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National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category; and Addition to Source Category List for Standards; Final Rule

**ENVIRONMENTAL PROTECTION AGENCY****40 CFR Parts 9 and 63**

[EPA-HQ-OAR-2010-0239; FRL-9242-3]

RIN 2060-AP48

**National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category; and Addition to Source Category List for Standards****AGENCY:** Environmental Protection Agency (EPA).**ACTION:** Final rule.

**SUMMARY:** EPA is adding the gold mine ore processing and production area source category to the list of source categories to be regulated under Section 112(c)(6) of the Clean Air Act due to its mercury emissions. EPA is also promulgating national emission standards for hazardous air pollutants to regulate mercury emissions from this source category.

**DATES:** This final rule is effective on February 17, 2011. The incorporation by reference of certain publications listed in the final rule is approved by the Director of the **Federal Register** as of February 17, 2011.

**ADDRESSES:** EPA has established a docket for this action under Docket ID No. EPA-HQ-OAR-2010-0239. All documents in the docket are listed on the <http://www.regulations.gov> Web site. Although listed in the index, some information is not publicly available, e.g., Confidential Business Information (CBI) or other information whose disclosure is restricted by statute.

Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through [www.regulations.gov](http://www.regulations.gov) or in hard copy at the EPA Headquarters Library, Room Number 3334, EPA West Building, 1301 Constitution Ave., NW., Washington, DC. The EPA/DC Public Reading Room hours of operation are 8:30 a.m. to 4:30 p.m. Eastern Standard Time (EST), Monday through Friday. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket and Information Center is (202) 566-1742.

**FOR FURTHER INFORMATION CONTACT:** Mr. Chuck French, Sector Policies and Program Division, Office of Air Quality Planning and Standards (D243-02), Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-7912; fax number (919) 541-3207, e-mail address: [french.chuck@epa.gov](mailto:french.chuck@epa.gov).

**SUPPLEMENTARY INFORMATION:** The information presented in this preamble is organized as follows:

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**I. General Information****A. Does this action apply to me?**

The regulated categories and entities potentially affected by this final rule include:

| Category                           | NAICS code <sup>1</sup> | Examples of regulated entities                                                                                                                                                                                                                                                                                                 |
|------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Industry:<br>Gold Ore Mining ..... | 212221                  | Establishments primarily engaged in developing the mine site, mining, and/or beneficiating ( <i>i.e.</i> , preparing) ores valued chiefly for their gold content. Establishments primarily engaged in transformation of the gold into bullion or dore bar in combination with mining activities are included in this industry. |

<sup>1</sup> North American Industry Classification System.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be affected by this action. To determine whether your facility would be regulated by this action, you should examine the applicability criteria in 40 CFR 63.11640 of subpart EEEEEEE (National Emission Standards for Hazardous Air Pollutants (NESHAP): Gold Mine Ore Processing and Production Area Source Category). If you have any questions regarding the applicability of this action to a

particular entity, consult either the air permit authority for the entity or your EPA Regional representative, as listed in 40 CFR 63.13 of subpart A (General Provisions).

**B. Where can I get a copy of this document?**

In addition to being available in the docket, an electronic copy of this final action will also be available on the Worldwide Web (WWW) through the EPA Technology Transfer Network (TTN). Following signature, a copy of

this final action will be posted on the TTN's policy and guidance page for newly proposed or promulgated rules at the following address: <http://www.epa.gov/ttn/oarpg/>. The TTN provides information and technology exchange in various areas of air pollution control.

**C. Judicial Review**

Under Section 307(b)(1) of the Clean Air Act (CAA), judicial review of this final rule is available only by filing a petition for review in the U.S. Court of

Appeals for the District of Columbia Circuit by April 18, 2011. Under section 307(d)(7)(B) of the CAA, only an objection to this final rule that was raised with reasonable specificity during the period for public comment can be raised during judicial review. Moreover, under section 307(b)(2) of the CAA, the requirements established by this final rule may not be challenged separately in any civil or criminal proceedings brought by EPA to enforce these requirements.

Section 307(d)(7)(B) also provides a mechanism for us to convene a proceeding for reconsideration, “[i]f the person raising an objection can demonstrate to EPA that it was impracticable to raise such objection within [the period for public comment] or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule.” Any person seeking to make such a demonstration to us should submit a Petition for Reconsideration to the Office of the Administrator, U.S. EPA, Room 3000, Ariel Rios Building, 1200 Pennsylvania Ave., NW., Washington, DC 20460, with a copy to the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

## II. Addition to Section 112(c)(6) Source Category List

For reasons stated in the preamble to the proposed rule (75 FR 22470, April 28, 2010), we are adding the gold mine ore processing and production area source category to the list of source categories under section 112(c)(6) on the basis of its mercury emissions. The preamble for the proposed rule provides a description of this industry including the processes used and the typical control technologies applied.

## III. What is the statutory authority and regulatory approach for the proposed standards?

As explained in the preamble to the proposed rule, CAA section 112(c)(6) requires that EPA set standards under section 112(d)(2) or (d)(4). The mercury standards for the gold mine ore processing and production area source category are being established under CAA section 112(d)(2), which requires maximum available control technology (MACT) level of control. Under CAA section 112(d), the MACT standards for existing sources must be at least as stringent as the average emissions limitation achieved by the best performing 12 percent of existing sources (for which the administrator has emissions information) for source

categories and subcategories with 30 or more sources, or the best performing 5 sources for categories and subcategories with fewer than 30 sources (CAA section 112(d)(3)(A) and (B)). This level of minimum stringency is called the MACT floor. For new sources, MACT standards must be at least as stringent as the emission control that is achieved in practice by the best controlled similar source (CAA section 112(d)(3)). EPA also must consider more stringent “beyond-the-floor” control options. When considering beyond-the-floor options, EPA must consider not only the maximum degree of reduction in emissions of HAP, but must take into account costs, energy, and nonair quality health and environmental impacts when doing so.

## IV. Summary of Significant Changes Since Proposal

This section summarizes the significant changes to the rule since proposal. Additional information on the basis for these changes and other changes can be found in the Summary of Responses to Major Comments in section V of this preamble and in the Summary of Comments and Responses document which is available in the docket for this action.

### A. Applicability

We have clarified in § 63.11651 of the final rule that the term “gold mine ore processing and production facility” does not include individual prospectors and very small pilot scale mining operations. These types of operations are very small and were not included in the section 112(c)(6) inventory that was the basis for the listing of the gold mine ore processing and production source category.

### B. Final Emission Standards

We have made changes to all of the proposed emission standards as the result of the following developments: (1) Inclusion of additional emissions test data received since proposal;<sup>1</sup> (2) additional analyses in response to public comments on the proposed rule;<sup>2</sup> and (3) further review of the data used to develop the standards for the proposed rule. The changes are summarized below and described in more detail in section V of this

<sup>1</sup> The new test data used in final MACT standard calculations can be found in the docket as docket items: EPA-HQ-OAR-2010-0239-0359 and EPA-HQ-OAR-2010-0239-0360.

<sup>2</sup> Analyses for the final MACT standards can be found in the docket in the document titled: “Development of the MACT Floors and MACT for the Final NESHAP for Gold Mine Ore Processing and Production” (also known as the “MACT Development Document”).

preamble. We estimate the final MACT standards will reduce mercury emissions from gold mine ore processing and production down to a level of about 1,180 pounds per year, which will be an estimated 77 percent reduction from the 2007 emissions level (5,000 lb/yr), a 95 percent reduction from year 2001 emissions level (about 23,000 lb/yr), and more than 97 percent reduction from uncontrolled emissions levels (more than 37,000 lb/yr).

### Ore Pretreatment Processes

In the proposed rule, the proposed mercury emission standards for both existing and new ore pretreatment processes were 149 pounds per million tons of ore processed (lb/million tons of ore). In the final rule, the emission standard for existing sources is 127 lb/million tons of ore; and for new sources the emission standard is 84 lb/million tons of ore. The final emission standards are based on several changes to the data set used in the MACT analysis. Since we issued the proposed rule, we collected emissions data from more recent tests that were not available at proposal. Further, we learned that two emissions tests that we used to develop the MACT floor in our proposed rule had been invalidated by the Nevada Division of Environmental Protection (NDEP), and we removed those test results from the database. Information on the specific tests invalidated and the rationale are available in the docket (docket item number EPA-HQ-OAR-2010-0239-0061). We also discovered that the test data for a unit within the ore pretreatment affected source at a facility should have been included as part of a different unit at the same facility. We have also dropped the data for one facility from the analysis because their autoclave was shut down in 2007 and dismantled, and the only test data we had for them was one test of the autoclave when it was operating in 2006. Moreover, we conducted additional beyond-the-floor analyses for the ore pretreatment affected source. The new information and analyses described above are discussed in more detail in section V.C of this preamble and in the MACT Development Document which is available in the docket for this rulemaking.

The resulting data set included emissions data for four facilities that ranged from 45 to 165 lb/million tons of ore. Based on these data, and using the same upper prediction limit (UPL) approach used for proposal to account for variability, we determined the MACT floor to be 158 lb/million tons of ore for existing sources of ore pretreatment processes and 84 lb/

million tons of ore for new sources. As explained in the proposed rule (75 FR at 22482), the technologies that we estimate are needed to achieve the MACT floor level of performance for existing ore pretreatment processes include calomel-based mercury scrubbers on roasters and venturi scrubbers on autoclaves and ancillary roaster operations. The preamble to the proposed rule provides a description of the UPL and the approach and calculations used to derive the UPL. The UPL is also discussed further in section V.

In our beyond-the-floor analysis, we evaluated the potential to add condensers and carbon adsorbers to control autoclaves, and the potential to add carbon adsorbers to control the ore pre-heaters. Based on this beyond-the-floor analysis, we concluded that it is feasible and cost-effective to establish the MACT standard for existing sources at a level lower than the MACT floor. Based on the analysis, we determined the MACT standard for existing sources to be 127 lb/million tons of ore. For new sources, we determined that it was not feasible and cost-effective to establish a standard lower than the new source MACT Floor (of 84 lb/million tons); therefore the MACT standard for new sources was determined to be 84 lb/million tons.

The technologies needed to achieve the new source MACT floor will depend on the types of ore processed, amount of mercury in the ore, and specific process units used. Nevertheless, we conclude that, at a minimum, the controls that would be needed would include calomel-based mercury scrubbers on roasters and venturi scrubbers on autoclaves and ancillary roaster operations. Additional controls that will likely be needed to achieve emissions at or below the new source MACT floor level include condensers and carbon adsorbers on autoclaves, and carbon adsorbers on ore preheaters.

Table 1 summarizes the MACT floor analysis for existing and new ore pretreatment processes. The beyond-the-floor analyses are explained further in section V of this preamble and in more detail in the MACT Development document.

TABLE 1—MACT FLOOR RESULTS FOR ORE PRETREATMENT PROCESSES

| Facility | Average performance (lb/million tons of ore) |
|----------|----------------------------------------------|
| A .....  | 45                                           |
| C .....  | 56                                           |
| E .....  | 71                                           |

TABLE 1—MACT FLOOR RESULTS FOR ORE PRETREATMENT PROCESSES—Continued

| Facility                                                                          | Average performance (lb/million tons of ore) |
|-----------------------------------------------------------------------------------|----------------------------------------------|
| D .....                                                                           | 165                                          |
| Average of the 4 facilities .....                                                 | 84                                           |
| 99% UPL for existing sources (i.e., the MACT Floor for existing sources) .....    | 158                                          |
| 99% UPL for new sources <sup>1</sup> (i.e., the MACT Floor for new sources) ..... | 84                                           |

<sup>1</sup> The MACT Floor for new sources is based on the average performance of Facility A (i.e., 45) plus an amount to account for variability (i.e., 45 + 39 = 84).

#### Carbon Processes

Under the proposed rule, all carbon processes were subject to the same proposed mercury emissions limits of 2.6 pounds per ton of concentrate (lb/ton of concentrate) for existing sources and, for new sources, either 0.14 lb/ton of concentrate or 97 percent reduction in uncontrolled mercury emissions. These limits would have applied to facilities that operate mercury retorts and facilities that do not operate mercury retorts. In the final rule, we distinguish between carbon processes with mercury retorts and carbon processes without mercury retorts because we believe there are unique differences in these two types of processes. Therefore, the final rule specifies separate emission standards for these two types of processes. Moreover, the final emission standards for carbon processes reflect inclusion of new test data that were not available at proposal. We also revised our data set based on new information that we received since proposal which impacted which sources were among the best performing sources. Based on the data that we have, there are 10 facilities that have carbon processes with mercury retorts, and we have mercury emissions data for all 10 of these facilities. There are approximately 7 facilities that have carbon processes without mercury retorts, and we have comprehensive and reliable mercury emissions data for 2 of these facilities. These 2 facilities are the best controlled facilities within that group based on the information we have. (See section V for further details.) For carbon processes with mercury retorts, the emission standard in the final rule is 2.2 lb/ton of concentrate for existing sources and 0.8 lb/ton of concentrate for new sources. For carbon processes without mercury retorts, the emission standard in the final rule is

0.17 lb/ton of concentrate for existing sources and 0.14 lb/ton of concentrate for new sources.

For carbon processes, regardless of whether the facility operates a mercury retort, we estimate that to meet the MACT floor facilities would generally need to have mercury condensers and carbon adsorbers to control mercury emissions. We also considered beyond-the-floor options for both existing and new sources for these process groups, which were based on the addition of a second carbon adsorber; however, we rejected those options because they are not cost effective. Additional information on the analyses performed can be found in the MACT Development document in the docket for this rulemaking.

We also eliminated in the final rule the compliance alternative of 97 percent reduction for new carbon processes. After reviewing the comments received on this proposed alternative standard and giving further consideration to the practicality of how it would be measured, we concluded that this option would be difficult to implement, particularly when multiple processes that are operated at different times vent to a single control device and stack. In addition, we have limited data supporting this compliance alternative. In proposing this alternative for comment, we had hoped to, but did not, receive additional data indicating that the 97 percent reduction option would be equivalent to the proposed new source limit of 0.14 pounds of mercury per ton of concentrate. For the reasons stated above, we eliminated the 97 percent control efficiency option for new carbon processes in the final rule.

Table 2 summarizes the results of the MACT floor analysis for carbon processes with mercury retorts, and Table 3 summarizes the analysis for carbon processes without mercury retorts.

TABLE 2—MACT FLOOR RESULTS FOR CARBON PROCESSES WITH MERCURY RETORTS

| Facility | Average performance (lb/ton of concentrate) |
|----------|---------------------------------------------|
| N .....  | 0.53                                        |
| J .....  | 0.74                                        |
| I .....  | 1.06                                        |
| A .....  | 1.47                                        |
| H .....  | 1.67                                        |
| D .....  | 2.20                                        |
| C .....  | 3.71                                        |
| G .....  | 8.17                                        |
| E .....  | 14.49                                       |
| B .....  | 20.60                                       |

TABLE 2—MACT FLOOR RESULTS FOR CARBON PROCESSES WITH MERCURY RETORTS—Continued

| Facility                                                                            | Average performance (lb/ton of concentrate) |
|-------------------------------------------------------------------------------------|---------------------------------------------|
| Average of top 5 .....                                                              | 1.1                                         |
| 99% UPL for existing sources ( <i>i.e.</i> , MACT Floor for existing sources) ..... | 2.2                                         |
| 99% UPL for new sources ( <i>i.e.</i> , MACT Floor for new sources) .....           | 0.8                                         |

TABLE 3—MACT FLOOR RESULTS FOR CARBON PROCESSES WITHOUT MERCURY RETORTS

| Facility                                                                            | Average performance (lb/ton of concentrate) |
|-------------------------------------------------------------------------------------|---------------------------------------------|
| M .....                                                                             | 0.058                                       |
| F .....                                                                             | 0.098                                       |
| Average of top 2 facilities .....                                                   | 0.078                                       |
| 99% UPL for existing sources ( <i>i.e.</i> , MACT Floor for existing sources) ..... | 0.17                                        |
| 99% UPL for new sources ( <i>i.e.</i> , MACT Floor for new sources) .....           | 0.14                                        |

## Non-Carbon Concentrate Processes

Under the proposed rule, the mercury emission standards for non-carbon concentrate processes were 0.25 lb/ton of concentrate for existing sources and 0.2 lb/ton of concentrate for new sources. In the final rule, the emission standards for these sources are 0.2 lb/ton of concentrate for existing sources and 0.1 lb/ton of concentrate for new sources. These standards are based on using new emissions data that were not available when we developed the proposal, along with the data that were used for the proposal. For non-carbon concentrate processes, we estimate that to meet the MACT floors, for both existing and new sources, facilities would generally need to control mercury emissions using mercury condensers and carbon adsorbers. As explained in the proposed rule, we considered beyond-the-floor controls for these processes (which were based on adding a second carbon adsorber to the MACT floor level controls) but concluded those controls would not be a cost-effective option. There are approximately 3 facilities in the U.S. that use these types of processes. We have emissions tests data for 2 of these facilities.

Table 4 summarizes the results of the MACT floor analysis for non-carbon concentrate processes.

TABLE 4—MACT FLOOR RESULTS FOR NON-CARBON CONCENTRATE PROCESSES

| Facility                                                                            | Average performance (lb/ton of concentrate) |
|-------------------------------------------------------------------------------------|---------------------------------------------|
| K .....                                                                             | 0.047                                       |
| L .....                                                                             | 0.078                                       |
| Average of 2 facilities .....                                                       | 0.062                                       |
| 99% UPL for existing sources ( <i>i.e.</i> , MACT Floor for existing sources) ..... | 0.2                                         |
| 99% UPL for new sources ( <i>i.e.</i> , MACT Floor for new sources) .....           | 0.1                                         |

## C. Compliance Dates

In the final rule, we provide in § 63.11641 that the compliance date for existing sources is 3 years after promulgation of the final rule as opposed to 2 years as proposed. We reviewed the information provided in public comments on the challenges of installing new controls, especially for autoclaves, which, although the controls have not yet been demonstrated, have been proposed by facilities with autoclaves in their Nevada Mercury Control Program (NMCP) permit applications. We also considered the installation of new controls on the roaster preheaters, which also have not yet been demonstrated, but have been proposed by these facilities in their NMCP permit applications. We concluded that allowing 3 years for existing sources to comply is appropriate, given the complexity of the sources, the combinations of control devices that are needed in many cases, and the amount of time necessary for designing, installing, testing, and commissioning additional emission controls for mercury.

## D. Compliance Requirements

Section 63.11646(a)(1) of the final rule does not include Method 30A, as was proposed, as an appropriate method for determining mercury concentration because it is not yet in general use. This paragraph further clarifies that the use of ASTM D6784–02 and Method 30B are allowed for compliance tests only if approved by the permit authority as opposed to automatically being allowed as in the proposal. The final rule also does not include the requirement to follow the acetone rinse procedures and the absence of cyclonic flow determination requirement, which were in subparagraphs (v) and (vi)

respectively of our proposed § 63.11646(a)(1). Method 29 already includes requirements for the acetone rinse, so there is no need to specify those procedures in the rule; and Method 1, which is required by the rule, addresses the issue of cyclonic flow.

In § 63.11646(a)(2), we changed the minimum sample volume when Method 29 is used to determine compliance from the proposed 60 dry standard cubic feet (dscf) to 30 dscf. We believe this volume is adequate for detecting mercury in the samples and determining mercury emissions for this industry. We have also expanded this section to address non-detect values. If the emission testing results for any of the emission points yield a non-detect value, the final rule requires that the minimum detection limit (MDL) be used to calculate the mass of emissions (in pounds of mercury) for that emission point that would subsequently be used in the calculations to determine if the source is in compliance with the MACT standard. If the resulting calculations indicate that mercury emissions are greater than the MACT emission standard, the owner or operator may repeat the mercury emissions testing one additional time for any emission point for which the measured result was below the MDL using procedures that produce lower MDL results. If this additional testing is performed, the results from that testing must be used to determine compliance.

For sources with multiple emission units (*e.g.*, two roasters) ducted to a common control device and stack, we have clarified in § 63.11646(a)(3) that compliance testing must either be performed with all affected emissions units in operation, if this is possible, or units must be tested separately. We also clarified that the establishment of operating limits for units that share a common stack can be based on emissions when all process units are operating together, or based on testing units separately. However, this requirement does not affect the frequency and schedule for monitoring, which are specified in the rule. If facilities have batch type processes that cannot be operated simultaneously, then the facility can test some or all of the units individually.

In § 63.11646(a)(6) and (7), we clarify that the production data used in compliance determinations are based on full calendar months. For the initial compliance test, data for all the full calendar months between publication of the final rule and the initial compliance test must be used. This initial compliance determination must include at least one full month of production

data (e.g., hours of operation, and million tons of ore processed or tons of concentrate processed) including the month the test was conducted. For subsequent annual compliance tests, data for the 12 full calendar months prior to the annual compliance test must be used to demonstrate compliance. In addition, we clarify in paragraphs § 63.11646(a)(5), (6) and (7) that compliance determinations are based on the number of 1-hour periods each process unit operates. By using the 1-hour period terminology, the final rule language is consistent with the terminology used in the General Provisions to part 63.

Because the final rule does not include the 97 percent reduction option that was in § 63.11645(e)(2) of the proposed rule, we have removed from the final rule the compliance requirement for that option that was in § 63.11646(b) of the proposed rule, which addressed testing the inlets and outlets for sources choosing that proposed option.

#### *E. Monitoring Requirements*

Section 63.11647(a) of the final rule includes an additional option for monitoring mercury emissions from roasters. The proposed rule specified two options for monitoring mercury emissions: Paragraph (a)(1) specified weekly sampling using PS 12B; and paragraph (a)(2) specified continuous emissions monitoring system (CEMS). In the final rule, we added paragraph (a)(3) to provide a third option of continuous sampling using PS 12B. In addition, paragraph (a)(1) in the final rule was changed to require sampling at least twice per month using either PS 12B or Method 30B rather than weekly. We believe that Method 30B is an acceptable alternative method for monitoring purposes and allows owners and operators more flexibility in how they monitor roaster emissions. We also believe that sampling twice per month coupled with extensive parametric monitoring of control devices (as explained below) is sufficient for the monitoring option in paragraph (a)(1).

Section 63.11647(a)(4)(iii) of the proposed rule would have required additional compliance testing if the mercury concentration in the ore fed to the roaster was higher than any concentration measured in the previous 12 months. We have removed this requirement from the final rule because it is not clear that the mercury content of the ore has a significant effect on the performance of mercury scrubbers applied to roasters, which are designed to handle and operate efficiently for a

range of mercury inlet concentrations. In addition, condensers are used to recover liquid elemental mercury prior to the mercury scrubber, and any increase in mercury loading would likely result in an increase in the recovery of elemental mercury.

The final rule incorporates several changes to § 63.11647(b), which addresses monitoring of calomel-based mercury scrubbers (*i.e.*, mercury scrubbers) that are used to control emissions from roasters. The proposed rule required monitoring of the scrubber liquid flow, liquid chemistry, scrubber pressure drop, and scrubber inlet gas temperature hourly. The final rule does not include the requirement to monitor pressure drop across calomel-based scrubbers because we conclude that pressure drop is not related to mercury emission control performance by this type of control device. In addition, the final rule allows hourly monitoring of the line pressure in the scrubber liquid supply line as an alternative to hourly monitoring of scrubber liquid flow rate. Line pressure monitoring is already in practice at some facilities and provides the same type of information as does liquid flow rate. As was proposed, the final rule allows the operating limit for scrubber liquid flow rate (or line pressure) and inlet gas temperature to be based on the minimum flow rate (or line pressure) or maximum inlet gas temperature established during the initial performance test. It also includes two additional options for setting these operating limits: (1) Based on the manufacturer's specifications if certain types of systems are designed to operate within a specified range of flow rates or temperatures; and (2) based on limits established by the permitting authority. If the facility chooses the option to establish the limits during initial compliance, the final rule requires the scrubber flow rate operating limit to be based on either the lowest value for any run of the initial compliance test or 10 percent less than the average value measured during the compliance test and the inlet gas temperature operating limit to be based on either the highest value for any run of the initial compliance test or 10 percent higher than the average value measured during the compliance test. This requirement takes into account the fact that, although initially the system may exhibit little variability from test run to test run, the short-term variability in performance may increase with time. Additional discussion of these changes can be found in section V.E of this preamble and in the Summary of Public

Comments and Responses document in the docket for this rulemaking.

