with mercury. The air pollution control efficiency of the scrubber for reducing the emissions of mercury can be determined alternatively by testing the concentration of mercury in the solution in the scrubber holding tank at the time the test begins and at the time the test ends. A side stream of scrubber solution can be bled out of a pipe to take a sample of scrubber solution from the holding tank. This sample can be used to calculate average mercury ion concentration. The make up water to the holding tank would not have any mercury in it. With this information (namely the mercury out at the stack, mercury concentration in the scrubber holding tank at the beginning of the stack emission test, mercury concentration in the holding tank at the conclusion of the stack emission test, the

amount of makeup water added, and the amount of solution removed from the holding tank), the mercury content in the flue gas at the inlet to the scrubber can be determined.

37. COMMENT: The Department overlooked the Ocean County Grand Jury presentment, which concluded that the Department "should comprehensively regulate junkyard and scrap metal recovery and salvage operations due to the serious environmental and public health concerns associated with such sites."

The Department is requiring the scrap melters to do the State's job by requiring them to obtain copies of the mercury minimization programs for all suppliers.

If scrap suppliers are to be regulated, then the Department should propose regulations under the New Jersey Solid Waste Management Act ("SWMA").

The Department should either clarify its current Universal Waste Rules at N.J.A.C. 7:26A-7.1 or advise vehicle dismantlers that failure to remove mercury switches constitutes improper disposal. (29)

RESPONSE: In November 17, 2003, the Department received a petition for rulemaking requesting that it require vehicle dismantlers and scrap recyclers to remove mercury containing switches from EOLV. In response to that petition, the Department proposed amendments to the recycling

regulations at N.J.A.C. 7:26A-1.3 and 2.1 and new rules at N.J.A.C. 7:26A-9, mandating the removal of mercury switches from EOLVs by certain entities that recycle these vehicles. (See 36 N.J.R. 3963(a) September 7, 2004)

In addition, the Department supports proposed legislation (such as S1292 and A2482) that would require the automotive industry to assist in mercury switch removal from EOLVs. Thus, the Department recognizes the responsibility of vehicle dismantlers, scrap recyclers, the automotive industry, and iron and steel melters to take appropriate actions to reduce harmful mercury emissions in the envioronment.

38. COMMENT: The Department's Federal Standards Analysis ("FSA") is deficient, thereby in violation of the Administrative Procedures Act ("APA"), because it does not contain a cost-benefit analysis, fails to provide any support that the standard is achievable under currently available technology, and inadequately addresses the issue of stack testing frequency. (29)

The rules proposal for the twenty-fold stack testing frequency, in excess of the Federal standard, does not indicate the factors used or any benefit warranting the additional testing. (12, 27, 29, 35)

RESPONSE: The Administrative Procedure Act ("APA") requires an agency that adopts rules exceeding Federal standards to perform a Federal standards analysis ("FSA"). According to the APA, a FSA must include: (1) a discussion of the agency's policy reasons for imposing standards or

requirements that exceed those required by Federal law; (2) a cost-benefit analysis that supports the agency's decision to impose standards or requirements that exceed those required by Federal law; and (3) a discussion that supports the agency's standard to be imposed as being "achievable under current technology." The Department believes that its FSA fully complies with these requirements.

The Department does not believe that the final National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries ("Iron and Steel MACT") at 69 Fed. Reg. 1906 (April 22, 2004) is sufficient to protect New Jersey citizens from mercury pollution. It does not apply to any facility in New Jersey. In addition to the work practice standards (e.g., source separation) contained in the Iron and Steel MACT, the Department is also adopting emission standards and air pollution control efficiency standards to measure the success of the work practice standards. The Department believes that it has provided adequate justification for these more stringent requirements, in accordance with the APA and its implementing regulations.

Throughout its proposal, the Department has discussed its policy reasons for adopting standards for controlling mercury emissions from the iron and steel industry, the largest emitting source category in New Jersey at approximately 1,000 pounds of mercury per year. Mercury is an extremely potent neurotoxin, and upon entering waters either directly or indirectly through air deposition, can bioaccumulate in fish as methlymercury, the most toxic form of mercury. Ingesting fish with high levels of methlymercury has been associated with serious neurological and developmental effects in humans, especially in developing fetuses and young children. In its proposal endnotes, the Department has cited to many studies and reports prepared by, among others, the two New Jersey

Mercury Task Forces, the National Academy of Sciences, and the United States Environmental Protection Agency ("USEPA"), all of which show the serious health effects caused by exposure to high levels of mercury pollution.

The Department also believes that its cost-benefit analysis has adequately justified its imposition of mercury standards exceeding the Iron and Steel MACT. The Department has identified the costs to be incurred by the iron and steel industry from either source separation or add-on controls, if source separation is not successful in significant mercury emission reduction. The Department's Environmental Impact Statement also identifies some of the benefits, which are admittedly difficult to quantify, of reducing mercury emissions. On balance, the Department has determined that the benefits of reduced mercury emissions in the atmosphere, and the resulting decrease in mercury bioaccumulation in fish, outweighs the costs of add-on controls. The Department disagrees with the USEPA's conclusion that source separation is the only method for reducing mercury emissions from the iron and steel industry. If source separation alone is unsuccessful in meeting the 35.0 mg/ton standard, then add-on controls are available to achieve the standard with current technology, such as a baghouse with activated carbon injection ("ACI"), or may be possible with the addition of chemicals to the scrubbing solution. Over the last 10 years, ACI controls have successfully reduced mercury emissions in municipal solid waste incinerators, and this technology can be transferred to the iron and steel sector.

Finally, the commenter states that the FSA is deficient because the Department did not justify the stack-testing requirement in its rules. The Department disagrees. The Federal rules have no stack

testing requirements that correspond to the mercury stack-testing requirement in the State rules. The State rules include an emission limit for mercury, the Federal rules do not establish an emission standard for mercury. Since the Federal rules do not require stack testing for mercury, but only require stack testing for a variety of other HAPs, the Department does not believe that its rules are more stringent than the Federal rules. Consequently, the Department does not believe it has to conduct a FSA for its stack testing requirement.

Nonetheless, the Department believes that its mercury emission standards and stack testing requirements are justifiable and necessary to ensure New Jersey citizens are not exposed to excessive levels of mercury pollution. Such justification is readily apparent from the highly toxic nature of mercury, the fact that quarterly stack testing will revert to annual stack testing after eight consecutive quarterly tests in compliance, and the fact that stack testing is necessary to determine the effectiveness of mercury removal from scrap and mercury air pollution control systems. The quarterly stack test requirement the Department is adopting is based on USEPA Reference Method 29, the most accurate testing method available for measuring mercury emissions. See 26 N.J.R. 1050, 1051 (February 22, 1994); 36 N.J.R. 123, 127 (January 5, 2004). The cost of the required stack testing was explained in the Economic Impact Statement in the proposal, and the benefits to public health from assuring compliance with the mercury standards were also set forth in the proposal.

39. COMMENT: The Air Pollution Control Act ("APCA") does not allow the Department to

regulate businesses beyond the emission of air pollution, so automotive recyclers can not be held to the proposed rules. The Department failed to consider the economic impact of the proposed regulations on the automotive recycling industry. The Department's cost estimate of $2.00 per switch removed is absolutely incorrect. The costs are significantly higher, based on the time necessary for employees to locate the switches and automotive manufacturers' refusal to provide recyclers with compensation for switch removal. The proposed rules will have a significant negative impact on the automotive recycling industry in New Jersey, forcing many companies to go out of business. Further, who should pay for the increased cost of switch removal? (36)

RESPONSE: The rules do not directly apply to automotive recyclers. The Department's rules mirror the Federal rules, requiring iron and steel melters to purchase only mercury-free scrap or scrap which has undergone a mercury switch removal program, and does not regulate automotive recyclers. The Department supports the proposed legislation requiring the automotive manufacturers to assist in the removal of mercury switches in EOLVs. New Jersey State Assembly Bill A2482, and New Jersey Senate Bill S1292, would establish a program for mercury switch removal from EOLVs. These bills currently propose that vehicle manufacturers pay a minimum of $2.00 for each mercury switch removed by a vehicle recycler or scrap recycling facility, as partial compensation for labor and other costs incurred by these facilities. The actual financial arrangement between automotive manufacturers and recyclers, however, is beyond the scope of these rules.

The Department has nonetheless evaluated the economic impacts of switch removal. In its final report, dated March 24, 2004, the Department's Pilot Project concluded that the estimated cost of

mercury switch removal, handling, transportation, and proper disposal was a total of $3.00 per switch. Labor for actual switch removal was estimated to represent approximately $2.00 of this total. This report is available for review at http://www.state.nj.us/dep/dsr/mercury/. The Department is aware that implementation of the proposed rules can be expected to increase labor costs to automobile recyclers to some degree if scrap melters require less mercury in their scrap.

40. COMMENT: The proposed rules do not indicate how automotive manufacturers will dispose of all the switches on a full-scale basis. (36)

RESPONSE: Removed mercury switches may be recycled in accordance with the Department's universal waste regulations at N.J.A.C. 7:26A-7. Alternatively, these switches may be disposed of as hazardous waste, in accordance with the Department's hazardous waste regulations at N.J.A.C. 7:26G.

41. COMMENT: New Jersey iron and steel melters are unlikely to generate sufficient demand to prompt each New Jersey junkyard/salvage operator or dismantler to source separate. Without this separation, automobiles will be crushed/shredded with the mercury switches still embedded in the steel and shipped overseas. (29)

New Jersey has the authority to require mercury switch removal in automotive scrap under the Scrap

Metal and Automotive Recycler General NPDES Permit (NJ0107671), which is scheduled to expire on 11/30/04. (40)

RESPONSE: New Jersey iron and steel melters will not be alone in needing a supply of scrap with the mercury switches removed. The USEPA MACT rules apply to all major iron and steel melters nationwide. Those facilities will need to purchase scrap with the switches removed, thus supporting a nationwide market for such scrap and narrowing opportunities to sell scrap that does not have mercury switches removed. Therefore, scrap suppliers that refuse to remove mercury switches will have a significantly limited market for their scrap, not only in New Jersey, but throughout the rest of the nation as well.

Proposed legislation supported by the Department (S1292 and A2482) would establish a program for removal of mercury switches from EOLVs. This program would include a provision stating vehicle manufacturers must pay a minimum of $2.00 for each mercury switch removed by a vehicle recycler or scrap recycling facility, as partial compensation for labor and other cost incurred by these facilities.

Further, the Department is in the process of promulgating amendments to the recycling regulations at N.J.A.C. 7:26A-1.3, 2.1 and new rules at N.J.A.C. 7:26A-9, mandating the removal of mercury switches from EOLVs by certain entities that recycle these vehicles. These amended rules are expected to be adopted in 2005.

42. COMMENT: It is imperative for New Jersey to take the lead in reducing mercury emissions from iron and steel melters, in addition to coal-fired energy plants. (6, 13, 15, 18, 19, 20, 22, 24, 25, 26, 40)

RESPONSE: The Department agrees. Adoption of the proposed new rules and amendments will help the State avoid potential adverse health and economic impacts and provide an example for other states and the USEPA.

