



National Emission Standards for Hazardous Air Pollutants (NESHAP) for Taconite Iron Ore Processing Plants

Background Information for Promulgated Standards

EPA 453/R-03-013
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**National Emission Standards for Hazardous Air Pollutants
(NESHAP) for Taconite Iron Ore Processing Plants**

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ACRONYMS

BID	Background information document
CAA	Clean Air Act
CO	Carbon monoxide
CO ₂	Carbon dioxide
COMS	Continuous opacity monitoring system(s)
CPMS	Continuous parameter monitoring system(s)
DEQ	Department of Environmental Quality
EIA	Economic impact analysis
EPA	Environmental Protection Agency
ESP	Electrostatic precipitator(s)
FGD	Flue gas desulfurization
FR	Federal Register
GCP	Good combustion practices
gr/dscf	Grain(s) per dry standard cubic foot
HAP	Hazardous air pollutant(s)
HCl	Hydrogen chloride
HF	Hydrogen fluoride
IMPLAN	Integrated Planning Model
IRIS	Integrated Risk Information System
MACT	Maximum achievable control technology
MDH	Minnesota Department of Health
mg	Milligram
MIR	Maximum individual risk
MPCA	Minnesota Pollution Control Agency
MRR	Monitoring, recordkeeping, and reporting
NESHAP	National emission standards for hazardous air pollutants
NO _x	Nitrogen oxides

NSPS	New source performance standard
O ₂	Oxygen
OCH	Ore crushing and handling
OSHA	Occupational Safety and Health Administration
PH	Finished pellet handling
PIC	Products of incomplete combustion
PM	Particulate matter
PPB	Parts per billion
PPM	Parts per million
ROP	Renewable operating permit
TOC	Total organic carbon
USGS	U.S. Geological Survey

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) received a total of 29 letters commenting on the proposed standards and the background information document (BID) for the proposed standards. Four of these letters were received after the close of the public comment period, but were still considered. A public hearing was not requested, and therefore, a public hearing was not held. Each letter or comment has a separate comment number. Comments are designated as follows:

- IV-D-(number) written comments received during comment period,
- IV-G-(number) comments received after comment period, and
- OAR-2002-0039-(number) comments in the e-docket (see web address below).

Copies of the comment letters are located in docket OAR-2002-0039. The docket is open for public inspection between 8:30 a.m. and 4:30 p.m., Monday through Friday (excluding legal holidays), at the EPA Docket Center (Air Docket), EPA West, Room B108, 1301 Constitution Avenue, N.W., Washington, DC 20460. An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may use EPA Dockets at <http://www.epa.gov/edocket/> to review public comments, access the index of the comments of the official public docket, and to access those documents in the public docket that are available electronically. A list of the commenters, their affiliations, and the EPA docket number assigned to their correspondence is given in table 1-1.

The comments and responses, and therefore the organization of this document, have been categorized under the following topics:

- Source Category,
- Cost and Economic Impacts,
- Affected Sources,
- Fugitive Emissions Control Plan,
- Compliance Testing,

- Emission Limits,
- Continuous Compliance Requirements,
- Notification, Recordkeeping, and Reporting Requirements,
- Clarifications and Miscellaneous,
- Environmental Impacts, and
- Selection of Pollutants.

TABLE 1-1. LIST OF COMMENTERS ON THE PROPOSED NESHAP
FOR TACONITE IRON ORE PROCESSING PLANTS

Docket Number	Commenter and Affiliation
IV-D-01 OAR-2002-0039-0030	James W. Sanders Forest Supervisor U.S. Department of Agriculture. U.S. Forest Service. 8901 Grand Ave. Place Duluth, Minnesota 55808-1102
IV-D-02 OAR-2002-0039-0031	Ann M. Foss Major Facilities Section Manager Majors and Remediation Division, Minnesota Pollution Control Agency St. Paul, Minnesota
IV-D-03 OAR-2002-0039-0032	Gustav R. Josephson Sr. Staff Safety & Environmental Engineer Ispat Inland Mining Company Minorca Mine P.O. Box 1 - 5950 Old Hwy. 53 Virginia, Minnesota 55792
IV-D-04 OAR-2002-0039-0005	Thomas J. O'Neil President and Chief Operating Officer Cleveland Cliffs, Inc. ^a [Cleveland Cliffs Comments - Part 1] 1100 Superior Avenue Cleveland, Ohio 44114-2589
IV-D-05 No E-Docket Number	Andy Buchsbaum Center Director National Wildlife Federation 213 West Liberty Street, Suite 200 Ann Arbor, Michigan 48104-1398
IV-D-06 OAR-2002-0039-0008	G. Few Earth Justice Washington, D.C. <i>[No other info is available on the comment document]</i>

TABLE 1-1. LIST OF COMMENTERS ON THE PROPOSED NESHAP
FOR TACONITE IRON ORE PROCESSING PLANTS (continued)

Docket Number	Commenter and Affiliation
IV-D-07 OAR-2002-0039-0009 (Same content as IV-D-14, OAR-2002-0039-0012, 0027, and 0028)	Tishie Woodwell General Attorney - Environmental United States Steel Corporation P.O. Box 417 Mount Iron, Minnesota 55768
IV-D-08 OAR-2002-0039-0013	Jennifer Bayley U.S. citizen 677 Mockingbird Lane Corrales, New Mexico 87048
IV-D-09 OAR-2002-0039-0024	Holly Kriger U.S. citizen 10643 Walnut Drive Nunica, Michigan 49448
IV-D-10 OAR-2002-0039-0023	Erin Fox U.S. citizen 1448 Glen Haven Drive Fort Collins, Colorado 80526
IV-D-11 OAR-2002-0039-0025	Brian Dane U.S. citizen 35891 Argonne Street Newark, California 94560
IV-D-12 OAR-2002-0039-0022 (this item replaced OAR- 2002-0039-0010)	Bob Olsgard Coordinator The Lake Superior Alliance P.O. Box 472 Spooner, Wisconsin 54801
IV-D-13 OAR-2002-0039-0017	Linda Murr U.S. citizen 156 Three Creeks Road Winchester, Virginia 22603-1859

TABLE 1-1. LIST OF COMMENTERS ON THE PROPOSED NESHAP
FOR TACONITE IRON ORE PROCESSING PLANTS (continued)

Docket Number	Commenter and Affiliation
IV-D-14 OAR-2002-0039-0012 (Same content as IV-D-07, OAR-2002-0039-0009, 0027, 0028)	Larry C. Salmela Department Manager - Environmental, Safety & Hygiene United States Steel Corporation P.O. Box 417 Mount Iron, Minnesota 55768
IV-D-15 OAR-2002-0039-0026	LaTisha R. Gietzen Environmental Manager National Steel Pellet Company P.O. Box 217 Keewatin, Minnesota 55753-0217
IV-D-16 OAR-2002-0039-0018	Laura Woodry U.S. citizen 6219 N Traymore Avenue Azusa, California 91702-4139
IV-D-17 OAR-2002-0039-0016	Jacob Sladewski U.S. citizen 42144 Hancock Street Chassell, Michigan 49916
IV-D-18 OAR-2002-0039-0015	Mike Sladewski U.S. citizen 42144 Hancock Street Chassell, Michigan 49916
IV-D-19 OAR-2002-0039-0014	Christopher Fries U.S. citizen 205 East Michigan Marquette, Michigan 49855-3823

TABLE 1-1. LIST OF COMMENTERS ON THE PROPOSED NESHAP
FOR TACONITE IRON ORE PROCESSING PLANTS (continued)

Docket Number	Commenter and Affiliation
IV-D-20 OAR-2002-0039-0019	Tony DeFalco U.S. citizen 2056 NW Overton Street, #2 Portland, Oregon 97209
IV-G-01 OAR-2002-0039-0020	Shalen Fairbanks U.S. citizen 707 Chesapeake Avenue Silver Spring, Maryland 20910-5207
IV-G-02 OAR-2002-0039-0021	Tanya Baker U.S. citizen 5435 Branciforte Drive Santa Cruz, California 95065
IV-G-03 OAR-2002-0039-0029	Jonathan Lotz U.S. citizen 4701 Steinbeck, #1 Ames, Iowa 50014
IV-G-04 OAR-2002-0039-0011	Robert Peacock Chairman, Reservation Business Committee Fond du Lac Reservation 1720 Big Lake Road Cloquet, Minnesota 55720
OAR-2002-0039-0002	Jean Public U.S. citizen jeanpublic@yahoo.com

TABLE 1-1. LIST OF COMMENTERS ON THE PROPOSED NESHAP
FOR TACONITE IRON ORE PROCESSING PLANTS (continued)

Docket Number	Commenter and Affiliation
OAR-2002-0039-0003	Bradley E. Anderson Manager of Environmental Affairs EVTAC Mining P.O. Box 180 Eveleth, Minnesota 55734, 218/774-7800
OAR-2002-0039-0004	Same as OAR-2002-0039-0003.
OAR-2002-0039-0006	Cleveland Cliffs, Inc. ^a [Cleveland Cliffs Comments - Part 2] 1100 Superior Avenue Cleveland, Ohio 44114-2589
OAR-2002-0039-0007	Cleveland Cliffs, Inc. ^a [Cleveland Cliffs Comments - Part 3] 1100 Superior Avenue Cleveland, Ohio 44114-2589

^a Cleveland Cliffs Inc. owns or operates four taconite iron ore processing plants: Northshore, Hibbing, Empire, and Tilden.

2.0 SUMMARY OF PUBLIC COMMENTS AND RESPONSES

2.1 SOURCE CATEGORY

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that the entire taconite source category should be de-listed in accordance with Section 112(c)(9) of the Clean Air Act (CAA). According to the commenters, nothing in the CAA requires EPA to regulate sources that are not posing an unacceptable risk to the public health or environment.

Response: Any person can prepare and submit a formal petition requesting the de-listing of a source category from the source category list in accordance with Section 112 (c)(9) of the CAA. In such a petition, detailed documentation must be provided to support the following determinations:

1. For hazardous air pollutants (HAP) that may result in cancer in humans, no source in the category can emit HAP in quantities which may cause a lifetime risk of cancer greater than one in one million to the individual in the population who is most exposed to the HAP emissions from the source.
2. For HAP that may result in adverse health effects in humans other than cancer or adverse environmental effects, no source in the category can emit HAP in quantities that exceed a level determined for the adequate protection of public health with an ample margin of safety and no adverse environmental effect will result from the HAP emissions from the source.

Upon receipt of such a petition, the EPA has 12 months to review all supporting documentation and make a determination as to grant or deny the source category de-listing petition. Since de-listing and maximum achievable control technology (MACT) standard development are separate processes, the MACT standard development process will continue as planned so that EPA can meet the consent decree promulgation date of August 2003.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that if

the entire taconite source category cannot be de-listed, then this source category should be subject to one of the more innovative risk-based approaches. The commenters stated that risk-based approaches have been used in the Brick and Structural Clay Products and Clay Ceramics National Emission Standards for Hazardous Air Pollutants (NESHAP); the Surface Coating of Automobile and Light-Duty Truck NESHAP; the Boiler and Process Heater NESHAP; the Wood and Composite Material NESHAP; and the Reciprocating Internal Combustion Engine NESHAP.

Response: Risk-based approaches were included in the preambles of the proposed rules for the five source categories cited above, as well as for the Combustion Turbines source category, because we considered these approaches to be potentially viable options for these source categories. For the Brick and Structural Clay source category, these options were not included in the final rulemaking due to: 1) the range and complexity of issues raised by the commenters regarding the risk-based approaches; 2) time constraints that prohibited full and open resolution of the issues while still allowing the court-ordered deadline for promulgation of the rule to be met; and, 3) uncertainties in the metal emissions data. Decisions have not yet been made about whether to include risk-based approaches in the other five rulemakings.

The risk-based approaches were not included in the proposed rule for the Taconite Ore source category because: 1) HAP emissions from this source category include co-emitted threshold and non-threshold pollutants, and 2) there are significant uncertainties surrounding the metal HAP emissions data.

Within eight years after promulgating an emission standard under Section 112(d) of the CAA, we are required to make a determination as to whether additional emission reductions are necessary from a source category to provide an ample margin of safety to public health as specified in Section 112(f) of the CAA. Within this allowed timeframe, we will assess the risk associated with the residual HAP emissions in the source category, and we will revisit whether risk-based approaches would be appropriate for this source category.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that the source category should be split into two separate source categories, one for physical material handling operations [i.e., ore crushing and handling units (OCH), ore dryers, and finished pellet

handling units(PH)] and another for thermal indurating furnace operations. The commenters suggested that the indurating furnace operations source category should include all furnaces and should be subcategorized into straight grate furnaces and grate kiln furnaces. The commenters asserted that this approach more accurately reflects the two diverse types of operations and would be consistent with other recently proposed standards. The commenters cited the proposed NESHAP for Brick and Structural Clay and Ceramic Clay products (67 FR 47894, 7/22/02) and the proposed decision not to develop a NESHAP to regulate chlorine and hydrochloric acid emissions from chlorine production (67 FR 44713, 7/3/02) as examples of rules that have subcategorized in a similar manner.

Response: In accordance to Section 112(c) of the CAA, the taconite iron ore processing industry was included in the source category list for major sources of HAP [58 FR 63941, December 3, 1993]. The taconite iron ore processing source category includes any facility engaged in separating and concentrating iron ore from taconite, a low-grade iron ore. The category includes the following operations: OCH, ore dryers, indurating furnaces, and PH. Each taconite facility identified in this source category includes all of these operations as part of one overall continuous process to produce a concentrated iron ore product. Therefore, it is not appropriate to split a single manufacturing process into different source categories. We recognize that the listed processing operations have different process and emission characteristics. Thus, at proposal we designated each of these four process operations as a separate affected source within the taconite iron ore processing source category. Within each affected source, we were able to take into account the process and emission characteristic differences while establishing the respective MACT level of performance.

The proposed regulations cited by the commenters as examples to support the division of an existing source category into two or more source categories are not appropriate. The rules cited by the commenters subcategorized different types of manufacturing processes used to create different types of products at different facilities. As mentioned previously, the taconite iron ore processing operations work in conjunction with each to create a single product at the same facility. Therefore, we have not separated the material handling operations and the indurating furnace operations into separate source categories.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that if EPA divides the source category into two separate source categories, one for physical material handling operations, and another for thermal indurating furnace operations, then the material handling operations should be de-listed since none of the operations are a major source of HAP. Alternatively, the commenters suggested that the material handling operations could be de-listed on the basis of risk under Section 112(c)(9) or 112(d)(4) of the CAA. The commenters asserted that this approach is consistent with EPA's action in the July 3, 2002, Federal Register (FR) notice announcing the Agency's proposed decision not to regulate Chlor-alkali plants.

Response: Refer to the response for the previous comment. We do not anticipate any division of the current taconite iron ore processing source category. Process and emission characteristic differences have been accounted for through the establishment of four different affected sources within the source category. Furthermore, even if it were determined that different process operations should be placed in separate source categories, we are still obligated to consider the HAP emissions from potential sources that are collocated with a major source.

2.2 COST AND ECONOMIC IMPACTS

Comment: Three commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04, IV-D-15) stated that the estimated total capital cost impact of \$47.3 million underestimates the cost to the industry. One of the commenters (IV-D-15) stated that the costs for their plant were underestimated.

Response: The capital equipment costs used in the cost analysis conducted prior to proposal were based largely on historical industry costs provided by industry and vendor estimates obtained by the EPA. All of the indurating furnace capital equipment replacement costs were based on equipment and installation costs incurred by Minntac in 1991 to install two new venturi scrubbers for furnace lines 4 and 5. For OCH and PH units, the capital equipment replacement costs were based on equipment costs obtained from two wet scrubber vendors.

In follow-up discussions with the industry, industry representatives indicated that the costs of purchasing and installing a new wet scrubber were underestimated. For example, based on the cost estimates provided by one plant, the installation of two new wet scrubbers on their furnace would cost \$18 million, not the \$9.4 million estimated by EPA. We asked each plant to provide an estimate of the cost impact the limits in the final rule will have on their plant. Overall, industry estimated a capital equipment and installation cost of \$57 million. The costs provided by industry are based on a combination of costs estimated by plant engineers, previous equipment replacement costs, and vendor cost estimates.

The EPA asserts that the impact estimate of \$57 million provided by the industry is a conservatively high estimate based on the fact that some plants did not account for the averaging of the emissions for those units within the ore crushing and handling and finished pellet handling affected sources. However, in order to ensure that we fully account for the cost impact to the industry, we used the conservatively high estimates provided by the industry. Therefore, the capital cost impact of the emission limits in the final rule was estimated to be approximately \$57 million, including emission control capital costs and monitoring, recordkeeping, and reporting (MRR) capital costs. The annual costs of the final rule are estimated to be \$9 million per year, including annualized capital and annual operational and MRR costs. For more information on the industry provided costs and the revised cost analysis, see the revised cost analysis memorandum in the docket.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that the costs of the rule as proposed are disproportionate to the reduction in HAP.

Response: The revised estimate of annual compliance costs for the final rule is \$9 million per year, and this expenditure is estimated to result in the reduction of 270 tons/year of HAP and 10,538 tons/year of particulate matter (PM). The corresponding cost per ton of HAP reduced is \$33,333; the corresponding cost per ton of PM reduced is \$854. These values are similar to or lower than those in other MACT standards. In addition, the emission limits in the final rule are based on the MACT floor level of control. The CAA does not give the EPA the discretion to consider costs for the MACT floor level of control.