In response to comments, we have revised the requirements for corrective action following control device monitoring parameter exceedances specified in § 63.11647(d). Under the final rule, if the corrective actions taken following an exceedance do not result in the parameter value (*e.g.*, liquid flow rate, line pressure, or inlet gas temperature) being returned to within the parameter range or limit within 48 hours, a mercury concentration measurement must be made to determine if the operating limit for mercury concentration is being exceeded. The measurement must be performed and the concentration determined within 48 hours after the initial 48 hours, or a total of 96 hours from the time the parameter was exceeded. If the measured mercury concentration meets the operating limit for mercury concentration, the corrective actions are deemed successful. In addition, the owner or operator may request approval from the permitting authority to change the parameter range or limit based on measurements of the parameter at the time the mercury concentration measurement was made. If, on the other hand, the measured mercury concentration indicates the operating limit for mercury concentration is exceeded, the exceedance must be reported as a deviation within 24 hours to the permitting authority, and the facility must perform a compliance test (pursuant to § 63.11647(d)) within 40 days to determine whether the source is in compliance with the MACT standard. We believe 40 days is appropriate because it may take 3 to 4 weeks to schedule and have the testing contractor on site, and, following completion of the test, another week or so to receive the final test results, and allows sufficient time to notify the permitting authority. We also removed the requirement that roasters must be shut down if a parameter is out of range.

In § 63.11647(a)(1)(ii) of the final rule, we require these same corrective actions described above (*i.e.*, measuring mercury concentration within 48 hours, reporting a deviation if the data show the operating limit was exceeded within 24 hours, and conducting a compliance test within 40 days) for exceedances of mercury concentration operating limits indicated by the results of the twice monthly monitoring using PS 12B or Method 30B, CEMS, or continuous monitoring using PS 12B. In such cases, the owner or operator must use the results of the compliance test to determine if the ore pretreatment

process affected source is in compliance with the emission standard. If the source is determined to be in compliance, the owner or operator may use this compliance test to establish a new operating limit for mercury concentration for the roaster. We also removed the requirement that roasters must be shut down if the mercury concentration is out of range.

In the final rule, § 63.11647(f)(1) requires monthly sampling of the exhaust stream of carbon adsorbers using Method 30B. The duration of sampling must be at least the minimum sampling time specified in Method 30B and up to one week. The proposed rule required a full week of such sampling, but, as pointed out by one of the commenters, breakthrough of the sampling trap from exhaust streams with high mercury concentrations could occur before a week had elapsed.

Section 63.11647(f)(2) of the final rule clarifies that sampling of the carbon bed must be collected from the inlet and outlet of the bed. This paragraph also specifies that, for carbon adsorbers with multiple carbon columns or beds, the sampling should be performed in the first and last column or bed rather than at the inlet or outlet.

We have deleted § 63.11647(f)(3) in the proposed rule, which allowed the carbon bed change-out rate to be determined based on historical data and the estimated life of the carbon. We have concluded that this method would not be adequate to ensure that breakthrough does not occur earlier than expected.

We have clarified § 63.11647(h) with respect to the monitoring of scrubbers (other than the calomel-based mercury scrubbers described above). Under the final rule, owners or operators are required to monitor and record water flow rate (or line pressure) and scrubber pressure drop once per shift; they also must record any occurrences when the water flow rate (line pressure) or pressure drop are outside the operating range, take corrective actions to return the water flow rate (line pressure) or pressure drop back in range, and record the corrective actions taken. At proposal, the water flow rate and pressure drop were to be monitored continuously. However, measuring the water flow rate (line pressure) and pressure drop once per shift will provide two to three measurements per day, and we believe that is sufficient to assure proper operations of the wet scrubber, and thus assure compliance with the emission standards. We have also added the option of monitoring the line pressure in the scrubber liquid supply line as an alternative to

monitoring scrubber liquid flow rate because line pressure monitoring is already in practice at some facilities and provides the same type of information as does liquid flow rate. As was proposed, the final rule allows the operating limit for water flow rate and pressure drop to be based on the minimum value during the initial performance test. It also includes two additional options for setting the operating limit: (1) Based on the manufacturer's specifications; and (2) based on limits established by the permitting authority. We have also clarified that, for scrubbers on autoclaves, the pressure drop parameter range should be established from manufacturer's specifications only.

#### *F. Definitions*

We have added a definition of carbon adsorber to § 63.11651 to clarify that this term, as used in the final rule, includes control devices consisting of a single fixed carbon bed, multiple carbon beds or columns, carbon filter packs or modules, and other variations of carbon adsorber design.

The definition of "gold mine ore processing and production facility" in § 63.11651 of the rule has been clarified to state that small operations, such as prospectors and very small pilot scale mining operations, that process or produce less than 100 pounds of concentrate per year are excluded from the source category. These prospectors and very small pilot-scale operations (that process at or below this level) were not included in the section 112(c)(6) inventory that was the basis for the listing of gold mine ore processing and production source category. These types of very small operations were not intended to be subject to the final rule, and we do not expect any significant emissions from them. We also clarified that the source category does not include facilities at which 95 percent or more of the metals produced are metals other than gold. For example, if other non-ferrous metals (such as copper, lead, nickel, or zinc) comprise 95 percent or more of the product, the facility is not part of the gold ore processing and production source category.

### **V. Summary of Responses to Major Comments**

#### *A. Statutory Requirements*

##### **1. Listing of the Gold Mine Ore Processing and Production Source Category Under Section 112(c)(6)**

*Comment:* One commenter stated that adding the gold mine ore processing and production category to the list of

categories required by Clean Air Act (CAA) section 112(c)(6) was correct and required because gold mines accounted for a significant portion of the aggregate emissions of mercury in the baseline year (1990) and because they still do so today. Other commenters stated that EPA does not have the authority to list gold mining processing and production as a source category under section 112(c)(6) and noted that section 112(c)(6) requires EPA to list, by 1995, categories of sources that make up 90 percent of the 1990 emissions for a subset of hazardous air pollutants (HAP), including mercury. The commenters said that EPA concluded its statutory listing obligation for mercury in 1998 with the publication of a list of source categories constituting 90 percent of aggregate mercury emissions, and that gold mining was not included on that list in 1998. In addition, the commenters said that the CAA requires EPA to list all categories under section 112(c)(6) by 1995 and complete issuance of standards for all listed sources by 2000, a task that would be impossible if EPA had the authority to add source categories ad infinitum.

*Response:* We appreciate the commenter's support in listing the gold mine processing and production area source category pursuant to section 112(c)(6). We disagree, however, with the commenters that assert that EPA is precluded from listing additional categories pursuant to section 112(c)(6). The commenters appear to be arguing that EPA is limited to a single listing opportunity under section 112(c)(6) and, having not listed gold mine ore processing and production in the initial 1998 listing effort, EPA is now foreclosed from doing so. There is nothing in the language of section 112(c)(6), however, that precludes EPA from listing additional source categories to the extent EPA determines that those categories are needed to meet the 90 percent requirement in section 112(c)(6). Indeed, the commenter's reading is contrary to the fundamental purpose of section 112(c)(6).

The core requirement of section 112(c)(6) is that EPA "shall \* \* \* list categories and subcategories of sources assuring that sources accounting for not less than 90 per centum of the aggregate emissions of each such pollutant" are subject to standards under either 11217FE0(d)(2) or (d)(4). EPA reasonably interprets section 112(c)(6) as allowing it to revise the list to add categories, where, as here, it determines that it needs the additional categories to meet the 90 percent requirement in section 112(c)(6). Indeed, EPA has previously revised the section 112(c)(6)

list to add a source category, where EPA determined that category was needed to meet its 90 percent requirement for mercury. *See* 72 FR 74087 (Dec. 28, 2007) (adding area source electric arc furnaces to the section 112(c)(6) list).

As explained in the proposed rule, we have a 1990 baseline emissions inventory, and it is against this baseline that we assess compliance with the 90 percent requirement for each of the pollutants specified in section 112(c)(6). EPA explained in the initial 1998 listing notice that it was using 1990 as the baseline year for assessing compliance with the 90 percent requirement. As EPA has developed emission standards for the sources included on the initial section 112(c)(6) list, it has acquired additional information on those sources and their emissions in 1990, which has resulted in some revisions to the 1990 baseline emissions inventory estimates. These revisions resulted in the need to regulate an additional source category. *See* 72 FR 74087 (setting standards for area source electric arc furnaces).

In addition to obtaining additional information concerning the source categories on the initial list, EPA has obtained additional information concerning the 1990 emissions of other sources. As explained in the preamble to the proposed rule, at the time of the initial section 112(c)(6) listing, there was very little available information on mercury emissions from gold mine ore processing and production. *See* 75 FR 22471. Because EPA lacked emissions information on mercury emissions from this source category at the time of the listing decision, EPA was unable to estimate the 1990 baseline mercury emissions from the gold mine ore processing and production source category and include this category in the first listing effort. Based on information that became available after the initial listing, EPA now finds that regulation of the area source gold mine ore processing and production category is needed to meet the 90 percent requirement for mercury. 75 FR 22471. Under the commenters' view, EPA cannot add any additional categories to the section 112(c)(6) list following the initial listing. If true, EPA could not meet its section 112(c)(6) obligation—a result Congress could not have intended. EPA reasonably interprets section 112(c)(6) in a manner that allows the Agency to achieve that provision's core requirement. EPA repeats that it sees nothing in the language or purpose of section 112(c)(6) that precludes it from listing additional source categories as needed.

Finally, Congress left to EPA's discretion which categories and

subcategories of sources to include on the section 112(c)(6) list. We have determined that we need the gold mine ore processing and production source category to meet the 90 percent requirement in section 112(c)(6) for mercury and are therefore now setting standards for that category.

We also reject the comment that the task of completing standards by 2000 would be impossible if EPA had the authority to add source categories. Nevertheless, EPA is under a court ordered deadline to complete section 112(c)(6) standards by January 16, 2011. (*Sierra Club v. EPA*, Consolidated Case No. 01–1537, D.D.C.).

*Comment:* Some commenters claimed that EPA did not provide an adequate basis for its 1990 emissions estimate for gold mining processing and production. Specifically, they questioned EPA's estimated emissions of 4.4 tons from this source category in the 1990 baseline year.

*Response:* Although the commenters question EPA's estimated emissions of 4.4 tons from this source category in the 1990 baseline year, they did not provide an alternative method for calculating such emissions or alternative data or assumptions that should be used. They also did not explain what they think the 1990 baseline emissions should have been. EPA continues to maintain that its baseline emissions estimate is reasonable. The methodology EPA used to derive that estimate is described in docket item EPA–HQ–OAR–2010–0239–0175.

*Comment:* Several commenters stated that Phase 2 permits under the Nevada Mercury Control Program (NMCP), which are scheduled for issuance by the end of 2010, will result in MACT-level controls on all thermal units at Nevada gold mines. According to the commenters, these permits are the culmination of a 7-year collaborative effort between NDEP and the gold mining industry to substantially reduce mercury emissions from gold mine processes. The commenters said that the proposal does not address how the NESHAP will result in reductions in mercury at gold mines in areas of the country other than Nevada, where the mercury content of the ore in gold mines is non-existent or only a fraction of the amount found in Nevada, and Nevada accounted for 99 percent of mercury emissions associated with gold mining operations in the United States. According to the commenters, this shows that if Nevada has an equivalent mercury control program for the gold mining industry, then there is nothing to be gained from imposing a Federal program, and if EPA acknowledges that

the mines in Nevada are already well controlled, then the listing of gold mining and the promulgation of an additional layer of regulation at substantial cost to industry, but with little environmental benefit, is both legally indefensible and practically unsupportable.

*Response:* As explained above, we are regulating the gold mine ore processing and production source category to meet the 90 percent requirement in section 112(c)(6) for mercury and are therefore setting standards for that category. Based on our 1990 baseline inventory for section 112(c)(6) and other emissions information for subsequent years, we estimate that this industry was among the top ten highest emitting categories of mercury emissions in the U.S. in 1990 and has remained in the top 10 since that time. Moreover, even though most emissions are from facilities located in Nevada, several commenters expressed serious concerns about the potential for mercury emissions from new gold mines in other States (e.g., Alaska). We share these concerns about potential emissions from new gold mine facilities. Finally, Congress left to EPA's discretion which categories and subcategories of sources to include on the section 112(c)(6) list. We are regulating the gold mine ore processing and production source category to meet the 90 percent requirement in section 112(c)(6) for mercury and are therefore now promulgating a Federal NESHAP for existing and new gold mine ore processing and production facilities.

## 2. Emission Standards for HAP Other Than Mercury

*Comment:* One commenter stated that CAA section 112(c)(6) provides that EPA must “list categories and subcategories of sources assuring that sources accounting for not less than 90 percent of each [enumerated] pollutant are subject to standards under subsection (d)(2) or (d)(4) of this section.” The commenter also stated that the D.C. Circuit has held repeatedly that when EPA sets standards for a category or subcategory of sources under section 112(d)(2), EPA has a statutory duty to set emission standards for each HAP that the sources in that category or subcategory emit (e.g., *National Lime Ass'n v. EPA*, 233 F.3d 625, 633–634 (D.C. Cir. 2000)). The commenter concluded that when EPA sets standards for gold mines under section 112(d)(2), as section 112(c)(6) requires it to do, EPA must set section 112(d)(2) emission standards for all the HAP that gold mines emit.

The commenter said that EPA appears to believe that because gold mines are



needed only to reach the section 112(c)(6) requirement of 90 percent for mercury and not for the other pollutants enumerated in section 112(c)(6), EPA's only obligation under section 112(c)(6) is to set section 112(d)(2) standards for mercury. The commenter said that section 112(c)(6) expressly requires EPA to issue section 112(d)(2) standards for the "sources" in the categories listed under section 112(c)(6), not some subset of the pollutants that those sources emit, and that section 112(d)(2) standards must include emission standards for each HAP that a source category emits. The commenter continued by stating that nothing in the CAA exempts EPA from this requirement. The commenter concluded that, had Congress wished to give EPA discretion to set standards for only some of the pollutants emitted by a category listed under section 112(c)(6), it would have done so expressly.

*Response:* EPA disagrees with the comment that, even though EPA lists a category under section 112(c)(6) due to the emissions of one or more HAP specified in that section, EPA must issue emission standards for all HAP (including HAP not listed in section 112(c)(6)) that sources in that category emit. The commenter cited in support the opinion by the United States Court of Appeals for the DC Circuit in *National Lime Ass'n v. EPA*, 233 F.3d 625, 633–634 (D.C. Cir. 2000)). The part of the National Lime opinion referenced in the comment dealt with EPA's failure to set emission standards for certain HAPs emitted by major sources of cement manufacturing because the Agency found no sources using control technologies for those HAP. In rejecting EPA's argument, the court stated that EPA has "a statutory obligation to set emission standards for each listed HAP." *Id.* at 634. The Court noted the list of HAP in section 112(b) and stated that section 112(d)(1) requires that EPA "promulgate regulations establishing emission standards for each category or subcategory of *major sources* \* \* \* of hazardous air pollutants listed for regulation. \* \* \*" *Id.* (Emphasis added). For the reasons stated below, we do not believe that today's final rule is controlled by or otherwise conflicts with the *National Lime* decision.

*National Lime* did not involve section 112(c)(6). That provision is ambiguous as to whether standards for listed source categories must address all HAP or only the section 112(c)(6) HAP for which the source category was listed. Section 112(c)(6) requires that "sources accounting for not less than 90 percent of the aggregate emissions of each such [specific] pollutant are subject to standards under subsection

(d)(2) or (d)(4)." This language can reasonably be read to mean standards for the section 112(c)(6) HAP or standards for all HAP emitted by the source. Under either reading, the source would be subject to a section 112(d)(2) or (d)(4) standard.

The commenter insists that once a section 112(d)(2) standard comes into play, all HAP must be controlled (per *National Lime*). But this result is not compelled by the pertinent provision, section 112(c)(6). That provision is obviously intended to ensure controls for specific persistent, bioaccumulative HAP, and this purpose is served by a reading which compels regulation under section 112(d)(2) only of the HAP for which a source category is listed under section 112(c)(6), rather than for all HAP.

The facts here support the reasonableness of EPA's approach. Gold mine ore processing is an area source category listed under section 112(c)(6) for regulation under section 112(d)(2) solely due to its mercury emissions. There is special statutory sensitivity to regulation of area source categories in section 112. For example, an area source category may be listed for regulation under section 112 if EPA makes an adverse effects finding pursuant to Section 112(c)(3) or if EPA determines that the area source category is needed to meet its section 112(c)(3) obligations to regulate urban HAP or its section 112(c)(6) obligations to regulate certain persistent bioaccumulative HAP. Therefore, unless an area source category emits a section 112(c)(3) urban HAP or a section 112(c)(6) HAP and EPA determines that such category is needed to meet the 90 percent requirement set forth in section 112(c)(3) and (c)(6), findings related to adverse human health or environmental effects are required before EPA can regulate that area source category—findings EPA is unable to make for non-mercury HAP emitted from the gold mine ore processing and production source category at this time. Moreover, to the extent EPA lists an area source category pursuant to section 112(c)(3) (whether that finding is based on adverse effects to human health or the environment or a finding that the source is needed to meet the 90 percent requirement in section 112(c)(3), the statute gives EPA discretion to set generally available control technology ("GACT") standards for such sources. 42 U.S.C. 7412(d)(5).

EPA does not interpret section 112(c)(6) to create a means of automatically compelling regulation of all HAP emitted by area sources unrelated to the core object of section

112(c)(6), which is control of the specific persistent, bioaccumulative HAP, and thereby bypassing these otherwise applicable preconditions to setting section 112(d) standards for area sources. Nor does *National Lime* address the issue, since the case dealt exclusively with major sources.<sup>3</sup> 233 F.3d at 633. Consequently, EPA disagrees with the comment that it is compelled to promulgate section 112(d)(2) MACT standards for all HAP emitted by gold mine ore processors.

### 3. Emission Standards for Fugitive Emissions

*Comment:* One commenter stated that gold mines have significant fugitive emissions of mercury, but that EPA did not propose standards for these emissions or mention them in its proposal. The commenter said that EPA has a statutory obligation to set standards for gold mine mercury emissions under section 112(d)(2) and (3), and must set emission standards for all the mercury emissions from the listed category. Another commenter described a recent preliminary study at two facilities in Nevada that found fugitive mercury air emissions from various non-point sources at those two mining operations such as from leach pads and tailings ponds.

One commenter stated that means to control fugitive emissions are available, such as enclosing their leaching operations. By enclosing the leaching process, the commenter believes that mines could eliminate this source of fugitive emissions. The commenter also stated that mines should not send tailings into open tailing ponds, but into closed treatment facilities that would remove mercury and other HAP from the tailings and prevent their release to the air. The commenter recommended that EPA evaluate the use of sulfur-based complexing agents for removing mercury during cyanidization of gold. According to the commenter, research indicates that these products appear useful for substantially reducing mercury in process solution during heap leaching.

*Response:* Due to the lack of information, we have not included fugitive mercury emissions at gold mine facilities in our 1990 baseline emission estimate (or in our more recent emissions estimates) for the gold mine ore processing and production area source category. Accordingly, these fugitive emissions are not part of the

<sup>3</sup> EPA acknowledges that major sources regulated under section 112 must be subject to MACT standards for all HAP emitted from the source category consistent with *National Lime*.

source category we are listing and regulating in this final rule. Other than the recent preliminary research at two facilities, we have no data on fugitive mercury emissions at gold mine facilities. The recent preliminary research suggests that some fugitive emissions may be occurring at these facilities from large non-point sources such as tailings ponds, leach fields and waste rock piles. However, it is our understanding that this preliminary research has not yet been published or peer-reviewed. Thus, at this juncture, we do not have sufficient information on fugitive emissions.

Furthermore, we have very little information on how these fugitive mercury emissions might be controlled. A few commenters suggested that certain compounds were available that may be useful for limiting these emissions. However, as far as we know, there has been no demonstration that these compounds would work effectively to limit the emissions, and we do not know the costs or potential adverse impacts of applying these chemicals. Therefore, we question the feasibility and practicality of applying these chemicals to limit fugitive mercury emissions from these non-point sources. We also question the feasibility and practicality of enclosing the leaching operations or the tailings ponds, as suggested by some commenters.

As explained in the proposed rule, the gold mine ore processing and production area source category covers the thermal processes that occur after ore crushing, including roasting operations (*i.e.*, ore dry grinding, ore preheating, roasting, and quenching), autoclaves, carbon kilns, electrowinning, preg tanks, mercury retorts, and furnaces. The data and calculations used to derive the estimated 4.4 tons of mercury emissions for this source category for the 1990 baseline inventory for section 112(c)(6) reflect emissions from the thermal processes described above, and the final MACT standards address all of these processes.

#### 4. Major Source Determination

*Comment:* One commenter noted that the proposal stated that the gold mining processing and production source category consists of only area sources; however, the proposal indicated that actual emissions of hydrogen cyanide (HCN) at a few facilities were near the major source threshold. The commenter concluded that EPA violates both the CAA and its own regulations by basing its evaluation of whether gold mines are

major sources on their actual emissions instead of their potential emissions.

The commenter further noted that the proposal requested comment on a certification process that would allow gold mines to avoid major source status whereby companies could certify that they are area sources by implementing certain "management practices" and then certifying to EPA that they had done so. The commenter stated that such a certification process would be unlawful in calculating a source's "potential to emit" because the management practices are not "control equipment," "restrictions on hours of operation or on the type or amount of material combusted, stored, or processed," and would not be "federally enforceable."

Other commenters supported EPA's conclusion and determination that the gold mines are area sources of HAP. According to the commenters, EPA's methodology in making this determination was extremely conservative because EPA did not apply what the commenters believe to be a key correction factor. Application of this correction factor would have reduced the HCN emissions estimates from by approximately 40–50%. The commenters also stated that fence line testing at selected gold mine operations demonstrated that these levels of HCN were below all applicable public health standards.

The commenters believe that, because the gold mines are area sources of HCN, they should not be subject to section 112 work practice standards or newly developed certification requirements. The commenters noted that it is not technically practical to set systematic work practice standards to reduce HCN emissions for every gold mining operation to follow because each mine is unique in its mineralogy and cyanide leaching processes, and different process solution pH values are necessary to enhance gold recovery.

The commenters explained that for economic, health, and safety reasons, they already implement work practice standards designed to minimize HCN. The commenter concluded that the combination of these work practice standards and the annual TRI reporting more than adequately ensure that gold mining operations will remain area sources of HCN.

*Response:* Contrary to the assertions of one of the commenter's, EPA did not state in the preamble to the proposed rule that the sources at issue had actual emissions ranging from 5 to 9 tons. By contrast, EPA stated that "a few facilities are close to the major source threshold due to hydrogen cyanide (HCN)." 75 FR

22479. EPA failed to clarify in the preamble to the proposed rule that the range of 5 to 9 tons represented potential to emit calculations for the largest-emitting sources. Specifically, as explained in the document "Estimated Emissions of HCN from Gold Mine Facilities in the U.S." (which is available in the docket for this rulemaking), EPA estimated the potential to emit for the five largest sources assuming that these sources would be operating every day of the year, 24 hours a day, at 100 percent of its current capacity. These assumptions and calculations resulted in a potential to emit estimate of 5 tons of HCN per year for the largest source. EPA then completed a second set of calculations, using the same assumptions (*i.e.*, operating every day of the year, 24 hours a day, at full capacity), but without applying the surface area correction factor, and those calculations resulted in a conservative potential to emit estimate of 9 tons of HCN per year for the largest source. The emission estimates for the remaining large facilities were all below 9 tons.