43. COMMENT: Under the current source removal program, the proposed stack testing is a waste of money. Current test results show that until the Department improves source removal via the adoption of hazardous waste rules, stack testing is a wasted data-gathering exercise. A reasonable amount of time should be allowed to pass after the implementation of the scrap management plan before the required stack testing begins. (12, 27, 29, 41)

RESPONSE: The Department is providing five years for the implementation of mercury waste separation program, and requires mercury control if the waste separation program does not achieve the numerical standard or control efficiency standard. Stack testing will track the progress towards reduction of mercury emissions as a result of separation of mercury-containing materials from scrap. If the progress is not sufficient to attain the standard by the required deadline at N.J.A.C.7:27-27.6(a), the owner or operator of the iron and steel melter would have the information early enough

to plan and implement mercury air pollution control. The Department is in the process of adopting rules that would require certain entities that recycle vehicles to remove mercury switches from end of life vehicles. In the mean time, it is the responsibility of the iron and steel melters to comply with the requirements of N.J.A.C. 7:27-27.6(d) through (i).

D. COAL-FIRED BOILERS

44. COMMENT: The alternative compliance deadline of December 15, 2012 is unnecessarily distant; three years from the mercury compliance date of December 15, 2007 (essentially seven years from the date of proposal) would be adequate (i.e. 2010). Conversely, another commenter feels that the compliance deadline is unreasonably short. (6, 13, 22, 39)

RESPONSE: The Department proposed a three-year December 15, 2007 compliance deadline based on the settlement agreement between the USEPA and the Natural Resources Defense Council ("NRDC") for regulating mercury emission limits from coal-fired boilers. The settlement agreement required the USEPA to propose rules by December 15, 2003, promulgate final rules by December 15, 2004, with the Clean Air Act then requiring compliance by December 15, 2007. See 42 U.S.C.A. §7412(i) The settlement agreement was modified after the proposal of these rules to extend the deadline for promulgating Federal rules until March 15, 2005, resulting in an extended compliance deadline of March 15, 2008. The Department's compliance deadlines are similar to the

deadlines either proposed or adopted in Connecticut and Massachusetts for regulating mercury emission limits from coal-fired boilers.

The Department provided an extension of the December 15, 2007 compliance deadline to December 15, 2012, for any facility that by December 15, 2007, has entered into an enforceable agreement with the Department to install and operate nitrogen oxides, sulfur dioxide, and particulate air pollution control systems. The 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 extension of the compliance deadline is provided for 50 percent of the capacity of the company located in New Jersey in order to accommodate the construction schedules of the air pollution control equipment for the control of nitrogen oxides, sulfur dioxide and particulates. The installation schedule of other air pollution control equipment is consistent with the consent decree among the State, the United States, and PSEG Fossil LLC, filed with in the United States District Court for the District of New Jersey, Newark Division, on January 24, 2002. Compliance with all four-emission limits by December 15, 2012 is achievable with currently available air pollution control technology. As discussed in the Summary of Agency-Initiated Changes portion of this adoption document, the Department has amended N.J.A.C. 7:27.7(d) on adoption to make it clear that compliance is measured based upon the company's capacity in New Jersey.

45. COMMENT: The term "unless a shorter period" should be replaced with "unless a different

period" in third sentence of the proposed N.J.A.C. 7:27-27.7(b). The third sentence of the proposed N.J.A.C. 7:27-27.7(b) says that "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." (5)

RESPONSE: The Department is not making the requested change. Stack emissions testing must be performed every quarter. The resultant twelve test runs per year should give an accurate measure of average annual emissions. If there are going to be 45 days or more between the previous quarter's test and the next quarter's test, then the owner or operator of the affected source does not need to get an approval from the Department. If the owner or the operator of the affected source wants to perform the test with fewer than 45 days between the previous quarter's test and the next quarter's test, then an approval must be requested from and approved by the Department. The Department is seeking testing which is representative of annual operation and would judge any request concerning test schedules against that goal.

46. COMMENT: New Jersey law does not give the Department unbridled discretion to impose any level of mercury emissions it chooses on New Jersey coal-fired power plants. The Department is required to consider the linkage between mercury emission sources and health and environmental consequences. (39)

RESPONSE: New Jersey's Air Pollution Control Act gives the Department broad authority to control air pollution. The law defines "air pollution" to include the presence of air contaminants in the outside air that is or tends to be injurious to human health or welfare. The Department believes that the mercury standards contained in these rules are reasonable, are achievable under current technology, and are consistent with the Department's authority to prevent, control, and prohibit air pollution in New Jersey.

Mercury is a toxic heavy metal that persists in the environment once it is released into the atmosphere. 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. 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. 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. Based on human and animal data, the International Agency for Research on Cancer (IARC) and USEPA have classified methylmercury as

a "possible" human carcinogen. A New Jersey law (P.L. 2003, c. 174) requires the Department of Health and Senior Services, in consultation with the Department, to prepare a mercury notice to be posted in doctors' offices providing care to pregnant women and children alerting them of the dangers from eating mercury-contaminated fish.

Combusting coal results in the release of substantial amounts of mercury into the air. Coal combustion is the largest category of mercury emissions in the USA and the second largest in New Jersey. As stated in the proposal (36 NJR127), the new rules and amendments are expected to lead to a substantial decline in the yearly emissions of mercury from coal-fired facilities. This decline is expected to lead to a significant reduction in the deposition of mercury from these facilities to the environment of New Jersey and its coastal waters.

47. COMMENT: The 700-pound estimate of mercury emissions used in the Second Mercury Task Force Report and relied on by the Department is overstated. In fact, all New Jersey coal-fired power plants emit only an estimated 200 to 400 pounds of mercury per year. (39)

RESPONSE: The 700-pound per year estimate was developed by the Second Mercury Task Force based on New Jersey facilities' stack test data that was available to the Second Mercury Task Force at the time. The Second Mercury Task Force was aware that there was uncertainty in this estimate, and so expressed it as a range, as 700 pounds plus or minus 300 pounds. The Second Mercury Task Force was also aware that estimates provided by the USEPA were lower, and discussed the

discrepancy in the Second Mercury Task Force report, Volume III, page 46. The Second Mercury Task Force elected to rely on the estimate based on actual stack tests, because the USEPA estimate was not based on actual stack tests but instead was based on measurements of the mercury concentrations of samples of coals purchased by facilities, adjusted with other factors such as coal consumption data and estimated mercury capture rates for the type of unit and control device. There is considerable variation in stack test measurements and resulting yearly estimates. One source of variation is the percent of the time a unit operates in any given year. The Department considers it conservative to base its emission estimate on the assumption that units will operate for much of the year at a loading comparable to the loading at the stack test. The most recent estimate by the Department, based on stack test data for all of the coal-burning units in the State, suggests an emission of mercury in the range of 545 pounds per year. This value is within the range of the Second Mercury Task Force estimate, and is considerably higher than the EPA estimate.

48. COMMENT: The establishment of standards likely to have a significant impact on reliability without any analysis of the impacts on electric reliability would be arbitrary and capricious. (39)

RESPONSE: The standards in these rules have no direct impact on reliability of electricity production. As discussed in responses to other comments, and in the proposal of these rules, the standards can be met with technology available today. The rules do not require the shutdown of any electric generating unit, but require only that air pollution control technology necessary to meet the standards be installed and operated. Accordingly, the Department does not expect the application of

the rules to affect reliability. Also, the MSW incinerators showed that carbon injection systems can be installed on major combustion facilities in a relatively short period of time (months) without affecting the annual availability of the units. Most of the carbon injection system is separate from the existing units. The injection ports require minor modifications to the existing ductwork, involving relatively small holes in the ductwork to insert the carbon injectors. One MSW facility rented a carbon injection system for a period of time, before installing a permanent carbon silo and conveying system for the carbon. Hence, downtime to install a carbon injection system is minor and can readily be done during normal downtime for other purposes.

Even when a power plant operator chooses to shut down a power plant, that decision need not affect reliability. The Department notes that on April 30, 2004, Atlantic City Electric Company filed a report with the New Jersey Board of Public Utilities recommending that the B.L. England Facility be shut down. The report stated that the operation of the B.L. England facility is necessary at the present time to satisfy reliability standards, but that those reliability standards could also be satisfied in other ways.

PJM Interconnection, LLC has issued the results of a retirement study of B.L. England. The report recommends that several upgrades to the electric transmission system be installed to eliminate potential reliability problems. The PJM study is available at http://www.pjm.com/planning/project-queues/gen-retirements/bl-england-retirement-study.pdf.

49. COMMENT: There is no basis to assume that recreational and commercial fishing would benefit economically from these rules. (39)

RESPONSE: The proposal on page 36 NJR 130 explained the importance of both recreational and commercial fishing to New Jersey's economy, and the monetary value represented by New Jersey recreational and commercial fishing. The proposal on pages 36 NJR 130 to 132 also explained why large numbers of fish are unsuitable for consumption and potentially harmful to health due to high mercury levels.

Throughout the State, and in specific regions and waterbodies within the State, mercury-based fish consumption advisories are in effect. Those advisories state that people should limit or even eliminate their intake of certain types of fish. The contamination that makes those advisories necessary inevitably limits commercial markets for the affected fish. It also discourages those recreational fishermen who eat what they catch.

These rules will help bring about a significant reduction in inputs of mercury to New Jersey water bodies, and eventually lead to lower levels of mercury in fish that will make possible the relaxation or elimination of advisories. Correcting the problems that have led to the advisories and to the adverse economic impacts on recreational and commercial fishing industries will have a positive economic impact.

50. COMMENT: There is a need to maintain fuel diversity for generating electricity in New Jersey. The Department's Proposed Rules presents two areas of risk to reliability: lack of fuel diversity and balance of plant impacts. Currently, New Jersey's coal-fired units are used primarily for base-load electricity generation. A requirement to remove 90 percent or more of mercury emissions will likely result in fundamental changes in the operation of these plants, including, as the Department notes, decisions to shut down coal-fired boilers. Such changes (including changing the dispatch order of or requiring significant changes to coal-fired power plants) would affect all aspects of the electrical system. USEPA recognized the need for standards that would allow continued fuel variability in its development of the proposed Federal Utility Mercury MACT Rules noting that setting standards likely to require a unit to "switch to natural gas would place an even greater strain on natural gas resources, and, in some circumstances, the change would interfere with a unit's ability to run at full capacity." The Department fails to address the potential adverse impacts of the Proposed Rules on reliability, including the potential impact on reliability if coal-fired power plants shut down to comply. The establishment of standards likely to have a significant impact on reliability without any analysis of the impacts on electric reliability in New Jersey would be arbitrary and capricious. (39)

RESPONSE: The Department strongly agrees with the commenter about the importance in maintaining diversity in the fuel used to generate electricity. Fuel diversity helps to reduce the impact of disruptions or shortages in the supply of any single fuel. At current prices, coal is significantly less expensive than oil or natural gas, offering an economic advantage not only to businesses that generate electricity but also to those businesses and residents that use electricity.

At the same time, a coal-fired power plant without air pollution control technology will emit substantially more nitrogen oxides, sulfur dioxide, carbon dioxide, and mercury than a natural gas-fired power plant without air pollution controls. That additional air pollution imposes costs on the public in additional health care costs, property damage, and contribution to global warming. In other words, a substantial part of the cost differential between the two types of fuels is effectively hidden and passed along to the public.

The Department has no wish to see widespread shutdowns of power plants using any type of fossil fuel, or to see coal-fired power plants forced to switch fuel. However, the Department is directed by statute to require reductions in emissions of air contaminants that are harming public health. Fortunately, air pollution from all types of fossil-fueled power plants can be reduced substantially using technology available today. For that reason, the rules do not mandate either fuel switches or shutdowns.