Comment: One commenter (OAR-2002-0039-0003) stated that they are struggling to remain competitive in the marketplace and currently have no orders for taconite pellets beyond June 2003. The commenter indicated that they have reduced their taconite pellet production costs from \$38/ton to \$33/ton through capital expenditures to increase efficiency. The plant has identified additional measures they can take to reduce their costs by an additional \$3/ton. These additional measures will require \$10 million in capital. The commenter is concerned that the additional \$11 million in capital costs that would be required to upgrade the indurating furnace dust collectors to comply with the rule will make it nearly impossible for this plant to obtain the \$10 million capital (loan) needed to upgrade the plant, achieve the additional \$3/ton cost reduction, and remain competitive in the market.

Response: This plant has two grate kiln furnaces processing magnetite, Line 1 and Line 2. The Line 1 furnace has one PM emissions test from November of 1997 at 0.004 gr/dscf. The Line 2 furnace has three PM emissions tests, one from December of 1996 at 0.0120 gr/dscf, one from April of 2001 at 0.0105 gr/dscf, and one from June of 2001 at 0.0125 gr/dscf. At the proposal level of 0.010 gr/dscf, the plant was estimated to incur cost impacts of between \$11 and \$19 million. However, in the final rule we have rounded the emission limits for grate kiln indurating furnaces processing magnetite to 0.01 gr/dscf. Therefore, based on their historical tests both indurating furnaces at this plant should meet the emission limit in the final rule and will not incur the indurating furnace control costs estimated for achieving the proposal level of control. This was confirmed in follow-up conversations with the commenter.

Comment: One commenter (OAR-2002-0039-0003) stated that the costs and resources associated with the administrative requirements (e.g., continuous monitoring, stack testing) of the final rule will pose a significant additional burden on their operations. The commenter cited estimated costs of \$515,000 for the installation of additional instrumentation and monitoring equipment, an additional cost of \$100,000 for dust collector monitoring maintenance, and an additional cost of \$45,000 for stack testing. The commenter stated that their plant is already operating under a title V permit and already has a well-controlled dust control system in place. The commenter asserted that the increased continuous monitoring and increased stack testing is not necessary to protect human health or the environment and adds unnecessary costs.

Response: In the proposed rule we included only those monitoring and testing requirements that were necessary to ensure the continued compliance with the PM emission limits. However, following a review of the public comments and follow-up discussions with the industry and States, we have written the final rule to reduce the monitoring and testing burden:

1. To reduce the monitoring burden we have deleted the requirements to conduct monthly transducer checks, quarterly gauge calibration checks, semiannual flow sensor calibration checks, daily pressure tap pluggage checks, and monthly electrical connection continuity checks. See section 2.7 for additional discussion regarding this change.
2. We have reduced the indurating furnace stack testing burden by removing the requirement to conduct simultaneous tests of all the stacks on one furnace. The final rule allows plants to conduct sequential testing of the stacks for a furnace, provided the tests are completed “within a reasonable period of time, such that the indurating furnace operating characteristics remain representative for the duration of the stack tests.”
3. We have removed the volumetric flow rate and process throughput rate criteria for grouping similar OCH and PH units. This will allow more units to be grouped together, and thus, will result in fewer initial compliance tests being required for

OCH and PH units. See section 2.5 for additional discussion regarding this change.

4. For dry electrostatic precipitators, we have allowed plants to monitor daily average secondary voltage and daily average secondary current in lieu of using a continuous opacity monitoring system (COMS). See section 2.7.4 for additional discussion regarding this change.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that the assumptions made do not reflect the current weak economic condition of the country or the taconite industry. The commenters stated that the rule will have dire economic impacts on the taconite iron ore processing industry.

Response: The economic impact analysis for the proposal was done using industry data for 1999 and 2000 since the data collected for purposes of developing regulatory options (e.g., control efficiencies, plant data, and costs) were based on data from those years. The Agency attempts to make its economic impact analysis (EIA) as consistent as possible with the data that must be input to it. If the Agency updates the data used in developing or revising regulatory options for the final rule, then the EIA shall also be revised accordingly. Such updates would likely account for current economic conditions across the country and the taconite industry. It should be noted that EPA believes competition from imports will limit the ability of taconite producers to pass compliance costs through to their customers. This is reflected in EPA's market model and drives the results generated by that model. Since the period represented by our EIA, the competitive pressure from imports has been somewhat mitigated by the tariff on steel that went into effect in 2002. A sign of mitigation of competitive pressure from imports is the increase in the Producer Price Index for steel products by about 11 percent between February 2002 and February 2003. This information indicates that taconite iron ore producers may be experiencing less pressure from imports due to imposition of the steel tariff.

Our EIA shows relatively small economic impacts to the taconite industry from implementation of the proposed rule. This analysis also includes a component which examines impacts from this rule on the communities the affected taconite plants are in using the Integrated

Planning Model (IMPLAN), a regional-based input-output model, and the analysis shows minimal employment and revenue reductions from the reduced output of taconite. Based on this analysis, the proposed rule will provide a slight economic impact to taconite producers and their customers beyond current conditions.

Comment: One commenter (OAR-2002-0039-0006) indicated that the executive summary of EPA's EIA appears to focus on only the best-case scenario. The first inconsistency is stating a price increase of \$0.01 per metric ton. This is based on a baseline price of \$55.13 per ton for taconite. Table 2-12 and page 2-24 of the EIA state that taconite prices range from \$25.51 to \$31.61 per ton. While the \$25 to \$31 per ton price appears to be consistent with actual market prices, the \$55 per ton figure deviates from actual prices by 75 percent.

Response: The price used in the market model, which is the type of model employed in the EIA, is the market price of iron ore pellets and was derived from the highest total average cost for U.S. mines in the Mine Cost Model. Based on the U.S. Geological Survey (USGS) Mineral Yearbooks, the taconite prices presented in Table 2-12 of the EIA were derived from Canadian taconite prices for usable ore (such as direct-shipping ore, concentrates, agglomerates, and byproduct ore) at mines, which excluded transportation costs. These prices should be viewed as a proxy for the values of U.S. taconite iron ore products at mines, not delivered prices or actual market prices. The baseline price of \$55.13 per ton used in the market model was derived from the highest total average cost for U.S. mines in the Mine Cost Model, and is the market price of iron ore pellets, with transportation costs, royalties, and port fees included. To sum up, the prices (\$25.51 to \$31.61) in Table 2-12 are values of iron ore products at mines, and should not be considered to be the actual market prices. Instead, the baseline price of \$55.13 per ton is the assumed market price of delivered taconite iron ore pellets.

Comment: One commenter (OAR-2002-0039-0006) stated another obvious yet confusing error in the EIA is that the Market-Level Impacts (Table 4-1) show the quantity of domestic taconite produced as 11.135 (10^6 metric tons). However, Tables 2-8, 2-11, and 2-12 all show domestic production at approximately 62.400 (10^6 metric tons). According to the commenter, this is a huge discrepancy that the Agency must address.

Response: Much of the taconite ore produced is not marketed; instead, it is used by the steel companies that own the mines (i.e., captive production). The market quantity reported in Table 4-1 represents EPA's estimate of taconite exchange in market transactions and excludes captive production supplied internally from mines owned by steel companies.

Comment: One commenter (OAR-2002-0039-0006) stated that the executive summary of the EIA asserts that together the affected companies would realize a decrease of 3,000 metric tons, and EPA estimates only 30 people would be laid-off as a result of the rule. This assertion is completely contradicted on pages 4-8 and 4-9 of the EIA, where in consecutive paragraphs it is first stated, "...we conclude that possibly two to three firms may close or sell..." and then it is stated that domestic employment is projected to decline by only one employee. According to the commenter, EPA's assessment of the employment impacts of this proposed rulemaking is internally inconsistent and significantly understated.

Response: The EPA utilized two methods that provide quantitative estimates of employment impacts. The first uses a market model that projects employment impacts proportional to the change in market output projected by the model (see section 4.2.4 of the EIA). The market model addresses impacts on only a part of the taconite producers (pertaining only to product that is output for market, and not including captive production), and does not assess facility closures. The relatively small projected adjustment in market output would result in a relatively small change in employment, especially small because of the capital-intensive nature of taconite production. The second approach uses both the market model and an input-output model (IMPLAN) to estimate changes in employment (see section 4.3.3.3 of the EIA). Because the second approach incorporates direct impacts on all taconite producers and a more extensive set of impacts on other local producers and consumers than is available in the market model, this estimate of employment change is slightly larger, approximately 30 full-time-equivalent employees.

The EPA did not include employment changes associated with a qualitative assessment that suggests two or three companies may close or sell individual mining operations because this assessment examined financial conditions of companies owning taconite mines, conditions that result from historical trends such as increasing use of mini-mills and increasing imports of iron

and steel, rather than resulting directly from compliance with the rule. The rule's costs are not sufficient by themselves, according to our market modeling, to make taconite facilities become unprofitable. However, companies in bankruptcy and those that are losing money may find it difficult to obtain financing for capital investments associated with compliance. If so, they may choose to sell or close their facilities. If the facilities are sold, no change in employment would necessarily result. If the facilities are closed, there would be additional employment losses that are not accounted for in EPA's estimates.

Comment: One commenter (OAR-2002-0039-0006) stated that in another part of the EIA, the introduction states there are 13 iron ore companies that own 13 mining operations and 10 concentrating and pellet operations, yet the remainder of the report mentions only 8 taconite processing operations. NSPC is familiar with only 8 remaining operations (and the idled LTV facility in Minnesota).

Response: The commenter is correct that there are currently only 8 taconite processing facilities in operation. Based on the USGS Minerals Yearbook, 13 mining companies produced iron ore in the United States in 2000. We mentioned that 13 mining companies produced iron ore since this represented the latest available data of this type to the Agency at the time of the analysis, and we wanted to match the year of the data that was used for assessment of the compliance costs and emission reductions. Nine of the 13 mining companies operated taconite facilities in Michigan and Minnesota, which included the Empire mine and the Tilden mine in Michigan and the following Minnesota facilities: EVTAC Mining LLC, Hibbing Taconite Co., Inland Steel Mining Co., National Steel Pellet Co., Northshore Mining Co., Minntac [The US Steel Group of USX Corp.], and LTV Steel Mining Co. [now idled]. Since LTV idled Hoyt Lakes, there are only 8 operations remaining in Michigan and Minnesota. EPA will clarify its distinction between the data being used for the analysis and current values for those data in the EIA.

Comment: One commenter (OAR-2002-0039-0006) mentions that page 2-16 of the EIA states that imports of foreign steel are projected to rise 10.1 million tons per year by 2003, thereby decreasing the need for Michigan and Minnesota iron ore pellets. Page 2-24 of the EIA

continues along this train of thought stating how domestic iron ore producers lowered prices to keep domestic ore competitive with imported materials. A comment on page 2-29 of the EIA also follows this path in saying, "...each iron ore producer is aware that it must reduce costs substantially to compete with foreign producers." However, the commenter believed contradictory statements were made on page 2-23, where the EPA leads the reader to believe the taconite industry is likely fairly concentrated and able to influence market prices. According to the commenter, EPA needs to reevaluate this analysis.

Response: Domestic taconite production is concentrated in a few facilities owned by a few companies. In itself, this would suggest that taconite producers may have market power and the ability to influence price (and, therefore, be able to pass along a greater share of compliance costs to their customers). However, EPA believes that the competition from imports will limit the ability of taconite producers to pass compliance costs through to their customers. This is reflected in EPA's market model. Since the period represented by our EIA, the competitive pressure from imports has been somewhat mitigated by the tariff on steel that went into effect in 2002. A sign of mitigation of competitive pressure from imports is the increase in the Producer Price Index for steel products by about 11 percent between February 2002 and February 2003.

Comment: One commenter (OAR-2002-0039-006) asserted that the capacity and production number totals listed in Table 2-8 of the EIA are off by a margin of 12 to 18 percent. The commenter believed that this is more than a rounding error. The commenter stated that numbers also have accuracy to the nearest hundredth, so the rounding error should be no greater than a tenth.

Response: The capacity, production, and employment totals presented in Table 2-8 represent conditions at the beginning of 2000, and include data from LTV's operation in Minnesota. Since LTV Steel Mining, Co. closed its Minnesota operation in early 2001, EPA has excluded LTV in its analysis. Thus, the total annual capacity of U.S. taconite facilities will be 56.69 metric tons, total U.S. taconite production in the year 2000 will be 55.07 metric tons, and total employment in the taconite processing industry will be 6,069. EPA will clarify the treatment of numbers in Table 2-8 in the EIA.

Comment: One commenter (OAR-2002-0039-0006) stated that page 4-1 of the EIA asserts that no buyer or seller has market power and market price is taken as a given when making production and consumption choices. The commenter asserted this is factually incorrect. The commenter stated that, in the iron ore market, price is not taken as a given when the industry has such a large abundance of foreign market products being pushed at customers at less than or equal prices. The commenter believes that imported foreign products appear to be currently setting the market price.

Response: This statement simply reflects EPA's assumption that the market for taconite is competitive and that neither producers nor consumers are able to influence or set the market price. Instead, producers and consumers respond to the market price, which they take as given, in making production and consumption choices. EPA's economic model includes foreign trade (see Equation A.3 in the EIA) in both taconite and steel mill product markets and uses literature-based model parameters that show import supply is more price-responsive than domestic supply. This assumption limits the ability of domestic producers to pass compliance costs to downstream consumers. Thus, even though there are a small number of domestic producers of taconite, individual producers are modeled as able to raise their prices by only a portion of the compliance costs.

Comment: One commenter (OAR-2002-0039-0006) stated that the EIA used elasticity numbers to gauge supply response and that the logic for choosing values is inconsistent. The commenter gave the following example: domestic and foreign supply elasticity values were midpoint values, but the import supply elasticity value was the higher of the two, even though the lower number represented the majority of the imports. The commenter asserted that this inconsistency is unexplained.

Response: EPA selected elasticity estimates from the economics literature based on professional judgment; the sources for these estimates are documented in Appendix A of the EIA. We believe, based on economic theory, that import supply is likely more responsive to price changes than domestic supply; thus, we used an elasticity value of 0.66 (imports) rather than 0.04 (domestic). This reasoning appears to be consistent with industry comments above regarding the important influence foreign imports may play in limiting domestic producer's

ability to pass on compliance costs through price increases. EPA also conducted a sensitivity analysis of all elasticity parameters and found it did not substantially alter conclusions made in the analysis (See Appendix B of the EIA). EPA would welcome additional data permitting direct estimation of the elasticity of supply.

Comment: According to one commenter (OAR-2002-0039-0006), Table 4-1 in the EIA contains serious numeric flaws. Moreover, the commenter asserted that there is no underlying support for the information in the table such as a breakdown showing calculations and the source of the values in the table. According to the commenter, current taconite prices and quantities do not reflect what is stated in the prior tables.

Response: As mentioned in a previous response to a similar comment, this statement simply reflects EPA's assumption that the market for taconite is competitive and that neither producers nor consumers are able to influence or set the market price. Instead, producers and consumers respond to the market price, which they take as given, in making production and consumption choices. EPA's economic model includes foreign trade (see Equation A.3 of the EIA) in both taconite and steel mill product markets and uses literature-based model parameters that show import supply is more price-responsive than domestic supply. This assumption limits the ability of domestic producers to pass compliance costs to downstream consumers. Thus, even though there are a small number of domestic producers of taconite, individual producers are modeled as able to raise their prices by only a portion of the compliance costs.

Comment: One commenter (OAR-2002-0039-0006) cited Section 4.2.3.1 of the EIA which examines conditions that contribute to capacity reduction and closure. However, since no empirical work has been done on this subject for taconite mines, the EPA used work prepared for the steel industry. The majority of these studies were completed in the late 1980's and early 1990's. The one report published in 1998 stated that a change in iron ore cost did not have a statistically significant impact on either capacity or plant closures. The commenter stated the report did not elaborate as to where the plant would get iron ore or what was considered significant. The report also did not take into account the increase in price for the four affected taconite plants.

Response: EPA's review of the literature concludes that these studies show that import competition and mini-mill competition strongly influence closure decisions. EPA emphasizes that the analysis *should not be* interpreted in a way that suggests changes in pollution abatement costs do not affect capacity or closure decisions. The empirical analysis does not demonstrate this effect was statistically different from zero at a 90 percent confidence interval. The EPA chose not to model plant closure as part of its market and facility impact analysis. However, EPA did consider the underlying financial conditions affecting firms owning taconite facilities, recognizing that firms already in bankruptcy and those losing money may have difficulty obtaining funds for the capital investments needed for compliance. (See the following response.)

Comment: According to one commenter (OAR-2002-0039-0006), it is confusing that in one section of the EIA, the Agency concludes that the final rule alone is unlikely to lead to mine closure, but on page 4-8 the EIA clearly states that it's possible that two or three firms may close or sell some or all of their operations. The only consistent statement in the EIA, according to the commenter, is that the proposed rule will add to existing financial stresses in the industry.