The commenters correctly point out that in determining whether a source is a "major source" under CAA section 112, we must consider the source's potential to emit, as well as its actual emissions. See CAA section 112(a)(1) and 40 CFR 63.2. As noted above, we specifically examined the sources' potential to emit and concluded that all sources' potential to emit were below the major source thresholds.

Some commenters allege that EPA significantly overestimated HCN emissions from the larger sources by not accounting for certain correction factors. They assert that if one were to account for the appropriate correction factors in developing the potential to emit values, HCN emissions would "range from 3.7–4.5 tpy for the larger mines compared to the 5–9 tpy estimate" (*See* document titled "PTE Emission Estimates for HCN" by the Nevada Mining Association, which is available in the docket for this action). Other commenters make a blanket, unsupported assertion that the Agency has underestimated HCN emissions from the source category because they believe that without the management practices currently employed by sources in the category, HCN emissions would exceed the major source thresholds at the larger sources. These latter commenters, however, made only conclusory statements and did not demonstrate that HCN emissions from the larger sources would exceed the major source thresholds if the management practices were not employed.

In sum, EPA has developed conservative estimates of the sources' potential to emit HCN. At one end of the range EPA estimates potential emissions of 5 tons per year of HCN for the largest source, which is well below the major source threshold of 10 tons per year of a single HAP. At the other end of the range EPA estimates potential emissions of 9 tons per year for that same largest source, which is a conservative estimate and is still below the major source threshold. The emission estimates for the remaining large facilities were all below 9 tons. We understand that the sources at issue implement various management practices as part of their operations to minimize the use and emissions of cyanide to protect workers, to comply with Mine Safety and Health Administration (MSHA) standards, to comply with their agreements to the International Cyanide Code, and for economic reasons (to reduce operational and supply costs). We currently do not have sufficient information to explicitly quantify emissions reductions achieved through these management practices, but nothing in the record suggests that the facilities would be major sources if they failed to employ the management practices. Accordingly, we are taking final action today to list the gold mine ore processing and production area source category and regulate its mercury emissions pursuant to CAA section 112(c)(6).

Although not required, we intend to send letters to various Gold Mining Processing and Production companies pursuant to Section 114 of the Clean Air Act to confirm our conclusion that the sources' potential to emit remain below major source thresholds.

#### 5. Title V Permit Exemption

*Comment:* In the proposal preamble, EPA solicited comment on whether a title V exemption "is appropriate under section 502(a) for any particular sources in this category." One commenter offered the following reasons for not exempting gold mines from title V permitting requirements:

- EPA did not properly determine whether some or all sources in the category are major sources by determining each source's potential to emit.
- The CAA allows EPA to exempt area sources from title V permitting only if it establishes that compliance with the title V permitting requirements would be "impracticable, infeasible or unnecessarily burdensome." However, EPA does not claim that such requirements are "impracticable," "infeasible," or "unnecessarily burdensome" for gold mines.

- It is feasible and within the gold mining companies' financial means to comply with title V permitting requirements.

The commenter believes that the text and legislative history of the CAA make plain that Congress intended ordinary citizens to be able to get emissions and compliance information about air toxics sources and to be able to use that information in enforcement actions and in public policy decisions on a State and local level. According to the commenter, Congress did not think that enforcement by States or other government entities was enough; if it had, Congress would not have enacted the citizen suit provisions. The commenter said that, if a source does not have a title V permit, it is difficult or impossible for a member of the public to obtain relevant information about its emissions and compliance status or to bring enforcement actions. The commenter stated that to the extent the informational and enforcement benefits provided by title V permits can be considered a burden, these benefits far outweigh that burden.

The commenter also noted that title V provides important monitoring benefits and that title V permits are necessary to provide adequate monitoring. The commenter concluded by stating that the legislative history of the CAA shows that Congress did not intend EPA to exempt source categories from compliance with title V unless doing so would not adversely affect public health, welfare, or the environment; however, exempting gold mines from title V would adversely affect public health, welfare and the environment by depriving the public of important informational and enforcement benefits.

One State agency commented that additional title V permitting would subject both the source and the State agency to additional resource burdens. The commenter points out that major sources of criteria pollutant emissions are currently subject to title V permit requirements in Nevada and that sources not subject to major source permitting requirements are subject to Nevada's minor source permitting program. In addition, the NMCP requires all mining sources to obtain mercury-specific operating permits to construct. The commenter believes that these permit programs would provide a strong basis for implementing and enforcing any Federal MACT requirements for the gold mining industry, and there would be nothing gained by subjecting these sources to title V permitting.

Several commenters stated that EPA should exercise its discretion and

exempt the gold mine ore processing and production industry from the title V requirements as impracticable, infeasible, and unnecessarily burdensome. The commenters said that, in light of EPA's findings in other similar rulemakings for area sources, the four factors set forth in the Exemption Rule support a finding that title V permitting is "unnecessarily burdensome" for the gold mine ore processing and production area source category.

In discussing the first factor of the Exemption Rule, whether title V would result in significant improvements to the compliance requirements, the commenters said that the proposed NESHAP for the gold mine ore processing and production area source category includes extensive monitoring, recordkeeping, and reporting requirements that are more comprehensive than title V requirements. The commenters believe that Nevada regulations and permits provide an additional layer of compliance assurance on the Federal NESHAP that obviates the need for title V permitting. The commenters claimed that the additional layering of title V does not "significantly improve" upon the proposed and existing compliance requirements.

Regarding the second factor in the Exemption Rule, whether title V permitting would impose significant burdens on the area source category and whether the burdens would be aggravated by any difficulty the sources may have in obtaining assistance from permitting agencies, the commenters said that there are extensive administrative burdens and costs associated with the title V permitting process, including mandatory activities that have been previously identified by EPA. The commenters claimed that many of the area source gold mines are owned and operated by small entities that are already required to comply with comprehensive State permitting requirements for mercury emissions and that requiring title V permits for them would result in resources being redirected away from more useful and necessary efforts.

The commenters explained that the third factor in the Exemption Rule examines whether the costs of title V permitting for the area source category would be justified, taking into consideration any potential gains in compliance likely to occur for such sources. The commenters claim that there do not appear to be any gains in compliance to justify the additional costs that would be imposed on these area sources from title V permitting

based on the lack of significant improvements in compliance requirements and the substantial additional costs and burdens associated with title V compliance.

The commenters noted that the fourth factor in the Exemption Rule analysis is whether there are implementation and enforcement programs in place that are sufficient to assure compliance with the NESHAP for the area source category, without relying on title V permits. The commenters claimed that the proposed rule includes all necessary monitoring to effectively implement its requirements, and the area sources for the gold mine ore processing and production are already permitted under State permit programs. According to the commenters, all non-title V sources in Nevada are required to hold "Class II" operating permits that must contain, among other things, all applicable emission limitations and standards. The commenters said that other States where gold mine ore processing and production area source are located either would be covered by a comparable delegated State air program or by EPA.

The commenters stated that EPA regularly provides title V exemptions for area sources similar to gold mine ore processing and production area sources and cited examples from the past year. The commenters claim that the existing and proposed compliance and monitoring requirements for the gold mines are generally more stringent than those found in the other NESHAPs for which EPA has granted a title V permit exemption.

The commenters stated that exempting the gold mine ore processing and production area source category from title V permitting will not adversely affect public health, welfare, or the environment because title V permits do not generally impose substantive air quality control requirements. According to the commenters, requiring title V permits also carries the potential of adversely affecting public health, welfare, or the environment by shifting State agency resources away from ensuring compliance with a program that is reducing mercury emissions from gold mines.

The commenters stated that EPA should exempt the gold mine ore processing and production area source category from title V permitting requirements, and at a minimum, should exempt area source gold mines that are subject to Nevada's comprehensive mercury control program.

*Response:* After reviewing the comments, we continue to believe that it is appropriate that all gold mine ore processing and production facilities be required to obtain title V permits. Most of the other area source categories for which we have provided title V permit exemptions have hundreds or thousands of facilities that are mostly owned by small businesses. In contrast, there are an estimated 21 facilities that are subject to this final rule, and, based on our research and analyses, none of the facilities are owned by small businesses; most of these facilities are owned by large, and in some cases, multi-national, corporations. Therefore, we conclude that the argument of financial burden, which has supported title V exemption for other source categories, does not apply to the gold mining industry (see Economic and Small Business Analysis, which is available in the docket).

Currently, it is our understanding that 7 of the 21 facilities that will be subject to the final rule already have title V permits (5 in Nevada and 2 in other states). Further, there are approximately 5 facilities in all other States (*i.e.*, except Nevada) that do not currently have title V permits that will be subject to this final rule, so title V permitting will apply to no more than a few facilities in any one of these other States. Therefore, we do not believe the requirement for title V permitting will be overly burdensome to the permitting authorities in those States. Although there are more facilities in Nevada that will be subject to the final rule, as the commenters point out, Nevada already has an effective permitting system in place. Five of the 14 gold mine facilities in Nevada already have title V permits. Because of Nevada's existing permitting system and experience with title V permitting, we do not think that it is an undue burden on the State of Nevada to require title V permits from the other gold mine facilities located within the State. We also think it is important for the public in States where these facilities are located to have access to emissions and monitoring data and the opportunity for public involvement in the permitting of these facilities that is provided by title V permitting.

#### 6. Reconstruction

*Comment:* Several commenters believe it is appropriate to group under each of the umbrella "affected sources" all the equipment associated with each particular process in order to ensure a reasonable application of the reconstruction provisions found in the General Provisions. The commenters asked that EPA reaffirm that the 50 percent fixed capital cost trigger for

determining reconstruction would be measured against all equipment components needed for the defined processes, and that reconstruction at one affected source as defined in the standard will not affect or result in reconstruction at another affected source.

The commenters also noted that the definition of "reconstruction" authorizes EPA to establish special provisions in a particular standard for the application of the reconstruction criteria to the affected source. The commenters said that the "carbon processes" affected source illustrates that the affected source can consist of several pieces of interconnected equipment that together constitute the process line, and it can be anticipated that production needs will give rise to the need to add more pieces of equipment to an existing carbon process line or even to install a whole new carbon process line. The commenters provided three examples: Adding a new component to an existing carbon processes group; construction of a new carbon group due to expansion at a facility that has an existing carbon group; and installation of new pollution control equipment. The commenter said that consideration of whether or where new MACT requirements should apply in these examples warrants the development of special reconstruction provisions in this standard, or EPA should clarify that the three examples would not be considered reconstruction under the proposed rule.

The commenters asked that EPA either clarify that the three examples would not be considered reconstruction, or alternatively, add the following provisions to the proposed rule: (1) An addition of a new piece of equipment to address production requirements is not considered a reconstruction, (2) the expansion of a facility by the construction of a completely new process line will not be considered a reconstruction of an existing process line, and (3) the installation of air pollution control equipment to comply with this standard is not considered a reconstruction.

*Response:* The determination of what constitutes a reconstruction is directly tied to the definition of the affected source and the definition of reconstruction in the part 63 General Provisions:

Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to

construct a comparable new [affected] source; and

(2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

For each of the four affected sources in the final rule, we have defined the affected source as the collection of processes associated within each affected source. Consequently, if one process within the affected source is upgraded or replaced with a new process, the 50 percent fixed capital cost criterion would be based on the fixed capital cost of replacing all processes in the affected source, not just the capital cost of the process being upgraded or replaced. For example, if a new carbon kiln is added to an existing group of carbon processes with mercury retorts, the capital cost of the new carbon kiln would be divided by the fixed capital cost of constructing a comparable new affected source containing all of the processes within the existing affected source of carbon processes with mercury retorts to calculate the percent for comparison to the 50 percent criterion.

With regard to the scenario where a new carbon process with a mercury retort is installed, the affected source is defined as the collection of all applicable processes within the affected source, and because of this, a facility could not have two carbon processes with mercury retorts affected sources, such as the commenter suggested, where one group is new and the other is existing. For example, if a new group of carbon processes with mercury retorts is installed at a facility in addition to an existing group of carbon processes with mercury retorts, the two groups (all carbon processes with mercury retorts at the facility) collectively would be a single affected source. In this case, the fixed capital cost criterion would be based on the fixed capital cost of replacing the existing affected source with a comparable new affected source, and if the new processes exceed 50 percent of that cost, all of the carbon processes with mercury retorts would be subject to the new source limit for carbon processes. There would not be separate and different emission standards for the two sets of carbon sources with mercury retorts (the older group and newer group) because the collection of all of these processes is the affected source.

We do not see a necessity to provide criteria for this final rule that are different from the requirements in the General Provisions for determining what constitutes a reconstruction. We also think it is appropriate to exclude the cost of emission control equipment from the cost calculation for reconstruction determinations.

#### *B. Applicability*

*Comment:* Several commenters stated the rule should exempt individuals (prospectors), laboratories, small mining operations, and non-leaching operations. The commenters urged EPA to include in the final rule all of the following exemptions to avoid the problem of unintended regulation of sources that were not meant to be included in the source category: Gold mining operations that produce less than 100 pounds of concentrate per year, which would exempt analytical labs that perform small bench scale processing tests on gold ores; gold mining operations that do not leach or dissolve gold, which would exempt placer and other non-leaching operators, including both small commercial efforts as well as individual recreation-type prospectors; and gold mining operations that process less than 1,000 tons per year of gold ore, which would exempt certain small scale pilot plants and related testing operations. The commenters said that the exemptions suggested above will not reduce in any way the effectiveness of the proposed rule in controlling mercury emissions from the targeted larger mines, nor will they lead to increased mercury emissions, but they will exclude regulation of a large number of small operators who do not emit any significant mercury.

*Response:* Section 63.11640(c) of the proposed rule provides that the emissions standards for this area source category do not apply to research and development facilities, as that term is defined under CAA section 112(c)(7). We did not receive any adverse comments concerning this provision, and are finalizing the provision in this rule.

Further, as mentioned above in section IV, we are clarifying in this final rule that this area source category does not include individual prospectors and very small pilot scale mining operations. Prospectors and other very small pilot-scale operations (e.g., operations that produce or process less than 100 pounds of concentrate per year) are very small and were not included in the section 112(c)(6) inventory that was the basis for the listing of gold mine ore processing and

production source category. We believe that emissions from the very small scale operations described above to be very minimal.

By contrast, the commenter's suggested 1,000 tons/yr ore threshold may include operations beyond the very small scale pilot operations discussed above. We believe that the 100 pounds of concentrate per year more appropriately reflect these very small scale operations.

We are not making the suggested change of excluding operations that do not leach or dissolve gold because certain gold mine facilities in the source category use flotation or gravity flotation processes and perform thermal processing of concentrate in melt furnaces, which can have significant emissions of mercury. However, as mentioned above we are clarifying that this final rule does not apply to these very small scale operations.

#### *C. MACT Floors*

##### *1. Consideration of Variability in Determining Floors*

*Comment:* One commenter acknowledged that EPA may consider variability in calculating the best sources' performance, but stated that EPA's method of considering variability seeks to assure that none of the sources among those identified as best performers would ever exceed the floor level. The commenter claims that such an approach ignores the reality that sources' emission levels are largely within their control, and although a great deal of variability may be statistically conceivable if EPA chooses a high enough prediction limit (in this case the 99th percentile) that does not mean that a well-operated source actually would experience such variability. The commenter said that one of the main points of having emission standards is to ensure that sources not only deploy the appropriate control measures, but also use those control measures consistently to minimize emissions.

The commenter said that using an upper prediction limit to set standards reflecting the statistical worst performance these sources could have in a purely statistical sense does not yield an accurate picture of the best sources actual performance, and it is especially arbitrary in the absence of any explanation of why EPA thinks that the relevant best sources' performance would ever be so bad, other than the fact that it is statistically possible.

*Response:* As described previously, the MACT floor limits are calculated based on the performance of the lowest

emitting sources in each of the MACT floor pools. We ranked all of the sources for which we had data based on their emissions and identified the lowest emitting sources.

As the commenter concedes, EPA can consider variability in assessing sources' performance when setting MACT standards. See *Brick MACT*, 479 F.3d at 881–82; and *Mossville Env't Action Now v. EPA*, 370 F.3d 1232, 1241–42 (D.C. Cir 2004) (reaffirming that EPA can assess variability in determining the level of emissions control achieved by the best performing sources).

Variability in facilities' performance has various causes. One source of variability for these facilities is the differing mercury concentrations in the input materials. Another source of variability is due to normal variations in performance of the control devices for which both run-to-run and test-to-test variability must be accounted.<sup>4</sup> A review of the run-by-run emissions data in the record shows that emission rates from one run to the next for well-operated sources can vary by as much as a factor of 8. We need to account for sources' variability (both due to control device performance and variability in inputs) in assessing sources' performance when developing technology-based standards. Accordingly, EPA accounts for variance in test data, between units, and among facilities when developing the MACT standard.

In determining the MACT floor limits, we first determine the average emissions of the top performers based on available data. We then assess variability of the best performers by using a statistical formula designed to estimate a MACT floor level that is equivalent to the average of the best performing sources based on future compliance tests. Specifically, the MACT floor limit is an upper prediction limit (UPL) calculated with the Student's t-test. The Student's t-test has also been used in other EPA rulemakings (e.g., NESHAP for Cement Manufacturing, NSPS for Hospital/Medical/Infectious Waste Incinerators, and NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters) in accounting for variability. A prediction interval for a future observation is an interval that

will, with a specified degree of confidence, contain the next (or some other pre-specified) randomly selected observation from a population. In other words, the prediction interval estimates what the upper bound of future values will be, based upon present or past background samples taken. The UPL consequently represents the value which we can expect the mean of future observations (i.e., emission test runs) to fall below within a specified level of confidence, based upon the results of an independent sample from the same population. In other words, if we were to randomly select a future test condition from any of these sources (e.g., average of 3 runs) we can be 99 percent confident that the reported level will fall at or below the 99 percent UPL value. We note that the methodology accounts for both short-term and long-term variability and encompasses run-to-run and test-to-test variability.

For this rule, we used the 99 percent UPL analysis on the emissions data for the top performing sources to account for the variance. In the context of determining the MACT floor, the 99 percent UPL represents the value below which the mean of future compliance tests (based on, for example, a 3-run average) would fall 99 percent of the time. A 99 percent level of confidence means that a facility, whose emissions are consistent with the best performing sources, has one chance in 100 of exceeding the emission standard.

We believe that using the 99 percent UPL is appropriate for this rule. As noted above, this approach is consistent with several other previous rulemakings. It also makes sense from a practical standpoint. If we selected a lower number (e.g., 95 percent UPL) this would mean that a best performing source that is performing at the MACT level of control would potentially exceed the limit 5 percent of the time—which we do not believe is a reasonable approach for this rule. See *Mossville*, 379 F.3d at 1241–42; see also 70 FR at 59438 (Oct. 12, 2005) (explaining use of 99th percentile). With regard to the commenter's statement that no sources among the best performers would ever exceed the MACT standard, we believe this is incorrect. The commenter provided no basis for this statement, and we do not believe the commenter based this statement on an analysis of the variability in the data.

We do not believe that the UPL analysis reflects the statistical worst performance the top five performing sources could have. The UPL calculation is dependent on the data that we have, and reflects the actual variability in the test data for the best

performing sources. It does not reflect worst-case performance. We continue to believe that the UPL does yield an accurate picture of the best sources' performance as best as possible with taking into account variance between the facilities, units at the facilities, and between test runs for the different units (including variability in input materials).

Furthermore, although the average of several data sets may show a top performing source meeting the emission standard by a significant margin, the variability in emissions inherent in any one compliance test could easily indicate much higher emissions, and, in some cases, an exceedance of the emission standard. We continue to believe that the UPL analysis evaluated at 99 percent confidence is appropriate for this source category.

Moreover, we believe the data we used to calculate the MACT standards are representative of the normal performance of the best performing sources for several reasons. First, the test results that we are using in our MACT database are tests conducted under Nevada's mercury emission control program, and are conducted to determine whether a facility is in compliance with State requirements. Facilities typically try to perform as well as they can during such tests. State (and often EPA) permitting authority staff are notified before a performance test is conducted to provide an opportunity to attend and observe the test, and they often attend to ensure the source is operating properly and that the testing is performed according to the strict requirements in the codified test methods.

Test reports are carefully reviewed by the permitting authority, and any failure to follow the test method or abnormal operation of a source is flagged. These data are usually invalidated, and invalidated tests are not used in our MACT standard calculations. For example, several tests from these facilities were invalidated by the NDEP because the specified testing procedures were not followed or the emission control device was not operating properly, and we have not used those results in our analysis for those reasons. We have collected additional data from test reports not available at the time of proposal, and one of those tests was invalidated because NDEP representatives discovered that the emission control device was not operating properly during the test. Therefore, we also did not use those test data.

The commenter believes that floors must be set at the average emission level

<sup>4</sup> Run-to-run variability is essentially within-test variability, and encompasses variability in individual runs comprising the compliance test, and includes uncertainties in correlation of monitoring parameters and emissions, and imprecision of stack test methods and laboratory analysis. 72 FR at 54877 (Sept. 27, 2007). Test-to-test variability results from variability in pollution device control efficiencies over time. Test-to-test variability can be termed long-term variability. 72 FR at 54878.

achieved by the best performers when they are operating properly. We agree that the performance data characterizing the emission level achieved by the top performers must be data obtained when they are operating properly, and we believe that is the case for our current database for this source category.

As described above, the MACT floor is based on the average performance of the top performers plus an amount to account for variability. We have appropriately developed a MACT standard based on emissions from the top 5 best performing sources that accounts for variability because, over an extended period of time, the emissions from each of these best performing facilities (even the best controlled) will vary above and below the facility average. For example, we expect that about half of the duration of the year the emissions from a best performing facility would be somewhat below their average and that about half of the duration of the year their emissions would be somewhat higher than their average. If we set the MACT limit exactly equal to the average emissions level achieved by the best performers (without accounting for variability), and we had a source that was performing at exactly the MACT level over the course of the year, the measured emissions level on roughly half the days of the year would suggest that the source is emitting at levels above the MACT limit, and on about half of the other days of the year the measured emissions level would suggest that the source is emitting at levels less than the MACT limit. We reasonably and appropriately accounted for variability in the data consistent with established statistical theory and practice and judicial precedent. Finally, ignoring variability of the best performing sources and using only the average performance would virtually guarantee that some of even the best performers would exceed the floor limit at least some of the time.

Thus, we developed a MACT standard based on the average of the best performing sources that accounts for variability. We accomplished this by calculating the MACT standard from this average performance and accounting for variability by using the 99 percent UPL. The specific calculations are presented in the MACT floor document in the docket for this rulemaking. Furthermore, we agree with the comment that one of the points of having emission standards is to ensure that sources not only deploy the appropriate control measures, but also use those control measures consistently to minimize emissions. We believe that the MACT standards established in this

rule along with the requirements to monitor and maintain control device parameters within certain ranges will ensure control measures are applied consistently to minimize emissions.

*Comment:* Another commenter stated that consideration should be given to defining the inherent range of measurement error and requiring more test runs in order to reduce variability due to process variation. The commenter said that this would also better clarify when variability was due to operational controls, which could be addressed, rather than due to factors that cannot be controlled, such as mercury content in the ore. The commenter asked for clarification on how inconsistent runs should be treated, what defines an acceptable set of runs, and at what point more runs would be required to provide reliable data.

The commenter also stated that the degree of variability allowed in the development of the new source limit for ore pretreatment appears to be out of line with the new source limits for carbon processes and non-carbon processes. The commenter believes that ore pretreatment variability for new sources is higher than existing sources because low thermal units were included in the same category, high emissions were allowed in the data set, and variable emissions were allowed in data set. The commenter recommended that, if EPA continues to use Goldstrike as the best performing source for new source MACT, then they should re-evaluate and reduce the variability to be equal to or less than the variability for existing sources.