51. COMMENT: As proposed, the percentage reduction compliance method is unworkable. Reliable sampling at the inlet of the first control device is virtually impossible. The USEPA found in reviewing the Information Collection Request (ICR) data that "the inlet measurement showed deficiencies due to the flow rate and short duct runs available for testing before the control device, and that these values were suspect as being reliable representations of actual inlet concentrations." (39)

RESPONSE: For most coal-fired power plants inlet testing can produce reliable results for mercury

emissions before control devices. The commenter has not indicated that inlet testing presents problems for any particular coal-fired power plant in New Jersey. Inlet testing for mercury is routinely done successfully for the 13 MSW incinerators in New Jersey. Inlet testing has also been done on many coal-fired power plants in the USA.

Since mercury after the combustion chamber and prior to control devices is mostly in gaseous form, the need for isokinetic sampling is much reduced. Hence, inlet ducts without the optimal run of ductwork normally desired to accurately determine particulate emissions are usually still adequate for mercury sampling. Also, there are sampling procedures available to accommodate less than optimal sampling locations, if necessary. These procedures generally involve testing at more points across the duct. Determination of appropriate testing procedures for inlet testing is a routine part of New Jersey's stack testing program. Each facility being tested is required to have its stack testing consultant submit a test protocol that is reviewed and approved by the Department's Bureau of Technical Services, which ensures that the testing is appropriate for the plant specific situation.

The Department believes that the cited USEPA's statements on inlet testing in its proposed Federal Utility Mercury MACT (69 Federal Register at 4671) has more to do with variability and USEPA's preference for an emission rate standard, than the ability to obtain accurate inlet samples. The ICR mercury data were based on stack test data for the last control device at each utility unit tested. It is probable that some of the testing for the ICR was done without the rigorous stack test protocol review and test observations done by the Department for tests in New Jersey. It is also our understanding that "suspect" inlet concentrations for the ICR were associated with very poor

removal efficiencies of control devices on some units, which resulted in the inlet concentrations being essentially the same as the outlet values as USEPA determined that evaluation of control device efficiency values based on unreliable inlet concentration data would not be justified. In such a circumstance, a slight variation is testing accuracy can result in negative removal efficiencies. USEPA reviewed this situation and correctly concluded that this indicated near zero control efficiency, and also that it was not a major issue with respect to the ICR data.

52. COMMENT: The Department's proposal to allow facility-wide averaging to comply with the proposed standards is supported. There is no reason, however, to make facilities go through future State approval or enter into an enforceable agreement with the State regarding such averaging. Such requirements cause unnecessary permitting and are unnecessary to ensure compliance with the applicable standards. (39)

RESPONSE: As required by Title V of the Federal Clean Air Act, all air pollution compliance requirements for a coal-fired power plant in New Jersey, including facility wide averaging, are or will be set forth in a facility's operating permit under N.J.A.C. 7:27-22. If a power plant is choosing to use facility-wide emissions averaging to comply with the emission limits in the rules, that choice must be documented in an approved operating permit so that the facility, the Department, and the public know what the compliance requirements are and the Department can determine whether the facility is in compliance.

53. COMMENT: Reducing mercury emissions from coal-fired power plants in New Jersey beyond the levels imposed nationally through the proposed Federal Utility Mercury MACT rules will have negligible or no impact on mercury levels in fish consumed by New Jersey residents. The Department did not provide any data linking New Jersey coal-fired power plants' contribution to methylmercury levels in New Jersey fish. It is unlikely that, even at the stringent levels proposed by the Department, the levels of methylmercury in New Jersey fish will be reduced beyond the levels expected from the proposed Federal Utility Mercury MACT rules. New Jersey's fish advisories are based on USEPA's highly conservative reference dose and the levels of mercury in water bodies are decreasing. The proposed rules do not provide evidence that any fish advisories will be lifted as a result of these rules or that the fishing industry will benefit. The emission of mercury from power plants is small compared to mercury emissions from all other in-state sources. New Jersey's contribution to the national mercury emissions is very low compared to other states. The small emission reductions that may be obtained by these rules are greatly offset by mercury emissions transported from out-of-state sources. An independent modeling study performed to determine the contribution of Conectiv's New Jersey coal-fired facilities to mercury deposition in New Jersey shows that the impacts of these facilities is less than 0.6 percent. (5, 39)

RESPONSE: The New Jersey Mercury Task Force found that coal-fired power plants are the second-largest source category of mercury emissions in the State, behind iron and steel melters. The USEPA has estimated that coal-fired power plants are the largest source category of mercury emissions in the nation. Absent an adopted Federal Utility Mercury MACT rules that is stringent enough to protect the citizen of New Jersey from the extremely harmful effects of mercury pollution,

the Department believes for the reasons set forth in this response and elsewhere in this adoption document, that it must go forward with regulating the mercury emitted from this large source category.

It is true that out-of-State sources are likely to make a significant contribution to the mercury deposited in New Jersey, and the Department continues to urge the implementation of more effective mercury controls at the national level. It is also true that New Jersey's overall contributions to the nation's total mercury emissions are relatively small. This is due in part to the fact that New Jersey is geographically small. Yet, it is also clear that mercury emissions in New Jersey do have a significant effect in New Jersey. The New Jersey rules will set an example for other states to adopt similar rules, as has already been done in Connecticut and Massachusetts, thereby resulting in additional benefits.

The information provided by the commenters provides no assurance that emissions from local power plants will not have significant local impacts. There are many sources of uncertainty in the various models that have been used to estimate the percentage of emissions that will deposit locally. These uncertainties include the estimates of the scavenging coefficient and dry deposition velocity for ionic mercury. Most models do not include many parameters that could be important in the fate, transport, and deposition of mercury, including the interactions of mercury species with atmospheric concentrations of carbonaceous particles, HCl, SO_2, and oxidants such as ozone. The effects of ozone concentrations are likely to be important in a state like New Jersey that is plagued with high summertime ozone concentrations, the production of which is exacerbated by emissions of NO_x from

sources including coal combustion. A heightened rate of oxidation of gaseous elemental mercury could exist during high-ozone episodes, leading to increased local mercury deposition.

One factor that is well understood is that ionic and particle-bound mercury emitted from power plants are likely to deposit relatively locally. Review of USEPA ICR data by the Department found that units burning bituminous coal emitted on an average approximately 40 percent of their total mercury emission in the form of ionic mercury. USEPA models, such as the Industrial Source Complex Dispersion Air Quality Model (Version 3) (ISC3), and the more recent Industrial Source Complex Short Term (ISCST3) model, predict that some of the mercury emitted by coal-fired units, particularly the ionic portion, will deposit locally, leading to relatively high deposition in the immediate vicinity of such sources. Use of the ISCST3 model to predict emissions from two large coal-fired power plants in western Pennsylvania and Texas found that, within an area of 50 km to 100 km of the plants, mercury deposition was doubled, with a higher deposition rate closer to the plant. (See letter from Michael Aucott and Alan Stern, NJDEP, to T.M. Sullivan, F.D. Lipfert, S.M. Morris, and S. Renninger, Brookhaven National Laboratory, 12/8/03.)

The importance of coal-fired power plants and other sources to relatively high rates of mercury deposition in certain regions of the United States, including New Jersey, is noted by several recent modeling studies not cited by the commenters. In one such study (Siegneur, Christian, K. Vijayaraghavan, K. Lohman, P. Karamachandani, and C. Scott, 2004, Global source attribution for mercury deposition in the United States, *Environ. Sci. Technol., 38*, 555-569), sources within North America were estimated to contribute more than 60 percent of the mercury deposition to sections of

the northeastern United States, with northeastern New Jersey estimated to receive over 80% of its mercury deposition from North American sources. The study also estimates that certain regions in the United States, especially the northeast and the Ohio Valley, receive significantly more mercury deposition than the western U.S. Another study (Cohen, Mark, R. Artz, R. Draxler, P. Miller, L. Poissant, D. Niemi, D. Ratte, M. Deslauriers, R. Duval, R. Laurin, J. Slotnick, T. Nettesheim, and J. McDonald, 2004, Modeling the atmospheric transport and deposition of mercury to the Great Lakes, *Environmental Research*, 95, 247-265), using a detailed model, found that approximately one half to two thirds of the mercury deposited to the Great Lakes is emitted by sources within the United States. For Lake Erie and Lake Ontario, over half of the deposition was estimated to originate from sources closer than 1000 km to each lake. Coal combustion was generally found to be the largest contributor to atmospheric mercury deposition to the Great Lakes. These and other studies indicate that, in general, regions in the United States with the highest mercury deposition are the same regions where local and regional sources, especially coal combustion, make significant contributions to the total mercury load.

Recent data have shown that New Jersey in fact does receive a relatively high rate of mercury deposition. A study completed for the Department by Rutgers University (Reinfelder, John, and Lisa Totten, 2004, New Jersey Atmospheric Deposition Network final report to the Department Division of Science and Research) concluded that there are higher wet deposition fluxes of mercury in urban/industrial Jersey City and Camden than in suburban New Brunswick and rural Pinelands, suggesting that local phenomena such as local sources and atmospheric chemistry influenced by local conditions contribute to the higher local deposition and are important to the wet deposition of

mercury in New Jersey. The study concluded that these data, together with nearly synoptic results from the National Atmospheric Deposition Network indicate a west to east increase in Hg wet deposition in the Mid-Atlantic region with the highest deposition fluxes in New Jersey.

Studies have shown that between 1.5 and five percent of the yearly inputs of mercury into a water body accumulate in fish. Research has also shown that modest increases in atmospheric mercury-loading can lead directly to enhanced levels of mercury in biota, and reductions of anthropogenic emissions of mercury can lead to relatively rapid reductions of concentrations of 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. A decline in the mercury concentration of saltwater fish spending a significant portion of their lifecycle in near-shore waters may also occur.

Evidence from Florida indicates rapid and significant reductions of mercury levels in Everglades fish as a result of reductions in local emissions. These Florida findings are not based merely on the earlier pilot studies in Florida, but reflect more comprehensive studies of fish concentrations observed over time in Florida, as noted in the rules proposal.

NJDEP does not view the USEPA's Reference Dose as "highly conservative." It is based on documented health effects in a human population, and takes as a starting point the doubling of the fraction of children in the lowest five percent of performance on tests neurological developmental competency. In fact, emerging evidence suggests that the current Reference Dose provide less than the originally anticipated level of health protection. New Jersey's fish advisories are based on

Reference Doses of 0.3 µg/kg/day for the general population and 0.07 µg/kg/day for high risk individuals, which include pregnant women, women of child-bearing age, nursing mothers, and children. Mercury concentrations in many fish sampled in New Jersey are high enough so that these Reference Doses could readily be exceeded by those consuming significant amounts of such fish. Further, the Department has seen no evidence to support the claim that levels of mercury in water bodies are decreasing in New Jersey. Preliminary review of the available data also indicates no decline in mercury concentrations of New Jersey fish.

Lower mercury concentrations in the environment will minimize human health impacts caused by ingesting mercury-contaminated fish. Potential health impacts lessened by implementation of the 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 wildlife species are also expected.

The Department appreciates the provision of the results of the independent modeling study noted by the commenter. However, the Department does not consider 0.6 percent to be an insignificant contribution to the total mercury deposition in New Jersey. Further, as noted elsewhere in this response, there are numerous sources of uncertainty in mercury deposition models, so it is possible that the percent contribution from these facilities is in fact larger. In addition, there could be a much greater percent contribution to specific New Jersey water bodies. Moreover, deposition to water bodies within the geographical boundaries of New Jersey alone is not the entire picture. Deposition to near shore coastal waters of the State could also be important.