Response: The empirical literature on steel mill capacity and closure suggests that import and mini-mill competition are more important explanatory variables for capacity and closure decisions than are pollution abatement cost expenditures. The EPA's market and facility impact analysis did not explicitly model mine closure decisions because of limited mine-level data and because the costs of compliance are relatively small (see page 4-8 of the EIA). The EPA's data indicate that the compliance costs alone are generally too low to result in facility closure. However, EPA recognized that several companies that owned taconite mines in 2000 were already under significant financial hardship; four firms experienced operating losses in 2000, and several were also operating under Chapter 11 protection. As a result, EPA collected financial data and considered several criteria to determine whether companies would be able to obtain financing for capital investments associated with compliance, or might have to close or sell individual mine operations (see section 4.3.2 of the EIA). EPA examined the following company financial data:

1. Change in profits projected by the economic model,
2. Altman Z-scores,

3. Current ratios, and
4. Recent environmental compliance expenditures.

Based on this review, EPA concluded that two or three companies *may* close *or* sell operations. A review of recent data from USGS and company financial reports confirms this pattern. In 2001, financially-strapped steel companies sold assets. Cleveland-Cliffs raised its total ownership of Tilden mine to 85 percent by acquiring an additional 45 percent share from Algoma Steel Inc. Cleveland-Cliffs and Minnesota Power purchased LTV Steel Co. in late 2001. Cleveland-Cliffs then acquired all the mining and processing facilities, including 25 percent share of the Empire mine. In the face of continuing financial pressures from mini-mills and imports, steel companies may close or sell taconite facilities if they cannot obtain financing for compliance. A USGS iron ore expert contacted by EPA, however, stated that 2002 financial and market conditions were somewhat better than 2001. This was confirmed by reviewing financial statements for these firms; while still experiencing difficult conditions in 2002, conditions improved somewhat compared to 2001.

Comment: One commenter (OAR-2002-0039-0006) stated that it will likely be forced to shut down because it will be unable to make the upgrades necessary to comply with the rule as proposed. NSPC currently employs nearly 500 people. The rule as proposed is anticipated to put these people out of work for a reduction of less than 5 tons of HAP. In addition to the anticipated closure of NSPC's operations, the EPA analysis concluded that another one or two taconite ore processing plants may also close.

Response: As noted in the previous response, EPA's analysis suggests that the costs of achieving compliance are not sufficient alone to result in taconite plants becoming unprofitable. However, EPA recognizes that there are long-standing trends in the industry, such as increased imports of iron and steel and increasing use of mini-mill technology, that have resulted in decreasing demand for U.S.-produced taconite pellets over time. Due to these trends, four companies owning taconite facilities were unprofitable in 2000, and three of them (including National Steel) were operating under the protection of Chapter 11 of the bankruptcy code. The EPA's analysis recognizes that firms that are unprofitable or in bankruptcy may have difficulty

obtaining financing for the capital investments needed to comply. Such firms may choose to sell or shut down their taconite plants. The EPA does not feel that such a decision should be entirely attributed to the final rule. However, note that recent industry data seem to show that in 2002 prices and profits improved somewhat, due in part to the decrease in taconite supply (due in part to LTV's closing of the Hoyt Lakes facility) and in part due to tariff protection of several steel products.

Comment: According to one commenter (OAR-2002-0039-0006), the employment impacts are inconsistently reported and overwhelmingly understated. Based on the assumption that taconite mining is a highly capital intensive industry rather than labor intensive, lost domestic production is not expected to lead to substantial layoffs. However, because the industry is so capital intensive, funds are traditionally diverted from manpower rather than capital expenditures to keep the facilities operational. The employment numbers also take credit for additional manpower needed for the MRR activities. The majority of these activities will be computer controlled and recorded, adding no additional manpower needs and may lead to additional areas for cuts in the workforce by reducing the current monitoring workload. However, the impact on indirect employment will be severe if two or three mines close.

Response: As mentioned in an earlier response, EPA utilized two methods that provide quantitative estimates of employment impacts. The first uses a market model that projects employment impacts proportional to the change in market output projected by the model (see section 4.2.4 of the EIA). The market model addresses impacts on only a part of the taconite producers (pertaining only to product that is output for market only, and not including captive production), and does not assess facility closures. The relatively small projected adjustment in market output would result in a relatively small change in employment, especially small because of the capital-intensive nature of taconite production. The second approach uses both the market model and input-output model (IMPLAN) to estimate changes in employment (see section 4.3.3.3 of the EIA). Because it incorporates direct impacts on all taconite producers and a more extensive set of impacts on other local producers and consumers than is available in the market model alone, this estimate is slightly larger, approximately 30 full-time-equivalent employees.

The EPA did not include employment changes associated with a qualitative assessment

that suggests two or three companies may close or sell individual mining operations because this assessment examined financial conditions of companies owning taconite mines, conditions that result from historical trends such as increasing use of mini-mills and increasing imports of iron and steel, rather than resulting directly from the rule. The rule's costs are not sufficient by themselves to make taconite facilities become unprofitable. However, companies in bankruptcy and those that are losing money may find it difficult to obtain financing for capital investments associated with compliance. If so, they may choose to sell or close their facilities. If the facilities are sold, no change in employment would necessarily result. If the facilities are closed, there would be additional employment losses that are not accounted for in EPA's estimates.

Comment: According to one commenter (OAR-2002-0039-0006), the statement in the EIA that two or three mines may close implies that Minnesota would see an additional loss of approximately 900 direct employees and \$20 million in local taxes. The loss of 900 jobs equates to \$67.5 million in wages and benefits. These figures represent a realistic social impact and create a different scenario than the one represented by the EPA in the EIA. The commenter asserted that these economic impacts will be "devastating" to an area heavily dependent on the mining industry.

Response: Chapter 4 of the EIA contains a regional impact analysis carried out by EPA. The analysis is carried out using IMPLAN, a regional-level input-output model mentioned in an earlier response. The total direct impact on each region (a State, in this analysis) is defined in the EIA as the change in local expenditures resulting from implementation of the final rule. The direct impact of the final rule is estimated based on the results of the market model, and includes expenditures for compliance (in this case, positive) and adjustments in outputs in response to price changes (in this case, negative or positive). Generally, the direct impact includes the net effect of reduction in local spending because of output declines and the increase in local spending to implement the controls. For the State of Minnesota, the EIA shows a net reduction in local spending of \$2.7 million, a value shown in Table 4-5. This is due to a loss of government revenues since a portion of State revenues comes from taxes on the total production from taconite iron ore. With the value of changes in total output included, the total impact to Minnesota is a reduction of \$3.9 million in local spending.

As mentioned in a response to an earlier comment, Minnesota is estimated to experience a reduction of 30 full-time employees as a result of the reduction in taconite production. Thus, EPA estimates do show a reduction in local spending and employment in Minnesota from implementation of the final rule, but not anywhere close to the amounts asserted by the commenter.

A separate financial assessment examined the financial condition of companies that own taconite facilities. Because of long-standing trends in the iron and steel industry (including increasing use of electric arc furnace mini-mill technology and increasing imports of iron and steel), several of the owner companies have experienced financial stress, and three are operating under Chapter 11 protection. For these reasons, EPA concluded that at least those three firms may have some difficulty obtaining the financing needed to make capital equipment investments at their plants, including investments associated with environmental compliance. The EPA stated that as many as two or three additional taconite facilities were in danger of closing or selling their taconite plants at the time of the analysis, due mainly to factors unrelated to the rule as proposed. However, the additional costs associated with the final rule will put additional stress on these already stressed companies. Recent USGS data indicate that in 2001, financially-strapped taconite firms did sell assets to Cleveland Cliffs. Since the original EIA, however, conditions have improved somewhat in the industry. The reduced output due to the closure of Hoyt Lakes, and the tariff, which has increased the effective price of imported iron and steel commodities, have resulted in increased prices and profits for iron and steel companies over the past year. Thus, the companies are somewhat less vulnerable than they were at the time of EPA's earlier analysis.

2.3 AFFECTED SOURCES

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) agreed that it is appropriate to define all OCH emission units at a facility as one affected source. However, the commenters stated that primary and secondary ore crushing operations should be explicitly exempt from the rule, similar to what was done in the Portland Cement NESHAP.

Response: Prior to the development of the Portland Cement NESHAP, the portland cement industry was already regulated and defined by two emissions standards under 40 CFR part 60: Subpart OOO, New Source Performance Standards for particulate matter from non-metallic mineral mining operations, and Subpart F, New Source Performance Standards for particulate matter from portland cement operations. Primary and secondary ore crushing operations at portland cement operations were subject to 40 CFR 60, Subpart OOO, while the portland cement kiln operations were subject to 40 CFR 60, Subpart F. When the portland cement NESHAP was developed, EPA recognized and worked within the two established boundaries of the industry. The applicability criteria for the portland cement NESHAP coincides with the operations previously subject to 40 CFR 60, Subpart F and the remaining portland cement operations (i.e., ore crushing and handling) continue to be subject to the requirements under 40 CFR 60, Subpart OOO. Therefore, it could be viewed as if the primary and secondary ore crushing operations were exempt from the portland cement NESHAP, yet these operations remain subject to the requirements under 40 CFR 60, Subpart OOO.

Analogously, OCH operations at taconite iron ore processing facilities are defined and subject to 40 CFR 60, Subpart L New Source Performance Standards for PM from metallic mineral mining operations. Unlike portland cement operations, the remaining taconite iron ore processing operations were not subject to any additional national emission standards. During the development of the taconite iron ore processing NESHAP, EPA determined that the MACT floor level of control for existing taconite OCH operations (including primary and secondary ore crushers), 0.008 gr/dscf, was far more stringent than the level of control required by 40 CFR 60, Subpart L, 0.022 gr/dscf. Thus, the particulate matter emission limits under Subpart L were determined not appropriate and taconite iron OCH operations were included in the taconite NESHAP applicability criteria.

Comment: Three commenters (OAR-2002-0039-0006/IV-D-04, IV-D-03, IV-D-07/IV-D-14) stated that the definition of finished pellet handling should be amended so that it specifically excludes the atmospheric cooler vent stack. In addition, the commenters stated that the definition of finished pellet handling should be amended so that it specifically excludes the gravity conveyor gallery vents designed to remove heat and water vapor from the finished pellet conveyor gallery structure. One of the commenters (IV-D-07/IV-D-14) provided the following recommended language to be added at the end of the finished pellet handling definition:

“The atmospheric pellet cooler vent stack and gravity conveyor gallery vents designed to remove heat and water vapor from the structure are not included as a part of the finished pellet handling affected source.”

Response: The definition of finished pellet handling has been modified to clarify our intent that atmospheric cooler vent stacks and gravity conveyor gallery vents should not be included in the finished pellet handling affected source.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03, IV-D-04) stated that, instead of each individual furnace being an affected source, all furnaces at a facility should be one affected source. The commenters explained that this approach would allow plants to average emissions across furnaces and would provide greater compliance flexibility. The commenters believed that this averaging approach would allow plants to reduce HAP emissions to the appropriate level in the most cost-effective manner, such as over-controlling one furnace while not making any changes to another furnace.

Response: Unlike OCH and PH units, we have defined each individual indurating furnace as a separate affected source. As explained in the preamble of the proposed rule (67 FR 77569):

“Unlike the ore crushing and handling and finished pellet handling affected sources, we have selected a narrower definition of affected source for indurating furnaces by defining the affected source as each individual furnace, rather than the collection of indurating furnaces at a particular plant. We defined each indurating furnace as a separate affected source because furnaces are independent emission units. As independent emission units, each indurating furnace

has its own dedicated emission controls. In contrast, emissions from several OCH and PH process units are often combined and vented to a shared control device. In addition, since the indurating furnaces are the most significant source of HAP emissions, we wanted all new indurating furnaces to be subject to new source MACT.”

Because indurating furnaces are the most significant sources of HAP within the source category, EPA believes it is important to consider each indurating furnace as a separate affected source. Therefore, we have not changed the definition of affected source for indurating furnaces to allow averaging of emissions from different furnaces.

2.4 FUGITIVE EMISSIONS CONTROL PLAN

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that all provisions related to the fugitive dust plan should be deleted from the regulation to avoid duplication and potential conflicts with existing title V permits. In a redline/strikeout version of the rule the commenters showed the removal of the fugitive dust requirements in sections 63.9591(a) and 63.9624.

Response: The EPA contacted the Minnesota Pollution Control Agency (MPCA) to determine whether the fugitive emission control plan requirements in the proposed rule were in conflict with the existing State requirements. The MPCA indicated that there would be no conflict with existing requirements and that all plants in Minnesota have submitted a fugitive dust emission control plan that would satisfy the requirements in the proposed rule. The EPA contacted the commenters and pointed out that section 63.9591(c) of the proposed rule allows the plants to “use an existing fugitive dust emissions control plan,” provided the plan includes the sources listed in the rule, describes current fugitive dust control measures, and has been approved as part of a State Implementation Plan or title V permit. The commenters agreed that the requirements do not conflict with existing requirements. Therefore, the fugitive emission control plan requirements have not been changed in the final rule.

2.5 COMPLIANCE TESTING

Comment: One commenter (IV-D-02) requested that EPA provide guidance on how subsequent retesting of OCH and PH emission units would be done if the flow-weighted mean concentration does not meet the MACT emission limit. The commenter suggested that the rule should require a source to retest the same emission units that were tested in the initial compliance test (they could still test additional units), or insert a statement such as “the Administrator shall determine which emission units shall be retested.”

Response: For the initial performance test, sources wishing to test representative emission units must submit a testing plan to the Administrator or delegated authority on or before the compliance date. In this testing plan the source must provide a list of all emission units that “clearly identifies all emission units that have been grouped together as similar emission units. Within each group of emission units, you must identify the emission unit that will be the representative unit for that group, and subject to initial performance testing.” Therefore, the testing plan must clearly state which units will be tested. After the initial compliance testing is conducted, we have left it up to the discretion of the Administrator or delegated authority to determine which emission units should be retested in the case the source fails to meet the MACT emission limit. For subsequent performance tests, the scheduling and review have been delegated to the State permitting authority.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that language should be included in the final rule either authorizing some discretion on behalf of State agencies or otherwise allowing testing completed between the promulgation date and the compliance date to be counted as initial compliance testing. The commenters stated that this will allow additional time to spread out the compliance testing requirements.

Response: At proposal, plants were given 2 years after the compliance date to conduct their initial compliance tests for OCH and PH units, and 180 days after the compliance date to conduct their initial compliance tests for indurating furnaces. However, since the time of proposal EPA has determined that allowing more than 180 days for initial compliance is not consistent with the 40 CFR part 63 General Provisions. Therefore, we have written the initial compliance testing deadline for OCH and PH units at 180 days after the compliance date.

More than 180 days are needed to conduct compliance testing and to reduce the burden of the final rule on the industry. Therefore, the EPA has written the final rule to allow source tests conducted between the promulgation date and the compliance date to be used for compliance demonstration, as long as the tests are performed in accordance with the requirements of the final rule. Since the compliance period is three years, plants will have a total of 3½ years to conduct the initial compliance tests for all of their units.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) supported the part of the proposed standard that allows plants to conduct initial performance tests by testing a representative sample of units within a group of similar units. However, in a redline/strike-out version of the proposed rule submitted by the commenters they removed the specific criteria defining similar units in section 63.9620(f) and the criteria indicating the number of units that must be tested per similar group in section 63.9620(g). In the place of these specific criteria the commenters inserted a statement that refers to criteria established by the State agency or in the title V permit.

Response: In follow-up discussions with the commenters, EPA asked the commenters to clarify their specific concerns regarding the criteria for the testing of representative units. The commenters indicated that their primary concern was with the criteria in paragraphs (3) and (4) of the section 63.9620(f), which require the volumetric flow rates of the emission units to be within plus or minus 10 percent of the representative emission unit and the actual process throughput rate to be within plus or minus 10 percent of the representative emission unit. The commenters stated that these criteria were so restrictive that they would not be able to group very many units.

The EPA also conducted follow-up discussions with MPCA regarding the criteria they use for grouping similar units. The MPCA staff indicated that the primary reason they group emission units is to reduce the number of permitted emission units, although the same groupings are used for testing purposes. The grouping of emission units by MPCA was conducted primarily on the basis of control type, installation date, and, to a certain degree, process type. However, in some cases they do group emission units from different processes. They do not group emission units on the basis of flow rate or process throughput.

Based on these discussions with the commenter and MPCA, EPA has determined that the criteria in sections 63.9620(f)(3) and (4) are too restrictive and, therefore, do not achieve EPA's true intent -- the reduction of the initial compliance test burden for OCH and PH emission units. As a result, EPA has not included the criteria in sections 63.9620(f)(3) and (4) as proposed. The criteria in sections 63.9620(f)(1) and (2) as proposed have been retained in the final rule. In addition, we have included the following new criteria in the final rule: the representative unit must have parametric monitoring values that encompass the characteristics of all the emission units within the group.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) requested that the EPA expand the provision that allows plants to conduct initial performance tests on representative emission units so that it includes indurating furnaces.

Response: Unlike OCH and PH emission units, we have defined each individual indurating furnace as a separate affected source. This was done because furnaces are independent emission units and are the most significant source of HAP emissions in the source category. It is because indurating furnaces are such significant sources of HAP that EPA believes it is important to have a performance test from each unit. This practice is consistent with existing title V permits for these plants. Therefore, we have not expanded the provision that allows plants to group similar units and conduct initial performance tests on representative units to include indurating furnaces.

Comment: Three commenters (OAR-2002-0039-0006, IV-D-03, OAR-2002-0039-0003) stated that the simultaneous testing of multiple indurating furnace stacks is costly. Two of the commenters (OAR-2002-0039-0006, IV-D-03) stated that simultaneous testing is also impractical and possibly not even feasible.

Response: In follow-up discussions with the commenters, they stressed that some furnaces have as many as five stacks. In order to test these stacks simultaneously they would need to have five source testing teams on site at the same time. The commenters stated that this would be very expensive. The commenters stated that for their current title V permits they are not required to conduct simultaneous tests of all stacks for a furnace. In our discussions with

MPCA they confirmed that, although they require all plants with permits to test all furnace stacks, they do not require that the plants test all the stacks on a furnace simultaneously. Also, in these discussions it was noted that the operating conditions are consistent enough that emissions should not vary significantly over a short period of time. Based on these discussions, EPA agrees that the simultaneous testing of indurating furnace stacks would be costly and would provide no additional compliance assurance. Therefore, in order to reduce the source testing burden of the final rule on the industry and to maintain consistency with current testing requirements, EPA has not included the requirement for simultaneous testing in the final rule. The final rule requires that, “For indurating furnaces with multiple stacks, the performance tests for all stacks associated with that indurating furnace must be conducted within a reasonable period of time, such that the indurating furnace operating characteristics remain representative for the duration of the stack tests.”