*Response:* We agree with the commenter that the testing process would be more accurate if the number of test runs was increased. However, we balance several factors in determining the minimum number of runs required, and because the compliance testing is supplemented by various types of continuous or periodic parametric monitoring, we have concluded that three test runs are appropriate for this final rule. Although we have not proposed a formal procedure to assess the consistency of test runs, the permitting authority performs routine reviews of compliance test data to identify potential outliers and results that suggest further investigation is needed. For example, a routine review tracks trends in performance, and in particular, flags any trends in deteriorating performance over time. An unusually high run among the three runs also attracts attention and would be examined to determine if it might have been caused by a problem with the

process, control device, sampling, or analysis. If the permitting authority identifies inconsistent runs, they have the authority to invalidate any or all runs. A source would be required to perform more runs to provide reliable data if two to three runs were invalidated.

We agree with the commenter that the degree of variability used in the development of the proposed new source MACT standard for the ore pretreatment group appeared to be inconsistent with the degree of variability used in the development of the proposed new source MACT standard for carbon processes and non-carbon concentrate processes. We agree with the commenter that the ore pretreatment degree of variability at proposal for new sources was higher than the degree of variability for existing sources. We do not believe that the variability was higher because low thermal units (*i.e.*, autoclaves) were included in the same category, but because two tests of the ore preheater/dry grinding processes at Goldstrike were allowed in the data set. These tests had, as the commenter identified, inconsistently high emissions (as compared to other tests at other times for the same units) and inconsistent variability between the runs. We have determined that the tests the commenter is referring to are not representative of normal operation, and those tests have been removed from our database because the NDEP invalidated the tests due to possible sample contamination. (See the MACT Floor Document in the docket for the final rulemaking for more details). We continue to use Goldstrike as the best performing source for the ore pretreatment new source MACT, and the variability for new source MACT is now less than that of the variability for existing source MACT, and is less than the variability calculated at the time of proposal.

## 2. General Comments on MACT

*Comment:* Some commenters stated that the MACT floor already represents installation and operation of MACT controls, and the use of emissions data from facilities that are already controlling their mercury emissions creates an artificially low MACT floor. The commenters said that the low MACT floor penalizes facilities that voluntarily invested in pollution control technology and creates a substantial disincentive for industry and States to move ahead of EPA in reducing emissions of HAP.

*Response:* We acknowledged at proposal that many gold mine facilities are already well controlled for many



reasons, including participation in the NMCP. We also acknowledge that the top performing facilities that are the basis for the MACT floor calculation are the top performers because they have installed controls. CAA section 112(d)(3)(B) requires that, for a category with fewer than 30 sources, the MACT floor not be less stringent than “the average emission limitation achieved by the best performing 5 sources (*for which the Administrator has or could reasonably obtain emission information*).” (Emphasis added). EPA has information on the well-controlled facilities and used the information to conduct MACT floor analysis, as required by the CAA. Although the MACT floor may be considered more stringent in comparison to floors that would have been established if no facilities had mercury emission controls, we do not consider the floor to be “artificially low” because consistent with the statute, it reflects the level achieved in practice by the best performing sources. See 112(d)(3). We do not believe that the MACT floor penalizes facilities that invested in pollution control technology because those facilities will be able to meet the MACT standards. We do not consider that this final rule creates a disincentive for industry and States to move ahead of EPA in reducing HAP emissions because as facilities reduce mercury emissions by adding controls required by State programs, they will be able to meet the NESHAP. Most of the facilities that will not meet the current final standards have already proposed to add controls to their units in their Phase 2 applications for the NMCP.

### 3. MACT for the Ore Pretreatment Group

*Comment:* Several commenters supported EPA’s general approach to establish three groups of affected sources in the proposal. On the other hand, several commenters suggested that EPA develop separate emission standards for roasters and autoclaves for existing and new sources. One commenter stated that roaster and autoclave processes are different from each other based on the mercury species released, controls utilized, and their rates of mercury emissions. The commenter said that roasters commonly reach temperatures of 400° to 700°C, releasing gaseous elemental mercury, whereas autoclaves commonly reach temperatures of 175° to 230°C producing reactive gaseous mercury and sulfate and forming mercury sulfate. According to the commenter, autoclaves are expected to be able to improve efficiency over time. The commenter

noted that roasters produce one to two orders of magnitude higher emissions than do autoclaves. The commenter believes that facilities that only use autoclaves should not be allowed the leeway to emit at the rate that facilities employing roasters are allowed. The commenter recommends that the ore pretreatment group be divided into high temperature pretreatment processes (roasters) and low temperature pretreatment processes (autoclaves and ancillary roaster processes, such as dry grinding, pre-heating, and quenching).

*Response:* We discussed in section V.A. of the preamble to the proposed rule our rationale for establishing the different affected sources, including the ore pretreatment processes affected source. We believe it is appropriate to maintain the ore pretreatment group affected source, as we had proposed. We do not agree with the comment that roasters necessarily have higher emissions that are one to two orders of magnitude higher than emission from autoclaves. The available data show a wide range in emissions from autoclaves (from 0.4 to 115 lb/million tons of ore). This range overlaps the range for roasters and their ancillary equipment, which have combined emissions between 42 to 71 lb/million tons of ore. Regardless of the mercury species released, controls utilized, operating temperatures, or control efficiency over time, autoclaves and roasters process the same input material (*i.e.*, ore) and are intended for the same purpose (*i.e.*, to oxidize the ore). Therefore, we believe that it is appropriate to maintain the ore pretreatment affected source as we had proposed, keeping roasting operations and autoclaves together.

*Comment:* One commenter stated that EPA failed to consider beyond-the-floor standards for roasters and that if additional reductions are achievable at roasters, then EPA must set additional beyond-the-floor standards for roasters.

A commenter also stated that although EPA’s standard for new ore pretreatment facilities is as high as its standard for existing facilities, EPA does not propose or discuss setting beyond-the-floor standards for new sources. The commenter claims that EPA has a statutory obligation to ensure that its new source standards reflect the maximum achievable reduction in emissions.

*Response:* Following proposal, we continued to investigate the performance of facilities with ore pretreatment processes and opportunities for additional control. We collected data from more recent tests that were not available at proposal, and these new data show that emission

control performance at these facilities has continued to improve. We identified two previous tests in the proposal database that were suspect, and we confirmed with NDEP that these tests should be invalidated and not used in the analysis because of possible sample contamination. We have also dropped the data for one facility from the analysis because their autoclave was shutdown in 2007 and dismantled, and we only had one test of the autoclave when it was operating in 2006. For these reasons, we did not include data for that facility in the analysis, which is now based on the only four facilities currently operating.

Based on the addition and change described above with respect to our available data, we revised the MACT floor analysis for the ore pretreatment processes. The revised MACT floor for existing sources decreased from 175 lb/million tons at proposal to 158 lb/million tons, and the new source MACT floor dropped from 163 lb/million tons to 84 lb/million tons.

The MACT floor limit for existing ore pretreatment processes is based on the use of calomel-based mercury scrubbers on roasters and wet scrubbers on autoclaves and ancillary roaster operations. We conducted a beyond-the-floor analysis during the development of the proposed rule. The roasters were already equipped with very good mercury controls (condensers and calomel-based mercury scrubbers), and we did not identify any beyond-the-floor options for the roasters. However, we identified as a beyond-the-floor control for autoclaves the installation of both a refrigeration unit (or condenser) and a carbon adsorber. We continue to believe that the roasters stacks are well controlled, but since our proposal, we have identified a beyond-the-floor control option (carbon adsorption) for the ore pre-heaters/dryers (ancillary roaster operation) that could achieve additional emissions reductions of approximately 70 percent (or more) for those units. Two of the three facilities with roasters have already proposed in their NMCP Phase 2 permit applications to apply controls to their preheaters/ore dryers, and these two companies have submitted cost estimates for applying a carbon adsorption system. Using the cost estimates submitted by the affected facilities, we estimate the capital costs for control of roaster preheaters/dryers for the three facilities with roasters as \$3 million with a total annualized cost of \$1.6 million per year. We also estimate a reduction of 118 lb/yr of mercury emissions would be achieved at an overall cost effectiveness of about \$13,800 per pound of mercury. We



believe that these costs and cost effectiveness are reasonable. As required under CAA section 112(d)(2), we have also considered non-air quality health and environmental impacts and energy requirements of this additional control. We conclude that this is an acceptable beyond-the-floor control technology for existing roaster preheaters/ore dryers. Therefore, we included the beyond-the-floor control for ore preheaters/dryers, as well as the beyond-the-floor control for autoclaves, in determining the MACT standard in this final rule for existing sources of ore pre-treatment processes. After applying the appropriate variability analyses to the data, we determined that the MACT standard for existing sources is 127 lb/million tons of ore.

As mentioned above, we have revised the new source MACT floor. We also did a beyond-the-floor analysis for new sources in the ore pre-treatment processes group. However, we did not establish the MACT standard for new sources based on this beyond-the-floor analysis because we did not identify a feasible and cost-effective option to achieve reductions greater than the new source MACT floor. Therefore, for new sources of ore pretreatment processes, the MACT "floor" is the MACT standard for the affected source. The final new source MACT standard is 84 lb/million tons of ore, which is considerably more stringent compared to the proposed standard of 149 lb/million tons of ore and reflects the maximum achievable reduction in emissions.

*Comment:* One commenter stated that the proposed estimated capital costs of \$890,000 and total annualized cost of \$720,000 for beyond-the-floor autoclave controls are not representative of actual costs of installing a refrigeration unit (or condenser) and a carbon adsorber on autoclaves. The commenter estimates that capital costs for autoclave controls will range from \$18 million to at least \$30 million, and annual operating costs could range from \$2 million to \$60 million, depending on which controls, if any, are determined to be technically feasible. The commenter believes that based on these cost estimates, beyond-the-floor MACT controls would be cost prohibitive and are not justified for the ore pretreatment affected source group.

Another commenter estimated that for the installation of carbon adsorbers on their autoclaves to control mercury emissions, the capital costs would range from \$30 million to \$35 million, annual operating costs would be \$2 million per year, and the annual energy requirements would be 11,400 megawatt-hours per year with an annual energy cost of \$900,000.

*Response:* After reviewing the new cost estimates provided by the commenters, we agree that capital and total annualized cost estimates of the beyond-the-floor controls on autoclaves in the proposal were underestimated. We evaluated the detailed cost estimate based on an engineering study for a carbon adsorption system provided by one of the commenters (see details in the comment above on capital, operating, and energy costs), and our review of these details indicates it to be a reasonable cost estimate and more representative. Therefore, we have used this estimate as the basis for our estimate of the costs of the beyond-the-floor mercury emission controls for autoclaves. Our revised estimates are that the capital cost for installing carbon adsorbers on autoclaves would be \$29.3 million, with a total annualized cost of \$4.9 million per year, which would result in an estimated reduction of 431 lb/yr of mercury emissions per year and an overall cost effectiveness of about \$11,000 per pound of mercury. Based on these new costs and estimated reductions we conclude that the beyond the floor controls are affordable and justified for the ore pretreatment affected source.

*Comment:* Several commenters noted that, at the proposed new source MACT limit of 149 pounds/million tons of ore, the proposed new source Donlin Creek Mine, located in Alaska, would be allowed to emit 3,200 lb/yr of mercury based on a projected production rate of 22 million tons/yr of ore.

*Response:* With respect to this proposed new gold mine in Alaska, the commenters' estimate of 3,200 lb/yr of mercury emissions is inaccurate and a significant overestimate for a number of reasons. The two primary reasons are that, based on available information, if the facility is built, only an estimated 15 percent of the ore mined will be processed in autoclaves (not 100 percent as assumed by the commenters), and that the commenters' estimate is based on assuming that the average emissions level for the facility throughout the year would be at the maximum allowed at the proposed new source limit (149 lb/million tons of ore), which has been significantly reduced since proposal.

With the new source MACT standard in the final rule that is about two times more stringent (*i.e.*, lower) than the proposed MACT standard, along with corrections described above, we estimate that far less than 3,200 lb/yr would be emitted from this new source if it is ever built. Assuming continuous operation for 365 days per year, an estimated 21.5 million tons/yr of ore mined, about 3.2 million tons/yr

processed in autoclaves (15 percent), and assuming the source would emit at the average emission level used to calculate the revised new source MACT (45 lb/million tons of ore), we calculate that mercury emissions would be about 144 lb/yr, which is about 5 percent of the estimate provided by the commenters. Considering that the facility has yet to go through the permitting process and that, if it is built, it will likely include emissions controls that would reduce the emissions below 45 lb/million tons of ore, we believe that, if the facility is built, emissions would quite likely be lower than 144 lb/yr.

#### 4. MACT for Carbon Processes

*Comment:* Several commenters objected to including Facility M in the MACT floor determination for new and existing sources in the carbon processes affected source because it is not representative of, or similar to, other sources, because it has unusually low mercury concentrations in its ore, and no need for a retort to remove and recover mercury. They noted that, because the mercury content of the gold ore is fixed, the only way for other facilities to reduce emissions of mercury is to apply mercury emission controls, but, for many facilities, emission controls will not be enough to meet the proposed MACT standard. The commenters stated they were aware that the DC Circuit Court had constrained EPA's discretion to set floors that fail to consider material inputs, but they said gold mines were different from the remanded source categories (brick kilns and cement kilns) because gold mining operations process very large quantities of ore, and the ore is the only material input that results in mercury emissions. The commenters stated that, in adopting section 112, Congress expressly cautioned EPA against setting standards that would require mining operations to change the ore used as essential feedstock. The commenters said that, by ignoring the mercury content in the ore being mined and processed at the facilities in the MACT floor determination, EPA is requiring facilities to consider the substitution of, or changes in, the ore that is processed because there is no other way to achieve the standard. The commenters recommended that EPA address, as a threshold matter, the differences in processing and emissions across facilities that result from the variable concentration of mercury in ore. The commenters recommended that Facility M not be considered the "best controlled similar source" for purposes of setting the new source MACT floor because the

facility is not similar to other sources. The commenters stated that, if EPA does not exclude from the source category facilities that do not use retorts to process concentrate, then they should subcategorize them.

*Response:* After consideration of comments and a re-examination of the design of the facilities at issue, the emission controls, and other factors affecting emissions from the carbon processes at Facility M, we agree that this facility is quite different and unique compared to most other gold mine ore processing and production facilities, including other facilities in Nevada, in its carbon process. The difference is manifested in the processing train in that mercury retorts are not needed or used at Facility M to recover mercury. As the commenter notes, the CAA allows EPA to “distinguish among classes, types and sizes of sources within a category” in developing MACT emission standards, and gold mine facilities without mercury retorts are different in both class and type from those with mercury retorts. Accordingly, in the final rule, we identify and set separate MACT standards for these two different types of carbon processes: those that use mercury retorts; and those, such as the carbon process at Facility M, that do not use mercury retorts.

As part of our re-analysis of the MACT floor and the MACT for sources that are in the carbon processes with mercury retorts group and sources that are in the carbon processes without mercury retorts group, we considered new data that were not available at the time of proposal. Over the past one to two years since our data collection effort for the proposal, facilities in Nevada have continued to add controls and improve emission control as part of the NMCP. The new data indicate there were two facilities with carbon processes without mercury retorts operating in 2009. Using the data from these two facilities, we determined that the MACT floor limits for carbon processes without mercury retorts are 0.17 lb/ton of concentrate for existing sources and 0.14 lb/ton of concentrate for new sources (based on the best performing facility, Facility M).

In our beyond-the-floor analysis, we considered the addition of a carbon adsorber on an uncontrolled emission unit within an existing affected source. We estimate the capital cost as \$210,000 with a total annualized cost of \$72,000 per year, an emission reduction of 1.63 lb/yr of mercury, and a cost effectiveness of \$44,000/lb of mercury. We do not believe that the small emission reduction that this control

option would achieve is justified in light of its cost. We therefore decided not to go beyond-the-floor. We also considered possible beyond-the-floor options for new carbon processes without mercury retorts, but concluded these options were not cost-effective or feasible. Therefore, for new and existing sources of carbon processes without mercury retorts, the MACT floor limit is the MACT standard for this affected source.

As part of our re-analysis for the carbon group processes with mercury retorts, we collected and evaluated additional data. As discussed above, several of the facilities have improved emission control over the levels observed in the database we used at proposal. Two facilities with newly-installed controls replaced two higher-emitting facilities that were in the top 5 at proposal, and all three of the other facilities that remained in the top 5 had lower levels of emissions after considering the new data. The results are that the MACT floor limits for carbon processes with mercury retorts are 2.2 lb/ton of concentrate for existing sources and 0.8 lb/ton of concentrate for new sources (based on the best performing facility, Facility N). In the beyond-the-floor analysis, we evaluated the impacts of adding a second carbon adsorber in series with the controls applied to achieve the MACT floor level of control. We estimate the capital cost would be \$3 million with a total annualized cost of \$1.3 million per year, an emission reduction of 9 lb/yr of mercury, and a cost effectiveness of \$150,000/lb of mercury. Because of the small emission reduction and high cost effectiveness associated with this additional control, we decided not to go beyond the floor. Therefore, for existing sources of carbon processes with mercury retorts, the MACT floor limit is the MACT standard for this affected source. We also considered possible beyond-the-floor options for new carbon processes with mercury retorts, but concluded these options were not cost-effective or feasible.

#### 5. Compliance Alternative for New Carbon Process Sources

*Comment:* One commenter noted that the compliance “alternative” of 97 percent would be unlawful unless EPA specified that carbon sources had to meet the more stringent of either the floor standard or a 97 percent reduction standard. The commenter stated that because floors must reflect the emission level achieved by the best performing sources, allowing sources to meet a 97 percent reduction standard that was less stringent than the emission level

actually achieved by the relevant best sources would contravene section 112(d)(3) and well-established D.C. Circuit court precedent.

One commenter supported EPA’s use of the percent control alternative to the new source MACT for the carbon group. The commenter believes that the percent control alternative for new source carbon group MACT should also be available as an alternative to the existing source MACT for the carbon group.

Another commenter stated that another facility, which has an average mercury reduction efficiency level of 99.995 percent, represents the “best controlled” similar source for the carbon process group and should be the basis for the alternative limits for new carbon processes.

Several commenters requested clarification of the way in which compliance with the alternative for percent reduction would be demonstrated for new sources when there are multiple control devices on an emission unit.

*Response:* We eliminated in the final rule the compliance alternative of 97 percent reduction for new carbon processes. After reviewing the comments received on this standard and giving further consideration to the practicality of how it would be measured, we concluded that this option would be difficult to implement, particularly when multiple processes that are operated at different times vent to a single control device and stack. In addition, we have limited data supporting this compliance alternative. In proposing this alternative for comment, we had hoped to, but did not receive additional data indicating that the 97 percent reduction option would be equivalent in stringency to the proposed new source limit of 0.14 pounds of mercury per ton of concentrate. Largely due to the reasons stated above, we have eliminated the 97 percent control efficiency option for new carbon processes in the final rule. In addition we are not allowing this percent reduction to be used for existing carbon sources. We also note that the facility that one commenter identified as having an average mercury reduction efficiency level of 99.995 percent is now being used as the “best controlled” similar source for the final MACT standard for new carbon processes with mercury retorts.

#### D. Compliance Determinations

##### 1. Timing for Compliance Determinations

*Comment:* Several commenters requested that the compliance deadline for existing sources be 3 years after the effective date of the rule, rather than the 2 years proposed. The commenters noted that several facilities will have to install control devices to achieve the MACT floor limits that have been proposed. The commenters explained that the controls must be custom designed for the unique characteristics of each process and associated process streams at each facility and stated that it can be time consuming and difficult to design, procure, construct, and implement emission controls to ensure effective operation for the particular source.

*Response:* After reviewing the information provided in public comments on the challenges of retrofitting new controls, we believe that allowing 3 years for existing sources to comply is appropriate. Given the complexity of the sources, the combinations of control devices that are needed in many cases, and the amount of time necessary for designing, installing, testing, and commissioning additional emission controls for mercury, we conclude that 2 years may not provide adequate time for existing sources to comply with the final emission standards.

*Comment:* Several commenters recommended that the rule specify that source testing results be used to determine compliance for the calendar year in which the test was conducted rather than to determine compliance for the prior 12 months. The commenters suggested that the source test results be applied to the hours of operation at the end of the calendar year to determine the source's compliance with the MACT standard on an annual basis, as required in the NMCP. The commenters suggested that, if more than one source test is conducted in a year, the facility should average the mercury emission test results to determine compliance for the calendar year in which the tests were conducted.

Another commenter commented that the annual compliance testing should not be constrained to the same calendar quarter each year. The commenter stated that this can lead to testing during periods of operation that may not represent normal production capacities. The commenter believes that mercury emissions testing should be scheduled for the most appropriate time interval throughout the calendar year.

*Response:* The permitting authority needs to be able to determine compliance with the NESHAP as soon as possible after the tests are completed and test results are available. Consequently, the final rule requires that initial compliance be determined based on production data and operating hours for all full calendar months between the date the rule is published in the **Federal Register** and the date of the compliance test, and subsequently, annual compliance must be based on production data and operating hours for the 12 full calendar months preceding the compliance test. This allows the permitting authority to determine if the affected source is in compliance in a timely manner. (This is consistent with the way compliance determinations are made in another MACT rule that uses a similar format—National Emission Standards for Hazardous Air Pollutants for Primary Lead Smelting, 40 CFR part 63, subpart TTT.) If compliance was based on a calendar year, as suggested by the commenter, then we would not know if a source is in compliance until after December each year. For example, if a source conducted its compliance test in March, we would have to wait about 9 more months before we could determine if that source was actually in compliance. After those 9 months, if the source was not in compliance, it would mean that the source could have been out of compliance for the previous 9 months.

Moreover, we do not believe that compliance with the NESHAP based on the production data from the 12 months prior to the compliance test would cause problems with reporting under the State program. It is our understanding that the emissions limits in the Nevada State Phase 2 permits are (or will be) based on concentration in the stacks (e.g., micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )). The limits in this final rule are based either on pounds of mercury per million tons of ore or pounds of mercury per tons of concentrate. Therefore, the companies can continue to report the annual emissions as required under the TRI program and the State program without conflict with this rule.

If multiple compliance tests are conducted during the year, then a compliance determination must be made for each separate compliance test based on the production data and hours of operation for the 12 full calendar months preceding each test (i.e., the results of multiple compliance tests conducted throughout the year are not averaged to provide a single compliance determination for the year).

We understand that the rule, as proposed, may have required all existing sources to conduct their subsequent annual compliance tests in the same calendar quarter, and this may pose a scheduling problem because of the large number of facilities located in the same State (e.g., Nevada). Our concern was that subsequent annual compliance tests, if not separated in time, could be conducted for two different years with little time between the two tests (e.g., only a few days apart for the extreme case where the first test is conducted in late December and the second one in early January of the following year). We are providing scheduling flexibility by requiring that annual compliance tests be at least 3 months apart and no more than 15 months apart, and we are providing a similar separation for the period between the initial compliance test and the first annual compliance test. We do not believe that tracking multiple compliance dates is a particular problem for the permitting authority because that is the case for many other source categories subject to annual compliance testing.

##### 2. Test Methods

*Comment:* Several commenters supported EPA's proposal of alternate Methods 30A and 30B for demonstrating compliance. One commenter supported EPA's requirement to use Method 29 as an emission test method, but recommended two revisions: Requiring a determination of the absence of cyclonic flow before sampling, and a minimum sampling time of 90 minutes for each test run. The commenter also stated that they do not support the use of the Ontario Hydro Method (ASTM D6784–02), Method 30A, or Method 30B as mercury test methods. The commenter believes that the methods of demonstrating compliance with the emissions standards should be consistent with the methods utilized to establish the emission standards, which were based mainly on Method 29 data. The commenter said that the typical gas streams associated with the gold mining industry have high particulate loadings, high mercury concentrations, sulfur dioxide ( $\text{SO}_2$ ), and contain particulate-bound mercury. The commenter also stated that the alternative methods were not developed specifically for the gold mining industry and their typical gas streams and concluded that the results from the various alternative methods will yield varying results, will not be comparable, and will provide inconsistent reporting of overall mercury emissions.