The Department concludes that local sources, including coal-fired power plants, are highly likely to contribute significantly to the total mercury deposition in the State. Mercury reduction in New Jersey fish requires local, regional, and global action. In these rules, New Jersey is addressing its role in this process.

54. COMMENT: The Department is proposing reductions in mercury, which may be unachievable. Mercury standards in the proposed rules have not been demonstrated to be attainable over an extended period of time. (5, 39)

RESPONSE: The proposed mercury emission standards have been shown to be achievable. PG&E National Energy Group's coal-fired units are already close to the proposed standard. Some plants in the USA, including some in New Jersey, have already met the proposed New Jersey standards with no mercury specific control technology, as documented in USEPA's information collection request (ICR) which resulted in the testing of about 80 coal-fired boilers in the USA. Also, carbon adsorption technologies have been shown to achieve 90 percent and better mercury removal on many boilers.

The commenter does not explain what he means by "an extended period of time". The use of activated carbon technology has been demonstrated for almost a decade for the technology to be commercially available. Vendors now sell carbon injection technology for use on coal boilers, and

the technology has been shown to effectively remove mercury.

The November 2003 USDOE report on "Preliminary Cost Estimate of Activated Carbon Injection for Controlling Mercury Emissions from an un-scrubbed 500 MW Coal Fired Power Plant" indicates that a coal-fired power plant with a baghouse can be retrofitted with activated carbon injection to achieve greater than 90 percent reductions of mercury emissions, in a highly cost-effective manner. Baghouses and ACI achieve the most mercury emission reductions and the most cost-effective mercury emission reductions at the same time. While available and cost effective, it is not necessary to rely on ACI to require a 90 percent or greater mercury reductions. ACI simply provides another available compliance system. Controls in use today to reduce emissions of sulfur dioxide and particulates are already demonstrated to be very effective in reducing mercury emissions. Scrubbers and baghouses in current use at New Jersey coal-fired power plants, in conjunction with low NO_x burners and selective catalytic reduction to control emissions of nitrogen oxides, are already available and have achieved mercury reductions of more than 90 percent (98 percent tested at one plant).

USDOE has been studying mercury control on coal-fired boilers for more than a decade. Technologies like ACI are available now**.** USDOE has a goal to get costs of ACI down to 1/4th current costs. However, the current costs of activated carbon injection are justified now. See response to comment 26, which applies to coal combustion, as well as iron and steel melting. There is over a decade of successful use of Activated Carbon Injection for Municipal Solid Waste (MSW) combustion. In New Jersey, MSW incinerators with baghouse control and ACI have achieved 99

percent mercury control. Transfer of such technology is clearly feasible from an engineering and cost perspective. The USDOE cost analyses indicate that retrofitting the coal-fired boilers with activated carbon injection (ACI) and baghouses (or polishing baghouse) can achieve 90 percent mercury emission reduction. ACI has a low capitol cost. It also has low operating costs if baghouse technology is used.

Data also show that carbon is effective with ESPs, although more carbon is needed, and the operating cost is higher. Two of New Jersey's MSW facilities have ESP's and use ACI to effectively control mercury.

In a recent technical paper, "Accumulated Power Plant Mercury Removal Experience with Brominated PAC Injection," the authors referred to in the response to comment 26, which indicate that mercury control technologies are commercially available today with high mercury removal efficiencies. This assessment is based on removing mercury with activated carbons to which halogen (bromine) has been added to improve the efficiency and capacity of mercury removal. Also, the authors conclude that high mercury removal has been achieved with existing ESPs without retrofitting with a baghouse, even with sub bituminous coals (the coal with more elemental mercury fraction that is harder to remove).

Thus, this paper indicates that even with the "worst case scenario" of western sub-bituminous coals and a plant with an ESP, a coal-fired power plant can get high (more than 90%) mercury control. According to Mr. Nelson, one of the authors, the cost of brominated carbon is higher (85 cents

versus 50 cents/lb), but a facility would have to inject much less of it (about 3 lb/mmacf versus about 20 lbs/mmacf of the powdered activated carbon to get 90 percent control with an ESP).

Unlike a catalytic converter which deteriorates with time, carbon injection is not subject to such deterioration. Carbon is injected, the mercury is caught on the carbon, and the carbon with the mercury is removed in the particulate control device in a relatively short period of time. There is no deterioration of the carbon. The injection system is simple and proven. Once installed and the control efficiency demonstrated, there is every reason to believe that continued use of carbon will continue to effectively remove mercury.

As with any air pollution control system, plant specific operating parameters may affect the operation of a carbon injection control system. Those effects can only be conclusively determined by installation of a system on a specific unit and determining the best carbon distribution and feed rates for that unit and whether chemically treated carbon is useful. Hence, extended demonstration periods at other plants, while comforting, are not needed or conclusive with respect to the exact operation of a system on another plant. Also, the capital cost of carbon injection technology is sufficiently low that the best way of determining its effectiveness on a unit is to install a system and test various injection rates with different types of carbon. The Department's experience with MSW incinerators is carbon injection technology can be installed in a matter of months at relatively low cost compared to the cost of the emission unit. There currently is sufficient demonstration of carbon systems on many types of plants, including coal burning plants, to design and install a carbon injection system which is likely to be highly effective at reducing mercury emissions with

reasonable adjustments of the system to maximize effectiveness, while minimizing costs.

55. COMMENT: The Department is prematurely pursuing a mercury control program independent of the USEPA's Utility HAP initiative. The Department should wait until the Federal mercury MACT rules is finalized to determine whether there is any need or justification for separate State rules. (5, 39)

RESPONSE: The Department participated in the Utility MACT Working Group that met between August 2001 and March 2003, to provide stakeholder participation relevant to the Federal MACT rulemaking. The working group submitted its report to the USEPA in October 2002. Compared to the majority of workgroups recommendations, the proposals that the USEPA actually published in the Federal Register in January and March 2004 would lead to far smaller emission reductions than what is required by the Clean Air Act and is technologically and economically feasible, and would delay those reductions by 10 to 20 years beyond what the Clean Air Act requires. Either of the alternatives (the mercury cap and trade program or the weak emission standard) that the USEPA proposes to control emissions would achieve virtually no additional mercury reductions beyond what is expected by partial control of some, but not all, power plants for nitrogen oxides and sulfur dioxide. At the same time, several other states have taken or are in the process of taking strong action to address mercury emissions from power plants. The Department has joined those states in an effort to set mercury standards reflecting what current technology can achieve and also reflecting what is necessary to protect public health. Considering the weakness of the rules proposed by the

USEPA, the Department continues to believe that the State rules are necessary and justified.

The Department's new rules and amendments are consistent with the State and Local Air Pollution Control Officials Recommendations for Utility MACT Standards dated October 22, 2002, which were included in the Utility MACT Working Group recommendations that were submitted to USEPA. Under an existing settlement agreement between USEPA and Natural Resources Defense Council (NRDC), regulations setting mercury emission limits for coal-fired boilers were proposed by the USEPA on January 30, 2004, and should be promulgated by March 15, 2005. Notwithstanding the efforts of the Federal government, several states such as Connecticut, Wisconsin, Massachusetts, North Carolina, Michigan, and Indiana have adopted or are 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. Connecticut’s law enacted on May 9, 2003, for coal-fired power plants (House Bill No. 6048) sets a mercury standard of 0.6 pounds per trillion BTU or 90 percent mercury control by 2008. Massachusetts's rules require 3.4 mg/MW-hr or 85 percent mercury reduction by January 1, 2008 and 1.135 mg/MW-hr or 95 percent control by October 1, 2012. Wisconsin approved a plan for coal-fired power plants to achieve 40 percent mercury control by 2010, and 75 percent mercury control by 2015. Wisconsin approved a permit for a coal-fired power plant to achieve 85 percent mercury control. A Utah permit for a new subbituminous coal-fired power plant requires 83 percent mercury control upon startup. The Mercury Action Plan of the 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

by 2003. A second interim goal was adopted with 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 to revise the target, if necessary, and to require the virtual elimination of mercury emissions, if feasible. Given the action of other states, the New Jersey mercury rules are not premature. These rules will yield significant environmental and health benefits as discussed in the previous responses, especially in conjunction with the rules of other states.

56. COMMENT: The Department's expectation of a commitment from Conectiv to enter into an agreement consistent with the terms of the PSEG agreement for an alleged New Source Review ("NSR") violation is unfounded. The Department provided no justification for the stringent multi-pollutant alternative to the proposed mercury standards for coal-fired boilers and expects New Jersey utilities to accept the terms of the consent decree, regardless of whether NSR violations have been established. (39)

RESPONSE: PSEG has already entered into a multi-pollutant consent decree with the Department to attain the multi-pollutant emission limits for all three of the company's coal-fired units. The Department made this compliance option available to other electricity-generating companies in New Jersey through these rules making. To take advantage of the delayed compliance date and to control emissions of nitrogen oxides, sulfur dioxide, and particulate matter, a coal-fired boiler does not have to admit that there are violations of the NSR rules.

The statement in the proposal (36 NJR 130) that "The Department expects commitments from Atlantic Electric for its three units, if coal is to be burned in the future" may have been unclear. The Department made that statement, as well as the statement about the Vineland coal-fired power plant, based on its understanding of plans by the owners of the affected power plants as stated in informal discussions.

57. COMMENT: The Department has failed to justify the imposition of emission levels and standards beyond the requirements of the Federal Mercury Rules and has provided no justification for the incremental compliance costs of the proposed rules. The Department should have performed a Federal Standard Analysis for this sector even though the Federal Utility Mercury MACT rules has not been adopted (39)

RESPONSE: There is no Federal Utility Mercury MACT rules at this time. As discussed in other responses, the Department believes that the proposed Federal Mercury MACT Rules do not meet the requirements of the Clean Air Act and is inadequate to protect the environment and human health. In fact both the Department and a coalition of State Attorneys General led by the New Jersey Attorney General provided extensive comments criticizing the Federal proposal. Since there are no Federal Utility Mercury MACT standards applicable to coal-fired boilers yet and the Department is uncertain which of the proposed alternatives, if any, the USEPA will ultimately adopt, the Department disagrees that it is required to conduct a Federal Standard Analysis. This conclusion is consistent with recent Appellate Division case law, holding that an agency is in compliance with the

Federal Standards review where there are no Federal Standards and the agency includes a written statement to that effect. Nonetheless, for the reason set forth in the proposal throughout this adoption, the rules contained in this rulemaking are reasonable to protect the public and environment from toxic mercury pollution, cost effective, and are achievable under current technology.

58. COMMENT: The standards for the proposed rules do not reflect the large variability in mercury emissions from all coal-fired power plants because it does not consider coal ranks. Neither single control technology nor a series of control technologies have been shown to achieve 90 percent control of mercury on a consistent long-term basis. No company providing mercury removal technology will be willing to guarantee the performance levels required by the draft rules. N.J.A.C. 7:27-27.7(a). (5, 39)

RESPONSE: The Department has considered variability in the development of these rules. It also did so in its existing mercury rules for MSW incinerators. The variability of mercury in MSW is higher than the variability of mercury in coal, and therefore the lessons learned for MSW incineration are relevant to coal combustion.

New Jersey's five MSW incinerators have been controlling mercury emissions with carbon injection since 1995. Mercury inputs at these facilities, because of the heterogeneous nature of waste materials, show frequent spikes. Review of inlet concentrations at these facilities collected with stack tests performed from 1996 to 2003 show a range of inlet concentrations from 23 to 3915 micrograms per dry standard cubic meter (μg/dscm), a range of over 100 times. The range from the

5th percentile to the 95th percentile is approximately 50 to 1180 μg/dscm, and the yearly average inlet concentration is as high as 1000 μg/dscm.