Comment: One commenter (IV-D-02) stated that section 63.9620(f)(3) requires that plants choosing to test representative emission units demonstrate that the volumetric flow rates of the control devices are within plus or minus 10 percent of the values from the representative emission unit. The commenter asked whether the flow rate should be based on design flow rates or actual flow rates?

Response: As stated previously in this section, EPA has not included this requirement in the final rule.

Comment: One commenter (IV-D-02) stated that section 63.9620(f)(4) requires that the actual process throughput rate for all grouped emission units be within plus or minus 10 percent of the values from the representative emission unit. The commenter asked what time frame should be used to establish actual throughput?

Response: As stated previously in this section, EPA has not included this requirement in the final rule.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that any requirements for sample volume or sample time should be removed from the initial and

continuous compliance testing requirements. The commenters stated that the rule should not include provisions that are different from already established EPA test methods.

Response: In the proposed rule we specified a minimum sample volume of 60 dry standard cubic feet for EPA Method 5 (40 CFR part 60, Appendix A) tests to ensure that enough particulate matter is collected to provide accurate results. The EPA Method 5 does not contain specifications for sample volume or sample time (i.e., sampling duration). Therefore, it is not uncommon for the EPA to specify a minimum sample volume or sample time corresponding to emission characteristics of an industry for EPA Method 5 tests. For example, the Integrated Iron and Steel NESHAP specifies a minimum sample volume (60 dry standard cubic feet) for EPA Method 5 tests.

Based on historical Method 5 tests from taconite plants, most 1-hour tests sampled about 30 to 50 dry standard cubic feet and obtained a dry catch of 2 to 20 milligrams. The EPA's Emissions Measurement and Assessment Division recommends a dry particulate catch of approximately 20 milligrams for an accurate Method 5 test. At the same historical particulate concentrations, a sample volume of 60 dry standard cubic feet or a test of 2 hours in duration will obtain a dry catch of approximately 20 to 30 milligrams. In the proposed rule we specified a minimum sample volume of at least 60 dry standard cubic feet for each run of a Method 5 test to ensure that an adequate amount of dry catch is obtained. However, since proposal we have determined that specifying a 2-hour sampling time will provide a greater assurance that an adequate catch is obtained. For example, with a sample volume of 60 dscf, a 20-mg dry catch is obtained for units with emissions of 0.005 gr/dscf or greater. By comparison, given the typical sampling rates of 0.75 to 1 dscf/min from the historical tests, specifying a 2-hour test provides a 20-mg dry catch for units with emissions as low as 0.003 gr/dscf. In addition, specifying the sampling time is consistent with other recently published rules, such as the Portland Cement NESHAP. Therefore, we have modified the testing requirements in the final rule by removing the requirement for a sample volume of 60 dscf and adding the requirement that the duration of each test run be at least 2 hours.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that the requirement to test each furnace twice within every five-year title V permit term is very costly

and excessive. The commenters stated that the extensive parametric monitoring required by the rule should suffice for demonstrating compliance unless the source undergoes a change or modification. Therefore, the commenters suggested that the rule be changed to require subsequent stack testing for furnaces only when the operation is modified. In another part of the comment letter the two commenters stated that the compliance testing frequency requirements should mimic the title V requirements.

Response: In order to ensure continuous compliance with the emission limits in the rule, EPA believes that each indurating furnace should be tested no less often than twice per five-year permit term. This is consistent with other recent MACT standards, such as the Integrated Iron and Steel NESHAP and the Coke Ovens NESHAP. In Minnesota, the required frequency of subsequent indurating furnace tests is based on the level of emissions for each furnace. Furnaces with emissions greater than 90 percent of the permitted level must be tested every year. Furnaces with emissions between 60 and 90 percent of the permitted level must be tested every 3 years. Furnaces with emissions less than 60 percent of the permitted level must be tested once every 5 years. The MPCA staff felt that the more-frequent testing in the MACT standard is appropriate given the more-stringent limit in the MACT. In follow-up discussions with the industry, we explained that we reduced the source testing burden on indurating furnaces by dropping the requirement to test all furnace stacks simultaneously. Therefore, in the final rule we have retained the requirement to test each indurating furnace twice per five-year permit term.

2.6 EMISSION LIMITS

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) concurred that going beyond-the-floor is not warranted based on the level of HAP emissions and the costs of controlling them. One commenter (IV-D-05) stated that beyond-the-floor standards are warranted for metallic HAP controlled as PM. The commenter stated that EPA should require fabric filters as the beyond-the-floor control for metallic HAP, since they are an extremely effective form of control for PM.

Response: For each affected source identified in this source category, EPA evaluated a regulatory option more stringent than the MACT floor corresponding to each affected source. However, the results of the beyond-the-floor analysis indicated that the incremental cost per ton of HAP and PM reduction was not cost justified. For each affected source, a PM emission limit more stringent than the MACT floor was selected and the corresponding impacts were evaluated. Impacts we considered included the incremental reduction in HAP and PM emissions, incremental compliance costs for the more stringent level of control, and incremental changes in energy and other environmental impacts. For the beyond-the-floor analysis, we could have used fabric filters as the selected technology, but we used wet scrubbers instead for the following reasons: First, the overall annualized capital and operating costs of wet scrubbers tend to be significantly less than the corresponding costs associated with fabric filters. Since the current beyond-the-floor analysis concluded that the incremental costs of using wet scrubbers to achieve the incremental HAP and PM emission reductions were not cost-justified, the use of fabric filters, which are more expensive, to achieve the same emission reductions would result in yet a higher cost per ton of emission reduction. Second, we selected wet scrubbers over fabric filters because fabric filters are not effective on exhaust streams with a high moisture content. The high moisture levels in the exhaust from the indurating furnaces would result in PM forming a moist cake on the fabric filters, thus effectively plugging the filters and rendering them ineffective.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that the emission limits should be set at 2 significant figures and not 3 significant figures. The commenters asserted that using 3 significant figures implies more precision than exists in reality and

establishes limits that are unrealistically stringent and that do not allow for natural variations.

Response: In the proposed rule, we numerically expressed the emission limits for all affected sources, new and existing, to three digits (e.g., 0.011 gr/dscf, 0.025 gr/dscf, and 0.008 gr/dscf). Thus, the proposed emission limits were already expressed as one or two significant figures. However, the intent of the commenters is for the EPA to consider rounding the proposed emission limits to two digits to account for normal variability in the taconite iron ore processing operations, performance of air pollution control equipment, and source testing procedures.

We have re-evaluated how natural variations were accounted for in the proposed emission limits for existing sources. The PM emission limits for existing sources in the OCH affected source and the PH affected source remain at 0.008 gr/dscf. In the final rule, you have the option to determine an overall, flow-weighted average PM concentration for all emission units within each of these two affected sources. One purpose for the flow-weighted average PM concentration procedure is to account for natural variability in: the various types of emission units within each affected source, the processing operations, the performance of air pollution control equipment, and source testing procedures.

The PM emission limits for existing sources in the indurating furnace affected source will be rounded to two digits. For both existing straight grate and grate kiln indurating furnaces processing magnetite, the PM emission limit is 0.01 gr/dscf. For existing grate kiln indurating furnaces processing hematite, the PM emission limit is 0.03 gr/dscf. After we considered the amount of PM source test data available in establishing the MACT floor, observed variability in measured PM concentrations from the furnace exhaust stacks, and noted fluctuations in the taconite iron ore process, we determined that it is appropriate to round the PM emission limits for existing indurating furnaces to two decimal places in order to fully account for natural variability. Even after rounding the PM emission limits for existing indurating furnaces, we will still achieve nearly the same level of emission reduction, while offering increased flexibility to the industry to comply with the emission standards of the final rule.

The PM emission limit for existing ore dryers was determined to be the level of control indicated by the existing State limit of 0.052 gr/dscf. Therefore, it is not appropriate to round the PM emission limit for existing ore dryers. The PM emission limit for existing ore dryers remains

0.052 gr/dscf in the final rule.

The PM emission limits for all new affected sources remain unchanged. These PM emission limits represent an actual performance level achieved by the best performing source in each affected source. Thus, the new source emission limits can be achieved through the proper design and construction/reconstruction of a new affected source.

Comment: Three commenters (OAR-2002-0039-0006, IV-D-02, IV-D-03) stated that the final rule should more clearly describe how to calculate the flow-weighted mean PM emissions concentration for the material handling operations.

Response: We agree with the commenters and have modified sections 63.9621 and 63.9622 to provide additional clarification for calculating the flow-weighted mean PM emissions concentration for OCH and PH. Specifically, the final rule clarifies that when calculating the flow-weighted mean PM emissions for OCH and PH the “average” PM concentration corresponding to each emission unit in an affected source is multiplied by the maximum design volumetric flow rate of the corresponding emission unit. The “average” PM concentration from an emission unit is derived as the arithmetic mean of a PM source test comprised of three valid sampling runs on the emission unit. If the affected source elects to conduct representative compliance testing for a group of similar emission units, the PM concentration determined for the tested emission unit will be assigned to the other emission units identified as similar within the group.

Comment: One commenter (OAR-2002-0039-0003) stated that it does not make sense to require control for metallic HAP, which are emitted in quantities below the major source threshold, while not requiring control for gaseous HAP, which are emitted in quantities above the major source threshold.

Response: We have determined that each taconite plant is a major source of HAP emissions – each plant emits more than 25 tons per year of combined HAP. As part of the NESHAP regulatory process, we evaluated the quantities of all HAP released from each plant and the types of air pollution control technologies currently used to reduce HAP emissions to determine the MACT floor for each type of HAP. The MACT floor for acid gases was

determined to be equivalent to (and expressed as) the MACT floor level for PM. The MACT floor for formaldehyde was determined as site-specific good combustion practices. The MACT floor for metallic HAP was determined as a quantifiable emission limit, expressed as a total PM concentration as a surrogate parameter.

Overall, the vast majority of emission units in the source category are currently equipped with control technologies capable of achieving the MACT level of control for metallic HAP. The final rule will have the greatest impact on the few emission units that are not currently achieving the same level of control achieved by the rest of the industry. It is estimated that upon promulgation, this rule will reduce metallic HAP by 14 tons per year, achieve incidental control of acid gases (hydrogen chloride and hydrogen fluoride) of 241 tons per year, and reduce total PM emissions by 10,261 tons per year.

2.7 CONTINUOUS COMPLIANCE REQUIREMENTS

2.7.1 Operating Limits

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) objected to using operating limits established during the performance test to determine continuous compliance. The commenters stated that a performance test is only a snapshot of an operation at a point in time and may not encompass the full operational variability that occurs. The commenters stated that this approach effectively sets a new more stringent NESHAP emission limit at the emissions level actually emitted during the performance test. Therefore, the commenters stated that any operation outside of the operating parameter range should not be classified as a deviation. The commenters stated that the D.C. Circuit Court has made it clear that MACT standards are to represent the best performing source on its worst day (see National Lime v. EPA, 233 F.3d 625, 51 ERC 1737 (D.C. Cir. 2000) and Cement Kiln Recycling Coalition v. EPA, 255 F.3d 855, 52 ERC 1865 (D.C. Cir 2001)). The commenters asserted that as long as a source is operating properly, follows procedures in the malfunction plan, and proceeds appropriately to corrective action, then variations within the range of proper operation should not constitute deviations. The commenters stated that the EPA may require plants to log such information and even report it, but not necessarily as a deviation under title V.

Response: In follow-up discussions with the industry, we were able to determine that the taconite industry's primary concern regarding the operating limits was being able to maintain the equipment so that they did not exceed the established operating limit. Specifically, their concerns included: their ability to maintain the pressure drop above the operating limit for venturi-rod deck units with a fixed throat and/or a volumetric flow dependent of process conditions; and, their ability to operate and obtain meaningful readings of opacity from dry electrostatic precipitators (ESP) using a COMS in conditions of high moisture and low opacity.

Regarding the measurement of the pressure drop, we have increased the averaging time from hourly to daily. The daily averaging period addresses industry's concerns about their ability to control pressure drop during short periods of time when the scrubber may experience a pressure drop lower than the operating limit. In addition, for dynamic wet scrubbers, we have provided the flexibility of monitoring either the daily average pressure drop or the daily average fan amperage, in addition to the daily average scrubber water flow rate. This addresses

industry's concern that for dynamic wet scrubbers both pressure drop and fan amperage are good indicators of proper performance. For a more-detailed discussion of the comments and our responses regarding the wet scrubber operating limits see section 2.7.3.

Regarding the measurement of opacity using COMS, we have verified with equipment vendors that COMS are available that will provide accurate readings under the moisture and low opacity conditions present at taconite facilities. However, we understand that currently there are no COMS in operation at taconite plants and that due to costs or site-specific operating conditions a COMS may not be the best option. Therefore, in the final rule we have provided plants the flexibility to establish their operating limit either as the 6-minute average opacity or as the daily average secondary voltage and the daily average secondary current for each field. For a more-detailed discussion of the comments and our responses regarding the dry ESP operating limits see section 2.7.4.

In addition, we have included language in the final rule to clarify when not meeting an operating limit becomes an exceedance. Specifically, after the first two times that you do not meet the operating limit, you must take corrective action. After the third time that you do not meet the operating limit, you must submit a written report within 5 calendar days and report the third unsuccessful attempt of corrective action as a deviation and continue corrective action.

2.7.2 Bag Leak Detection Systems

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that the requirement in section 63.9634(d)(1) of the proposed rule that requires that the bag leak detection system not alarm for more than 5 percent of the time should be deleted from the final rule. The commenters asserted that the requirements to "...initiate corrective action to determine the cause of the alarm within 1 hour of the alarm, initiate corrective action to correct the cause of the problem within 24 hours of the alarm, and complete the corrective action as soon as practicable" are sufficient. The commenters stated that the 5 percent limitation is arbitrary and without basis. The commenters stated that if the 5 percent threshold is not deleted, it should be changed to 10 percent, which is more realistic for these operations.

Two commenters (OAR-2002-0039-0006, IV-D-03) pointed out that section 63.7833(d)(1)(iii) of the proposed rule specifies that 1 hour of alarm be logged even if

procedures are implemented to determine the cause of the alarm and corrective action is taken in less than 1 hour. The commenters contended that the requirement artificially and unfairly inflates the semiannual percentage of alarm time and does not provide an incentive for sources to initiate procedures as quickly as may be possible. The commenters suggested that the final rule should require the plant to “count the actual amount of time it took to initiate procedures to determine the cause of the alarm.”

Three commenters (OAR-2002-0039-0006, IV-D-03, IV-D-07, IV-D-14) stated that in the requirement in section 63.9634(d)(1)(v) that the bag leak detection system not alarm for more than 5 percent of the “total operating time,” it is unclear if the “total operating time” refers to the operating time of the affected source or the time the baghouse is actually evacuating emissions generated by the affected source. The commenters pointed out that some baghouses, by design, evacuate emissions for only a few minutes each hour. The commenters recommended that EPA clarify its intent that the “total operating time” refers to the total operating time of the affected source.

Response: We agree with the commenters and have not included the 5 percent operating limit requirement for baghouse leak detectors in section 63.9634(d)(1) of the final rule. As a result, the requirements to log alarm time and to determine the ratio of the sum of the alarm times to the total operating time have also not been included. However, it is important that corrective action be initiated promptly, so we are retaining the requirement in section 63.9600(b)(2) that you “initiate corrective action to determine the cause of the alarm within 1 hour of the alarm, initiate corrective action to correct the cause of the problem within 24 hours of the alarm, and complete the corrective action as soon as practicable.”

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that section 63.9590 of the rule should be revised to specify that bag leak detection systems are required only for negative pressure baghouses and positive pressure baghouses equipped with a stack.

Response: We have clarified in section 63.9632 of the final rule that bag leak detection systems are required only for negative pressure baghouses and positive pressure baghouses equipped with a stack.

Comment: One commenter (IV-D-02) recommended that section 63.9632(a) of the final rule specify that baghouse leak detector alarm levels be set at 3 times the baseline level or at twice the cleaning peak level, whichever is less, with no other flexibility offered to the operator. The commenter also recommended that section 63.9622 be modified to require establishing baseline operating conditions of the baghouse leak detectors during initial compliance testing.

Response: Due to variations in equipment design and configuration we believe that the monitoring requirements for baghouse leak detectors should be determined on a site-specific basis. Therefore, we have not added prescriptive requirements for setting the baghouse leak detector alarm levels to the final rule. Instead, we have added a requirement for the plant to develop and submit, for approval, a site-specific monitoring plan that addresses the following:

1. Installation of the bag leak detector system.
2. Initial and periodic adjustment of the bag leak detector system, including how the alarm set-point will be established.
3. Operation of the bag leak detection system, including quality assurance procedures.
4. How the bag leak detection system will be maintained, including a routine maintenance schedule and spare parts inventory list.
5. How the bag leak detection system output shall be recorded and stored.