*Response:* Method 29 references Method 1, which requires cyclonic flow checks under certain circumstances. Consequently, in the final rule, we have removed the specific requirements for cyclonic flow checks prior to every stack test that were in § 63.11646(a)(1)(vi) of the proposed rule. Owners or operators should follow the requirements in the applicable EPA reference method and any additional requirements specified by the permitting authority.

When specifying the minimum requirements for compliance tests, it is more important to specify a minimum sampling volume than a minimum sampling time because the detection of a regulated pollutant is a function of the volume of the sample rather than the length of time taken to collect the sample. Thus, the final rule does not specify a minimum sampling time. We are also changing the required minimum sampling volume to be 30 dscf rather than the 60 dscf as proposed in § 63.11646(a)(2) because we believe that 30 dscf generally will be adequate for detecting mercury emissions for this industry. Affected facilities should be aware, however, that the minimum sample volume may sometimes result in a failure to detect any mercury (a non-detect) emitted from a process unit subject to the emission standard (for the group of process units within the affected source) because of a mercury concentration at the outlet lower than expected. If the emission testing results for any of the emission points yield a non-detect value, then the minimum detection limit (MDL) must be used in calculating the emissions for that emission point and, in turn, for calculating the sum of the mass emissions for all emission points subject to the emission standard for determining compliance. If the resulting mercury emissions (in pounds of mercury per ton of concentrate, or pounds of mercury per million tons of ore) for the affected source are greater than the MACT emission standard, the owner or operator may use procedures that produce lower MDL results and repeat the mercury emissions testing one additional time for any emission point for which the measured result was below the MDL. If this additional testing is performed, the results from that testing must be used to determine compliance (*i.e.*, there are no additional opportunities allowed to lower the MDL).

After reviewing the information provided by the commenter about Method 29, we agree with the commenter that Method 29 is the most appropriate method for compliance

determinations for this source category because of the unique characteristics of these sources. Therefore, we are promulgating Method 29 as the main method for compliance in this rule. Alternative methods, such as 30B and the Ontario Hydro method (OHM; ASTM D6784–02), could be used to demonstrate compliance for this source category if approved by the permitting authority. These alternative methods (such as 30B and OHM) may prove to be more appropriate under certain circumstances. However, we have omitted Method 30A as an option in the final rule, as it is not yet in general use.

#### *E. Monitoring*

##### 1. Compliance Assurance

*Comment:* One commenter noted that EPA's proposed mercury standards are expressed in a format of pounds of mercury per million tons of ore processed and observed that the proposed rule requires stack testing only once a year. The commenter claims that EPA's proposed monitoring requirements would not demonstrate whether sources are in compliance with their emission standards, which renders the rule unenforceable. According to the commenter, the once-a-year stack test would provide no indication as to what a mine's emissions were the rest of the year. The commenter said that a source that failed its stack test would have only one violation of emission standards, even if that test showed that the source likely violated its emission standard throughout the year. The commenter believes that EPA's proposed monitoring requirements would not assure compliance with the proposed emission standards. The commenter also noted that EPA proposed to require sources to monitor their mercury emissions either with CEMS, sampling, or various types of parametric monitoring; however, these methods do not provide direct information about the pounds of mercury emitted. Consequently, none of these monitoring methods could be used to demonstrate whether a source is in or out of compliance with the proposed emission standards.

According to another commenter, all three affected source categories should be required to use CEMS at all times and at all emission points. The commenter stated that the ore pretreatment group especially needs CEMS because of variable levels of mercury in the ore and different operational measures within the control of the facility.

Other commenters supported a requirement for continuous monitoring and said that the CEMS should be

incorporated into the compliance regime as well. The commenters believe that, if the monitoring results indicate that the mine is consistently out of compliance for a period of one week without correction, the process unit should be subject to compliance-based penalties and/or shut down until corrections are made and the process unit is back in compliance. According to the commenters, quarterly stack testing should still be required to demonstrate that the CEMS is working.

*Response:* We recognize the importance of requiring adequate monitoring to assure compliance with the emission standards. Because of the higher mercury emitting potential of the roaster, we proposed the option of mercury monitoring using CEMS or weekly monitoring with PS 12B with associated parametric monitoring as well. We are including in the final rule the option to perform continuous PS 12B monitoring, and, as with the CEMS, associated parametric monitoring would not be required. We are changing the frequency of the proposed weekly concentration monitoring approach for roasters to twice per month (at least 11 days apart) and would allow a facility to conduct a Method 30B test (as an alternative to a PS 12B test), supplemented with continuous parametric monitoring. We changed the frequency because we believe that sampling twice per month, coupled with continuous parametric monitoring, is sufficient for determining that the roaster control devices are operating properly. We added the alternative of using Method 30B because this method directly measures mercury concentration and is a valid means of determining whether the concentration is below the operating limit established during the initial performance test. The twice per month Method 30B measurements will provide a concentration value that can be compared to that operating limit to determine if an exceedance of the operating limit has occurred. Also, if the twice monthly sampling shows repeated deviations over time, EPA could decide at a later date that CEMS or continuous monitoring with PS 12B are appropriate and necessary for roasters.

We disagree with the commenter that the proposed monitoring requirements render the rule unenforceable. Although the mercury concentrations monitoring for roasters along with the parametric monitoring of all control devices on all units do not directly measure pounds of mercury per ton of input, we believe that these actions, along with the annual emissions compliance tests, is still an acceptable approach to assure

compliance with the emission standards all year long. Parametric monitoring of control devices assures that the control devices are operating properly (and reducing emissions) on an ongoing basis. Any exceedance of the parameter limits or operating limits triggers corrective action. If corrective action does not return the mercury concentration within the established limits, the plant must conduct a full compliance test and determine if the source is meeting the mass-based (lb/million tons of ore) emission standard.

We do not believe that we should include CEMS as a monitoring option for the non-roaster sources. These sources have less potential mercury emissions, and requiring CEMS on all these other units would be quite costly and burdensome. Moreover, most of these other units are, or will be, controlled with carbon adsorbers, and the carbon adsorber monitoring required by the final rule is an effective means of ensuring the controls are working effectively on a continuing basis. We consider that either frequent testing of carbon beds to monitor for breakthrough using Method 30B, or frequent adsorbent sampling for mercury content, is an effective way to ensure these mercury control systems are operating properly on a continuing basis. The final rule also requires parametric monitoring of wet scrubbers that are considered the final mercury control (*i.e.*, not followed by a carbon adsorber or calomel mercury scrubber). We believe that annual tests coupled with appropriate parametric monitoring of the wet scrubbers are sufficient to ensure emissions are properly controlled on a continuing basis.

With regard to the comment that quarterly stack testing should be required for facilities using a CEMS, we believe that following the Quality Assurance (QA) procedures detailed in 40 CFR 60, Appendix F, are sufficient to ensure the CEMS continues to operate as designed, and in this case, additional stack sampling is not necessary.

## 2. Operating Limits

*Comment:* One commenter stated that the operating limits for roasters and for carbon adsorbers are inappropriate and set up a second set of MACT standards. The commenter claimed that the operating limits do not take into account the effects of: Hours of operation of a process unit on mercury emissions; reduction in performance of a process unit offset by an improvement in performance of another process unit; variability in the exhaust gas flow rates with no appreciable effect on the

corresponding mercury emission rate; and variability in the inlet mercury concentrations to a carbon adsorber. These factors all result in variability in the outlet mercury concentration. The commenter also noted that the proposed operating limit for carbon adsorbers could result in premature carbon change out, resulting in the generation of more waste. The commenter recommended that EPA defer to the Nevada state monitoring requirements and only provide for monitoring of throughput and annual mercury emission testing to demonstrate compliance with the MACT emission standard. The commenter believes that any operating limit parameters must be established based on manufacturer specifications and recommendations in coordination with the permitting authority and not based on values measured during source compliance testing.

*Response:* We proposed the mercury operating limits as a monitoring tool to ensure that the processes within individual affected sources and their associated control devices are functioning properly on a continuing basis and not as a second set of MACT standards. We developed emission standards for four affected sources, and the emission standard for an affected source applies to the sum of emissions from all process units within the affected source. One unit could have an upward fluctuation in mercury concentration, but the group of process units could still meet the MACT limit. We see the value of the operating limit approach as sufficient to detect significant increases in emissions and as a valuable tool to ensure the control devices are operating effectively and provide quick notification of a potential problem with controls or emissions. The monitoring parameters are used as compliance indicators, and the relevant mercury operating limits are the main “triggers” of a possible emissions increase and are set to alert facility operators when emissions are greater than the corresponding mercury operating limit. We believe it is important to have such monitoring in the rule to ensure the control devices are working properly.

Regarding specific comments about monitoring the carbon adsorber, the State of Nevada has had good results with conducting sampling of the carbon adsorber to maintain its performance. The final rule offers an additional option of measuring the mercury concentration exiting the carbon adsorber that also achieves the same objective of avoiding breakthrough of the bed. We do not expect sudden dramatic failures of this technology.

Instead, we expect to obtain close control of performance by ensuring that the carbon is changed in a way that prevents breakthrough. This monitoring methodology should also prevent premature replacement of the bed.

We disagree with the comments that only monitoring for throughput and annual emissions testing are sufficient to demonstrate compliance with the MACT standards. Such an approach does not yield sufficient data to assure compliance with the emission standards either directly or indirectly by assuring that the control devices are operating properly. The parametric monitoring and operating limits specified in this final rule provide assurance that control devices are properly operated and maintained between emissions tests, and exceedances of the operating limit require corrective action. With regard to the comment that any operating limit parameters should be based solely on manufacturer specifications and/or in consultation with the permitting authority, we have provided various options in this rule for establishing control device parameter limits. Control device operating parameter values sometimes are site-specific and are associated with a level of emissions from the source. Therefore, it is generally preferable for certain control device parameter limits to be associated with an emissions test that demonstrates compliance with the emissions standards. However, we agree that certain parameters for mercury scrubbers applied to roasters, such as the ranges associated with ensuring the proper chemistry of the scrubber, are best provided by the system's manufacturer. Guarantees of performance are usually conditioned by requiring that the system be operated as designed and specified by the manufacturer, and there is no assurance that a potentially narrow range that would be established during a short performance test reflects the full applicable range of proper operation. We also realize that it may be preferable that the permit authority establish the parameter limits for some of the control devices in this industry because of some of the unique characteristics of the processes and control devices used in this industry and the experience of the permit authority with addressing these sources. Therefore, this final rule allows three options for establishing parameter limits: (1) Based on the initial compliance test; (2) according to the manufacturer's specifications; or (3) based on limits established by the permitting authority.

*Comment:* Some commenters stated that their established parametric

monitoring programs are sufficient to confirm that mercury emission controls are functioning properly for roasters. The commenters also stated that the NMCP permits have required parametric limits and that additional CEMS for mercury would neither improve the operation of these current controls, nor reduce mercury emissions. The commenters concluded that the operating parameters monitored on a regular basis are key parameters for measuring the efficiency and operation of the mercury controls and that operating each of these units within the optimum ranges ensures that mercury emissions are being effectively controlled.

*Response:* As discussed above, we do not believe parametric monitoring alone is sufficient for roasters because of the very high mercury emission potential, unless the facility has adequately demonstrated that the mercury emissions from the roasters are consistently very low (*e.g.*, less than 10 pounds per million tons). We have concluded that the combined approach of annual stack compliance testing along with the mercury concentration monitoring and parametric monitoring requirements and options outlined in this rule are necessary to detect excess emissions and to ensure controls are working effectively on a continuous basis. We note that for facilities that choose to monitor the mercury concentration from the roaster with CEMS or continuous PS 12B sampling, they do not have to do parametric monitoring. For facilities that can demonstrate their mercury emissions are less than 10 lbs per million tons of ore, they only have to do parametric monitoring, no mercury concentration monitoring.

### 3. Mercury Concentration Monitoring for Roasters

*Comment:* One commenter stated that the proposed provisions for monitoring mercury concentrations in roaster emissions are not based on roaster process and pollution control device operational parameters and would not yield reliable information that can be used for detecting and correcting problems. The commenter also stated that the formula for establishing the mercury operation limit for roasters is not appropriate because it uses an emission limit that is based on emission test data from several process units in addition to the roaster. The commenter recommended using the methods proposed for parametric monitoring of roaster emission control devices for all roasters. The commenter also has concerns about utilizing PS 12A

(mercury CEMS) and PS 12B for emissions monitoring purposes because there are terms and conditions listed in the proposed rule that are not fully defined. The commenter also recommended deleting the emissions monitoring requirements for mercury concentration for carbon adsorbers for the same reasons described above for roasters.

*Response:* We disagree with the comment that monitoring the mercury concentration in roaster emissions would not yield reliable information that can be used for detecting and correcting problems. An elevated mercury concentration in the roaster stack gas indicates that there could be a problem with either the process or the control device, which could result in excess mercury emissions from that unit. Monitoring the mercury concentration in roaster emissions provides a direct measure of the regulated pollutant (mercury). The commenter is correct that the formula for establishing the mercury operating limit for roasters is based on emission tests performed on several processes units in addition to the roaster. However, for the facilities with roasters that will be subject to the requirements to monitor mercury concentration, the roaster is the biggest source of potential mercury emissions within the affected source. Therefore, we conclude that changes in the mercury concentration in the roaster exhaust gases provide a reasonable indication of overall emissions from the affected source. In addition, the operating limit is not used directly to determine compliance with the MACT emission standard. As mentioned above, it is designed to detect elevated mercury concentrations in the roaster stack gas, which could indicate a problem with either the process or the control device. We continue to believe that it is necessary and appropriate to monitor mercury concentration for the largest source of potential mercury emissions in the source category (*i.e.*, the roaster) to detect excursions in emissions that must be addressed when the operating limit is exceeded. By developing the mercury operating limit from the emission standard and compliance test results, an exceedance of the mercury operating limit will indicate a potential increase in emissions and that corrective actions are needed.

As described above, we believe that either continuous mercury sampling or mercury sampling twice per month (coupled with continuous parametric monitoring of the control device) should be required for the roaster emissions. If a CEMS is used, the daily average

mercury concentration is calculated by averaging the hourly emissions concentrations during that day. The final rule includes continuous sampling with PS 12B as an option for monitoring roasters. If PS 12B is used for continuous integrated sampling (*i.e.*, without parametric monitoring), the daily average concentration is determined by assigning the mercury concentration measured by the sorbent trap monitoring system (total mass of mercury collected during the sampling period divided by the sample volume) as the daily average value to each of the days covered by the integrated sample.

A third option is based on short-term sampling twice per month (at least 11 days apart) for mercury concentration using either PS 12B or Method 30B, and if this option is chosen, continuous parametric monitoring of the mercury scrubber must also be performed. For this short-term sampling option (twice per month sampling) each measured mercury concentration must be compared to the operating limit to determine if an exceedance has occurred. For the contents of the monitoring plan, see 40 FR 63.8(d)(3) and 40 CFR part 60, Appendix F.

We also disagree that parametric monitoring alone is sufficient for carbon adsorbers. For carbon adsorbers, measuring the mercury concentration exiting the carbon bed is also a direct measure of the pollutant of interest. (The other option as established for years in NDEP operating permits involves sampling the carbon for mercury content.) An elevated mercury concentration indicates that there could be a problem with either the process or the control device, which could result in excess mercury emissions from that unit. We have established exit concentration monitoring requirements in many rules for emissions of organic compounds exiting carbon adsorbers. That monitoring has proven to be effective to prevent or detect breakthrough, and the same principles apply here for mercury.

*Comment:* Commenters stated that CEMS for gold mining operations are not capable of accurately measuring mercury emissions and that there are three major challenges with the feasibility of mercury CEMS for the gold mining industry: Mercury CEMS calibration, sample transport, and system operability and reliability. The commenters are concerned with the unavailability of a means to calibrate the CEMS for roasters because existing calibrator designs are simply not capable of generating mercury concentrations high enough to provide meaningful upscale calibration points

that correspond to gold mining source characteristics. The commenters noted the unavailability of National Institute of Standards and Technology (NIST) traceable calibration gases and stated that the current calibration standards traceable to NIST do not apply to the full range of mercury concentrations that can be present in the exhaust gases of roasters. The commenters concluded that the lack of a NIST-traceable standard is a fatal flaw that precludes using mercury CEMS to monitor roaster emissions. Regarding sample transport, the commenters said that current designs of mercury CEMS for coal-fired electric generating units require high temperature umbilical lines to transport the sample from the stack to the analyzer and that CEMS on coal-fired electric generating units have seen umbilical failures occur, representing another challenge to having CEMS function consistently for the continuous monitoring of mercury from industrial sources. The commenters were also concerned with the CEMS operability and reliability because mercury CEMS must contain some type of converter to reduce oxidized mercury to elemental mercury and premature catalytic failures periodically occur in these units resulting in several days of missing data. The commenters continued by stating that users reported mercury CEMS to be unavailable as much as 30 to 40 percent of the electric generating unit operating time. The commenters believe the amount of downtime to be expected from these systems on roasters would likely be even higher. The commenter concluded that the breakdown events, combined with the other types of failures, result in data availability that is substantially inferior to parametric monitoring and cannot justify the significant cost and resource investment necessary to install, operate, and maintain these devices.

The commenters are concerned that continuous data reports of mercury emissions that are not accurate, reliable, or credible could be offered as "credible evidence" to assert a violation. The commenter concluded by stating that this concern was particularly troubling in Nevada, where there are separate mercury limits established pursuant to State law.

**Response:** Regarding the feasibility of using CEMS to monitor mercury emissions from roasters, CEMS have been demonstrated for process units similar to roasters (e.g., coal-fired power plants), and we believe there is no technical reason why they will not work for the roasters. (See NESCAUM, 2010. Technologies for Control and Measurement of Mercury Emissions

from Coal-Fired Power Plants in the United States: A 2010 Status Report Northeast States for Coordinated Air Use Management (NESCAUM) July 2010).

Many of the issues with mercury CEMS have been resolved as facilities have gained experience with their use. However, we realize that mercury concentrations in the exhaust gases from roasters can be higher than the range of concentrations for coal-fired power plants, and that the calibration standards traceable to NIST, that have been available in the past, have not applied to the full range of mercury concentrations that can be present in the exhaust gases from roasters. Nevertheless, as we discussed in the proposal preamble, CEMS manufacturers supply calibration standards for the ranges of concentrations seen at roasters.

In addition, the NIST has recently completed certification of a 'NIST Prime' elemental mercury gas generator at concentrations of 41, 68, 85, 105, 140, 185, 230, 287, and 353  $\mu\text{g}/\text{m}^3$ . Mercury gas generator vendors may now submit elemental mercury gas generators for certification to serve as 'Vendor Primes' in a wide range of concentrations. Therefore NIST traceable mercury gas standards can now be made available in concentrations that cover the full range of the concentrations typically measured from roasters.

After consideration of public comments, we continue to believe CEMS are a valuable tool and a reasonable option for monitoring mercury concentrations and comparing those concentrations to the operating limit that is established by CEMS measurements made during the compliance test. However, we also point out that the final rule does not require the use of CEMS; instead, the final rule includes CEMS as one of the three monitoring options. The other two options that we are promulgating for monitoring mercury from roasters are: (1) Continuous monitoring using PS 12B; and (2) twice per month sampling using PS 12B or Method 30B coupled with parametric monitoring. All three of these monitoring options are intended to ensure that emissions from the roasters are not exceeding operating limits, or if they do exceed the operating limits, that corrective actions are taken in a timely manner to bring the emissions down to within the operating limits. If these corrective actions are not successful then the facility must perform a complete compliance test using the methods in section 63.11646 to determine whether the affected source is in compliance with the MACT

standard. The CEMS can also be used to help identify problems with control systems and ensure that corrective actions are taken immediately to fix such problems. The exceedance of the operating limit is not intended to determine if the source is in violation of the MACT standard. Rather, it would be the subsequent compliance test pursuant to section 63.11646 that would be used to determine if the source is in compliance with the MACT standard.

We understand the commenter's concerns regarding the transport of samples and converter failures. However, we have revised the final rule to give facilities 3 years to comply with the rule which will allow extra time to successfully set-up and operate controls and monitoring equipment to be able to comply with the MACT standards. We believe this will provide sufficient time, for facilities that choose the CEMS monitoring option, to identify and resolve issues with the transport of samples and converters.

**Comment:** One commenter stated that the regulated industry has no experience with direct measurements of mercury concentrations at the roaster exhaust gas stream. As a result, the commenter believes that there will be problems in collecting data, establishing appropriate timeframes for sampling under PS 12B, maintaining instrument reliability for CEMS, and in establishing confidence in the accuracy of the results reported by these methods. The commenter claimed that the calculated operating limit based on source testing and simultaneous direct measurements may not be reflective of the future daily operations of all the stack emissions. The commenter noted that flow rate measurements are critical in verifying compliance with actual emission limits because sometimes lower flow rates of the stack exhaust gas flow can artificially elevate the mercury concentration in the gas stream with no real effect on emissions. The commenter concluded that any exceedance in mercury concentration should be verified first with a compliance test before halting the roaster production.

**Response:** We have learned from the comments received that there may be a learning curve for facilities to implement the concentration monitoring procedures. As described in section V.D. of this preamble, we have established in the final rule a compliance date that is 3 years after the effective date of the final rule for existing sources, partly to allow sources time to ensure they can successfully comply with the monitoring requirements, but mainly to allow time to install new mercury emission



controls that we believe will be necessary to meet the emission standards in the final rule.

We agree that mercury concentration measurements are not direct measurements of the emissions rate from the affected source and that flow rate, production, and other factors need to be considered. These are some of the reasons that the operating limit is not being used as a direct measure of compliance with the MACT standards. However, concentration measurements above the operating limit should indicate that either controls are not working effectively or other problems are occurring. In either case, exceedances of the operating limit require investigation and may require corrective actions. The requirement to shut down the roaster has been removed from this final rule. However an exceedance of the mercury concentration does trigger corrective action, and if not corrected requires a compliance test.

*Comment:* One commenter requested that EPA reduce the weekly Method 12B monitoring frequency to quarterly or at most monthly. The commenter also requested that EPA include a provision that allows for a source to demonstrate a correlation or consistency of performance such that the Method 12B sampling frequency can be further reduced based on the permitting authority's acceptance of the demonstration. The commenter suggested that if multiple Method 12B samples are collected in a single day or over multiple days in the calendar week, then the samples should be averaged, and this average concentration should be compared to the operating limit. The commenter said that, for stacks with high mercury concentration, the sample collection time may be only an hour or two, and in this case, it may be important to collect more than one sample in a single day or over multiple days to obtain a representative mercury concentration measurement.

*Response:* After taking into consideration the commenter's rationale, under this monitoring option, the final rule requires the sampling of mercury concentration at least twice per month (with 2 samples taken at least 11 days apart) instead of weekly sampling as proposed. If multiple samples are taken during the twice per month period, each result must be compared to the operating limit separately (*i.e.*, not averaged). Otherwise, a high result from a sample taken near the end of the sampling period might not trigger corrective actions to correct a problem that developed at that time if the results are averaged with previous samples

during periods of good performance. We do not agree with the suggestion to allow the monitoring frequency to be reduced if the monitoring results demonstrate consistency over the long term. We believe that monitoring the mercury concentration at least twice per month is necessary for roasters to ensure that potential problems with control systems are identified quickly and corrective actions are taken in a timely manner.