Throughout the period from 1996 to the present, with brief exceptions in the case of two facilities, the MSW facilities have achieved 90 to 99 percent mercury control through the use of selective non-catalytic reduction, carbon injection, spray drier scrubbing, and baghouse or ESP particulate control. Carbon injection and good particulate control were shown to be the most important measures for effective mercury reduction. ACI is currently available commercially for coal, and the technology transfer from MSW use is economically and technically feasible.

This higher variability of mercury in MSW has been successfully addressed by the Department with a mercury limit that is similar in form to the coal limit. Both standards include quarterly testing to determine an average emission rate. The form of these two standards is appropriate for a range of mercury concentrations. Control of average mercury content can help the facility achieve the emission rate component of the standards. If on the other hand, the material has high mercury content, the percentage-reduction component of the standard can be achieved. This combined emission rate or percentage reduction standard ensures that all coals can be burned, just as it was assured that all types of MSW could be burned. The quarterly testing (with 12 test runs per year) also addresses variability by using an average emission rate to determine compliance, rather than a peak emission rate.

Also, a company may use a mercury continuous emission monitor for mercury if approved by the

Department. Such monitors would provide the best means of determining the actual annual emissions and addressing impacts of mercury emission variability on less than continuous measurements.

Controls currently used to reduce emissions of sulfur dioxide and particulates have already demonstrated their effectiveness in reducing mercury emissions. Scrubbers and baghouses currently used at New Jersey coal-fired power plants, in conjunction with selective catalytic reduction to control emissions of nitrogen oxides, are already achieving mercury reductions of more than 90 percent, and in some cases more than 98 percent. Also, see response to comment #54. The commenter implies that control technology should not be installed until control efficiencies are guaranteed. However, under the commenter's scenario, one would not see sufficient control technology being installed to obtain sufficient information to guarantee new technologies. For new air pollution control technology to become widespread, it is more common for regulatory action to occur first, with limits that have been shown to be achievable, but may not be guaranteed in every case. The regulation provides the reason to expand the use of the existing control technology.

In a NESCAUM report (Praveen Amar, Project Director, Environmental Regulation and Technology Innovation, Controlling Mercury Emissions from Coal-Fired Boilers, September 2000) NESCAUM documents the benefits of regulating when there is sufficient information, but before a technology is in widespread use. This report documents opposition to new technologies based on inflated cost estimates and concern about uncertainty in applying the technology to specific cases. The report showed that costs were much lower, problems solved, and uncertainties addressed as the technology

was implemented after adoption of rules. While there are some uncertainties about how well control of mercury from coal will do, there is sufficient information to expect at least 90% control and the successful transfer of technology from the MSW Sector to the coal-fired power plant sector is expected.

Also, the nature of mercury control technology does not make a guarantee of exact control efficiency for every unit either necessary or appropriate prior to regulation. "Guarantees are based on inexpensive, full scale duct-injection trials at the particular plant site on the particular fuels that the customer is combusting. With our B-PAC, because so little equipment is required and retrofit is so simple, the customer can easily "try before they buy". A portable injection trailer is towed to the site for short-term trials. The guarantees are based on the results. Detroit Edison's St. Clair Plant, for example, with just a cold-side ESP burning a sub bituminous coal, is achieving an average of 94 percent mercury removal with a B-PAC injection rate of only 3 lb/MMACF. (Sid Nelson, Sorbent Technologies, October 23, 2004 communication.)

59. COMMENT: The proposed rules incorrectly suggest that the economic impact from the rules will be insignificant. The control study (Evaluation of Mercury Control Technologies for Conectiv's B.L. England Station by J.E. Cichanowicz dated March 4, 2004) shows that the maximum level of mercury reduction that can be achieved at B.L. England Unit 2 is 77 percent, far short of the reduction requirements of the proposed rules. The control study estimated that achieving even a 77 percent reduction would cost $55,000 per pound of mercury. According to the commenter, compliance with the proposed rules could be as high as $240,000 per pound. (39)

RESPONSE: The Department never stated or suggested that the economic impact of this rule is insignificant. On the contrary, the Economic Impact statement in the rule proposal outlined in detail the estimated costs of bringing coal-fired boilers into compliance, as well as the costs that other sectors would incur. The proposal also explained the economic benefits from the rule.

The Department calculated costs in accordance with USEPA Control Cost Manual. The Department described the estimated costs for three different compliance scenarios: the addition of activated carbon injection to existing air pollution controls; retrofitting an existing electrostatic precipitator (ESP) by installing a polishing baghouse after the ESP; or adding sodium hypochlorite to the scrubbing solution to units with wet scrubbers.

The Department found that compliance costs would range from $28,000 to $39,000 per pound of mercury removed. The Department does not suggest that these costs are insignificant. The Department believes that the costs are justified. Mercury is an extremely harmful neurotoxin. Even in relatively small quantities (tens or hundreds of pounds emitted annually from coal-fired boilers in New Jersey, compared with thousands of tons of nitrogen oxides, sulfur dioxide and particulates), mercury emissions bring severe and long-lasting harm to human health and to the environment.

The Department recognizes that the cost of reducing one pound of mercury emissions far exceeds the cost of reducing one pound of emissions of nitrogen oxides, sulfur dioxide, or particulates. However, such a comparison is not relevant, because small amounts of mercury have the ability to

cause such great harm to public health and the environment. Since the harm that each pollutant causes is not the same pound for pound or ton for ton, the cost of eliminating a pound of one pollutant is not a useful yardstick in establishing what is a reasonable cost to eliminate a pound of another pollutant.

The Department's projections of compliance costs are necessarily estimates. The Department recognizes that there may be differences in the design of any given coal-fired boiler, differences in the operation of any given boiler, differences in the site on which any given boiler is located, and any number of other site-specific circumstances that could make the cost of compliance at a particular boiler higher or lower than the estimate. Furthermore, any two consultants working independently may well come up with two different projections of the cost of compliance for the same boiler.

The Department's decision to regulate mercury emissions from coal-fired boilers did not hinge on the costs of compliance falling precisely within the range outlined above. Even at significantly higher costs, the Department would still conclude that regulating these emissions was justified. That conclusion reflects the severe effects of mercury emissions on public health and on the health and usability of New Jersey's fisheries. It also reflects environmental and economic benefits of controlling mercury emissions that were not described at length in the proposal because of the difficulty in quantifying those other benefits.

In evaluating the environmental benefit of reducing mercury emissions, and the economic benefit

that follows, it is important to note that the technology that reduces mercury emissions also reduces emissions of nitrogen oxides (NO_x) and sulfur dioxide (SO_2) (and vice versa). Scrubbers designed to control SO_2 emissions, in combination with selective catalytic reduction technology designed to control NOx emissions, reduce mercury emissions as well. Even the industry trade organization Edison Electric Institute acknowledges that NOx and SO_2 emissions from coal-fired power plants in the U.S. already capture, on average, about 40 percent of the mercury that enters the boilers with the coal, although the removal rate will vary depending on the type of coal and the air pollution control devices used and other factors. Comments of Quinlan Shea, Edison Electric Institute, on USEPA Docket ID No. OAR-2002-0056, June 29, 2004. The baghouse typically used in conjunction with the scrubber also captures particulate emissions. In addition, the combination of air pollution control technologies also reduces emissions of toxic acid gases and metals. The Department's analysis of the economic benefits of reducing mercury emissions did not include the benefits of reducing emissions of any of these other pollutants. Neither did the Department's cost estimates reflect the costs that affected plants may already have incurred or may be planning to incur to make required reductions of emissions of the other pollutants. Accordingly, the Department believes that its analysis is conservative and establishes the reasonableness of the cost of reducing emissions as required under the rule.

The Department also notes that on April 30, 2004, Conectiv recommended to the New Jersey Board of Public Utilities (BPU) that the B.L. England Generating Station in Cape May County be retired by the end of 2007. If the plant is retired as planned, it will not incur costs to comply with the mercury rule.

60. COMMENT: The output-based standard in the proposed rules, based on net megawatt hours, will create additional compliance problems, without any commensurate benefits in terms of improving energy efficiency, because plants will be penalized for using power to operate emissions control equipment. The Department did not provide any basis for such standard selection. The output based standard should be based on gross megawatt hours produced, not net megawatt hours. N.J.A.C. 7:27-27.7(a). (5, 39)

RESPONSE: The Department is adopting an output-based standard consistent with the approach recommended by the state and local government stakeholders to the Utility MACT Working Group. The approach is also consistent with what some industry stakeholders recommended.

An output-based standard rewards efficiency and provides plants with compliance flexibility by adding efficiency to the mix of ways to meet an emission limit. Promoting increased efficiency through establishment of output-based emissions standards also helps to reduce emissions of other pollutants.

All coal-fired power plants in New Jersey need air pollution control technology in order to achieve the mercury emission reductions required in the rules. Since operating that control technology at all of the plants will consume electricity, there is no reason to believe that any one coal-fired power plant will be penalized. However, plants will have an incentive to use the most energy-efficient

control technology, and use that efficiency to help meet the net output-based standard.

61. COMMENT: Carbon injection may merely shift the environmental burden from one medium to another. The introduction of activated carbon will generate mercury-contaminated fly ash, which will incur additional disposal costs as solid waste. The mercury contaminated fly ash may not be used in coal mine reclamation activities or in the cement industry. (5)

RESPONSE: The Department agrees that mercury is adsorbed by activated carbon and carbon shifts mercury from air to solid waste. Mercury bonds with carbon closely and is not released into the environment. Based on the review of MSW incinerator residual ash test data, residual ash containing mercury does not fail the Toxicity Characteristic Leaching Procedure ("TCLP") test and is not classified as hazardous waste. Specifically, the mercury-contaminated residual ash meets the TCLP test for the mercury regulatory threshold of 0.02 mg/l.

Also, once emitted into the air, mercury is virtually impossible to control and extraordinarily difficult to clean up. In contrast, mercury that is captured in solid waste can be appropriately managed in a manner protective of the environment and public health.

The mercury-contaminated fly ash disposal costs and revenue loss has been included in the Economic Impact Analysis. This analysis points out that a utility has the option of installing a second particulate control device, similar to what PSEG plans for Hudson. With such a system, 99

percent of the ash can be collected without carbon in the first particulate control device, and carbon can be injected in the second control device, where only one percent of the ash will be collected. In this way the bulk of the ash can be unaffected by carbon if this is desired.

62. COMMENT: The rules do not provide any assurances that the introduction of additional pollution control technologies will not trigger any additional State-of-the-Art (SOTA) requirements per N.J.A.C. 7:27-8.12 or N.J.A.C. 7:27-22.35. N.J.A.C. 7:27-27.8(e). (39)

RESPONSE: The Department did not provide any such assurance. If SOTA is triggered due to a modification at the facility that significantly increases emissions, it would require compliance with all State and Federal permitting requirements, including SOTA.

Carbon injection could potentially increase particulate emissions. However, all New Jersey coal-fired units with one exception (Vineland) have either particulate control or a commitment to install such control (Hudson) that meets SOTA requirements. The Department understands that the Vineland coal unit will be shut down and a combined cycle gas fired turbine will be installed.