2.7.3 Wet Scrubber Continuous Parameter Monitoring Systems (CPMS)

Comment: Three commenters (OAR-2002-0039-0006, IV-D-03, IV-D-07, IV-D-14) stated that the labor hours required for the monthly transducer checks and the quarterly gauge calibration checks for the pressure drop sensor (§63.9632(b)(1)(iv)), and the semiannual flow sensor calibration checks (§63.9632(b)(2)(iii)) are excessive compared to the potential emissions control improvement. Two commenters (OAR-2002-0039-0006, IV-D-03) suggested that rather than mandatory monthly, quarterly, or semi-annual calibration checks, any control unit which emits less than five percent of the total annual PM emissions at the plant should be allowed to reduce the periodic checks required by each of the cited provisions to once annually. The other commenter (IV-D-07, IV-D-14) suggested that the EPA should allow each source to propose an alternative method to the proposed calibration checks to the appropriate permitting agency.

Three commenters (OAR-2002-0039-0006, IV-D-03, IV-D-07, IV-D-14) stated that the daily pressure tap pluggage check (§63.9632(b)(1)(iii)) and monthly electrical connection continuity checks (§63.9632(b)(1)(vi)) are overly burdensome and costly to implement. The commenters argued that the manual labor and clock hours required for such continuity checks would be so large that the monitoring systems would have to be shut down so frequently and for such a length of time that they would have virtually no operating time. According to the commenters, these provisions should be modified so as to provide “a program within the CPMS to alarm the process unit operator and to record the alarm for a zero value indication and for a static value indication that satisfies the requirement of this provision.” In addition, one commenter (IV-D-07, IV-D-14) stated that, if no change is made, the labor costs for the continuity checks must be factored into the economic analysis.

Response: The specific installation, operation, and maintenance requirements for wet scrubber CPMS have not been included in the final rule. Therefore, the requirements for monthly transducer checks, quarterly gauge calibration checks, semi-annual flow sensor calibration checks, daily pressure tap pluggage checks, and monthly electrical connector continuity checks have not been included in the final rule. In place of the specific requirements, we have included the requirement that, for each CPMS, you must develop and make available a site-specific monitoring plan that addresses the following:

1. Installation of CPMS sampling probe so that measurement is representative of control of the exhaust emissions.
2. Performance and equipment specifications for the sample interface, the parametric signal analyzer, and the data collection and reduction system.
3. Performance evaluation procedures and acceptance criteria (e.g., calibrations).
4. Ongoing operation and maintenance procedures in accordance with the general requirements of §§63.8(c)(1), (3), (4)(ii), (7), and (8).
5. Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d).
6. Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §§63.10(c), (e)(1), and (e)(2)(i).

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) requested that language be added to the rule that specifically provides wet scrubbers a 5-percent allowance for operating in alarm conditions. The commenters stated that this would be consistent with the language for baghouses, which provides a 5-percent allowance for operating in alarm conditions.

Response: The 5-percent operating allowance during alarm conditions for baghouse leak detectors in section 63.9634(d)(1) of the proposed rule has been removed from the final rule (see section 2.7.2). In follow-up discussions with the commenters, they indicated that if the 5-percent allowance were removed for the bag house leak detectors, then their request for a similar 5-percent allowance for wet scrubbers would be moot. Therefore, a 5-percent allowance for wet scrubbers to operate in alarm conditions was not included in the final rule.

Comment: One commenter (IV-D-01) stated that the averaging period should be specified in section 63.9632(c)(2), which requires that for wet scrubbers “each CPMS must have valid data for at least 95 percent of every averaging period.” In addition, the commenter stated that the length of the averaging period for the parameters being monitored should be specified in section 63.9634(e)(1), which requires maintaining the average pressure drop and scrubber water flow rate at levels no lower than those established during the initial or subsequent performance test. The commenter also stated that the averaging period should be specified for reducing the continuous parameter monitoring data for wet scrubbers in section 63.9634(e)(3).

Response: We have clarified in the final rule that it is a daily averaging period.

Comment: Three commenters (OAR-2002-0039-0006, IV-D-03, IV-D-07, IV-D14) stated that it is inappropriate to set a single (pressure drop) point for operating wet scrubbers and recommended that EPA remove the pressure drop requirement and rely on the operation and maintenance plan for compliance. The commenters pointed out that venturi-rod deck scrubbers operate over a range of pressure drop that is affected by scrubbing water flow rate, scrubber water flow distribution, water temperature, gas temperature, and the square of the process gas flow rate. The commenters stated that operators cannot directly control the pressure drop in a venturi-rod deck scrubber. By setting the average pressure drop at the minimum level established during the performance test, the commenters stated that the rule effectively forces a

source to operate well below the emission limit.

Response: In follow-up discussions with the commenters, it was clarified that their comments referred only to venturi-rod deck scrubbers installed on indurating furnaces. These venturi-rod deck scrubbers are fixed-throat scrubbers for which the pressure drop can be measured, but not directly controlled. Two commenters stated that they cannot directly control the pressure drop across the venturi- rod deck scrubbers because of the following factors:

- the scrubbers are of a fixed-throat design;
- the fan drawing or pushing air through the scrubber operates at a fixed speed and fixed diameter; and
- the damper prior to the scrubber is used to control the overall flow of air through the system; therefore, it cannot be used to control the pressure drop to the scrubber without affecting the entire process. The damper is opened more or closed more, as necessary, to modulate the air flow as changes occur in the process. As production rate increases, the damper is opened more and, therefore, the pressure drop across the scrubber increases.

Due to these factors the pressure drop across the venturi-rod deck scrubbers on the furnaces is more variable than other controls and is difficult to regulate.

The commenters presented data showing the variability of the pressure drop for their venturi-rod deck scrubbers. One commenter presented pressure drop readings taken every 20 minutes that ranged from 12 to 4 inches of pressure drop, with very few points below 4 inches of pressure drop. However, after excluding periods of malfunction and looking at the daily average pressure drop instead of instantaneous readings, the data showed that the daily average pressure drop for each scrubber fell within a narrow range. The difference between the lowest daily average pressure drop and the highest daily average pressure drop was only about 2 or 3 inches of pressure drop. Based on these data, the commenter stated that they were confident that they could maintain a pressure drop at or above the operating limit based on a daily average.

The other commenter provided daily average pressure drop for their venturi-rod deck scrubbers. The data showed that on a daily average basis the pressure drop for each venturi-rod

deck scrubber varied by 1 to 3.6 inches over a period of 2 months. The commenter requested that they be allowed to use historical pressure drop data to establish the pressure drop operating limit for venturi-rod deck scrubbers on indurating furnaces. In addition, the commenter requested that compliance with the pressure drop operating limit for venturi-rod deck scrubbers on indurating furnaces be determined on a daily average basis.

To address the technical issues raised by the commenters, we have written the final rule to allow the use of pressure drop data from PM tests conducted on or after December 18, 2002 (the proposal date) to establish the operating limit for venturi-rod deck scrubbers controlling emissions from indurating furnaces. The historical pressure drop data must be from a certified test for which the PM emission concentration was at or below the applicable indurating furnace limit in Table 1 to the final rule. In addition, the basis for compliance with the pressure drop operating limit for venturi-rod deck scrubbers on indurating furnaces has been written as a daily average not an hourly average.

Comment: One commenter (OAR-2002-0039-0003) stated that EPA should allow plants to use water pressure as a surrogate for scrubber water flow to demonstrate that the wet scrubbers are operating properly.

Response: In follow-up discussions with the industry it was found that one plant was opposed to the installation of water flow meters because it would cost approximately \$30,000 to purchase and install them. A representative from the plant indicated that they are currently experiencing severe economic hardship and cannot afford any additional costs. The installation of water flow meters was not a big concern for the rest of the industry.

The EPA investigated using water pressure to demonstrate wet scrubber performance. The EPA expressed concern to the taconite industry representatives that pluggage in a water line could result in false water pressure readings. We requested that industry provide a plan for periodic water line pluggage checks. The taconite industry representatives were not able to develop such a plan or indicate how one could be developed. Therefore, we have not explicitly allowed the use of water pressure as a surrogate for scrubber water flow. However, the final rule does allow plants to petition the Administrator for approval of alternatives to the monitoring requirements.

2.7.4 Continuous Opacity Monitors

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that there should not be any requirement to install or operate a COMS. The commenters do not support setting an opacity limit on a case-by-case and site-by-site basis. In addition, the commenters asserted that the opacity will be low enough to be outside of the range of error for the test method (the COMS) and sources could create a reportable deviation without truly exceeding the actual opacity limit. Instead, the commenters stated that there should be a requirement for a visible emission check, as is required in the Portland Cement NESHAP.

Response: We have verified with equipment vendors that COMS are available that will provide accurate readings at low opacity conditions. Certain models of COMS can measure opacity as low as 0.1 percent with an accuracy of +/- 0.3 percent. In addition, the COMS vendors indicated that the COMS will provide accurate readings under the moisture conditions present at taconite facilities (typically 9 percent moisture). However, we understand that currently there are no COMS in operation at taconite plants (one facility has scheduled a trial installation for later this year) and that due to equipment and installation costs or site-specific operating conditions a COMS may not be the best option for each plant. Therefore, in the final rule we have provided two options for the operating limits for dry ESP: the 6-minute average opacity, as monitored using a COMS; or the daily average secondary voltage and the daily average secondary current for each field, as monitored using a CPMS.

During our dry ESP discussions with industry, it was requested that we add specific monitoring requirements for wet ESP. After discussion with the industry and State agencies we established the following monitoring parameters for wet ESP:

- daily average secondary voltage for each field;
- daily average stack outlet temperature; and
- daily average water flow rate.

Therefore, the final rule contains requirements to establish operating limits for these parameters during the initial performance test. Plants must also monitor these parameters such that they are maintained at or above the operating limits (for secondary voltage and water flow rate), or below the operating limits (for stack outlet temperature).

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) requested that language be added to the rule that explicitly states that a 5-percent downtime for COMS per semi-annual reporting period is not a deviation. The commenter stated that this would be consistent with the language for baghouses, which provides for a 5-percent allowance for operating in alarm conditions.

Response: The 5-percent operating allowance during alarm conditions for baghouse leak detectors in section 63.9634(d)(1) of the proposed rule has been removed from the final rule (see section 2.7.2). In follow-up discussions with the commenters, they indicated that if the 5-percent allowance were removed for the bag house leak detectors, then their request for a similar 5-percent allowance for COMS would be moot. Therefore, a 5-percent allowance for COMS to operate in alarm conditions was not added to the rule.

2.7.5 Monitoring

Comment: One commenter (IV-D-05) stated that under 42 U.S.C. section 7414(a)(3) the EPA must require monitoring for all HAP known to be emitted by the industry. Therefore, the commenter asserted that the taconite regulations should require monitoring for mercury, manganese, asbestos, formaldehyde, hydrochloric acid and hydrofluoric acid.

Response: Section 7414(a)(3) of the CAA gives the EPA the authority to require enhanced monitoring and the submission of compliance certifications in order to determine compliance with the standard. It does not require EPA to establish monitoring requirements for all HAP known to be emitted by the industry, as is purported by the commenter. Specifically, this section states:

“(a) Authority of Administrator or authorized representative. For the purpose (i) of developing or assisting in the development of ... any emission standard under section 7412 of this title..., (ii) of determining whether any person is in violation of any such standard or any requirement of such a plan, or (iii) carrying out any provision of this chapter ... (3) The Administrator shall in the case of any person which is the owner or operator of a major stationary source, and may, in the case of any other person, require enhanced monitoring and submission of compliance certifications. Compliance certifications shall include (A) identification of the applicable requirement that is the

basis of the certification, (B) the method used for determining the compliance status of the source, (C) the compliance status, (D) whether compliance is continuous or intermittent, (E) such other facts as the Administrator may require. ...”

2.8 NOTIFICATION, RECORDKEEPING, AND REPORTING REQUIREMENTS

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that the semiannual reporting requirements, which require reports 30 days after the end of the reporting period, conflict with State reporting requirements in Michigan, which require reports on September 15th and March 15th. The commenter stated that the semiannual reports should be submitted on the schedule required by the States.

Response: The EPA contacted the Michigan Department of Environmental Quality (DEQ), Air Quality Division regarding this issue. The Michigan DEQ staff member stated that there would be no conflict between the notification, recordkeeping, and reporting requirements in the proposed rule and a plant's Michigan Renewable Operating Permit (ROP). The Michigan DEQ staff member stated that the Michigan ROP format is very flexible and was designed to accommodate a wide variety of emission limits, operating requirements, and notification, recordkeeping, and reporting requirements. It was pointed out that ROPs already written by the Michigan DEQ Air Quality Division easily incorporate the requirements of federal New Source Performance Standards (NSPS), NESHAP, and MACT standards in the existing Michigan permit format. Based on the information provided by Michigan DEQ, EPA has determined that it is not necessary to change the due dates for the semiannual reports.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that there should be no initial notification report requirement. The commenter pointed out that sources are all existing sources that have effectively already submitted initial notification to their respective State agencies (on or before May 15, 2002) under the requirements of Section 112(j) of the CAA and General Provisions of part 63.

Response: Initial notifications are required under 40 CFR 63.9(b) of the General Provisions and are an important part of ensuring compliance with the standard. Even in industries with only a few facilities, the initial notification reports are important in identifying changes in ownership or possible facility closures. This is not a burdensome requirement and any initial notification requirement previously submitted could be used, provided it meets the requirements in Section 63.9(b). Therefore, we have retained the initial notification requirements as proposed.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that the semiannual reporting forms, generated by the State, do not provide a space for plant owners or operators to certify “there are no deviations” for the given reporting period. The commenter suggested that, since all eight of the affected plants have already received and are operating under State operating permits, the semiannual reports submitted under the applicable State operating permit should suffice.

Response: If there is not enough room on the form to write in this statement, it can be submitted as part of the cover letter for the semiannual report or on a separate page attached to the State-generated semiannual reporting form. In addition, it is anticipated that once the rule is promulgated, the State agencies implementing the rule will generate new forms that will accommodate any additional information that is required as part of the NESHAP. Therefore, we have retained the requirement for this statement as proposed.

2.9 CLARIFICATIONS AND MISCELLANEOUS

Comment: One commenter (IV-D-02) pointed out that there are 22 furnaces in the industry, not 21 furnaces. The commenter stated that Furnace 5 at Northshore was overlooked in EPA's inventory.

Response: Furnace 5 at Northshore has been shut down for a number of years, and therefore, was not included in our analysis as an operating unit.

Comment: Two commenters (IV-D-02, IV-D-07, IV-D14) stated that the reference in section 63.9650 to Table 1 should be changed to Table 2.

Response: This typographical error has been corrected in the final rule.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that in section I.F. of the preamble (Health Effects) the Agency should clarify that the health and environmental effects noted in the preamble are specifically associated with certain exposures (in terms of frequency, duration, and quantity) to the listed chemicals and compounds. The commenters stated that it should also be clarified that, just because those compounds are emitted in some quantity from taconite iron ore processing facilities, it does not mean that they are emitted in such a quantity, duration, and frequency that would impact public health or the environment.

Response: The last paragraph of section I.F. of the proposal preamble stated that:

“We recognize that the degree of adverse effects to health experienced by exposed individuals can range from mild to severe. The extent and degree to which the health effects may be experienced depend on:

- Pollutant-specific characteristics (e.g., toxicity, half-life in the environment, bioaccumulation, and persistence);
- The ambient concentrations observed in the area (e.g., as influenced by emission rates, meteorological conditions, and terrain);
- The frequency and duration of exposures; and
- Characteristics of exposed individuals (e.g., genetics, age, pre-existing health conditions, and lifestyle), which vary significantly within the general population.”

We feel that this language clearly expresses the variable relationship between emissions of harmful substances and the adverse effects those emissions have on public health and the environment. Therefore, this language will be retained in the final rule.

Comment: One commenter (IV-D-05) cited the following statement in the preamble for the proposed rule: “EPA will evaluate the feasibility of controlling mercury emissions from taconite iron ore plants as part of the assessment for residual risk standards.” The commenter stated that EPA should clarify that the residual risk standard must, at a minimum, be set at a level high enough to protect public health with “an ample margin of safety,” regardless of whether the EPA or the industry believes such controls are “feasible.”

Response: The EPA will look at the feasibility of additional controls when determining whether and to what extent additional regulations for residual risk are warranted under Section 112(f) of the CAA. Section 5 of the Residual Risk Report to Congress (EPA-453/R-99-001, page 127, paragraph 3) states:

The EPA will apply the ample margin of safety framework to public health risks in the context of the tiered risk assessment and management approach for air toxics’ residual risks. For carcinogens, EPA will apply a two-step ample margin of safety approach, as described here and in section 2.1. The EPA developed the benzene risk management framework, which forms the basis for human health risk management in the residual risk program, in response to a 1987 DC Circuit Court decision on the Vinyl Chloride national emission standard, also taking into consideration public comment on several alternative risk management approaches it had proposed for benzene (see section 2.1 for more historical background on the benzene national emission standard). According to the benzene framework, EPA would develop national emission standards for HAPs in two steps: (1) first determine a “safe” or “acceptable risk” level, considering only public health factors, and (2) then set an emission standard that provides an “ample margin of safety” considering relevant factors in addition to health such as costs, economic impacts, and feasibility. In establishing the acceptable risk level, EPA would

consider the extent of the estimated risk if an individual were exposed to the maximum level of a pollutant for a lifetime, i.e., maximum individual risk (MIR). Although an MIR for cancer of approximately 1 in 10 thousand should ordinarily be the upper-end of the range of acceptability under this approach, EPA would consider other health and risk factors (e.g., projected overall incidence of cancer or other serious health effects within the exposed population, the number of people exposed within each individual lifetime risk range, the science policy assumptions and estimation uncertainties associated with the risk measures). In the second step, EPA would attempt to provide protection to the greatest number of people possible at an excess individual lifetime risk of cancer no higher than 1 in 1 million (10^{-6}), taking into account additional factors relating to the appropriate level of control (e.g., costs, economic impacts, feasibility). The acceptable risk established in the first step would not be exceeded by the standards EPA adopts based on the second step. This approach is consistent with risk management approaches taken by other EPA programs intended to broadly protect public health. For example, other EPA programs use a risk management range of 10^{-6} to 10^{-4} under their reasonable maximum exposure scenario to guide their decision-making for carcinogens.