#### 4. Parametric Monitoring of Control Device for Roasters

*Comment:* Some commenters recommended that EPA remove the provisions requiring monitoring of the mercury scrubber liquor flow rate and scrubber pressure drop because each facility that has a roaster has a unique sequence of air pollution control devices, and monitoring parameters that may be appropriate for one roaster may not be applicable to another. One of the commenters said that the scrubber liquor flow rate is not currently monitored, nor is it considered a critical parameter in the daily operation of the scrubber mercury removal tower associated with roasters at their facility. The commenter further explained that the scrubber is not a spray tower, but instead the liquor is recirculated in the tower, so the pump is monitored to insure it is operational. The commenter stated that the pressure drop across the mercury removal tower at its roasters is monitored, but is not considered a critical parameter and that the mercuric ion and chloride ion concentrations that they monitor are the critical parameters that define the effectiveness of the mercury scrubber.

Another commenter added that, for the calomel-based mercury scrubbers, the key parameter is the reagent concentration in the solution exiting the scrubber and that maintaining the exit reagent concentration ensures there is sufficient reagent to react with the mercury vapor. The commenter noted that low exit concentrations indicate that either the liquor flow rate is too low, or the fresh reagent addition rate is too low. Thus, liquor flow rate does not need to be monitored in addition to reagent exit concentration. The commenter stated that if EPA continues to require them, the ranges should be based on the manufacturer's specification or an alternative value approved by the permitting authority, as opposed to the three test runs from the initial compliance test. One commenter recommended that the corresponding range or limit for parametric deviations be applied to a daily average value

rather than continuous instantaneous values or single samples.

Another commenter also stated that the requirement to establish the minimum water flow rate and pressure drop of the wet scrubber on readings taken during the performance test should not apply to scrubbers on roasters. The commenter noted that these parameters were intended to monitor for physical processes, and the scrubbers on roasters often include chemical reactions, which are not monitored.

*Response:* We agree that pressure drop is not relevant to mercury scrubbers because, unlike venturi scrubbers applied to control PM emissions, it is not related to its mercury emission control performance. We have removed pressure drop monitoring from the final rule for mercury scrubbers. However, we continue to believe that it is important to monitor the scrubber flow rate to ensure the scrubber solution is being delivered to the system and that the flow is adequate, which is related to the system's performance. We understand that some facilities monitor mercury scrubber solution line pressure (solution header pressure) as an indicator of flow rate, and we agree this is adequate to ensure proper flow. Consequently, the final rule requires hourly monitoring of scrubber flow rate (or line pressure) for mercury scrubbers on roasters. As with the inlet temperature operating range, the minimum flow rate or line pressure must be established by one of the following three ways: (1) During the initial compliance test, (2) from the manufacturer's specifications, or (3) based on the limits established by the permitting authority. If the facility chooses the option to establish the limits during initial compliance, the final rule requires the scrubber flow rate operating limit to be based on either the lowest value for any run of the initial compliance test or 10 percent less than the average value measured during the compliance test and the inlet gas temperature operating limit to be based on either the highest value for any run of the initial compliance test or 10 percent higher than the average value measured during the compliance test. The final rule requires hourly monitoring and that corrective action is triggered if the flow rate or line pressure falls below the established parameter limit.

Regarding the acceptability of scrubber flow rate and inlet gas temperature parameter values that were approved by permitting authorities prior to this final rule, such values must be established as specified in the final rule

and are not presumed in advance to be acceptable. Note that the monitoring requirements for wet scrubbers in § 63.11647 of the final rule would not apply to the mercury scrubbers on roasters, or any wet scrubber prior to the mercury scrubber on the roasters.

*Comment:* One commenter believes that establishing a maximum operating temperature for inlet gas concentrations by artificially increasing this temperature during compliance testing may destroy the control equipment, conflict with recommended operating temperatures, and artificially increase the reported mercury emissions. The commenter concluded that these parameters are not deemed critical in the effective operation of a mercury calomel scrubber. Another commenter added that their Compliance Assurance Monitoring (CAM) plan provides for an inlet gas temperature range of 32° to 134 °F to prevent water freezing problems or extremely hot gas temperatures that could damage the mercury scrubber. The commenter stated that mercury scrubbers remove mercury from the gas stream through a chemical reaction and not a condensation mechanism and that lower temperatures will not remove (via condensation) additional mercury. The commenter explained that, although mercury scrubber inlet gas temperature is not a relevant control performance parameter, their facility maintains the inlet gas temperature below 134 °F and monitors the temperature daily to prevent damage to the controls system from excessively low or high gas temperatures.

*Response:* After additional review of operating permits and consideration of public comments, we have found that the inlet temperature of the mercury scrubber is monitored and maintained within a range to provide operational flexibility with the lower end bounded to prevent freezing and the upper end bounded to prevent damage to equipment, which in turn could lead to excess emissions. In addition, we have learned that this temperature is dependent on the cooling tower water temperature used in the process, and this water temperature can vary quite widely from winter to summer. Facilities may not be able to address the issues described above if they can only use initial compliance testing to establish the inlet temperature operating range, as we proposed. Consequently, the final rule provides the following three ways for a facility with a roaster to establish an operating range for inlet temperature: (1) Based on the maximum inlet temperature during the initial compliance test; (2) from the

manufacturer's specifications; or (3) based on the limits established by the permitting authority. If the facility chooses the option to establish the limits during initial compliance, the final rule requires the inlet gas temperature operating limit to be based on either the highest value for any run of the initial compliance test or 10 percent higher than the average value measured during the compliance test. The facility must monitor the temperature hourly, and any exceedance of the upper limit for temperature would trigger corrective action.

#### 5. Exceeding the Operating Limits for Roasters

*Comment:* One commenter was concerned about the consequences of exceeding a parametric monitoring limit. The commenter remarked that shutting down the roaster for exceeding a monitoring parameter without evidence of an ongoing emission limit exceedance is arbitrary and capricious, unnecessarily punitive, and threatens the economic viability of the regulated sources. The commenter pointed out that the ranges of parameters measured during source testing are not necessarily the only ranges within which the unit can operate effectively. The parameters proposed by EPA are not the best parameters for monitoring roaster emissions and do not directly correlate to mercury emissions or proper control system operation. The commenter also objected to the period of only 45 minutes to investigate and take corrective action.

One commenter recommended that the corrective action response time be extended minimally to 48 hours after daily average values are processed, plus an additional 24 hours to verify the daily average parametric value was within limits. For facilities that conduct PS 12B sampling and a daily average parametric deviation persists for 96 hours, the commenter recommended requiring sampling of the roaster's exhaust using PS 12B within the next 24 hours, then evaluating the mercury concentration results. If the mercury concentration is below the operating limit, then, within 10 days of receiving the analytical results, the facility should be required to either petition the permitting authority for a change in the parametric limits, or provide the permitting authority with a compliance plan that details corrective actions taken to date and the plan and schedule for bringing the parameter back within range. The commenter said that, if the mercury concentration is above the operating limit, the facility will be required to schedule an independent

source testing firm to perform a compliance test within 45 days using one of the approved methods described in the rule. The commenter noted that the Nevada State agency requires 30 days to review the testing protocol, and source testing companies typically require 30 days or more advanced notice.

For roasters where direct concentration measurements are not required and a daily average parametric deviation persists for 96 hours, the commenter recommended that within 48 hours, the facility should: (1) Provide the permitting authority with a compliance plan that details corrective actions taken to date and the plan and schedule for bringing the parameter back within the limits; or (2) schedule an independent source testing firm to perform a compliance test within 45 days using one of the approved methods described in the rule. The commenter concluded that, if the test results show that the source has exceeded the threshold of 10 lb/million tons of ore, the facility would be required to implement direct mercury concentration measurements.

One commenter requested that EPA provide an exception from the shutdown requirement when it can be demonstrated that, notwithstanding an exceedance of the parametric operating range, the roaster mercury emissions are less than the operating limit for mercury concentration. The commenter stated that the mercury concentration measurement is a more direct indication of the ultimate mercury emissions that the parametric monitors are designed to address.

*Response:* We have investigated in greater detail the issues associated with monitoring roasters, and we have consulted with NDEP and the owners and operators of roasters to learn more about appropriate roaster monitoring. We understand that sometimes the ranges of parameters measured during source testing are not necessarily the only ranges within which the unit can operate effectively, that is why in the final rule we are offering two other options for establishing the ranges: (1) Based on manufacturer's specifications; and (2) ranges approved by the permitting authority. We believe that monitoring the scrubber flow rate, inlet gas temperature, and scrubber liquid chemistry, as required in the final rule, are appropriate parameters to monitor. We have also revised the requirements of this final rule to provide assurance that timely corrective actions are taken when a monitoring parameter is exceeded, and we have included requirements for testing for

mercury concentrations to determine if the corrective actions were successful or if a deviation has occurred. The final rule includes parametric monitoring of the mercury scrubbers applied to roasters to control mercury. If a parameter is outside of the established range or limit, corrective actions are triggered. If corrective actions do not result in the parameter reading being corrected and verified within 48 hours, a mercury concentration measurement (using CEMS, Method 30B, 29, OHM, or PS 12B) must be made to determine if the operating limit for mercury concentration is being exceeded. The measurement must be performed and the concentration determined within 48 hours (after the initial 48 hours, or a total of 96 hours). If the measured mercury concentration meets the operating limit for mercury concentration, the corrective actions are deemed successful. In addition, the owner or operator may request approval from the permitting authority to change the parameter range or limit based on measurements of the parameter at the time the mercury concentration measurement was made. If, on the other hand, the operating limit is exceeded, the exceedance must be reported as a deviation and the facility must conduct a full compliance test within 40 days to determine if the source is in compliance with the MACT limit. *See* § 63.11647(d) of final rule.

*Comment:* For facilities that monitor roasters with a CEMS, one commenter proposed that corrective action be required within 48 hours of receiving and processing the results from the CEMS data, plus an additional 24 hours should be allowed to collect verification data to see if the daily average concentration was restored below the operating limit. The commenter recommended that, if the exceedance persists, the facility should be required to schedule an independent source testing firm to perform a compliance test within 45 days.

For facilities that choose PS 12B monitoring, the commenter recommended that a deviation be considered an exceedance of the operating limit if the average of three consecutive sampling results (three weeks) were above the established limit. The commenter proposed that the facility should then have one week to take corrective actions, an additional week to take the verification sample using PS 12B, with receipt of results the following week (three weeks total). The commenter stated that if the exceedance persists, the facility should be required to schedule an independent source testing firm to perform a compliance test

within 45 days using one of the approved methods described in the proposed rule.

*Response:* After considering these comments on the mercury concentration operating limit and the above discussion on parametric monitoring of roasters, we have made several clarifications in the final rule. If a mercury concentration operating limit is exceeded from either daily average measurements from a CEMS, continuous sampling using PS 12B, or from sampling twice per month (at least 11 days apart) using PS 12B or Method 30B, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results that show the deviation. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again (with the CEMS, PS 12B, Method 30B, Method 29, or OHM) and demonstrate to the permit authority that the operating limit for mercury concentration has been met, or inform the permit authority that the limit continues to be exceeded. If the operating limit is still exceeded after these 96 hours, the owner or operator must conduct a full compliance test for the ore pretreatment affected source within 40 days to determine if the affected source is in compliance with the MACT emission standard. If the source is determined to be in compliance, the compliance test may also be used to establish a new operating limit for mercury concentration. *See* § 63.11647(a)(1)(ii), (a)(2)(ii), and (a)(3)(ii) of the final rule.

*Comment:* One commenter requested that EPA provide an exception to the shutdown requirement for facilities that have well-controlled roasters and elect to monitor under the proposed Option 3. The commenter believes a facility should have time (45 days) to demonstrate that the roaster's mercury emissions remain less than 10 lbs of mercury per million tons of ore. The commenter stated that this would be achieved by scheduling an independent source testing firm to perform a compliance test using methods described in the rule, and calculations that demonstrate compliance with the limit of 10 lbs per million tons of ore.

*Response:* As we have discussed above, the final rule relies in part on parametric monitoring of mercury scrubbers used on roasters to assure compliance with the applicable emission standards, and when the measured parametric values are out of the established operating range, corrective actions must be taken. This is no different for facilities that qualify for

the exemption described in § 63.11647(a)(5) of the final rule (*i.e.*, facilities exempt from mercury concentration monitoring by having demonstrated that their roaster emissions are less than 10 lb/million tons of ore). For these facilities, the final rule similarly requires that corrective actions be taken to restore the scrubber operating parameters to the established operating range. If the parameters are not restored to the established range within 48 hours of triggering the corrective actions, the owner or operator must perform mercury concentration sampling of the roaster emissions using PS 12B, Method 30B, Method 29, CEMS or OHM and determine the mercury concentration within 48 hours following the initial 48 hours (or a total of 96 hours from the time the parameter range was exceeded). The measured concentration must be compared to a mercury concentration operating limit that is based on Equation 2 in the final rule, where the value for " $C_{trap}$ " in Equation 2 is based on the mercury concentration for the roaster measured during the most recent compliance test. If the measured mercury concentration meets the operating limit for mercury concentration, the corrective actions are deemed successful. In addition, the owner or operator may request approval from the permitting authority to change the parameter range or limit based on measurements of the parameter at the time the mercury concentration measurement was made. If the operating limit is exceeded, the facility must take corrective actions and report it to the permit authority as a deviation. The owner or operator must also conduct a compliance test within 40 days to determine if the roaster operations are in compliance with the emission standard. *See* § 63.11647(d) of the final rule. We also note that the requirement to shut down the roaster has been removed from this final rule.

#### 6. Carbon Adsorber Temperature Monitoring

*Comment:* Several commenters stated their concern with the proposed requirement of monitoring gas stream temperature at the inlet to the carbon adsorber and maintaining the inlet temperature below the maximum temperature established during the compliance test. They noted that the primary purpose for monitoring the inlet gas stream temperature of carbon adsorbers is to prevent spontaneous combustion of the sulfidized carbon in the adsorber, not to detect excursions in mercury emissions. The commenters also stated that some carbon adsorption systems heat the gas stream prior to the

carbon adsorber to prevent moisture buildup and/or subsequent condensation in the carbon. The commenters explained that the NMCP already requires that the exit gas temperature of condensers prior to the carbon adsorbers be established to minimize mercury emissions from the condenser. The commenters believe that an increase in inlet gas temperature to a carbon adsorption unit is not indicative of an increase in inlet gas stream mercury emissions because the high operating temperatures of the processes volatilize approximately 100 percent of mercury. The commenters stated that establishing a maximum operating temperature for inlet gas concentrations by artificially increasing this temperature during compliance testing may destroy mercury control equipment; conflict with NMCP requirements and/or manufacturer's recommended operating temperatures; artificially increase the reported mercury emissions; or artificially decrease the allowable operating limit for mercury concentration.

The commenters continued by stating that, if EPA persisted in requiring the monitoring of the gas stream inlet temperature, the maximum inlet temperature limit should be established by either the manufacturer's recommendation and/or concurrence with the permitting authority. The commenters proposed monitoring the inlet temperature once per shift as an option to continuously monitoring the inlet temperature and comparing the daily averages rather than the hourly averages to the operating limit. The commenters noted that many facilities do not have digital acquisition systems capable of recording continuous data, and monitoring once per shift is sufficient to maintain control performance. The commenters suggested that, if corrective action is needed, the facility should be allowed to sample the carbon loading to demonstrate that the effectiveness of the carbon adsorber has not been adversely impacted.

*Response:* The purpose of monitoring the inlet temperature to carbon adsorbers is not to provide an indication of higher mercury concentrations in the inlet stream as suggested by the commenters. The purpose is related to the fact that temperature is a fundamental parameter that affects the efficiency and capacity of carbon adsorbers. Generally, higher temperatures result in lower capacity and earlier breakthrough and, in fact, high temperatures are used to desorb adsorbed pollutants to regenerate carbon. In the extreme of temperature,

the carbon adsorber might actually be desorbing rather than acting as a control device. This is particularly important for those carbon adsorbers applied to high temperature thermal processes, such as carbon kilns and melt furnaces, where it is possible for the exhaust temperature to rise above the normal operating temperature or above the temperature at which the carbon adsorber was designed to operate. For high temperature processes (such as furnaces), and not those such as electrowinning where the temperature may be near ambient conditions, we continue to require monitoring the inlet temperature. Owners or operators must establish an operating limit for temperature based on one of the following: (1) The maximum temperature during the initial compliance test; (2) from the manufacturer's specifications; or (3) based on limits established by the permitting authority. If this established operating limit is exceeded corrective action must be taken and the exceedance reported as a deviation to the permit authority. Further, the final rule requires facilities to monitor inlet temperature once per shift rather than continuously, as was proposed. Because inlet temperatures should not vary greatly over the course of an 8- to 12-hour period, we believe monitoring once per shift is adequate. We also conclude that if a temperature exceedance has occurred, the carbon bed should be sampled or the outlet concentration determined, depending on the monitoring option chosen, within 48 hours to ensure no permanent damage to the carbon adsorber occurred as a result of the deviation. We believe the temperature exceedance should be reported as a deviation even if the subsequent monitoring shows that the carbon bed is operating properly because the subsequent monitoring would not necessarily detect if mercury had been desorbed and excess emissions occurred.

#### 7. Monitoring of Wet Scrubbers

*Comment:* One commenter proposed that only the scrubber water flow rate monitoring be required for wet scrubbers on the quenching circuits associated with the roaster. The commenter wanted to confirm that wet scrubber monitoring does not apply to wet scrubbers or condensers on roasters. Another commenter asked that EPA confirm that the term "wet scrubbers" does not include condensers, which are used throughout the mining processes for gas cooling to condense water or (in the case of retorts) mercury. Another commenter asked EPA to confirm that

wet scrubber monitoring does not apply to wet scrubbers associated with ore preheaters.

One commenter noted that continuous readings on wet scrubbers are unreliable and proposed monitoring the water flow rate and pressure drop once per shift. The commenter noted that if any water flow rate or pressure drop reading exceeds the operating limit, the facility should follow the procedures for operating limit exceedances. The commenter stated that many facilities do not have data acquisition systems capable of recording continuous data and that wet scrubbers are primarily used to control particulates. The commenter concluded by stating that wet scrubbers are not key mercury controls and monitoring once per shift is sufficient to maintain control performance on a continuing basis.

One commenter wanted to confirm that the limits established during testing would not be more stringent than the requirements set forth in the Standards of Performance for New Stationary Sources for Metallic Mineral Processing Plants, which allows for plus or minus 30 percent. Another commenter recommended that the operating limit for wet scrubber monitoring be based on either the lowest average value during any test run or no lower than 10 percent below the average value measured during the test.

*Response:* We are clarifying in the final rule that § 63.11647(h) applies only to wet scrubbers not followed by a mercury control system (*i.e.*, carbon adsorber, calomel mercury scrubber, *etc.*). It is necessary to monitor the primary mercury emission control device, which is the last stage of the exhaust gas cleaning treatment train, to ensure it is operating properly and controlling mercury emissions, and the rule does not require that wet scrubbers in the gas treatment train (typically used for control of PM and/or SO<sub>2</sub>) prior to the primary mercury emission control device be monitored under this rule for mercury emissions. However, if there is no carbon adsorber or mercury scrubber, and the wet scrubber in question is the only control device for mercury emissions, the final rule requires that it be monitored once per shift per operating day (*e.g.*, minimum of two times per day) for pressure drop and flow rate with operating limits that are either established during the initial compliance test, from the manufacturer's specifications, or based on approval from the permitting authority (except for pressure drop for autoclaves as discussed above). This applies to wet scrubbers on ore preheaters and quenching if there is no

carbon adsorber or mercury scrubber in the exhaust gas treatment train. As discussed above, the scrubber monitoring for roasters applies to the mercury scrubber (located at or near the end of the exhaust gas treatment train) and does not apply to the wet scrubbers that are used to remove PM and SO<sub>2</sub> prior to the mercury scrubber.

We are clarifying in the final rule that condensers, such as those found at roasters and mercury retorts, are not wet scrubbers. We agree that monitoring and recording the pressure drop once per shift is adequate for monitoring these wet scrubbers to ensure they are operating properly. We disagree that a buffer of  $\pm 30$  percent based on a certain New Source Performance Standard (NSPS) subpart is appropriate for this NESHAP for mercury. The comment suggesting an option of a  $\pm 10$  percent buffer around the average value during the performance test has merit as an option to only using the lowest value during any individual run as the operating limit. If the system is so stable that it shows very minimal variability during the performance test, we agree that it is appropriate to add  $\pm 10$  percent to account for potential future variability. Consequently, we are incorporating this option in the final rule, as suggested by the commenter. However, we are using  $\pm 10$  percent rather than  $\pm 30$  percent. We are also clarifying for the final rule for wet scrubbers on an autoclave, that facilities must establish the pressure drop range according to manufacturer's specifications.

#### 8. Monitoring of Multiple Units Ducted to One Stack

*Comment:* Commenters requested clarification that, for facilities that have two roasters ducted together through a shared mercury control system, the mercury concentration monitoring would be conducted on the combined exhaust stream. The commenters also requested clarification that the mercury concentration operating limit for two roasters that share a control system would be established during the simultaneous operation of the roasters in order to account for the combined mercury emissions from both roasters.

Commenters also requested clarification that, for facilities with multiple process units ducted together through a shared carbon adsorber, the mercury concentration monitoring would be conducted on the combined exhaust stream. The commenters also requested clarification that the mercury concentration operating limit for a carbon adsorber for multiple units that share the carbon adsorber would be

established during the simultaneous operations of all process units in order to account for the combined mercury emissions.

*Response:* We agree with the commenters in general and have made the following clarifications in the final rule. If two roasters share a common control device and stack, the mercury concentration operating limit can be based on both roasters operating if possible. However, monitoring for mercury concentration must be performed at the frequency specified in the final rule whether only one or both roasters are operating. We also have clarified that, for multiple process units vented to a common carbon adsorber, the mercury concentration operating limit can be based on all units operating if possible. However, the ongoing mercury concentration monitoring must be performed at the frequency specified in the final rule for whatever units are operating at the time.

#### 9. Monitoring Mercury Concentration in Roaster Ore

*Comment:* One commenter objected to the proposed requirement to conduct additional compliance testing if the mercury concentration in the ore fed to the roaster is higher than any concentration measured in the previous 12 months. The commenter stated that there would not be an increase in the mercury emissions from their roasters because of the extensive series of mercury controls, some of which operate more efficiently at higher mercury loadings with unchanged stack emissions. In addition, the commenter noted that the rule does not provide details on how to measure the mercury ore concentration or what threshold of significance would be used to show an increase in ore mercury content occurred. The commenter concluded that the requirement would only provide extra cost and burden without any environmental benefit.

*Response:* We agree with the commenter and have removed this requirement (§ 63.11647(a)(4)(iii) of proposed rule) from the final rule. We have no data showing that the mercury content of the ore has a significant effect on the performance of mercury scrubbers applied to roasters, which are designed to handle and operate efficiently for a range of mercury inlet concentrations. In addition, roasters condense and recover elemental mercury prior to the mercury scrubber, and any increase in mercury loading would likely result in an increase in the recovery of liquid elemental mercury. We have identified and require the monitoring of parameters associated

with the scrubber chemistry, and maintaining these parameters within the established range for which the mercury scrubber was designed. This monitoring approach helps ensure that the mercury scrubbers are controlling mercury emission independent of variations in ore mercury content.