Hence, the Department projects that particulate controls on, or being installed on, New Jersey coal-fired units which will exist after December 15, 2012, should be adequate to control the carbon being injected. These units have emission limits that are better than, or equal to, the New Source Performance Standards (NSPS) of 0.03 lbs of particulate per million BTU. As long as this standard

continues to be achieved with carbon injection, the Department does not anticipate requiring additional particulate control. However, if this level of emissions should be exceeded for whatever reason, the Department would expect particulate controls to be improved. Also, the Department may, independent of this mercury rules, adopt more stringent particulate rules to address the fine particulate ambient air quality standards. While the Department does not anticipate that either of these will occur, there is the possibility that some ESPs in the USA will be inadequate for effective mercury control because they are relatively small and need to be upgraded for more effective particulate control. In New Jersey, ESPs at the PSEG Mercer facility and the Conectiv B.L. England facility should be sufficiently large to continue to meet the particulate NSPS, even with carbon injection.

63. COMMENT: The proposed rules should include a waiver provision, similar to the Connecticut and Massachusetts regulations, should the installed pollution controls be unable to achieve the proposed standards. N.J.A.C. 7:27-27.7(a). (5, 39)

RESPONSE: The Department has not included a waiver provision in the rule. The rules establish two alternative approaches to compliance, with an output-based emission limit and a percent removal requirement. Currently available mercury control technologies have successfully achieved more than 90 percent mercury control, as discussed in response to several comments earlier. The Department therefore does not believe that a waiver provision is appropriate.

Nonetheless, the Department understands the commenters' concern. In Connecticut, Public Act No. 03-72 (Approved June 3, 2003) set mercury emission standards for the one affected coal-fired boiler in the state. That law provides for an alternative emission limit if the owner or operator of the affected unit properly installs and operates control technology designed to achieve the mercury emission standards, but the technology fails to meet the standards. Again, considering the availability of air pollution control technology that has been demonstrated to be effective, the Department does not believe that an alternative emission limit is either necessary or appropriate. However, the Department does recognize the possibility that additional time for adjustment and optimization could be needed in some cases before the boiler is able to consistently meet the emission standards in the rule, even when the appropriate technology was installed well in advance of the compliance deadline. Accordingly, the Department anticipates that it will be proposing an amendment to the rule that would allow in certain circumstances a temporary alternative emission limit to be established for 12 months.

64. COMMENT: The language of N.J.A.C. 7:27-27.7(d) is suggested to be changed as follows: “The mercury emissions standard specified in (a)(1) or (a)(2) above are applicable on and after December 31, 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 31, 2012, provided that by December 15, 2007, approximately 50 percent of the owner or operator’s total coal-fired megawatt capacity located in New Jersey that was operating as of the date of the enforceable agreement either achieves

compliance with (a) above or ceases operation." (5)

RESPONSE: The Department has not made the suggested change. The proposal offered an option to extend the December 15, 2007 compliance deadline for five years for approximately 50 percent of a company's coal-fired generating capacity, provided that the other 50 percent achieved compliance by December 15, 2007. The Department did not intend that this option be used to encourage the shutdown of coal-fired generating capacity in the State, and therefore provided that approximately 50 percent of the generating capacity in use on December 15, 2007 was required to comply with the emission limits in N.J.A.C. 7:27-27.7(a). A shutdown would not achieve a compliance delay for the remaining units owned by a company.

If a company were to cease operation of some portion of its coal-fired generating capacity by December 15, 2007, or agree by that date to do so under N.J.A.C. 7:27-27.7(e), then the five-year extension would not be available unless approximately 50 percent of the remaining capacity met the requirements of N.J.A.C. 7:27-27.7(a). In other words, if a company, with 1,200 MW of New Jersey coal-fired capacity, agreed under N.J.A.C. 7:27-27.7(e) to shut down 600 MW of that capacity, 300 MW of the remaining 600 MW would be required to comply with N.J.A.C. 7:27-27.7(a) by December 15, 2007.

The Department clarified the rules upon adoption that the five-year extension of compliance for 50 percent of a company's coal-fired capacity refers only to coal-fired capacity in New Jersey, consistent with the consent decree.

65. COMMENT: The following language should be added at the end of proposed N.J.A.C. 7:27-27.7(a)(2): "An owner and operator of a coal fired boiler may comply with this section by installing and optimizing controls of SO_2 and NO_x." (5)

RESPONSE: The rules do not prescribe how to achieve compliance with N.J.A.C. 7:27-27.7(a)(1) and (a)(2). The owner or operator may comply with N.J.A.C. 7:27-27.7(a)(1) and (a)(2) by installing and optimizing SO_2 and NO_x controls, however, the Department does not believe that rules change is necessary. The Department notes that if optimizing SO_2 and NO_x controls do not achieve the standard, the additional measures are necessary in order to meet the standards in the rules.

66. COMMENT: How will annual testing impact the environmental justice executive order, which looks at the actual continuous impact on the effected neighborhoods? (6, 20)

RESPONSE: Although Continuous Emission Monitors (CEMs) for measuring mercury emissions from a stack would be desirable, the USEPA has not yet certified CEMs that can reliably measure stack mercury, although it is expected that this will happen eventually. In the interim, an optimization approach will be used to identify parameters that can be measured continuously (in this case it is the reagent feed rate) which are demonstrated to be correlated with low mercury emissions.

At N.J.A.C. 7:27-27.8(d), the owner or operator of any source subject to these rules, with a reagent

based mercury emission control system, is required to conduct optimization tests for mercury emissions control apparatus. The optimization tests determine the optimized reagent feed rate at which emissions of mercury are reasonably minimized below the applicable limits, while considering the amount of reagent used. The owner or operator is required to operate each applicable source at or above the optimized reagent feed rate approved by the Department. Continuous monitoring of the reagent feed rate and comparison to the optimized reagent feed rate will be required to ensure that mercury emissions are continuously minimized and below the allowable mercury emission limits. This is in addition to quarterly stack emission testing requirements in the rules. The results of both the stack testing and the continuous reagent monitoring will be used to determine compliance with the emission standards established for the sources regulated by these new and amended rules.

Finally, it should be noted that operating parameters related to emissions other than mercury must be continuously monitored, giving the Department additional information about whether the equipment is operating properly. All of these measures will ensure that the potential impacts of mercury on nearby neighborhoods, which may include low-income communities, will be reduced as a result of the adoption of these rules.

67. COMMENT: The USEPA's proposal to trade mercury emissions is seriously misguided and could cause greater harm to communities in New Jersey, which already face higher-than-average mercury exposure. (40)

RESPONSE: The Department agrees with the commenter and submitted a comment to the USEPA that its proposed mercury MACT rules (cap-and-trade) not be adopted as proposed. In addition, the New Jersey Attorney General led a multi-state coalition in submitting comments in opposition to the Federal Utility Mercury MACT proposal.

68. COMMENT: The proposed N.J.A.C. 7:27-27.7(b) should be revised as follows: “On and after December 15, 2007, the owner or operator of any coal-fired boiler determining compliance with (a)(1) or (a)(2) above shall conduct stack tests annually to determine emissions and concentrations of mercury. The owner or operator shall report to the Department within 60 days of conducting such tests, unless the Department grants an extension of time.” If the Department does not make this requested change, then the Department should add the following language," “Notwithstanding the foregoing, an owner or operator of a coal-fired power plant, that has entered into an enforceable agreement with the Department to develop, install and test mercury CEMS, may comply with the terms of the enforceable agreement including, but not limited to, any stack emission test protocols or procedures established pursuant to that agreement, in lieu of the requirements in this section.” (5)

RESPONSE: The emission standard is based on an annual average to address variability. The Department does not believe that one test per year is sufficient because it must be able to document the actual annual average testing by more frequent quarterly tests. N.J.A.C. 7:27-27.7(c) provides for annual testing once the owner or operator of any coal-fired boiler achieves and maintains

compliance for eight consecutive quarters. N.J.A.C. 7:27-27.9 includes similar language suggested regarding submitting the results of the stack emission tests.

69. COMMENT: If company has an enforceable agreement with the Department, then testing and monitoring shall be consistent with that agreement. It is requested that those who enter into an enforceable agreement with the Department, such as a consent decree, should be permitted to follow stack testing protocols and procedures within the enforceable agreement in lieu of the regulatory requirements by adding the following new section after proposed N.J.A.C. 7:27-27(f): "Notwithstanding the forgoing, an owner or operator of a coal-fired power plant that has entered into an enforceable agreement with the Department to develop, install and test Mercury CEMS may comply with the terms of the enforceable agreement including, but not limited to, any stack emission test protocols or procedures established pursuant to that agreement in lieu of the requirements in this section." (5)

RESPONSE: PSEG Consent Decree does not specify testing and monitoring requirements for mercury controls. Therefore, the new and amended rules can not be consistent with the nonexistent revisions of the PSEG Consent Decree.

70. COMMENT: The commenter is concerned about the qualification that a CEM can be utilized only after a "Federal Performance Specification" has been developed. The term "Federal Performance Specification" is not defined, and calls into question PSEG's ability to use the mercury CEM technology that the company is required to construct pursuant to its consent decree with the

United States and the Department. PSEG believes that the following new subparagraph N.J.A.C 7:27-27.8(b)(4) be added: "Any stack emission testing protocol or CEM that is installed and operated pursuant to an enforceable agreement between the owner or operator of a coal-fired power plant and the Department." Furthermore, the following new subsection should be added to N.J.A.C. 7:27-27.7: “The provisions of (b), above, shall not apply to any owner or operator who installs and operates a CEMS pursuant to an enforceable agreement entered into with the Department, in accordance with the provisions of 7:27-27.8.” (5)

RESPONSE: The Consent Decree of PSEG does not include an approved stack emission testing protocol for mercury. The Consent Decree of PSEG includes the following provisions for mercury continuous emission monitoring:

> "By December 31, 2002, PSEG Fossil, in consultation with USEPA and NJDEP, shall evaluate technologies for continuous mercury emissions monitoring ("Mercury CEMS") at Hudson Unit 2, Mercer Unit 1, and Mercer Unit 2, and shall provide a report to USEPA and the Department proposing Mercury CEMS technology at these Units."
>
> "By December 31, 2003, USEPA and the Department in consultation with PSEG Fossil, shall select and approve a Mercury CEMS demonstration technology for Hudson Unit 2, Mercer Unit 1, and Mercer Unit 2."
>
> "By December 31, 2004, PSEG Fossil, shall install and commence operation of a Mercury

CEMS demonstration technology selected by USEPA and NJDEP, in consultation with PSEG Fossil."

"On and before December 31, 2005, 2006, and 2007, PSEG Fossil, shall submit to USEPA and the Department a report summarizing the performance and accuracy of the Mercury CEMS."

N.J.A.C. 7:27-27.8 (c) states the rule's intent that the continuous emission monitoring would be used when a Federal performance specification is developed and published in the Federal Register. At that time 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. Thereafter, the continuous emission monitoring equipment may be used to demonstrate compliance with the emission standards of this subchapter in accordance with the conditions of approval of the continuous monitoring equipment. When a Federal performance specification is developed and published in the Federal Register, PSEG may demonstrate that the continuous monitoring equipment they installed pursuant to the Consent Decree complies with the quality assurance requirements of the Federal specifications. Until the Department approves the use of a CEM for determining compliance with the rules, facilities will be required to perform stack testing for compliance and shall submit the stack emission test protocols or procedures as required.

71. COMMENT: The standard should compare mercury emissions to the amount of mercury in the

inlet coal. Coal can be more easily sampled and tested than flue gas at the inlet of the control devices. The term "valid stack test" should be defined. N.J.A.C. 7:27-27.7(b). (39)

RESPONSE: Coal sampling is not as representative as flue gas sampling to determine the efficiency of the air pollution control equipment. The form of mercury in the unburned coal and the form of mercury in the flue gas prior to the air pollution control equipment would be different. Another concern would be the ability to do simultaneous coal and outlet testing of the air pollution control device. Flue gas sampling before and after the control apparatus is the most accurate method to determine the mercury control efficiency of the mercury control device in reducing the emissions of mercury in the flue gas. This is what the rules require.