2.10 ENVIRONMENTAL IMPACTS

Comment: One commenter (IV-D-02) stated that EPA did not adequately consider the potential water pollution and solid waste impacts that could result from the expanded use of wet air emission control equipment. The commenter pointed out that EPA assumed that no additional water consumption costs or wastewater treatment costs will be incurred because scrubbing water will be taken from and returned to the tailings basins. However, the commenter stated that tailings basins are not completely closed systems - they discharge millions of gallons per day of wastewater into rivers and streams. In addition, the wastewater from some OCH and PH air emission control units is not treated by tailings basin systems. As a result, the commenter believes the costs of installing and using wet scrubbing is underestimated because it does not address the cost of wastewater treatment nor the cost of potential additional solid waste management. In addition, the commenter stated that the cost and economic impact estimates assume that the needed control equipment replacements and upgrades will all be accomplished by wet scrubbers, without any discussions of the comparable costs of dry emission controls.

Response: The preamble to the proposed rule contained the following statement regarding the wastewater impacts:

“We project that the implementation of the rule as proposed would increase water usage by 8.4 billion gallons per year industry wide. This increased water usage would result from the installation of new wet scrubbers needed for compliance. Much of this water will be discharged as scrubber blowdown to the tailings basin(s) located at each plant. At two or more of the affected facilities, there is the potential that this increased wastewater burden will result in new or aggravated violations of permitted wastewater discharge limits from the tailings basins unless significant measures are taken to install new or upgrade existing wastewater treatment systems.”

EPA acknowledges that if plants use wet scrubbers to meet the MACT standard there is the potential that this increased wastewater burden will result in new or aggravated violations of permitted wastewater discharge limits from the tailings basins. However, it should be pointed out that the rule does not mandate the use of wet scrubbers. Therefore,

if a particular facility has a concern about water quality issues, a dry technology (such as an ESP) could be used.

In follow-up discussions with the commenter, it was found that the primary concern is wastewater discharges from the Minntac plant. However, it was also found that the permit conditions of the discharge water from Minntac have not yet been decided. Without knowing the permit conditions, we cannot estimate how the rule will impact Minntac's ability to comply with those conditions and any costs that may result. Therefore, in the absence of permit conditions and costs it would be very difficult to perform any additional wastewater impacts analysis for this plant. In the follow-up discussions the commenter agreed that, given the current information that is available, EPA cannot conduct additional analyses. Therefore, the commenter stated that the language that was published in the proposal preamble adequately addresses their concern.

Comment: One commenter (IV-D-02) stated that EPA should clarify whether the estimated reductions of HAP and PM are based on allowable emissions or actual emissions.

Response: We estimate that the final rule will result in a reduction of PM emissions of 10,538 tons per year and a reduction in HAP emissions of 270 tons per year. The estimates of PM emission reductions are based on the allowable emissions after the MACT standard takes effect. In other words, all units were assumed to be at the MACT PM level of control when estimating emissions after the standard takes effect. Therefore, the PM emission reduction estimate reflects the difference between the sum of all current emissions of units above the MACT limit and the sum of all emissions of these same units at the MACT limit. It should be pointed out that units with tests below the MACT limit or equipped with venturi scrubbers, impingement scrubbers, or baghouses, were assumed to be at the MACT level of control in the baseline. Therefore, these units have no net effect on the emissions reductions.

The metallic HAP emission reductions were calculated by multiplying the PM emission reduction percentage for each plant by the baseline metallic HAP emissions. The acid gases HAP emission reductions were calculated by multiplying the baseline acid

gas emissions by an assigned level of control of 74 percent. We assumed that there would be no emission reductions for mercury and pollutants of incomplete combustion (mainly formaldehyde). See Chapter 7 of the proposal background information document (EPA 453/R-02-015) and the memorandum titled “Revised Taconite Iron Ore Processing NESHAP Baseline HAP and PM emissions and Emission Reductions” for additional details.

Comment: One commenter (OAR-2002-0039-0003) stated that the rule provides little or no environmental benefit.

Response: We estimate that the final rule will result in a reduction of PM emissions of 10,538 tons per year and a reduction in HAP emissions of 270 tons per year. We believe that these emission reductions are significant.

Comment: Two commenters (OAR-2002-0039-0006, IV-D-03) stated that the HAP emission values in section I.E. of the preamble (What HAP Are Emitted and How Are They Controlled?) need to be updated to accurately reflect what is currently being emitted. Specifically, one commenter (OAR-2002-0039-0006) stated that U.S. Steel has more recent testing data that can be used to update the estimates. Another commenter (OAR-2002-0039-0026) asserted that HAP emissions from taconite ore plants are inaccurately characterized. The commenter stated that several companies have more recent test data and EPA can revise the HAP emissions accordingly. The commenter stated that a more accurate depiction of the emissions will alter the economic analysis.

Response: In follow-up discussions with the industry we asked them to submit any test data that were not reflected in the proposal analyses. We received the following additional emission tests:

- Engineering Emissions Test Report for Tilden conducted the week of November 4, 1999. Tested PM, nitrogen oxides (NO_x), hydrogen chloride (HCl), hydrogen fluoride (HF), benzene, hexane, toluene, formaldehyde, metals, and asbestos.

- Particulate and Metals Emission Study for Tilden conducted May 7 to 11, 2002. Tested total PM and metals.
- MPCA spreadsheet incorporating Minntac emissions tests for December 2002 and August 2001. Tested formaldehyde, HCl, HF, chlorine, and fluorine.
- Northshore formaldehyde emissions tests conducted on March 6, 2003.

We have reviewed the test data listed above and have revised the baseline HAP emissions as appropriate. The baseline HAP emissions have been modified as follows:

- Baseline formaldehyde emissions were updated for Minntac, Northshore, and Tilden. The baseline formaldehyde emissions for EVTAC and Inland were also updated, since their formaldehyde emission factors were based on Northshore estimates. This resulted in a decrease in baseline formaldehyde emissions from 180.7 to 30.1 tons/year. This had no effect on the HAP emission reduction estimate since we assumed that there would be no formaldehyde emission reductions.
- Baseline HCl and HF emissions were updated for Minntac and Tilden. This resulted in a decrease in baseline HCl emissions from 349.1 to 274 tons/year and a decrease in baseline HF emissions from 308 to 229 tons/year. As a result, the emission reduction from acid gases decreased from 356.1 to 256 tons/year.

Comment: Several commenters (OAR-2002-0039-0006, IV-D-03, IV-D-15) stated that the EPA should include emission reduction estimates only for metallic HAP in the air emission impact analysis, since these are the only HAP for which EPA has established a limit in the proposed rule (PM as a surrogate for metallic HAP). The commenter added that the emission reductions for other HAP, such as acid gases, are based on assumptions of what control technology the plants will use to meet the PM limits. According to the commenter, the plants might choose ESP, which will not

significantly reduce acid gas emissions.

Response: When we estimate the emission reductions that will result from a rule, it is common practice to include any incidental emission reductions that may be expected. These incidental reductions result not from actual limits for these pollutants, but as a result of controls that are installed to meet limits in the standard for other pollutants. Since we expect incidental reductions of acid gases as a result of the implementation of PM emission limits in our rule, we have included these acid gas reductions in the overall emission reduction estimate.

In our emission reduction and cost analyses we assumed that both Minntac and National would replace their existing controls with venturi wet scrubbers. Representatives from both plants have indicated that they are considering either a dry ESP or a venturi wet scrubber, but their plants have not made a decision. For Minntac we assumed that they would replace the existing control on line 3 with a venturi wet scrubber for the following reasons:

- Their historical indurating furnace control upgrades have been venturi wet scrubbers. In 1991 Minntac replaced the existing controls on two indurating furnace lines with venturi wet scrubbers.
- ESP are significantly more expensive than wet scrubbers.
- Their existing wet scrubbers are meeting the MACT limits.

For National, we assumed that they would replace the existing controls on their indurating furnace with venturi wet scrubbers mainly on the basis of cost. No information has been provided to us to indicate that either plant will be installing an ESP rather than a venturi wet scrubber. Therefore, we have retained our assumption that both plants will install venturi wet scrubbers on their indurating furnaces.

2.11 SELECTION OF POLLUTANTS

2.11.1 Mercury

Comment: Seventeen commenters (IV-D-05, IV-D-06, IV-D-08 to IV-D-13, IV-D-16 to IV-D-20, IV-G-01 to IV-G-04) stated that EPA has a statutory obligation to set emission standards for mercury. Several commenters (IV-D-05, IV-D-06, IV-D-12) specifically cited National Lime. One commenter (IV-D-05) stated that the fact that no specific type of control technology has yet proven effective and affordable for taconite processing cannot legally excuse the industry from regulation. Thirteen commenters (IV-D-08 to IV-D-11, IV-D-13, IV-D-16 to IV-D-20, IV-G-01 to IV-G-03) asserted that EPA's practice of not setting standards for industries that do not yet control their emissions is illegal and encourages the industry to do as little as possible to control mercury.

One commenter (IV-D-01) encouraged EPA to consult with the MPCA Department of Natural Resources, Division of Lands and Minerals, to get the most up-to-date information on potential mercury control strategies for taconite facilities before promulgation. The commenter stated that viable mercury control technologies or strategies may be identified in the very near future. The commenter asserted that the best strategies to control mercury may be operational modifications such as different handling practices for captured dust from indurating furnaces.

Two commenters (IV-D-05, IV-D-06) stated that the EPA must set an emission standard for mercury based on the statute's "minimum stringency requirement" (i.e., the MACT floor) even if specific technologies or operating practices to achieve it have not been identified. One commenter (IV-D-05) stated that if no such controls or practices are being used, EPA must find some other factor on which to base the standard. Three commenters (IV-D-05, IV-D-06, IV-D12) suggested that EPA determine the floor based on the average mercury emission level of the five plants (or furnaces) with the lowest emissions, and then set the mercury emission limit there. One commenter (IV-D-05) stated that if certain plants will not be able to meet such a standard within 4 years, the statute provides relief through a Presidential exemption for a period of not more than 2 years. The commenter also contends that the CAA allows relief for a company that

makes a significant effort to identify and implement effective controls but is still unable to meet the standard by the 4-year deadline. The commenter stated that EPA included a similar provision in the Portland Cement NESHAP. The commenter believes that setting a standard would induce the industry to invest in research and development to meet it. The commenter stated that promising mercury control technologies for the taconite industry are on the horizon. The commenter stated that the EPA should investigate the COHPAC-TOXECON system, corona discharge, and catalytic oxidation, as well as an iron oxide sorbent system being tested in Minnesota.

One commenter (IV-D-06) stated that EPA recognized in the proposed rule that the mercury content of the taconite ore is the “key factor” affecting mercury emissions. The commenter reasoned that by setting a mercury standard, plants that use ore with high mercury content will have to find ways to reduce mercury emissions, including switching to cleaner raw materials or installing pollution controls.

One commenter (IV-D-05) stated that the final rule should consider precluding the use of coal, even as a secondary fuel, to control mercury emissions.

Thirteen commenters (IV-D-08 to IV-D-11, IV-D-13, IV-D-16 to IV-D-20, IV-G-01 to IV-G-03) recommended that EPA establish a reasonable limit for mercury and allow relief for a company that is unable to meet the limit after making appropriate technological or research investments.

Two commenters (IV-D-12, IV-G-04) requested more information supporting EPA’s finding that “we were unable to find any viable control technologies or operating procedures for achieving reduction in mercury emissions from indurating furnaces at taconite iron ore plants.” One of the commenters (IV-G-04) requested the cost of control per ton of mercury control that was estimated in EPA’s analysis. Both commenters (IV-D-12, IV-G-04) stated that control technologies being developed for coal-fired power plants could be used to control mercury emissions from taconite facilities. Two commenters mentioned activated carbon injection as a potential mercury control for taconite plants.

One commenter (IV-D-12) stated that, both within the binational program and in national policy documents, the EPA insinuates that the NESHAP program is the means

by which the Agency will achieve mercury reduction goals. The commenter asserted that an emission limit for mercury should be set that pushes the industry to research and develop control technology but also allows for relief if a company is unable to meet the standard after diligently pursuing such technology. The standard should also include mercury monitoring requirements.

Three commenters (IV-D-05, IV-D-12, IV-G-04) stated that if mercury emissions from the taconite industry are not reduced, the goals of the binational program to protect the Lake Superior Basin cannot be met. One commenter (IV-D-05) stated that, if EPA does not intend to set standards for mercury emissions from industries that currently do nothing to control their emissions and that do not develop control technology on a voluntary basis, its regulations (if not its authority) are inadequate to protect the Great Lakes and other Great Waters from mercury deposition. The commenter stated that EPA's refusal to take action under CAA section 112(m) because authority is available under CAA section 112(d), and then failing to use the CAA section 112(d) authority is unacceptable. Furthermore, the commenter stated that Congress directed the EPA to take action to protect the Great Waters by 1995. The commenter stated that postponing regulations until residual risk standards are required violates the spirit (if not the letter) of the congressional mandate.

One commenter (IV-D-05) stated that beyond-the-floor standards are warranted for mercury. The commenter stated that a mercury standard based on developing technologies is "achievable." The commenter stated that EPA could base beyond-the-floor mercury standards on the reductions that could be achieved through raw material change (low-mercury ore), fuel change (natural gas), or control technologies (wet scrubbers, carbon beds, or activated carbon injection). The commenter recommended that EPA investigate the COHPAC-TOXECON system, whereby a pulse-jet baghouse is installed downstream from existing ESP controls, and a sorbent injection system is installed between the existing ESP and the baghouse. The commenter also suggested that EPA look at developing multipollutant technologies, such as corona discharge, catalytic oxidation, and iron oxide sorbent systems being tested in Minnesota.

One commenter (IV-D-05) cited estimated costs for activated carbon systems that

were developed for coal-fired boilers that ranged from \$4,940 to \$70,000 per pound (\$9.9 to \$140 million/ton) of mercury removed at 90 percent control (USDOE, September 2002; NESCAUM, June 2000). The commenter also provided costs for carbon filter beds used in European waste incinerators of \$513 to \$1,083 per pound (\$1.0 to \$2.2 million/ton) of mercury removed at 99 percent control. The commenter stated that the control costs for indurating furnaces should lie somewhere between the two cost ranges. The commenter also provided estimated costs for enhanced wet scrubbing systems for coal-fired boilers of \$76,000 to \$174,000 per pound (\$152 to \$348 million/ton) of mercury removed (NESCAUM, June 2000).

Response: There is no way to set a floor standard for mercury that is “achievable,” as required by CAA section 112(d)(2), because there is no standard that can be duplicated by different sources or replicable by the same source. The opinion in National Lime did not deal with a situation where an emission standard was unachievable for these reasons. Mercury emitted from taconite iron ore processing plants originates primarily from the ore itself and to a much lesser extent the fuels powering the process. None of the taconite iron ore processing plants control mercury emissions by using at-the-stack controls. Thus, any differences in mercury emissions from existing indurating furnaces reflect different mercury levels in raw materials or fossil fuels used at the individual plants. Attempting to base a mercury standard (either a floor standard, or a beyond-the-floor standard) on raw material substitution (i.e., ore substitution), however, would lead to unachievable standards for all sources, because this means of control is not duplicable or even replicable.

A study by the Coleraine Minerals Research Laboratory in 1997 stated that “the mercury volatilized during pellet induration is not the same for every taconite operation. There is a correlation between the amount of mercury volatilized during induration and the location of the taconite operation. The taconite operations that are located on the west end of the Mesabi Iron Range volatilize more mercury during pellet induration than those on the east end of the range.” This correlation was confirmed in a report by the Minnesota Department of Natural Resources (Berndt, 2002) with the mercury concentrations present in the ore varying from 21 parts per billion (ppb) at the west end

of the range to 0.6 ppb for facilities located on the east end of the range. Each taconite iron ore processing plant is located directly proximate to its own mining source. Transportation costs of procuring raw materials from other locations are prohibitive. A plant has no access to the raw ore used by another plant and, consequently, could not duplicate the mercury emissions performance of the other plant. The ore processing operations at a given plant are dependent on the type of ore mined. The east range ores are typically finer and harder requiring different processing steps in crushing, grinding, and flotation. Because of the differences in processing for each type of ore, it is not feasible for any one facility to process different ores mined from multiple locations in the range. Moreover, because iron ore deposits are variable in mercury content, there is no way to assure that even a source processing its own ore could replicate its own performance, since the next ore batch could contain higher concentrations of mercury. Based on the above justifications, we have determined that it is infeasible for taconite plants to reduce mercury emissions by switching to “cleaner” ores.

Natural gas is the primary fuel used by the taconite industry to fuel the process. From the period of 1995 to 1997, the burning of coal constituted only between 9 and 18 percent of the overall energy input for taconite indurating furnaces. During the same period, natural gas constituted between 73 and 83 percent of the overall energy input for taconite indurating furnaces. Although very little coal is used overall by the industry, it is critical for certain plants to have coal available to them as a backup fuel when natural gas may not be available or when seasonal fluctuations in the price of natural gas make its use uneconomical. Therefore, based on the negligible impact of coal on mercury emissions in the industry and the importance of maintaining backup fuel options, fuel switching is not a feasible means of controlling HAP metal emissions (including mercury) for the taconite industry.