## VI. Summary of Environmental, Economic and Health Benefits

For proposal, we estimated baseline mercury emissions to be 3,119 lb/yr based on the available emissions data and average process data for the period 2007 to 2009. To estimate the impacts of the final rule, we have revised our baseline mercury emissions estimate to account for the recent installation of new mercury emission controls at two facilities and additional test data received since proposal. As a result of these changes, we now estimate baseline mercury emissions to be 2,636 lb/yr. We estimate the final MACT standard will reduce mercury emissions from gold mine ore processing and production by 1,461 lb/yr from the baseline emissions levels of 2,636 lb/yr down to a level of 1,176 lb/yr once this NESHAP is fully implemented. The annual emissions expected after the MACT standards are implemented (1,176 lb/yr) represent an estimated 77 percent reduction from 2007 emissions (5,000 lb/yr), a 95 percent reduction from the emissions level in 2001 (about 23,000 lb/yr), and more than 97 percent reduction from uncontrolled emissions levels (more than 37,000 lb/yr). The capital cost of emission controls is estimated as \$36 million with a total annualized cost of \$8 million per year. The capital costs for monitoring, reporting, and recordkeeping are estimated as \$0.5 to \$1.0 million with a total annualized cost of \$0.7 to \$1.5 million per year, depending on the monitoring option that is chosen. The overall cost effectiveness is estimated to be about \$6,300 per pound of mercury reduced. The cost of compliance is estimated to be less than 0.8 percent of sales for all affected firms. We therefore believe that the economic impact on an affected company would be insignificant. Electricity consumption is expected to increase by about 12,600 megawatt-hours per year due to increased fan capacity for carbon adsorbers and the installation of refrigeration units or condensers on a few process units. Non-hazardous solid waste (spent carbon containing mercury that must be regenerated or disposed of) would increase by about 7 tons per year.

## VII. Statutory and Executive Order Reviews

### A. Executive Order 12866: Regulatory Planning and Review

This action is a “significant regulatory action” under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993) because it may raise novel legal or policy issues. Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under Executive Order 12866, and any changes made in response to OMB recommendations have been documented in the docket for this action.

### B. Paperwork Reduction Act

The information collection requirements in this final rule have been submitted for approval to OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* The Information Collection Request (ICR) document prepared by EPA has been assigned EPA ICR No. 2383.01.

The recordkeeping and reporting requirements in this final rule are based, in large part, on the information collection requirements in EPA’s NESHAP General Provisions (40 CFR part 63, subpart A). The recordkeeping and reporting requirements in the General Provisions are specifically authorized by section 114 of the CAA (42 U.S.C. 7414). All information other than emissions data submitted to EPA pursuant to the information collection requirements for which a claim of confidentiality is made is safeguarded according to CAA section 114(c) and EPA’s implementing regulations at 40 CFR part 2, subpart B.

This final NESHAP will require applicable one-time notifications according to the NESHAP General Provisions. In addition, owners or operators must submit annual notifications of compliance status and report any deviations in each semiannual reporting period. Records of all performance tests, measurements of feed input rates, monitoring data, and corrective actions will be required.

The average annual burden for this information collection averaged over the first 3 years of this ICR is estimated to total 483 labor hours per year at a cost of approximately \$26,847 per year for the 21 facilities that will be subject to this final rule, or approximately 23 hours per year per facility. Capital costs are estimated as \$1.0 million, operation and maintenance costs are estimated as \$52,000 per year, and total annualized cost (including capital recovery) is estimated as \$360,210 per year for this final rule’s information collection

requirements. No costs or burden hours are estimated for new sources because none is projected for the next 3 years. Burden is defined at 5 CFR 1320.3(b).

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection displays a currently valid OMB control number. The OMB control numbers for EPA’s regulations in 40 CFR part 63 are listed in 40 CFR part 9. In addition, EPA is amending the table in 40 CFR part 9 of currently approved OMB control numbers for various regulations to list the regulatory citations for the information requirements contained in this final rule.

### C. Regulatory Flexibility Act

The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that this rule would not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions.

For the purposes of assessing the impacts of this final NESHAP on small entities, a small entity is defined as: (1) A small business whose parent company meets the Small Business Administration size standards for small businesses found at 13 CFR 121.201 (less than 500 employees for gold mine ore processing and production facilities—NAICS 212221); (2) a small governmental jurisdiction that is a government of a city, county, town, school district, or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. This final rule is estimated to impact about 21 gold mine ore processing and production facilities, none of which are owned by small entities. Thus, there are no impacts to small entities from this final rule. Although this final rule will contain requirements for new sources, EPA expects few, if any, new sources to be constructed in the next several years. Therefore, EPA did not estimate the impacts for new affected sources for this final rule.

Although this final rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this final rule on small and large entities. These standards establish emission limits that reflect practices and controls that are used throughout the industry and in many cases are already required by State operating permits. These standards also require only the essential monitoring, recordkeeping, and reporting needed to verify compliance. These final standards were developed based on information obtained from industry representatives in our surveys, consultation with business representatives and their trade association and other stakeholders.

### D. Unfunded Mandates Reform Act

This final rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or to the private sector in any one year. This final rule is not expected to impact State, local, or tribal governments. The total nationwide annualized cost of this final rule for affected industrial sources is \$9.1 million/yr. Thus, this final rule is not subject to the requirements of sections 202 and 205 of the Unfunded Mandates Reform Act (UMRA).

This final rule is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments. This final rule will not apply to such governments and will not impose any obligations upon them.

### E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This final rule does not impose any requirements on state and local governments. Thus, Executive Order 13132 does not apply to this action.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicited comment on this proposed action from State and local officials.

*F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). This final rule imposes no requirements on tribal governments; thus, Executive Order 13175 does not apply to this action. Although EPA requested comment from tribal officials in developing this action, no comments on the proposal were received from tribal governments. However, the reductions in mercury emissions to the environment, which will be achieved by this final rule, will certainly benefit tribal populations within the vicinity of affected gold mine ore processing and production facilities.

*G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks*

EPA interprets Executive Order 13045 (62 FR 19885, April 22, 1997) as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5–501 of the Executive Order has the potential to influence the regulation. This action is not subject to Executive Order 13045 because it is based solely on technology performance. However, we note that the final rule will result in significant reductions in emissions of mercury, and thus will provide benefits to children's health.

*H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*

This action is not a “significant energy action” as defined in Executive Order 13211 (66 FR 28355, May 22, 2001) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. We have concluded that this final rule will not likely have any significant adverse energy effects because energy consumption would increase by only 12,600 megawatt-hours per year.

*I. National Technology Transfer and Advancement Act*

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (“NTTAA”), Public Law 104–113 (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards (VCS) in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. VCS are technical standards (e.g., materials specifications, test methods, sampling

procedures, business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable VCS.

This final rulemaking involves technical standards. EPA decided to use ASME PTC 19.10–1981, “Flue and Exhaust Gas Analyses,” for its manual methods of measuring the oxygen or carbon dioxide content of the exhaust gas. These parts of ASME PTC 19.10–1981 are acceptable alternatives to EPA Method 3B. This standard is available from the American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016–5990.

Another VCS, ASTM D6784–02, “Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)” is an acceptable alternative to EPA Method 29 for this NESHAP if approved by the permit authority. This performance test method is available from ASTM International. See <http://www.astm.org/>.

EPA has also decided to use EPA Methods 1, 1A, 2, 2A, 2C, 2D, 2F, 2G, 3, 3A, 3B, 4, 12A, 12B, 29, 30B, SW–846 Method 7471B, “Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique),” (incorporated by reference—see § 63.14) and ASTM D6784–02, “Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources,” (incorporated by reference—see § 63.14). Although the Agency has identified 14 VCS as being potentially applicable to these methods cited in this rule, we have decided not to use these standards in this final rulemaking. The use of these VCS would have been impractical because they do not meet the objectives of the standards cited in this rule. The search and review results are in the docket for this final rule.

Under section 63.7(f) and section 63.8(f) of Subpart A of the General Provisions, a source may apply to EPA for permission to use alternative test methods or alternative monitoring requirements in place of any required testing methods, performance specifications, or procedures in the final rule.

*J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

Executive Order 12898 (59 FR 7629, February 16, 1994) establishes Federal

executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this final rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it will increase the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

Additionally, the Agency has reviewed this rule to determine if there were any existing disproportionately high and adverse human health or environmental effects on minority or low-income populations that could be mitigated by this rulemaking. An analysis of demographic data showed that the areas in closest proximity to gold mines are very rural, with low total populations. The population total for block groups which centers are within 3 miles of a gold mine facility is 1,580. At the three mile radius, minority populations and children's populations are underrepresented when compared to national averages, while populations living below poverty are overrepresented. The aggregate average percentages for these groups are 26.3 percent, 30.5 percent, and 26 percent for minority populations, populations living below poverty, and children's populations, respectively. These averages are compared to national averages across block groups for these populations which are 31.8 percent, 12.5 percent, and 25.7 percent. There were only two block groups with centers within 3 miles of any gold mine, and the total population living below poverty was found to be 492.

In determining the aggregate demographic makeup of the communities near affected sources, EPA used census data at the block group level to identify demographics of the populations considered to be living near affected sources, such that they have notable exposures to current emissions from these sources. In this approach, EPA reviewed the distributions of different socio-demographic groups in the locations of the expected emission reductions from this rule. The review



identified those census block groups within a circular distance of a 1, 3, and 5 miles of affected sources and determined the demographic and socio-economic composition (e.g., race, income, education, etc.) of these census block groups. The radius of 3 miles (or approximately 5 kilometers) has been used in other demographic analyses focused on areas around potential sources.<sup>5 6 7 8</sup> Gold mine facilities were assumed to have an average area of 7 square miles and buffered distances were calculated beyond the 7 square mile area to count populations not within the mine boundaries. EPA's demographic analysis has shown that these areas have an overrepresentation of populations below poverty, and an underrepresentation of minority and children's populations.<sup>9</sup>

This action establishes national emission standards for new and existing gold mines. The EPA estimates that there are approximately 23 such locations covered by this rule. The rule will reduce emissions of mercury (Hg), and as a result have positive health and welfare benefits to sustenance fishing communities, many of which are often considered to have environmental justice concerns.

EPA defines "Environmental Justice" to include meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. To promote meaningful involvement, EPA has developed a communication and outreach strategy to ensure that interested communities have access to this rule and are aware of its content. EPA will publicize the rulemaking via EJ newsletters, Tribal newsletters, EJ listservs, and the Internet, including EPA's Office of Policy's Rulemaking Gateway Web site (<http://yosemite.epa.gov/oepi/RuleGate.nsf/>). EPA will also conduct targeted outreach to EJ communities as appropriate.

<sup>5</sup> U.S. GAO (Government Accountability Office). *Demographics of People Living Near Waste Facilities*. Washington, DC: Government Printing Office; 1995.

<sup>6</sup> Mohai P, Saha R. "Reassessing Racial and Socio-economic Disparities in Environmental Justice Research". *Demography*. 2006;43(2):383–399.

<sup>7</sup> Mennis J. "Using Geographic Information Systems to Create and Analyze Statistical Surfaces of Populations and Risk for Environmental Justice Analysis". *Social Science Quarterly*. 2002;83(1):281–297.

<sup>8</sup> Bullard RD, Mohai P, Wright B, Saha R, et al. *Toxic Waste and Race at Twenty 1987–2007*. United Church of Christ. March 2007.

<sup>9</sup> The results of the demographic analysis are presented in "Review of Environmental Justice Impacts for Gold Mines", December 2010, a copy of which is available in the docket.

Outreach activities may include providing general rulemaking fact sheets (e.g., why is this important for my community) for EJ community groups and conducting conference calls with interested communities. In addition, State and Federal permitting requirements will provide State and local governments and members of affected communities the opportunity to provide comments on the permit conditions associated with permitting the sources affected by this rulemaking.

Overall, this final rule is expected to reduce mercury emissions from gold mine ore processing and production facilities and thus decrease the amount of such emissions to which all affected populations are exposed.

#### K. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this final rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of this final rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This final rule will be effective on February 17, 2011.

#### List of Subjects

##### 40 CFR Part 9

Environmental protection, Reporting and recordkeeping requirements.

##### 40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Incorporation by reference, Reporting and recordkeeping requirements.

Dated: December 16, 2010.

**Lisa P. Jackson,**  
*Administrator.*

For the reasons stated in the preamble, title 40, chapter I, of the Code of Federal Regulations is amended as follows:

#### PART 9—[AMENDED]

■ 1. The authority citation for part 9 continues to read as follows:

**Authority:** 7 U.S.C. 135, *et seq.*, 136–136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601–2671; 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251, *et seq.*, 1311, 1313d, 1314, 1318, 1321, 1326, 1330, 1342, 1344, 1345(d) and (e), 1361; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp. p. 973; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–1, 300j–2, 300j–3, 300j–4, 300j–9, 1857, *et seq.*, 6901–6992k, 7401–7671q, 7542, 9601–9657, 11023, 11048.

#### Subpart A—[Amended]

\* \* \* \* \*

■ 2. The table in § 9.1 is amended by adding an entry in numerical order for "63.11647–63.11648" under the heading "National Emission Standards for Hazardous Air Pollutants for Source Categories" to read as follows:

#### § 9.1 OMB Approvals under the Paperwork Reduction Act.

\* \* \* \* \*

| 40 CFR citation                                                                             | OMB control No. |
|---------------------------------------------------------------------------------------------|-----------------|
| * * *                                                                                       | * *             |
| National Emission Standards for Hazardous Air Pollutants for Source Categories <sup>3</sup> |                 |
| * * *                                                                                       | * *             |
| 63.11647–63.11648 .....                                                                     | 2060–NEW        |
| * * *                                                                                       | * *             |
| * * *                                                                                       | * *             |

<sup>3</sup> The ICRs referenced in this section of the table encompass the applicable general provisions contained in 40 CFR part 63, subpart A, which are not independent information collection requirements.

\* \* \* \* \*

#### PART 63—[AMENDED]

■ 3. The authority citation for part 63 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

#### Subpart A—[Amended]

■ 4. Section 63.14 is amended by adding paragraph (b)(66), revising paragraph (i)(1), and adding paragraph (k)(1)(v) to read as follows:

#### § 63.14 Incorporation by reference.

\* \* \* \* \*

(b) \* \* \*

(66) ASTM D6784–02 (Reapproved 2008), Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method),

approved April 1, 2008, IBR approved for § 63.11646(a)(1)(vi), § 63.11647(a)(1)(ii), § 63.11647(a)(3)(ii), and § 63.11647(d).

\* \* \* \* \*

(i) \* \* \*

(1) ANSI/ASME PTC 19.10–1981, Flue and Exhaust Gas Analyses [Part 10, Instruments and Apparatus], issued August 31, 1981 IBR approved for §§ 63.309(k)(1)(iii), 63.865(b), 63.3166(a)(3), 63.3360(e)(1)(iii), 63.3545(a)(3), 63.3555(a)(3), 63.4166(a)(3), 63.4362(a)(3), 63.4766(a)(3), 63.4965(a)(3), 63.5160(d)(1)(iii), 63.9307(c)(2), 63.9323(a)(3), 63.11148(e)(3)(iii), 63.11155(e)(3), 63.11162(f)(3)(iii) and (f)(4), 63.11163(g)(1)(iii) and (g)(2), 63.11410(j)(1)(iii), 63.11551(a)(2)(i)(C), 63.11646(a)(1)(iii), table 5 to subpart DDDDD of this part, and table 1 to subpart ZZZZZ of this part.

\* \* \* \* \*

(k) \* \* \*

(1) \* \* \*

(v) SW–846 Method 74741B, Revision 2, “Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)” February 2007, IBR approved for § 63.11647(f)(2).

\* \* \* \* \*

■ 5. Part 63 is amended by adding subpart EEEEEEE to read as follows:

**Subpart EEEEEEE—National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category**

**Applicability and Compliance Dates**

Sec.

63.11640 Am I subject to this subpart?

63.11641 What are my compliance dates?

**Standards and Compliance Requirements**

63.11645 What are my mercury emission standards?

63.11646 What are my compliance requirements?

63.11647 What are my monitoring requirements?

63.11648 What are my notification, reporting, and recordkeeping requirements?

**Other Requirements and Information**

63.11650 What General Provisions apply to this subpart?

63.11651 What definitions apply to this subpart?

63.11652 Who implements and enforces this subpart?

63.11653 [Reserved]

**Tables to Subpart EEEEEEE of Part 63**

Table 1 to Subpart EEEEEEE of Part 63—Applicability of General Provisions to Subpart EEEEEEE

**Subpart EEEEEEE—National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category**

**Applicability and Compliance Dates**

**§ 63.11640 Am I subject to this subpart?**

(a) You are subject to this subpart if you own or operate a gold mine ore processing and production facility as defined in § 63.11651, that is an area source.

(b) This subpart applies to each new or existing affected source. The affected sources are each collection of “ore pretreatment processes” at a gold mine ore processing and production facility, each collection of “carbon processes with mercury retorts” at a gold mine ore processing and production facility, each collection of “carbon processes without mercury retorts” at a gold mine ore processing and production facility, and each collection of “non-carbon concentrate processes” at a gold mine ore processing and production facility, as defined in § 63.11651.

(1) An affected source is existing if you commenced construction or reconstruction of the affected source on or before April 28, 2010.

(2) An affected source is new if you commenced construction or reconstruction of the affected source after April 28, 2010.

(c) This subpart does not apply to research and development facilities, as defined in section 112(c)(7) of the Clean Air Act (CAA).

(d) If you own or operate a source subject to this subpart, you must have or you must obtain a permit under 40 CFR part 70 or 40 CFR part 71.

**§ 63.11641 What are my compliance dates?**

(a) If you own or operate an existing affected source, you must comply with the applicable provisions of this subpart no later than February 17, 2014.

(b) If you own or operate a new affected source, and the initial startup of your affected source is on or before February 17, 2011, you must comply with the provisions of this subpart no later than February 17, 2011.

(c) If you own or operate a new affected source, and the initial startup of your affected source is after February 17, 2011, you must comply with the provisions of this subpart upon startup of your affected source.

**Standards and Compliance Requirements**

**§ 63.11645 What are my mercury emission standards?**

(a) For existing ore pretreatment processes, you must emit no more than

127 pounds of mercury per million tons of ore processed.

(b) For existing carbon processes with mercury retorts, you must emit no more than 2.2 pounds of mercury per ton of concentrate processed.

(c) For existing carbon processes without mercury retorts, you must emit no more than 0.17 pounds of mercury per ton of concentrate processed.

(d) For existing non-carbon concentrate processes, you must emit no more than 0.2 pounds of mercury per ton of concentrate processed.

(e) For new ore pretreatment processes, you must emit no more than 84 pounds of mercury per million tons of ore processed.

(f) For new carbon processes with mercury retorts, you must emit no more than 0.8 pounds of mercury per ton of concentrate processed.

(g) For new carbon processes without mercury retorts, you must emit no more than 0.14 pounds of mercury per ton of concentrate processed.

(h) For new non-carbon concentrate processes, you must emit no more than 0.1 pounds of mercury per ton of concentrate processed.

(i) The standards set forth in this section apply at all times.

**§ 63.11646 What are my compliance requirements?**

(a) Except as provided in paragraph (b) of this section, you must conduct a mercury compliance emission test within 180 days of the compliance date for all process units at new and existing affected sources according to the requirements in paragraphs (a)(1) through (a)(13) of this section. This compliance testing must be repeated annually thereafter, with no two consecutive annual compliance tests occurring less than 3 months apart or more than 15 months apart.

(1) You must determine the concentration of mercury and the volumetric flow rate of the stack gas according to the following test methods and procedures:

(i) Method 1 or 1A (40 CFR part 60, appendix A–1) to select sampling port locations and the number of traverse points in each stack or duct. Sampling sites must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) and prior to any releases to the atmosphere.

(ii) Method 2, 2A, 2C, 2D, 2F (40 CFR part 60, appendix A–1), or Method 2G (40 CFR part 60, appendix A–2) to determine the volumetric flow rate of the stack gas.

(iii) Method 3, 3A, or 3B (40 CFR part 60, appendix A–2) to determine the dry

molecular weight of the stack gas. You may use ANSI/ASME PTC 19.10, "Flue and Exhaust Gas Analyses" (incorporated by reference—see § 63.14) as an alternative to EPA Method 3B.

(iv) Method 4 (40 CFR part 60, appendix A–3) to determine the moisture content of the stack gas.

(v) Method 29 (40 CFR part 60, appendix A–8) to determine the concentration of mercury, except as provided in paragraphs (a)(1)(vi) and (vii) of this section.

(vi) Upon approval by the permitting authority, ASTM D6784; "Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)" (incorporated by reference—see § 63.14) may be used as an alternative to Method 29 to determine the concentration of mercury.

(vii) Upon approval by the permitting authority, Method 30B (40 CFR part 60, appendix A–8) may be used as an alternative to Method 29 to determine the concentration of mercury for those process units with relatively low particulate-bound mercury as specified in Section 1.2 of Method 30B.

(2) A minimum of three test runs must be conducted for each performance test of each process unit. Each test run conducted with Method 29 must collect a minimum sample volume of 0.85 dry standard cubic meters (30 dry standard cubic feet). If conducted with Method 30B or ASTM D6784, determine sample time and volume according to the testing criteria set forth in the relevant

method. If the emission testing results for any of the emission points yields a non-detect value, then the minimum detection limit (MDL) must be used to calculate the mass emissions rate (lb/hr) used to calculate the emissions factor (lb/ton) for that emission point and, in turn, for calculating the sum of the emissions (in units of pounds of mercury per ton of concentrate, or pounds of mercury per million tons of ore) for all emission points subject to the emission standard for determining compliance. If the resulting mercury emissions are greater than the MACT emission standard, the owner or operator may use procedures that produce lower MDL results and repeat the mercury emissions testing one additional time for any emission point for which the measured result was below the MDL. If this additional testing is performed, the results from that testing must be used to determine compliance (*i.e.*, there are no additional opportunities allowed to lower the MDL).

(3) Performance tests shall be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests. Performance tests must be conducted under operating conditions (including process or production throughputs) that are based

on representative performance. Record and report to the permit authority the process throughput for each test run. For sources with multiple emission units (*e.g.*, two roasters, or a furnace, electrowinning circuit and a mercury retort) ducted to a common control device and stack, compliance testing must be performed either by conducting a single compliance test with all affected emissions units in operation or by conducting a separate compliance test on each emissions unit.

Alternatively, the owner or operator may request approval from the permit authority for an alternative testing approach. If the units are tested separately, any emissions unit that is not tested initially must be tested as soon as is practicable. If the performance test is conducted when all affected units are operating, then the number of hours of operation used for calculating emissions pursuant to paragraphs (a)(6) and (7) of this section must be the total number of hours for the unit that has the greatest total operating hours for that period of time, or based on an appropriate alternative method approved by the permit authority to account for the hours of operation for each separate unit in these calculations.

(4) Calculate the mercury emission rate (lb/hr), based on the average of 3 test run values, for each process unit (or combination of units that are ducted to a common stack and are tested when all affected sources are operating pursuant to paragraph (a)(3) of this section) using Equation (1) of this section:

$$E = C_s * Q_s * K \quad (\text{Eq. 1})$$

Where:

E = mercury emissions in lb/hr;

C<sub>s</sub> = concentration of mercury in the stack gas, in grains per dry standard cubic foot (gr/dscf);

Q<sub>s</sub> = volumetric flow rate of the stack gas, in dry standard cubic feet per hour; and

K = conversion factor for grains (gr) to pounds (lb),  $1.43 \times 10^{-4}$ .

(5) Monitor and record the number of one-hour periods each process unit operates during each month.

(6) For the initial compliance determination for both new and existing sources, determine the total mercury emissions for all the full calendar months between the compliance date and the date of the initial compliance test by multiplying the emission rate in lb/hr for each process unit (or combination of units ducted to a common stack that are tested together) by the number of one-hour periods each

process unit (or the unit that had the greatest total operating hours among the combination of multiple units with one stack that are tested together, or an alternative method approved by the permit authority, pursuant to paragraph (a)(3) of this section) operated during those full calendar months prior to the initial compliance test. This initial period must include at least 1 full month of operations. After the initial compliance test, for subsequent compliance tests, determine the mercury mass emissions for the 12 full calendar months prior to the compliance test in accordance with the procedures in paragraph (a)(7) of this section. Existing sources may use a previous emission test for their initial compliance determination in lieu of conducting a new test if the test was conducted within one year of the

compliance date using the methods specified in paragraphs (a)(1) through (a)(4) of this section, and the tests were representative of current operating processes and conditions. If a previous test is used for their initial compliance determination, 3 to 12 full months of data on hours of operation and production (*i.e.*, million tons of ore or tons of concentrate), including the month the test was conducted, must be used to calculate the emissions rate (in units of pounds of mercury per million tons of ore for the ore pretreatment affected sources, or in units of pounds of mercury per tons of concentrate for the other affected sources).