A valid stack test is defined as a complete sampling and analytical test event, including the data reduction, that was performed in accordance with the applicable test method(s) and/or the Department approved performance test protocol, and validated by the Bureau of Technical Services.

E. GENERAL

72. COMMENT: The State should educate New Jersey residents about purchasing mercury-free products and the proper recycling/disposal of hazardous waste. The State should re-focus its efforts on recycling to include the increasing number of recyclable items. (6, 20)

RESPONSE: The Department agrees with the commenter. The Department supports proposed legislation requiring the automotive industry to assist in the removal of mercury switches in End-of-life-vehicles (EOLVs). New Jersey State Assembly bill A2482 and Senate bill S1292 would establish a program for mercury switch removal from EOLVs. In addition, the Department is in the process of proposing amendments to the recycling regulations at N.J.A.C. 7:26A-1.3, and 2.1, and promulgating new rules at N.J.A.C. 7:26A-9, mandating the removal of mercury switches from EOLVs by recyclers.

73. COMMENT: Continuous monitoring equipment would provide more accurate and usable data than the current proposed stack emissions testing scheme. (3, 6, 13, 15, 25)

RESPONSE: The Department agrees with the commenter that continuous emissions monitoring for mercury that could meet Federal performance specifications may provide more accurate data. NJAC 7:27-27.8 (c) allows for use of continuous emission monitoring system when a Federal performance specification is developed and published in the Federal Register. The owner or operator of a source regulated by these rules may propose a mercury continuous emission monitoring system capable of meeting the Federal performance specifications. The owner or operator of the affected source may install and operate the CEM to determine compliance with these rules if approved by the Department.

74. COMMENT: Mercury is everyone's problem and placing part of the burden of emission reduction on the emitters of mercury is one of the appropriate tools for correcting the problem. (15)

Any alternate emission limit ("AEL") program permitting continual harm to the environment or delayed mercury remediation should be eliminated. The health impacts of mercury pollution are too dangerous to allow companies not to follow the standards in the rules. (15, 25, 26)

RESPONSE: The Department has adopted each of the emission limits contained in the proposal because it believes that setting stringent emission limits and reduction efficiencies for control devices will reduce the amount of mercury emitted by New Jersey facilities regulated by these rules. The rules do not provide any alternative emission limits.

The rules do allow for the possibility of some limited delay in reducing mercury emissions. If a company enters into an enforceable agreement with the Department to bring all of its New Jersey coal-fired boilers into compliance with strict emission limits for nitrogen oxides, sulfur dioxide and particulate matter, the rules allow a five-year extension of the deadline for mercury compliance for 50 percent of the company's coal-fired capacity located in New Jersey. The Department believes that installing advanced controls to reduce emissions of additional air contaminants beyond mercury is more than valuable enough to justify the limited extension in the rules.

As discussed in the response to comment 63 above, the Department anticipates that it will propose

rules that would allow 12 months of additional time for adjustment and optimization when the appropriate mercury control technology has been installed on a boiler.

For MSW incinerators, the rules provide a second compliance alternative emission limit of 14 µg/dscm based on three-year average, which provides the opportunity to spread the spikes over three years of data measurements (or 12 consecutive quarters) and amongst all units at the facility. This would deliver emission reductions comparable to what the 95 percent/28 µg/dscm standard would achieve, and would deliver those reductions several years earlier. This is designed to achieve at least a fifty percent actual mercury reduction. The Department estimates that this option would provide an emissions reduction comparable to what the first alternative's second phase would achieve.

No other alternative limits were considered by the Department.

75. COMMENT: Sewage sludge incinerators should be considered for mercury controls in the future. (22)

RESPONSE: The Department will consider future rules for limiting mercury from sewage sludge incinerators. Under the Title V Operating Permit program, the Department requested all owners and operators of sewage sludge incinerators subject to Title V Operating Permit program to agree to limit the mercury content of the feed sewage sludge to below five ppm on a yearly average. This limit is included in their operating permits as an enforceable requirement with associated monitoring, recordkeeping and reporting requirements. This level is consistent with the recommendations of the

Second Mercury Task Force dated December 2001. In addition to these permitting efforts, the Department will, in the future, be evaluating the need and timing for rules which would require lower than five ppm mercury limits in sludge being incinerated or which would establish mercury emission limits on the sludge incinerator stack. The Second Mercury Task Force also recommended that, after five years, mercury in sludge be reduced to less than two ppm measured with a 12-month rolling average on all sludge generated in New Jersey. If sewage sludge incinerator facilities achieve this mercury level in the sewage sludge, then the Department does not intend to set stack emission limits. The Department will continue to monitor the concentration of mercury in sludge to determine whether it will proceed with rulemaking concerning this industry sector in the future.

76. COMMENT: Once a facility has satisfied N.J.A.C. 7:27-27.4(c) with eight consecutive passing quarters, the Department should be unconcerned about *which* quarter the facility conducts its stack test. The proposed subsection provides that subsequent testing should be performed every "fourth quarter," apparently meaning that each subsequent test should be conducted within four quarters of the last test. "fourth quarter," however, *could* be interpreted to mean every year between October 1 and December 31. Such an interpretation would unnecessarily restrict facilities' ability to schedule testing in a cost-effective way, and could even cause a facility to conduct two stack tests per year, depending upon when the proposed Amendment became effective. The Department should clarify that the requirement is to conduct a stack test within the four quarters that follow the last stack test. (33)

RESPONSE: At N.J.A.C. 7:27-27.4(c), the term "fourth quarter" does not mean the quarter between October 1 and December 31. Any owner or operator achieving and maintaining compliance with N.J.A.C. 7:27-27.4(a) during eight consecutive quarters 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 average compliance was determined. Stated in other words, if the owner or operator of a municipal solid waste incinerator is entitled to demonstrate compliance pursuant to the reduced stack testing provision of N.J.A.C. 7:27-27.4(c), there will be three quarters between stack emission tests. For example, if a stack emission test was performed in the second quarter of 2008 because the owner or operator met the requirements of N.J.A.C. 7:27-27.4(c) for all applicable incinerators located at a facility, during eight consecutive quarters, may reduce testing, then the next test would be done in the second quarter of 2009.

77. COMMENT: Please clarify that a "licensed professional engineer," required by N.J.A.C. 7:27-27.9(d) to certify stack test reports, can be licensed in any of the 50 states to be qualified to certify stack test reports. (33)

RESPONSE: The term "licensed professional engineer" referred to at N.J.A.C. 7:27-27.9(d) means an engineer licensed in any of the 50 states.

78. COMMENT: The types of units required to perform reagent optimization tests are not identified by the rule's language. (38) Testing requirements for optimizations of reagent use are unnecessary, costly, and will not provide any additional benefit. N.J.A.C. 7:27-27.8(d). (5, 39)

RESPONSE: The rules at N.J.A.C. 7:27-27.8(d) state that the owner or operator of any affected source that has a reagent based mercury emission control system must conduct optimization tests. The purpose of the optimization tests for the air pollution control equipment is to determine the optimum reagent feed rate at which the emissions of mercury are minimized below the applicable standards. Examples of reagent based mercury control system include, but are not limited to, activated carbon injection to baghouse air pollution control equipment, or sodium hypochlorite or other oxidizing chemicals added to a scrubbing solution in a wet scrubbing air pollution control system.

Some municipal solid waste incinerators have already performed optimization testing and have demonstrated to the Department that they have been achieving at least 95 percent control efficiency in all recent tests. These facilities have already demonstrated that they are feeding sufficient reagent to minimize emissions. Hospital/medical/infectious waste incinerators use source separation and pollution prevention methods and do not operate reagent based air pollution control systems, so there is no reagent feed to optimize.

In proposing the optimization testing requirement, the Department did not intend that MSW facilities that have already demonstrated optimization would have to repeat the optimization testing. The

Department intended to require optimization testing for MSW facilities that have not been attaining 95 percent control efficiency consistently, because those are the facilities that may not be minimizing mercury emissions. The Department intends that those facilities would repeat optimization testing.

Therefore, in response to this comment, the Department has added language to N.J.A.C. 7:27-27.8(d) to clarify when optimization testing is required. For MSW incinerators, optimization testing shall be conducted within one year of the operative date of these rules, except if the owner or operator has demonstrated to the Department that it has achieved at least 95 percent control in all tests over the preceding two years. The hospital/medical/infectious waste incinerators would not be expected to perform optimization testing, because they all use source separation and pollution prevention methods and do not operate reagent based air pollution control systems. The Department has also added language to N.J.A.C. 7:27-27.8(d) to clarify for iron and steel melters and coal-fired boilers, optimization testing shall be conducted within one year after the compliance date applicable to each sector, if a reagent based mercury control system is used.

79. COMMENT: Iron and steel melters should be given the opportunity to perform one stack test under conditions plus or minus five percent of maximum production, similar to other sources subject to stack emissions testing. The commenter is requesting to add, “stack emission testing will be done in accordance with the approved protocol.” (12)

RESPONSE: The protocol approved by the Department pursuant to N.J.A.C.7:27-8.13(d)1 and N.J.A.C.7:27-8.4(f)1 to 4 for the minor source facilities, or N.J.A.C.7:27-22.18 for the major source facilities, will specify the range of operating conditions required at the time of the stack emissions testing.

80. COMMENT: The following sentence should be inserted after the fourth sentence in proposed N.J.A.C. 7:27-27.7(b): “The owner or operator shall not be required to commence stack testing until after the stack emission testing protocol is approved by the Department." (5)

RESPONSE: The fourth sentence in the rules at N.J.A.C. 7:27-27.7(b) requires, "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)". The rules at N.J.A.C. 7:27-27.8 (a) requires, "Stack emission testing performed pursuant to this subchapter shall be conducted in accordance with a test protocol approved by the Department. The owner and/or operator must submit the protocol to the Department in a accordance with the timing set forth in the applicable regulations at N.J.A.C. 7:27-8.4(f)(1), which requires that the protocol shall be submitted at least 60 days prior to the anticipated date of the testing, except where the Department determines that a different submittal date is needed to allow for adequate testing so that the Department will have enough time to review and the owner/operator will have time to make revisions, secure approval, and still be able to perform the stack emission in accordance with the requirements of the rules.

81. COMMENT: The Department should strengthen the CEMS proposal at N.J.A.C. 7:27-27.8(c) by requiring installation of mercury CEMS, rather than not requiring CEMS until a CEMS becomes available that meets the Federal specifications. This requirement would largely eliminate the need of quarterly stack testing and would simplify reporting requirements. Quarterly stack testing should be conducted for the initial two years, which would provide data to calibrate and validate the CEMS. Massachusetts requires the installation of mercury CEMS for coal fired boilers by January 1, 2008, and USEPA has proposed to require mercury CEMS to demonstrate compliance with its January 30, 2004 proposed mercury standards. (3, 13)

RESPONSE: The Department agrees that the use of a CEMS may be preferable for determining continuous compliance. The Department included in the rules a provision allowing voluntary installation of CEMS equipment to monitor mercury emissions, if approved by the Department. When USEPA promulgates the mercury CEMS Performance Specification Test Method 12 and mercury CEMS are certified, the Department will consider future rulemaking to mandate the installation and operation of mercury CEMS equipment by the owner or operator.