Based on these facts, EPA cannot accept the comment that it must establish a floor standard by averaging the lowest mercury emission values of the so-called best-performing 12 percent of sources. In the next performance test, all of these mercury values could be higher (no matter what method would be used to establish “best performing”), because there are no means of controlling ore concentrations or feasibly

using fuel substitution. Such a standard simply could not be achieved by any source. Not only is this not the intent of a technology-based standard, but would result in sources being out-of-compliance and, thus, possibly shutting them down. This is not how MACT was intended to function. “MACT is not intended . . . to drive sources to the brink of shutdown . . .” (H.R. Rep. No. 101-490, 101st Cong. 2d sess. 328).

We note further that the mercury in the ore and the fuel is present in trace amounts. The Minnesota Department of Natural Resources stated that “mercury present in taconite occurs as a trace element, and cannot be eliminated by simply using a different fuel source or by eliminating mercury-bearing components from material to be combusted.” (Berndt, 2002) This supports the Agency’s technical determinations that control via substitutions of feed or fuel is neither feasible nor likely to be effective since random variability in the feed will likely result in equal amounts of mercury being emitted in any case. Indeed, as stated above, it is not clear that even a single source could reliably duplicate its own performance for mercury emissions due to the small amounts emitted and random variabilities in the mercury content of the iron ore.

The commenters themselves acknowledge that viable controls for mercury are not currently available for the taconite industry:

- One commenter stated that “viable mercury control technologies or strategies may be identified in the very near future.”
- One commenter stated that “setting a standard would induce the industry to invest in research and development to meet it.” The commenter also stated that “promising mercury control technologies for the taconite industry are on the horizon.”
- Two commenters stated that “control technologies being developed for coal-fired plants could be used to control mercury emissions from taconite facilities.”

Section 112(d) of the CAA requires that the EPA establish emission standards that are “achievable for new or existing sources.” Since we have not been able to identify any currently employed operating practices that effectively reduce mercury emissions which are duplicable or replicable, we cannot develop an achievable floor standard.

Some commenters also suggested extended compliance periods (beyond the 3 years provided by section 112(i)(3) of the CAA). The problem, however, is not one of

time but of the lack of existence of any means of floor control. Control of emissions via raw material or fuel substitution will not be available regardless of time allowed for compliance.

Several commenters also noted that EPA's action here could undermine efforts to control mercury deposition in the Great Lakes and questioned the adequacy of EPA's action in light of the Agency's obligation under section 112(m)(6) of the CAA to "determine whether the other provisions of this section [112] are adequate to prevent serious adverse effect to public health and serious or widespread environmental effects" in the Great Lakes. The EPA, however, is not reopening its existing determination that the section 112(d) and (f) standards are adequate for this purpose. See generally 63 FR 14090 (March 24, 1998); "Deposition of Air Pollutants to the Great Waters: First Report to Congress (EPA-453/R-93-055, 1994); "Deposition of Air Pollutants to the Great Waters: Second Report to Congress" (EPA-453/R-97-011, 1997). The EPA notes further that the section 112(f) residual risk process must evaluate (among other things) whether a more stringent standard for mercury is needed to prevent an adverse environmental effect (taking into consideration costs, energy, safety and other relevant factors).

The commenters' statements regarding potential at-the-stack control options are legitimate considerations for beyond-the-floor standards, but after evaluating the possibility of such controls against technical considerations and the section 112(d)(2) factors, we do not feel that a beyond-the-floor standard for mercury is warranted.

One commenter indicated that different handling practices for captured dust from indurating furnaces, as discussed in a report by the Minnesota Department of Natural Resources (Berndt, 2002), would be a good method for controlling mercury. The control option investigated in the report involves placing magnetite dust collected by the wet scrubbers, which was found to be high in mercury, into the waste stream rather than recycling the dust back to the indurating furnace. A review of the report cited by the commenter reveals that, for the two taconite plants studied, the costs of this approach ranged from \$28 to \$254 million per ton of mercury removed (\$14,000 to \$127,000 per pound of mercury removed). This high cost results from the loss of over \$1 million of magnetite dust product (\$25 per long ton) to prevent approximately 30 pounds of

mercury emissions. The study concludes that “due to the high cost of this emission control method, the large uncertainty in the cost estimates, and the limited amount of emission reduction, it appears that more research is needed before mercury emission control methods can be put into practice in taconite processing facilities.” We believe that the high cost, the small reduction in HAP emissions, and increased waste disposal do not justify this beyond-the-floor alternative at this time.

Other potential mercury controls cited by the commenters include: wet flue gas desulfurization (FGD), baghouses, activated carbon injection, activated carbon/baghouse system (COHPAC), corona discharge, electro-catalytic oxidation, and injection of copper-coated magnetic taconite concentrate.

Ninety seven percent of the mercury emitted from taconite plants is emitted from the indurating furnaces. The mercury emitted from the taconite indurating furnaces is primarily elemental mercury. Wet scrubbing systems, such as wet FGD, “are very effective at removing soluble ionic mercury, but are not very effective at removing insoluble elemental mercury” (NESCAUM, 2000). Therefore, wet FGD systems were not considered to be a technically viable beyond-the-floor option.

Baghouses and control systems that utilize them, such as the COHPAC system, cannot be used on taconite indurating furnace stacks due to the high moisture content of the exhaust gas. The high moisture content of the exhaust gas causes plugging problems that make the baghouses ineffective. Therefore, baghouses and control systems based on baghouse technology were not considered to be a technically viable beyond-the-floor option.

In pilot scale studies at several electricity generating boilers, carbon injection has provided up to a 90 percent reduction in mercury emissions. Estimated costs for installing activated carbon injection systems on electricity generating boilers range from \$10 to \$140 million per ton of mercury removed (\$5,000 to \$70,000 per pound of mercury removed) (NESCAUM, 2000; USDOE, 2002). Activated carbon injection has been demonstrated to provide 95 percent control of mercury emissions for municipal waste combustors (NESCAUM, 2000). Costs for installing activated carbon injection for municipal waste combustors range from \$0.4 to \$1.74 million per ton of mercury reduced

(\$211 to \$870 per pound of mercury reduced). However, NESCAUM points out that “this working experience with small sources is not directly transferable to large coal-fired boilers because of their different flue gas characteristics” (NESCAUM, 2000). The cost per pound of mercury removed for this industry with activated carbon injection would be considerably higher than the estimated cost for a utility boiler because the capital and fixed operating costs would be similar while these plants have very low mercury emissions. The high cost, small reduction in HAP emissions, increased energy usage, and additional waste generation do not justify this beyond-the-floor alternative at this time.

The corona discharge, electro-catalytic oxidation, and copper-coated magnetic taconite concentrate injection control technologies are describe by the commenter as “emerging technologies . . . that could potentially be applied to the taconite sector as they mature and become more cost-effective.” Based on the commenter’s own description, these technologies are not currently ready for application to the taconite industry. Therefore, these technologies were not considered in the beyond-the-floor analysis.

In evaluating these potential beyond-the-floor options, we were unable to identify any viable control technologies or operating practices for achieving reductions in mercury emissions from taconite iron ore plants. Consequently, we chose the floor level of no emissions reduction as MACT.

Since specific controls for mercury are not currently present in the industry and operating practices that effectively reduce mercury emissions have not been identified, we are selecting no emissions reduction as new source MACT.

2.11.2 Asbestos

Comment: Seventeen commenters (IV-D-05, IV-D-06, IV-D-08 to IV-D-13, IV-D-16 to IV-D-20, and IV-G-01 to IV-G-04) stated that EPA should set a limit for asbestos emissions from taconite plants as is required by the CAA. One commenter (IV-D-05) stated that asbestos is designated as a HAP by the CAA. The commenter reasoned that if asbestos is emitted by the taconite industry, the statute requires that EPA set a standard for asbestos fibers. Based on the decision in Reserve Mining Co. v. EPA, 514

f.2d 492, 526 (1975), the commenter contends that the EPA must consider asbestos to be a HAP emitted by the taconite industry. One commenter (IV-D-06) contended that “lack of information” about asbestos emissions is an invalid reason for not setting standards.

Two commenters (IV-G-04, IV-D-12) asserted that 30 years ago, EPA stated that it intended to regulate asbestos emissions from the taconite industry. The same commenter stated that the 1973 asbestos NESHAP had excluded “mineral processing operations that may contain asbestos as a contaminant.” The commenter further pointed out the Congress rejected this approach when it passed the CAA Amendments of 1990.

One of the commenters (IV-D-05) pointed out that in a 1975 Reserve Mining decision, the U.S. Court of Appeals for the Eighth Circuit stated in regard to emissions from the Co. plant (now operated by Northshore) that “Reserve discharges fibers substantially identical and in some instances identical to fibers of amosite asbestos.” The trial court heard extensive evidence as to the chemistry, crystallography, and morphology of the cummingtonite-grunerite present in the mined ore. This evidence demonstrated that, at the level of the individual fiber, a portion of Reserve’s cummingtonite-grunerite cannot be meaningfully distinguished from amosite asbestos. Reserve attempted to rebut this testimony by showing that the gross morphology of the two minerals differed and the characteristics of the two minerals varied when considered in crystal aggregations. Since, according to the opinions of some experts, the individual fiber probably serves as a carcinogenic agent, the district court viewed the variations in mineralogy as irrelevant and determined that Reserve discharges fibers substantially identical and in some instances identical to amosite asbestos.

One commenter (IV-D-02) stated that it should be noted in the proposal preamble that only one mine remains operating at the eastern end of the Mesabi Range where acicular (needle-like) minerals may be present in the ore. The commenter also stated that the proposal preamble overstated the efforts of EPA’s work group investigation of asbestos in taconite ore. The commenter asserted that the work group is focused mainly on vermiculite and is unlikely to study or recommend “solutions” for the taconite industry.

One commenter (IV-D-06) stated that EPA’s refusal to set beyond-the-floor

standards for asbestos is unlawful.

Response: Although we are compelled to develop MACT standards for HAP from major sources, and "asbestos" is listed as a HAP in section 112(b) of the CAA, "asbestos" is not a single chemical substance or an easily identified group of chemicals or substances. Our previous regulatory experience with asbestos as an air pollutant has been limited to those substances commercially used for their properties, such as a high resistance to heat and most chemicals. More recently, the Agency has become concerned with those and similar substances that may occur as a contaminant in other mined materials and then be released into the air during processing activities.

When Congress listed "asbestos" as a HAP in section 112(b)(1), it did not further explain the term in the statute, and EPA is not aware of any legislative history addressing the term asbestos. Currently, EPA regulatory definitions for "asbestos" are provided in the Asbestos NESHAP, as revised in 1990 (40 CFR 61.141, subpart M), and the regulations for addressing asbestos-containing materials in schools (40 CFR 763.83). Both rulemakings, which focus on commercial asbestos, define asbestos as the asbestiform varieties of six different minerals: chrysotile (serpentine), crocidolite (riebeckite), amosite (cummingtonite-grunerite), anthophyllite, actinolite, and tremolite. As some commenters have indicated, it is correct that the ore from the eastern end of the Mesabi Range is comprised to some extent of cummingtonite-grunerite and ferroactinolite (an iron-based form of actinolite), two of the above listed asbestos-like minerals.

Similarly, other Federal agencies' standards for "asbestos," for example, the Occupational Safety and Health Administration (OSHA), were developed for commercial asbestos products and not asbestos as a contaminant in another material (29 CFR parts 1910, 1915, and 1926). Current OSHA workplace air regulations apply only to chrysotile, crocidolite, amosite, and the asbestiform varieties of anthophyllite, tremolite, and actinolite. The word asbestos is often added after the mineral (e.g., tremolite asbestos) to signify that the asbestiform variety of the mineral is being referred to. This is not necessary for chrysotile, crocidolite, or amosite because these are terms specific to the asbestiform varieties of the minerals (which are serpentine, riebeckite, and

cummintonite-grunerite, respectively).

Since the EPA first regulated asbestos as a HAP, a distinction has been made on applying the term asbestos to commercially manufactured products and not as a contaminant in other materials. When the Asbestos NESHAP was promulgated in 1973, the EPA Administrator made explicit in accompanying comments that the NESHAP only apply to asbestos mines and asbestos mills. Approximately 1 year after the rule was promulgated, EPA further clarified the rule by stating it does not apply to asbestos occurring as a contaminant as distinguished from asbestos as a product (39 FR 15397, May 3, 1974). In a 1974 revision to the Asbestos NESHAP, the Administrator added a definition of “commercial asbestos” to distinguish asbestos which is produced as a product from asbestos which occurs as a contaminant in other materials.

Furthermore, when the CAA was amended in 1990, EPA’s approach in developing NESHAP was significantly altered through the use of the HAP list under section 112(b) and the application of technology-based standards under section 112(d) instead of a strict risk-based approach. However, the CAA amendments in 1990 did not provide any further guidance on how the definition of asbestos could be applied beyond its use in the Asbestos NESHAP to address asbestos as a contaminant in other materials.¹ Based on EPA’s historical use of the term “asbestos,” it has been used in the context for commercially produced products and not, as yet, as a contaminant in other products. In summary, there is no technical or regulatory consensus on the set of minerals pertinent to contaminant asbestos.

Notwithstanding the real technical uncertainties as to how to classify the fibers in the Northshore emissions, commenters argued that the issue had already been decided by virtue of the Eight Circuit’s Reserve Mining decision, which found that Reserve Mining

¹ We thus disagree with the commenter who stated, without citation, that the 1990 amendments to the CAA were intended to compel section 112(d) standards to control the fibers emitted from non-commercial sources. The commenter is correct in that section 112 is not limited to commercial asbestos emissions, but nothing in the statute or its legislative history of which EPA is aware indicate that Congress intended a particular meaning of “asbestos” or that particular fiber-emitting sources be regulated under section 112 by virtue of the inclusion of “asbestos” in the list of HAP.

(now Northshore) emitted asbestos for purposes of ordering injunctive relief. First, any suggestion that EPA is now precluded from making a different factual determination is not correct. The issue decided in Reserve Mining is different from the one involved here: whether the Northshore fibers are “asbestos” for purposes of section 112 (b) of the CAA, a provision not at issue in Reserve Mining since it did not even exist at the time of the decision.

Second, EPA is not acting in the context of a plea for general injunctive relief (as in Reserve Mining), but rather to implement a limited grant of statutory authority to regulate the HAP “asbestos.” We have looked for existing, objective means of determining if Northshore’s fibers are “asbestos” and currently find the situation uncertain. In light of this uncertainty, we are not establishing MACT standards for the fibers emitted by Northshore. Rather, the issue of which non-commercial fibers are “asbestos” for purposes of section 112(b) is one that must first be decided in a broader context.

In response to the events surrounding exposures of residents to asbestos that occurred as a contaminant in a vermiculite mine in Libby, Montana, EPA is currently studying the complex issues involved with asbestos emissions from beneficiation and subsequent processing of minerals where asbestos may be present as a contaminant. One component of this activity is a comprehensive update to the asbestos entry in the Agency’s Integrated Risk Information System (IRIS). In the hazard and dose-response assessment pieces of the update, the current information on mineralogy, size, bioactivity and chemistry of different asbestos fibers is being considered. Within the past 3 years, the Agency has sponsored or co-sponsored several technical meetings aimed at bringing together the current knowledge on asbestos, its characteristics and related health effects. These include, but are not limited to:

- May 24-25, 2001, “Asbestos Health Effects Conference” in Oakland, California;
- February 25-27, 2003, “Asbestos Cancer Risk Peer Consultation” in San Francisco, California; and
- June 12-13, 2003, “Asbestos Mechanisms of Toxicity Workshop” in Chicago, Illinois.

Integration of the information gathered through these and other mechanisms will compose the support documents for the new IRIS file and will assist us in decisionmaking regarding contaminant asbestos.

As part of the response to the findings in Libby, the Agency has developed an action plan which identifies steps necessary to gather the information needed to decide whether regulations for sources of contaminant asbestos emissions are warranted. The action plan specifies vermiculite mining and processing operations as the first area of focus. Contrary to one commenter's assertion, the action plan also includes plans to assess emissions, exposure and risk associated with asbestos that occurs as a contaminant from other mining and processing operations, including taconite ore mining and processing. That assessment will inform decisions on specific risk-based regulation of asbestos that occurs as a contaminant in taconite ore mining and processing. Specific risk-based emission limitations for asbestos are not included in the technology-based final rule.

In addition, an International Fiber Symposium was held in St. Paul, MN in April, 2003. The papers presented at the symposium are in a peer-review process and will then be published. Once the proceedings are published, the Minnesota Department of Health (MDH) will determine if they can conduct a risk assessment for fibers or if they can draw any conclusions about the potential health impacts from fibers. Based on MDH's findings, the MPCA and Minnesota Department of Natural Resources may make policy changes with respect to fibers. Until then, MPCA will continue to regulate airborne fibers from Northshore as required by the court who deemed the fibers a health concern.

Finally, we note that Northshore is in fact controlling emissions of its fibers in part with baghouses, which are the optimum control technology for air emission of fibers (a point made, among other places, in the Reserve Mining decision itself). Since the Reserve Mining decision, ambient air monitoring around the plant has demonstrated a significant reduction in fiber emissions through the installation of high efficiency baghouses on ore crushing and handling emission units and wet ESP on the indurating furnace exhaust stacks. Baghouses are not a control option for indurating furnaces due to the high moisture content (10 to 15 percent) in the exhaust gases. The high moisture

content causes PM to cake and plug the filtering material causing filters to be ineffective. In addition, further reductions in fiber emissions are expected through compliance with the PM emission standards in the final rule. Representatives at Northshore have indicated that existing emission units equipped with multiclones are likely to be replaced with more efficient PM control devices in order to comply with the PM emission standards in the final rule. Northshore representatives provided us with the estimated costs for such an equipment upgrade, and these control costs are reflected in our revised cost impacts for the final rule.