82. COMMENT: Since the proposed Federal mercury CEMS performance specification 12A only accounts for vapor phase mercury emissions, the rules at N.J.A.C. 7:27-27.8(b)(3) and (c) appears to allow compliance to be demonstrated with mercury CEMS that do not measure particulate-bound mercury. The Department should require total mercury emissions, not merely the vapor phase, to be

the basis of compliance demonstrations. The average particulate-bound mercury measured by stack testing should be added to the vapor-phase mercury measured by the CEMS, until a particulate-bound CEMS unit becomes available. (3)

RESPONSE: In the proposed Federal mercury MACT for power plants, mercury would be monitored by vapor-phase mercury CEMS. A review of the ICR III data shows that, for most units, the particle-bound portion of the mercury emitted is in the range of one to two percent or less. The units that show particle-bound mercury with as much as 12 percent of emitted mercury are not located in New Jersey, where requirements for better particulate control would be expected to yield a lower percentage of particle-bound mercury. Sources with CEMS will be required to conduct an annual RATA test on the mercury CEMS (or on the alternative Method 324, if approved). As part of CEMS approval, the Department expects to require a mercury test to verify particulate mercury is insignificant and adjust mercury emissions accordingly, if necessary. Upon promulgation of USEPA test methods, the Department will consider amending the rules regarding CEMS for mercury to address the issue concerning the measurement of particulate mercury.

83. COMMENT: Will affected sources be allowed to use a continuous sampling method with periodic analysis (like USEPA's proposed Method 324)? USEPA-approved test methods alone should be sufficient to demonstrate compliance. (39)

RESPONSE: After promulgation of USEPA performance specifications for mercury CEMS, the Department will consider the type of CEMS which will be approved in New Jersey.

84. COMMENT: The sources should be given the opportunity, on a case-by-case basis, to utilize CEMS in lieu of quarterly stack testing, prior to the establishment of an USEPA-approved performance specification test and commercial monitor availability. N.J.A.C. 7:27-27.8(b). N.J.A.C. 7:27-27.8 (b)(3) should be stricken because it assumes a Federal regulatory requirement that may not occur. The commenter suggested replacing N.J.A.C. 7:27-27.8(b)(3) with the following: "A CEM method approved by the Department." (As opposed to a CEM that is the subject of a Federal Performance Standard) The commenter further suggested that N.J.A.C. 7:27-27.8 (c) be deleted. (5, 39)

RESPONSE: Commercial mercury CEMS are available, but the USEPA Performance Specification (PS) has not been promulgated. CEMS, in lieu of quarterly stack testing, can be considered for compliance purposes after the 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 confirmed available. Once the Federal Performance Specification is published, an owner or operator of a regulated source may propose and install a mercury continuous emission monitoring system to determine compliance 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 in accordance

with the conditions of approval for the CEM. Thereafter, quarterly stack testing would not be required.

85. COMMENT: The Department should clarify how penalties will be assessed for those who are utilizing CEMS. The rules should clarify that penalties apply only to non-CEM stack testing. The commenter opposes the proposed penalty matrix applicable to mercury emissions measured by CEMS. N.J.A.C. 7:27-27A-3.10(m)(27). Since the commenter is also opposed to the provisions addressing reagent optimization rates, the commenter is also opposed to the penalty provisions related to those provisions (5)

RESPONSE: If CEMS are used to determine compliance, then the existing penalty rules for excess emissions will be in accordance with N.J.A.C. 7:27A-3.10(e) and N.J.A.C. 7:27A-3.10(n)1. The penalty matrix in N.J.A.C. 7:27-27A-3.10(m) will not be used for emission violations determined by CEMS. The provisions requiring reagent optimization are adopted at N.J.A.C. 7:27-27.8(c) and related penalty provisions are retained.

86. COMMENT: The compliance-averaging period of CEMS should be changed to a 30-day rolling average, instead of an annual average. (13)

RESPONSE: When a Federal performance specifications are developed and published in the Federal Register and mercury continuous emission monitoring systems capable of meeting the Federal specifications are available, the Department will consider future rules making to mandate the installation and operation of mercury CEMS, and could also change the compliance-averaging period of the mercury standard as measured with CEMS at that time. At this time the Department anticipates retaining the annual limitation because of the long term, rather than short term, known adverse effects of mercury.

Summary of Agency Initiated Changes:

N.J.A.C. 7:27-27.6(e)1 as proposed required iron or steel melters to purchase and use only mercury-free scrap or 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 Department has changed N.J.A.C. 7:27-27.6(e)1 on adoption to require 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, hoods, and anti-lock brake systems of end of life vehicles contained in the scrap.

As discussed in the proposal summary (36 N.J.R. at 125), the Second Mercury Task Force estimated that over 1,000 pounds of mercury is contained 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.

(NJDEP, 2002, New Jersey Mercury Task Force, Volume III, Chapter III, page 100, NJDEP, Trenton, NJ) The switches are contained in convenience lighting (in the hood and trunk) and in anti-lock brakes. 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. The summary also noted that at the time of the proposal, the Department was carrying out a pilot program to determine the effectiveness of removing mercury-containing switches from end-of-life vehicles.

On September 7, 2004, the Department published a proposal of a new rule and related amendments in the Recycling Rules at N.J.A.C. 7:26A, which govern the operation of recycling centers in New Jersey under the Solid Waste Management Act, N.J.S.A. 13:1E-1, et seq, and the New Jersey Statewide Mandatory Source Separation and Recycling Act, N.J.S.A. 13:1E-99.32 (see 36 N.J.R. 3963(a) (September 7, 2004)). The proposed rules require vehicle dismantlers/recyclers and scrap recyclers to remove mercury-containing convenience light switches and anti-lock brake switches from end-of-life vehicles prior to crushing or flattening the vehicle for shipment to a shredder. Any switches removed must be handled as universal waste. The goal of the proposed rules is to reduce the amount of mercury emitted into the air by iron and steel melters, which process the shredded vehicles. The summary of that proposal discussed the results of the Pilot Project as set forth in the Pilot Project Report. The report, which was issued after the Department proposed the amendments to N.J.A.C. 7:27-27 adopted herein, stated, “studies have indicated that 99 percent of the mercury in vehicles is contained in switches. Of the vehicles containing mercury, the convenience light switches account for 87 percent of the total mercury, while the antilock brake

system switches account for 12 percent."(Kenneth L. Woodruff, Mercury Switch Data Collection Pilot Project Final Report, p. 5. (March 24, 2004). http://www.state.nj.us/dep/dsr/hg-switch)

Recently, as noted in response to Comment 25, legislation is pending that will require the removal of mercury switches from hoods, trunks, and anti-lock brake systems of end-of-life vehicles. The legislation will also require vehicle manufacturers to finance the removal of the mercury switches.

In order to conform the source-separation provisions of these adopted rules relating to iron and steel melters to the findings of the Pilot Project report as well as to the Department's pending amendments to the Solid Waste and Recycling rules, which reflect those same findings, the Department is modifying N.J.A.C. 7:27-27.6(e)1 on adoption to address mercury switches not only in accessible hood and trunk lighting, but also in anti-lock brake systems of end-of-life vehicles.

The Department made an agency-initiated change to N.J.A.C. 7:27-27.7(d) 1, 2, 3 to clarify the compliance period for emissions of nitrogen oxides, sulfur dioxide, and particulate matter. The proposal stated that PSEG has already entered into a multi-pollutant consent decree with the Department (filed January 24, 2002) to attain the emission limits set forth in the proposal, but did not specify the compliance period. The Department has clarified the rules upon adoption to incorporate the compliance periods set forth in the consent decree.

The Department has further modified N.J.A.C. 7:27-27.7(d) on adoption to make it clear that compliance with N.J.A.C. 7:27-27.7(a) is measured based upon the company's capacity in New Jersey, and to specify that USEPA Test Method 5 is the means by which particulate matter is measured. USEPA Test Method 5, which is applicable for the determination of PM emissions from stationary sources, is available from the USEPA's website at www.epa.gov/ttn/emc/promgate/m-05.pdf. Under this test method, particulate matter is withdrawn isokinetically from the source and collected on a glass fiber filter maintained at a specific temperature. The mass of the particulate matter, which includes any material that condenses at or above the filtration temperature, is determined gravimetrically after the removal of uncombined water.

The Department has modified N.J.A.C. 7:27-27.8(e) on adoption to require 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 to obtain an air pollution control permit for any required preconstruction permit actions or for any required operating permit actions. The rule, as proposed, required only the timely submittal of an application. However, merely submitting an application is not sufficient because the Air Pollution Control Act and implementing rules require approval from the Department before constructing, installing, or modifying equipment that emits air contaminants.

Full text of the adoption follows (additions to proposal indicated in boldface with asterisks * **thus***;

deletions from proposal indicated in brackets with asterisks * [thus]*):

CHAPTER 27

AIR POLLUTION CONTROL

Subchapter 27. CONTROL AND PROHIBITION OF MERCURY EMISSIONS

7:27-27.1 Definitions

* * *

"Mercury-free scrap" is defined to mean scrap solely from sources that do not contain any intentionally added mercury. For example, automobile scrap, even when the mercury switches have been removed, would not be considered "mercury-free scrap." In contrast, steel beams obtained from demolished buildings would be considered "mercury-free scrap."

* * *

7:27-27.2 Purpose and Applicability

(No change.)

7:27-27.3 General provisions

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

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

(a)-(b) (No change.)

(c) Notwithstanding the provisions of (b) above, any owner or operator who achieves and maintains compliance with (a) *[1 or (a) 2ii and iii]* above, for all applicable incinerators located at a facility, during eight consecutive quarters, 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 average compliance was determined. However, if subsequent stack emission testing fails to demonstrate compliance with (a) *[1 or (a) 2ii and iii]* above, then the frequency of stack emission testing shall revert to that indicated in (b) above ***for the unit that failed*.**

(d) (No change)

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

(a) - (g) (No change.)

7:27-27.6 Iron or steel melters

(a) - (b) (No change.)

(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) (No change.)

(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*, and anti-lock braking systems*** 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 ***mercury-free*** scrap shipments to ensure that ***the shipments**

contain only mercury-free scrap, and procedures for visual inspection of a representative portion, but not less than 10 percent, of all other incoming scrap to assist in verifying that* mercury has been removed from the scrap.

i. – ii. (No change.)

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 ***of mercury-free scrap*** whose shipments fail to provide mercury-free scrap for more than three inspections in one calendar year.

(f) - (i) (No change.)

7:27-27.7 Coal-fired boilers

(a) - (b) (No change.)

(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 ***New Jersey*** 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 ***based on 30-day rolling average*** for wet bottom utility boilers;

2. The emissions of sulfur dioxide shall not exceed 0.150 pounds per million BTU ***based on 30-day rolling average***; and

3. The emissions of particulate matter shall not exceed 0.030 pounds per million BTU ***based on USEPA Test Method 5***;

(e)- (j) (No change.)

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

(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;]* ***as follows:**

   i. **For iron and steel melters and coal-fired boilers, optimization testing shall be conducted within one year after the compliance date;**

   ii. **For MSW incinerators, optimization testing shall be conducted within one year of the operative date of these rules, except if the owner or operator has demonstrated to the Department that it has achieved at least 95 percent control in all tests over the preceding two years;***

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]* *** obtain an air pollution control permit*** for any required preconstruction permit actions, or for any required operating permit actions.

Based on consultation with staff, I hereby certify that the above statements, including the Federal Standards 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 adoption. I hereby authorize this adoption.

Date:_____

_____
Bradley M. Campbell,
Commissioner
Department of Environmental Protection