2.11.3 Formaldehyde

Comment: One commenter (IV-D-06) stated that EPA has a statutory obligation to set emission standards for formaldehyde. The commenter asserted that the standard for formaldehyde must be at least as stringent as the average formaldehyde emission level of the five best performing plants. The commenter stated that whether or not there are feasible control technologies for formaldehyde is irrelevant.

Response: As EPA stated at proposal, formaldehyde (and other organic HAP) are emitted in very low concentrations by taconite processing indurating furnaces, not because these organic HAP are contained in feed or fuel input to the process, but rather as products of incomplete combustion (PIC) necessarily generated when fossil fuels are burned (in any type of process, not just in indurating furnaces)(67 FR 77570). Formaldehyde from indurating furnace emissions has been measured through stack testing at concentrations that are typically less than 1 part per million (ppm).

The EPA stated somewhat inaccurately at proposal that formaldehyde emissions from indurating furnaces are currently uncontrolled. It is clear from context that we meant that there are no current “at-the-stack” controls for formaldehyde (and other PIC) emissions from these furnaces, although control of the combustion process minimizes PIC (including formaldehyde) formation and hence PIC emissions. We reiterate that at-the-stack controls in place to control PM emissions have no effect on PIC emissions. We also know of no feasible at-the-stack control technology for reducing formaldehyde emissions at these extremely low concentrations and at the exhaust gas temperatures

typically encountered at indurating furnaces.

The only known technology for the control of formaldehyde emissions at concentrations of less than 1 ppm is thermal catalytic oxidation, in which formaldehyde is contacted with a precious metal catalyst in the presence of oxygen and high temperature (650 to 1,350°F) to yield carbon dioxide and water. Destruction efficiencies of 85 to 90 percent have been demonstrated on formaldehyde emissions contained in the exhaust gas from stationary combustion turbines at concentrations in the parts per billion range and temperatures of 1,000°F or higher. Destruction efficiencies, however, decrease exponentially at reaction temperatures below 650°F, reaching less than 10 percent at exhaust gas temperatures of 300°F or lower, which is typical of most indurating furnaces. Burning large quantities of additional fuel, such as natural gas, to heat the exhaust gases to the desired temperature would generate large additional quantities of carbon dioxide (a gas potentially connected to global climate change) and NO_x (ozone precursors). As at proposal, given the significant issues of technical feasibility and adverse environmental impacts associated with use of this technology, it is not the proper basis for MACT standards (67 FR 77571).

We also reiterate that fuel switching is not a justifiable means of control. Most indurating furnaces currently utilize natural gas as a fuel, and PIC emissions are higher for natural gas than for coal, but switching to coal would increase emissions of HAP metals in much larger amounts than the minimal PIC emissions attributable to natural gas burning. See S. Rep. 101-228, 101st Cong. 1st sess. at 168 (“In cases where control strategies for two or more different pollutants are in actual conflict, the Administrator shall apply the same principle – maximum protection of human health shall be the objective test.”)

Consequently, the only form of control currently used and feasible to minimize formaldehyde emissions is the proper and efficient operation of an indurating furnace with GCP. It is clear from the low measured levels of formaldehyde emitted from these furnaces that this means of control is highly effective.

In general, good efficiency of a combustion device is governed by time, temperature, and turbulence, the three “T’s” of combustion. Efficient combustion is

achieved when a selected fuel reaches an optimum temperature for a minimum residence time with sufficient turbulence to allow oxidation of all organic compounds to completely react to the products of combustion—water and carbon dioxide. However, there are many phenomena associated with combustion that lead to the formation of PIC. Examples of possible phenomena include: unburned fuel, quenches or cool zones in the combustion area, fuel rich zones, low combustion temperatures, insufficient air (oxygen) contact with fuel due to limited turbulence, and changes to the combustion process due to load swings or feed changes.

Good combustion practices typically encompass several elements such as the proper operation of the combustion process, routine inspection and performance analysis of the process, and preventative maintenance. More specific examples of GCP indicating the range of existing practices are listed below:

- Maintain operator logs;
- Develop procedures for startup, shutdown, and malfunction;
- Perform periodic evaluations or inspections;
- Perform burner or control adjustments/tune-ups;
- Monitor and maintain concentrations of carbon monoxide (CO), oxygen (O₂), or carbon dioxide (CO₂) in compliance with site-specific concentration limits in the combustion exhaust;
- Monitor and maintain combustion temperatures above a site-specific minimum value;
- Monitor fuel/air metering;
- Comply with a CO or total organic carbon (TOC) emission limit;
- Maintain proper liquid fuel atomization;
- Monitor fuel quality and handling procedures;
- Maintain combustion air distribution; and
- Maintain fuel dispersion.

Although all indurating furnaces need to use GCP to minimize PIC emissions, determining what precisely is GCP involves site-specific determinations for each furnace. For example, some indurating furnaces have been required to install NO_x emission

controls such as low NO_x burners. The basic method used in reducing NO_x emissions is a reduction in combustion temperature, which is the opposite strategy needed for minimizing PIC (i.e., increasing combustion temperature). Thus, due to differences in furnace design, operation, firing fuel, process controls, and air pollution control equipment, one set of GCP established for one type of indurating furnace may be different from those needed for another type of indurating furnace.

In addition, State operating permits for the taconite indurating furnaces do not require any specific set of GCP. However, based on discussions held with industry representatives, all sources already use a wide variety of work practices (e.g., existing Standard Operating Procedures) to maintain proper and efficient operation of each indurating furnace. See the July 11, 2003 memorandum, "Meeting Minutes on Good Combustion Practices with Taconite Industry Representatives." Sources have a strong and inherent economic incentive to ensure that fuel is not wasted, and that the combustion device operates properly and is appropriately maintained. The lack of a uniform approach to assuring combustion efficiency is not surprising given the differences of indurating furnace designs, and the fact that existing Federal/State standards do not include GCP requirements for indurating furnaces.

Thus, we have determined that site-specific GCP are the MACT floor for formaldehyde emissions from existing sources. In evaluating potential beyond-the-floor options, we considered the only known at-the-stack technology for the control of formaldehyde emissions at concentrations of less than 1 ppm--thermal catalytic oxidation, which was described earlier. However, as discussed previously, given the significant issues of technical feasibility (e.g., low exhaust gas temperatures, high volumetric flow rates of exhaust gas, and low concentrations of formaldehyde), adverse environmental impacts in the form of increased energy use, and the tremendous additional cost associated with use of this technology, we determined that a standard based on use of thermal catalytic oxidation was not a viable beyond-the-floor option. Since there is no other form of emission control or work practice to control formaldehyde emissions from indurating furnaces, the site-specific GCP documented in the operation and maintenance plan were also determined as the MACT floor for formaldehyde

emissions from new indurating furnace sources.

We further find that under CAA section 112(h)(1), it is not feasible to prescribe or enforce an emission standard for HAP because at-the-stack controls are not feasible (as explained earlier), and monitoring parameters related to GCP can only meaningfully result in minimization of PIC emissions if such monitoring parameters are quantified on a site-specific basis.

Since it is not possible to identify any uniform requirements or set of work practices that would meaningfully reflect the use of GCP, the final rule requires each source to identify site-specific work practices for each indurating furnace and to document these GCP in an operation and maintenance plan in accordance with §63.9600 of the final rule. A GCP control strategy could include a number of combustion conditions and work practices which, applied collectively, promote good combustion performance and minimize the formation of formaldehyde/PIC emissions. Thus, the MACT requirement for these sources is to use GCP, and for each source to develop an operation and maintenance plan that details appropriate operating parameters for each of the following elements of GCP, or explains why such operating parameters are either inappropriate or unnecessary for the source (“inappropriate” or “unnecessary” to be determined by the degree to which PIC formation from fuel combustion in the furnace is minimized):

- Proper operating conditions for each indurating furnace (e.g., minimum combustion temperature, maximum CO concentration in the furnace exhaust gases, burner alignment, or proper fuel-air distribution/mixing).
- Routine inspection and preventative maintenance and corresponding schedules of each indurating furnace.
- Performance analyses of each indurating furnace.
- Keeping applicable operator logs.
- Keeping applicable records to document compliance with each element.

A source’s compliance with its startup, shutdown, and malfunction plan also will contribute to GCP.

A final determination that the values established in the operation and maintenance

plan are appropriate GCP for the source would then be achieved by submitting the plan to the Administrator on or before the compliance date that is specified in §63.9583 of the final rule for the affected source. The operation and maintenance plan must explain why the chosen elements and work practices are considered GCP for the affected source. The quantified parameters (e.g., furnace operating temperature) contained in the plan become enforceable operating conditions unless and until the Administrator acts to establish new parameters.

The Administrator will evaluate the demonstration and determine whether the chosen elements and work practices minimize the formation of formaldehyde (and other PIC) and so constitute GCP for the furnace. The Administrator will review the adequacy of the site-specific procedures and the records to demonstrate that the plan constitutes GCP. If the Administrator determines that any portion of the plan is not adequate, we can reject those portions of the plan and request additional information addressing the relevant issues.

Finally, with respect to the commenter's point that EPA is obligated to establish MACT standards for formaldehyde, EPA has established such standards, based on GCP implemented by means of an operation and maintenance plan and site-specific determinations through the permitting process, as explained above.

2.11.4 HCl and HF

Comment: One commenter (IV-D-06) stated that EPA has a clear statutory obligation to set emission standards for each listed HAP, including HCl and HF. The commenter asserted that, just because plants are achieving some incidental control of acid gases, it does not free EPA of its statutory obligation to set a specific emission limit for HCl and HF. Two commenters (IV-D-05, IV-D-06) stated that EPA must set a standard for HCl and HF that reflects, at a minimum, the average emission level achieved by the five best performing plants. One commenter (IV-D-05) cited the National Lime opinion which states "The CAA requires EPA to set MACT floors upon the average emission limitation achieved; it nowhere suggests that this achievement must be the product of specific intent."

One commenter (IV-D-06) stated that EPA's rejection of beyond-the-floor standards for HCl and HF is not logical when a technology is available and substantially reduces HAP. The commenter contended that available acid gas control technology would yield a far greater degree of reduction than is required by EPA's proposed standards, which require no reduction at all.

Response: Acid gases (HCl and HF) are formed in the indurating furnace due to the presence of chlorides and fluorides in pellet additives, such as dolomite and limestone, as well as in the ore bodies. The taconite industry has not installed equipment specifically for the purpose of controlling acid gases from indurating furnace stacks, but, as the commenters correctly note, intent is irrelevant in determining HAP control (National Lime). What matters is the extent of control, where control in fact occurs. Test data for HCl and HF emissions were available from seven indurating furnaces at six taconite plants. Since most of the furnaces have multiple stacks, these tests represent emissions from fifteen control devices: 8 venturi scrubbers, 2 multiclones, 3 dry ESP, and 2 wet ESP. These data show that, except for emissions from stacks controlled with multiclones, HCl and HF are emitted from indurating furnaces at very low concentrations, typically less than 3 ppm.

Of the six plants for which HCl and HF test data were available, three plants conducted PM emissions tests concurrently with the HCl and HF tests. These tests represent emissions from 3 furnaces and 8 emission control devices: 4 venturi scrubbers, 2 multiclones, and a dry ESP/wet ESP ducted together. An analysis of the HCl and HF emissions data and the corresponding PM emissions data indicates that, for this industry, there is a correlation between acid gas and PM emissions from control devices on indurating furnaces. Specifically, the data indicate that stacks with higher PM emissions also have higher acid gas emissions, and likewise, stacks with lower PM emissions have lower acid gas emissions ("Correlation of Acid Gas Emissions to PM Emissions for Taconite Indurating Furnaces," July 2003). Consistent with this correlation, the best performing sources for PM are also the best performing for acid gas emissions.

There is an engineering basis for this correlation. Due to the strong affinity of acid gases for water, PM control equipment that uses water, such as wet scrubbers and

wet ESP, has the capability of reducing HCl and HF emissions substantially. Therefore, wet scrubbers and wet ESP control technologies used for the reduction of PM emissions from taconite indurating furnaces to achieve the MACT level of control for HAP metals are expected to achieve a reduction of acid gas emissions as well. Standards requiring good control of PM emissions for this industry will also achieve control of acid gas emissions. For the taconite industry, PM emissions can be used as a surrogate for the acid gases emitted from taconite indurating furnaces. Therefore, we are establishing standards for total PM as a surrogate pollutant for the acid gases, HCl and HF. This finding is valid only for these taconite indurating furnace data; data for other industries may not show a correlation between acid gas emissions and PM emissions. Therefore, this finding should not be used as a precedent in other rulemakings.

Establishing separate standards for acid gases would impose costly and significantly more-complex compliance and monitoring requirements. In addition, establishing separate standards for acid gases would achieve little, if any, HAP emissions reductions beyond what would be achieved using the total PM surrogate pollutant approach. Consequently, EPA has chosen to establish a standard for acid gases using the PM surrogate. Therefore, the MACT floor level of control for acid gases is equivalent to (and expressed as) the MACT floor level of 0.01 gr/dscf for PM.

We then examined the beyond-the-floor option. The next increment of control beyond the floor is the installation of venturi scrubbers or dry ESP capable of meeting a PM concentration limit of 0.006 gr/dscf, which is equivalent to the level of PM control required for new furnaces. We estimate the additional capital cost of going from the MACT level of 0.01 gr/dscf for PM to 0.006 gr/dscf to be \$99.7 million per year. We estimate the corresponding additional reduction in acid gases achieved by this PM level to be 112 tons of acid gases. The cost per ton of acid gas is \$890,000/ton. The energy increase would be expected to be 53,436 mega-watt hours per year, primarily due to the energy requirements of new wet scrubbers and dry ESP. (Beyond-the-Floor Analysis for Acid Gases, July 2003). The high cost, the small reduction in HAP emissions, and the additional energy requirements do not justify this beyond-the-floor alternative for acid gases. Consequently, we chose the MACT floor level of control for PM of 0.01 gr/dscf

as the existing indurating furnace MACT for acid gases. New source MACT for acid gases is equivalent to the PM new source MACT level of 0.006 gr/dscf.

By establishing a standard for acid gases, we have addressed the commenters' point that the Agency is legally obligated to do so.

2.11.5 PM as a Surrogate for Metallic HAP

Comment: One commenter (IV-D-06) asserted that EPA cannot use a surrogate when doing so would result in regulations that do not include emission standards for each listed HAP or in standards that do not at least match the average emission level that the best sources achieve. The commenter pointed out that the Court has already held that the use of PM as a surrogate for non-mercury metals is not reasonable and, therefore, not lawful where factors other than PM control affect emissions of such metals (National Lime). The commenter reasoned that, since each plant's actual metallic HAP emission levels are influenced not just by PM control technology but also to a very large extent by the HAP metal content in the ore used, the use of PM as a surrogate for non-mercury metals is unlawful.

The commenter stated that, in the past, EPA has recognized that it can set standards for groups of metals that behave similarly (for example, in the hazardous waste combustors rule). The commenter asserted that EPA has no basis for assuming that its only two options are either to set a PM standard for all HAP or to set individual emission standards for each HAP. The commenter stated that EPA must explain why it cannot set emission standards for groupings of metals or for representative surrogate metals rather than just a PM standard.

The commenter explained that the correlation of PM to any given metal varies with the volatility of the metal in question; therefore, EPA cannot assume that all the metals emitted by taconite plants will consistently behave as PM. The commenter stated that different PM control devices have different collection efficiencies for different metals. Therefore, the commenter stated that, even if all taconite plants had identical HAP metal input, EPA could not assume that any two plants have identical (or even similar) emission rates for any given metal.

Two commenters (OAR-2002-0039-0006, IV-D-03) supported using PM as a surrogate for total HAP emissions. The commenters stated that “it is far more appropriate to use PM for total metal HAP than to attempt to specialty individual metal HAP. The earthen material that is processed is not necessarily identical in composition in each and every shovelful of material. It would be impossible to account for differences in individual HAP metal content for each load processed.”

Response: We disagree with the first commenter; PM is a valid surrogate for the HAP metal compounds emitted from taconite iron ore processing plants. As indicated in the preamble to the proposed rule, metallic HAP are emitted from ore crushing and handling units, indurating furnaces, finished pellet handling units, and ore dryers. We determined that it is not practical to establish individual standards for each metallic HAP that could be present in the various processes (e.g., separate standards for manganese compound emissions, separate standards for lead compound emissions, and so forth for each metal compound group listed as HAP that is potentially present).

A key parameter for the control of both semi-volatile and non-volatile metal compounds is the operating temperature of the air pollution control device that is applied. At temperatures of 200 to 400 °F, the range typical of control devices applied to emissions from taconite indurating furnaces, any semi-volatile and non-volatile HAP metal compounds present, except elemental mercury, would exist in the form of fine PM and, therefore, would be controlled in direct relationship to PM. As a result, strong correlations exist between PM emissions and emissions of the individual metallic HAP compounds. Control technologies used for the reduction of PM emissions achieve comparable levels of reduction of metallic HAP emissions. Standards requiring good control of PM emissions will also achieve a similar level of control of metallic HAP emissions. Therefore, we are establishing standards for total PM as a surrogate pollutant for the individual metallic HAP. Establishing separate standards for each metallic HAP would impose costly and significantly more complex compliance and monitoring requirements. In addition, establishing separate standards for each metallic HAP would achieve little, if any, HAP emissions reductions beyond what would be achieved using the total PM surrogate pollutant approach.

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