(7) For compliance determinations following the initial compliance test for new and existing sources, determine the total mercury mass emissions for each process unit for the 12 full calendar

months preceding the performance test by multiplying the emission rate in lb/hr for each process unit (or combination of units ducted to a common stack that are tested together) by the number of one-hour periods each process unit (or the unit that had the greatest total operating hours among the combination of multiple units with one stack that are tested together, or an alternative method approved by the permit authority, pursuant to paragraph (a)(3) of this section) operated during the 12 full calendar months preceding the completion of the performance tests.

(8) You must install, calibrate, maintain and operate an appropriate weight measurement device, mass flow meter, or densitometer and volumetric flow meter to measure ore throughput for each roasting operation and autoclave and calculate hourly, daily and monthly totals in tons of ore according to paragraphs (a)(8)(i) and (a)(8)(ii) of this section.

(i) Measure the weight or the density and volumetric flow rate of the oxidized ore slurry as it exits the roaster oxidation circuit(s) and before the carbon-in-leach tanks. Alternatively, the weight of the ore can be measured "as fed" if approved by the permit authority as an acceptable equivalent method to measure amount of ore processed.

(ii) Measure the weight or the density and volumetric flow rate of the ore slurry as it is fed to the autoclave(s). Alternatively, the weight or the density and volumetric flow rate of the oxidized ore slurry can be measured as it exits the autoclave and before the carbon-in-leach tanks if approved by the permit authority as an acceptable equivalent method to measure amount of ore processed.

(9) Measure the weight of concentrate (produced by electrowinning, Merrill Crowe process, gravity feed, or other methods) using weigh scales for each batch prior to processing in mercury retorts or melt furnaces. For facilities with mercury retorts, the concentrate must be weighed in the same state and condition as it is when fed to the mercury retort. For facilities without mercury retorts, the concentrate must be weighed prior to being fed to the melt furnace before drying in any ovens. For facilities that ship concentrate offsite, measure the weight of concentrate as shipped offsite. You must keep accurate records of the weights of each batch of concentrate processed and calculate, and record the total weight of concentrate processed each month.

(10) You must maintain the systems for measuring density, volumetric flow rate, and weight within  $\pm 5$  percent accuracy. You must describe the

specific equipment used to make measurements at your facility and how that equipment is periodically calibrated. You must also explain, document, and maintain written procedures for determining the accuracy of the measurements and make these written procedures available to your permitting authority upon request. You must determine, record, and maintain a record of the accuracy of the measuring systems before the beginning of your initial compliance test and during each subsequent quarter of affected source operation.

(11) Record the weight in tons of ore for ore pretreatment processes and concentrate for carbon processes with mercury retorts, carbon processes without mercury retorts, and for non-carbon concentrate processes on a daily and monthly basis.

(12) Calculate the emissions from each new and existing affected source for the sum of all full months between the compliance date and the date of the initial compliance test in pounds of mercury per ton of process input using the procedures in paragraphs (a)(12)(i) through (a)(12)(iv) of this section to determine initial compliance with the emission standards in § 63.11645. This must include at least 1 full month of data. Or, if a previous test is used pursuant to paragraph (a)(6) of this section for the initial compliance test, use a period of time pursuant to paragraph (a)(6) of this section to calculate the emissions for the affected source. After this initial compliance test period, determine annual compliance using the procedures in paragraph (a)(13) of this section for existing sources.

(i) For ore pretreatment processes, divide the sum of mercury mass emissions (in pounds) from all roasting operations and autoclaves during the number of full months between the compliance date and the initial compliance test by the sum of the total amount of gold mine ore processed (in million tons) in these process units during those same full months following the compliance date. Or, if a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.*, million tons of ore) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per million tons of ore.

(ii) For carbon processes with mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, mercury retorts, and

melt furnaces during the initial number of full months between the compliance date and the initial compliance tests by the total amount of concentrate (in tons) processed in these process units during those same full months following the compliance date. If a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.*, tons of concentrate) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per tons of concentrate.

(iii) For carbon processes without mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, and melt furnaces during the initial number of full months between the compliance date and the initial compliance tests by the total amount of concentrate (in tons) processed in these process units during those same full months following the compliance date. If a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.*, tons of concentrate) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per tons of concentrate.

(iv) For non-carbon concentrate processes, divide the sum of mercury mass emissions (in pounds) from mercury retorts and melt furnaces during the initial number of full months between the compliance date and the initial compliance tests by the total amount of concentrate (in tons) processed in these process units during those same full months following the compliance date. If a previous test is used to determine initial compliance, pursuant to paragraph (a)(6) of this section, then the same 3 to 12 full months of production data (*i.e.*, tons of concentrate) and hours of operation referred to in paragraph (a)(6) of this section, must be used to determine the emissions in pounds of mercury per tons of concentrate.

(13) After the initial compliance test, calculate the emissions from each new and existing affected source for each 12-month period preceding each subsequent compliance test in pounds of mercury per ton of process input using the procedures in paragraphs (a)(13)(i) through (iv) of this section to determine compliance with the emission standards in § 63.11645.

(i) For ore pretreatment processes, divide the sum of mercury mass

emissions (in pounds) from all roasting operations and autoclaves in the 12-month period preceding a compliance test by the sum of the total amount of gold mine ore processed (in million tons) in that 12-month period.

(ii) For carbon processes with mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, mercury retorts, and melt furnaces in the 12-month period preceding a compliance test by the total amount of concentrate (in tons) processed in these process units in that 12-month period.

(iii) For carbon processes without mercury retorts, divide the sum of mercury mass emissions (in pounds) from all carbon kilns, preg tanks, electrowinning, and melt furnaces in the 12-month period preceding a compliance test by the total amount of concentrate (in tons) processed in these process units in that 12-month period.

(iv) For non-carbon concentrate processes, divide the sum of mercury mass emissions (in pounds) from mercury retorts and melt furnaces in the 12-month period preceding a compliance test by the total amount of concentrate (in tons) processed in these process units in that 12-month period.

(b) At all times, you must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

#### **§ 63.11647 What are my monitoring requirements?**

(a) Except as provided in paragraph (a)(5) of this section, you must monitor each roaster for mercury emissions using one of the procedures in paragraphs (a)(1), (a)(2), or (a)(3) of this section and establish operating limits for mercury concentration as described in paragraph (a)(4) of this section.

(1) Perform sampling and analysis of the roaster's exhaust for mercury concentration using EPA Performance Specification 12B (40 CFR part 60, appendix B and Procedure 5 of appendix F) or EPA Method 30B (40 CFR part 60, appendix A-8) at least twice per month. A minimum of two measurements must be taken per month

that are at least 11 days apart from other consecutive tests. The mercury concentration must be maintained below the operating limit established in paragraph (a)(4) of this section. The results of the sampling must be obtained within 72 hours of the time the sample is taken.

(i) To determine the appropriate sampling duration, you must review the available data from previous stack tests to determine the upper 99th percentile of the range of mercury concentrations in the exit stack gas. Based on this upper end of expected concentrations, select an appropriate sampling duration that is likely to provide a valid sample and not result in breakthrough of the sampling tubes. If breakthrough of the sampling tubes occurs, you must re-sample within 7 days using a shorter sampling duration.

(ii) If any mercury concentration measurement from the twice per month sampling with PS 12B or Method 30B is higher than the operating limit, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again (with PS 12B (40 CFR part 60, appendix B and Procedure 5 of appendix F), Method 30B or Method 29 (40 CFR part 60, appendix A-8), or ASTM D6784 (incorporated by reference—see § 63.14)) and demonstrate to the permit authority that the mercury concentration is no higher than the operating limit, or inform the permit authority that the limit continues to be exceeded. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority. The owner or operator must conduct a full compliance test pursuant to § 63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance, the compliance test may also be used to establish a new operating limit for mercury concentration (in accordance with paragraph (e) of this section).

(2) Install, operate, calibrate, and maintain a continuous emissions monitoring system (CEMS) to continuously measure the mercury concentration in the final exhaust stream from each roaster according to the requirements of Performance Specification 12A (40 CFR part 60, appendix B) except that calibration standards traceable to the National Institute of Standards and Technology are not required. You must perform a data accuracy assessment of the CEMS according to section 5 of Appendix F in part 60 and follow the applicable monitoring requirements in § 63.8 as provided in Table 1 to subpart EEEEEEE.

(i) You must continuously monitor the daily average mercury concentration from the roaster and maintain the daily average concentration below the operating limit established in paragraph (a)(4) of this section.

(ii) If the daily average mercury concentration from the CEMs is higher than the operating limit, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again (with the CEMs (40 CFR part 60, appendix B and Procedure 5 of appendix F) and demonstrate to the permit authority that the mercury concentration is no higher than the operating limit, or inform the permit authority that the limit continues to be exceeded. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority, and the owner or operator must conduct a full compliance test pursuant to § 63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance, the compliance test results may also be used to establish a new operating limit for mercury concentration (in accordance with paragraph (e) of this section).

(iii) You must submit a monitoring plan that includes quality assurance and quality control (QA/QC) procedures sufficient to demonstrate the accuracy of

the CEMS to your permitting authority for approval 180 days prior to your initial compliance test. At a minimum, the QA/QC procedures must include daily calibrations and an annual accuracy test for the CEMS.

(3) Continuously measure the mercury concentration in the final exhaust stream from each roaster using EPA Performance Specification 12B (40 CFR part 60 appendix B and Procedure 5 of appendix F).

(i) You must continuously measure the mercury concentration in the roaster exhaust and maintain the average daily mercury concentration below the operating limit established in paragraph (a)(4) of this section. To determine the appropriate sampling duration, you must review the available data from previous stack tests to determine the upper 99th percentile of the range of mercury concentrations in the exit stack gas. Based on this upper end of expected concentrations, select an appropriate sampling duration that is likely to provide a valid sample and not result in breakthrough of the sampling tubes. If breakthrough of the sampling

tubes occurs, you must re-sample within 7 days using a shorter sampling duration.

(ii) If the daily average mercury concentration is higher than the operating limit, the exceedance must be reported to the permit authority as a deviation and corrective actions must be implemented within 48 hours upon receipt of the sampling results. Moreover, within 96 hours of the exceedance, the owner or operator must measure the concentration again with PS 12B (40 CFR part 60, appendix B and Procedure 5 of appendix F), Method 30B or Method 29 (40 CFR part 60, appendix A–8), or ASTM D6784 (incorporated by reference—see § 63.14) and demonstrate to the permit authority that the mercury concentration is no higher than the operating limit, or inform the permit authority that the limit continues to be exceeded. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority and the owner or operator must conduct a full

compliance test pursuant to § 63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance, the compliance test results may also be used to establish a new operating limit for mercury concentration (in accordance with paragraph (e) of this section).

(4) Use Equation (2) of this section to establish an upper operating limit for mercury concentration as determined by using the procedures in paragraphs (a)(1), (a)(2), or (a)(3) of this section concurrently while you are conducting your annual compliance performance stack tests according to the procedures in § 63.11646(a).

$$\text{OLR} = C_{\text{test}} * (\text{EL}/\text{CT}) \quad (\text{Eq } 2)$$

Where:

OLR = mercury concentration operating limit for the roaster (or roasters that share a common stack) (in micrograms per cubic meter);

$C_{\text{test}}$  = average mercury concentration measured by the monitoring procedures (PS 12A or PS 12B or 30B) during the compliance performance stack test (in micrograms per cubic meter);

EL = emission standard for ore pretreatment processes (in lb/million tons of ore);

CT = compliance test results for ore pretreatment processes (in lb/million tons of ore).

(5) For roasters that utilize calomel-based mercury control systems for emissions controls, you are not required to perform the monitoring for mercury emissions in paragraphs (a)(1), (a)(2), or (a)(3) of this section if you demonstrate to the satisfaction of your permitting authority that mercury emissions from the roaster are less than 10 pounds of mercury per million tons of ore throughput. If you make this demonstration, you must conduct the parametric monitoring as described below in paragraphs (b) and (c) of this section.

(i) The initial demonstration must include three or more consecutive independent stack tests for mercury at least one month apart on the roaster exhaust stacks. Subsequent demonstrations may be based upon the

single stack test required in paragraph (a) of section § 63.11646. The results of each of the tests must be less than 10 pounds of mercury per million tons of ore. The testing must be performed according to the procedures in § 63.11646(a)(1) through (a)(4) to determine mercury emissions in pounds per hour.

(ii) Divide the mercury emission rate in pounds per hour by the ore throughput rate during the test expressed in millions of tons per hour to determine the emissions in pounds per million tons of ore.

(b) For facilities with roasters and a calomel-based mercury control system that choose to monitor for mercury emissions using the procedures in paragraph (a)(1) of this section or that qualify for and choose to follow the requirements in paragraph (a)(5) of this section, you must establish operating parameter limits for scrubber liquor flow (or line pressure) and scrubber inlet gas temperature and monitor these parameters. You may establish your operating parameter limits from the initial compliance test, according to the manufacturer's specifications, or based on limits established by the permitting authority. If you choose to establish your operating parameter limits from the initial compliance test, monitor the scrubber liquor flow (or line pressure)

and scrubber inlet gas temperature during each run of your initial compliance test. The minimum operating limit for scrubber liquor flow rate (or line pressure) is either the lowest value during any run of the initial compliance test or 10 percent less than the average value measured during the compliance test, and your maximum scrubber inlet temperature limit is the highest temperature measured during any run of the initial compliance test or 10 percent higher than the average value measured during the compliance test. You must monitor the scrubber liquor flow rate (or line pressure) and scrubber inlet gas temperature hourly and maintain the scrubber liquor flow (or line pressure) at or above the established operating parameter and maintain the inlet gas temperature below the established operating parameter limit.

(c) For facilities with roasters and a calomel-based mercury control system that choose to monitor for mercury emissions using the procedures in paragraph (a)(1) of this section or that qualify for and follow the requirements in paragraph (a)(5) of this section, you must establish operating parameter ranges for mercuric ion and chloride ion concentrations or for oxidation reduction potential and pH using the

procedures in paragraph (c)(1) or (c)(2) of this section respectively.

(1) Establish the mercuric ion concentration and chloride ion concentration ranges for each calomel-based mercury control system. The mercuric ion concentration and chloride ion concentration ranges for each calomel-based mercury control system must be based on the manufacturer's specifications, or based on approval by your permitting authority. Measure the mercuric ion concentration and chloride ion concentrations at least once during each run of your initial compliance test. The measurements must be within the established concentration range for mercuric ion concentration and chloride ion concentration. Subsequently, you must sample at least once daily and maintain the mercuric ion concentration and chloride ion concentrations within their established range.

(2) Establish the oxidation reduction potential and pH range for each calomel-based mercury control system. The oxidation reduction potential and pH range for each calomel-based mercury control system must be based on the manufacturer's specifications, or based on approval by your permitting authority. Install monitoring equipment to continuously monitor the oxidation reduction potential and pH of the calomel-based mercury control system scrubber liquor. Measure the oxidation reduction potential and pH of the scrubber liquor during each run of your initial compliance test. The measurements must be within the established range for oxidation reduction potential and pH. Subsequently, you must monitor the oxidation reduction potential and pH of the scrubber liquor continuously and maintain it within the established operating range.

(d) If you have an exceedance of a control device operating parameter range provided in paragraphs (b) or (c) of this section, you must take corrective action and bring the parameters back into the established parametric ranges. If the corrective actions taken following an exceedance do not result in the operating parameter value being returned within the established range within 48 hours, a mercury concentration measurement (with PS 12B or PS 12A CEMS (40 CFR part 60, appendix B and Procedure 5 of appendix F), Method 30B or Method 29 (40 CFR part 60, appendix A–8), or ASTM D6784 (incorporated by reference—see § 63.14)) must be made to determine if the operating limit for mercury concentration is being exceeded. The measurement must be performed and the mercury concentration determined within 48 hours (after the initial 48 hours, or a total of 96 hours from the time the parameter range was exceeded). If the measured mercury concentration meets the operating limit for mercury concentration established under § 63.11647(a)(4), the corrective actions are deemed successful, and the owner or operator can request the permit authority to establish a new limit or range for the parameter. If the measured mercury concentration exceeds the operating limit for mercury concentration after these 96 hours, the exceedance must be reported as a deviation within 24 hours to the permitting authority and the owner or operator must conduct a full compliance test pursuant to § 63.11646(a) for the roaster operations within 40 days to determine if the affected source is in compliance with the MACT emission standard. For facilities that have roasters and autoclaves, the owner or operator can use the results of the previous

compliance test for the autoclaves to determine the emissions for those process units to be used in the calculations of the emissions for the affected source. If the source is determined to be in compliance with the MACT emission standard, the compliance test may also be used to establish a new operating limit for mercury concentration (see paragraph (e) of this section).

(e) You may submit a request to your permitting authority for approval to change the operating limits established under paragraph (a)(4) of this section for the monitoring required in paragraph (a)(1), (a)(2), or (a)(3) of this section. In the request, you must demonstrate that the proposed change to the operating limit detects changes in levels of mercury emission control. An approved change to the operating limit under this paragraph only applies until a new operating limit is established during the next annual compliance test.

(f) You must monitor each process unit at each new and existing affected source that uses a carbon adsorber to control mercury emissions using the procedures in paragraphs (f)(1) or (f)(2) of this section. A carbon adsorber may include a fixed carbon bed, carbon filter packs or modules, carbon columns, and other variations.

(1) Continuously sample and analyze the exhaust stream from the carbon adsorber for mercury using Method 30B (40 CFR part 60, appendix A–8) for a duration of at least the minimum sampling time specified in Method 30B and up to one week that includes the period of the annual performance test.

(i) Establish an upper operating limit for the process as determined using the mercury concentration measurements from the sorbent trap (Method 30B) as calculated from Equation (3) of this section.

$$OLC = C_{\text{trap}} * (EL/CT) \quad (\text{Eq } 3)$$

Where:

OLC = mercury concentration operating limit for the carbon adsorber control device on the process as measured using the sorbent trap, (micrograms per cubic meter);

$C_{\text{trap}}$  = average mercury concentration measured using the sorbent trap during the week that includes the compliance performance test, (micrograms per cubic meter);

EL = emission standard for the affected sources (lb/ton of concentrate);

CT = compliance test results for the affected sources (lb/ton of concentrate).

(ii) Sample and analyze the exhaust stream from the carbon adsorber for mercury at least monthly using Method 30B (40 CFR part 60, appendix A–8). When the mercury concentration reaches 75 percent of the operating limit, begin weekly sampling and analysis. When the mercury concentration reaches 90 percent of the operating limit, replace the carbon in the carbon adsorber within 30 days. If mercury concentration exceeds the operating limit, change the carbon in the carbon adsorber within 30 days and

report the deviation to your permitting authority.

(2) Conduct an initial sampling of the carbon in the carbon bed for mercury 90 days after the replacement of the carbon. A representative sample must be collected from the inlet of the bed and the exit of the bed and analyzed using SW-846 Method 7471B (incorporated by reference—see § 63.14). The depth to which the sampler is inserted must be recorded. The design capacity is established by calculating the average carbon loading from the inlet and outlet measurements. Sampling and analysis



of the carbon bed for mercury must be performed quarterly thereafter. When the carbon loading reaches 50 percent of the design capacity of the carbon, monthly sampling must be performed until 90 percent of the carbon loading capacity is reached. The carbon must be removed and replaced with fresh carbon no later than 30 days after reaching 90 percent of capacity. For carbon designs where there may be multiple carbon columns or beds, a representative sample may be collected from the first and last column or bed instead of the inlet or outlet. If the carbon loading exceeds the design capacity of the carbon, change the carbon within 30 days and report the deviation to your permitting authority.

(g) You must monitor gas stream temperature at the inlet to the carbon adsorber for each process unit (*i.e.*, carbon kiln, melt furnace, *etc.*) equipped with a carbon adsorber. Establish a maximum value for the inlet temperature either during the annual performance test (required in § 63.11646(a)), according to the manufacturer's specifications, or as approved by your permitting authority. If you choose to establish the temperature operating limit during the performance test, establish the temperature operating limit based on either the highest reading during the test or at 10°F higher than the average temperature measured during the performance test. Monitor the inlet temperature once per shift. If an inlet temperature exceeds the temperature operating limit, you must take corrective actions to get the temperature back within the parameter operating limit within 48 hours. If the exceedance persists, within 144 hours of the exceedance, you must sample and analyze the exhaust stream from the carbon adsorber using Method 30B (40 CFR part 60, appendix A-8) and compare to an operating limit (calculated pursuant to (f)(1)(i)) or you must conduct carbon sampling pursuant to (f)(2) of this section. If the concentration measured with Method 30B is below 90 percent of the operating limit or the carbon sampling results are below 90 percent of the carbon loading capacity, you may set a new temperature operating limit 10°F above the previous operating limit or at an alternative level approved by your permit authority. If the concentration is above 90 percent of the operating limit or above 90 percent of the carbon loading capacity you must change the carbon in the bed within 30 days and report the event to your permitting authority, and reestablish an

appropriate maximum temperature limit based on approval of your permit authority.

(h) For each wet scrubber at each new and existing affected source not followed by a mercury control system, you must monitor the water flow rate (or line pressure) and pressure drop. Establish a minimum value as the operating limit for water flow rate (or line pressure) and pressure drop either during the performance test required in § 63.11646(a), according to the manufacturer's specifications, or as approved by your permitting authority. If you choose to establish the operating limit based on the results of the performance test, the new operating limit must be established based on either the lowest value during any test run or 10 percent less than the average value measured during the test. For wet scrubbers on an autoclave, establish the pressure drop range according to manufacturer's specifications. You must monitor the water flow rate and pressure drop once per shift and take corrective action within 24 hours if any daily average is less than the operating limit. If the parameters are not in range within 72 hours, the owner or operator must report the deviation to the permitting authority and perform a compliance test for the process unit(s) controlled with the wet scrubber that has the parameter exceedance within 40 days to determine if the affected source is in compliance with the MACT limit. For the other process units included in the affected source, the owner or operator can use the results of the previous compliance test to determine the emissions for those process units to be used in the calculations of the emissions for the affected source.

(i) You may conduct additional compliance tests according to the procedures in § 63.11646 and re-establish the operating limits required in paragraphs (a) through (c) and (f) through (h) of this section at any time. You must submit a request to your permitting authority for approval to re-establish the operating limits. In the request, you must demonstrate that the proposed change to the operating limit detects changes in levels of mercury emission control. An approved change to the operating limit under this paragraph only applies until a new operating limit is established during the next annual compliance test.

**§ 63.11648 What are my notification, reporting, and recordkeeping requirements?**

(a) You must submit the Initial Notification required by § 63.9(b)(2) no later than 120 calendar days after the

date of publication of the final rule in the **Federal Register** or within 120 days after the source becomes subject to the standard. The Initial Notification must include the information specified in § 63.9(b)(2)(i) through (b)(2)(iv).

(b) You must submit an initial Notification of Compliance Status as required by § 63.9(h).

(c) If a deviation occurs during a semiannual reporting period, you must submit a deviation report to your permitting authority according to the requirements in paragraphs (c)(1) and (2) of this section.

(1) The first reporting period covers the period beginning on the compliance date specified in § 63.11641 and ending on June 30 or December 31, whichever date comes first after your compliance date. Each subsequent reporting period covers the semiannual period from January 1 through June 30 or from July 1 through December 31. Your deviation report must be postmarked or delivered no later than July 31 or January 31, whichever date comes first after the end of the semiannual reporting period.

(2) A deviation report must include the information in paragraphs (c)(2)(i) through (c)(2)(iv) of this section.

(i) Company name and address.

(ii) Statement by a responsible official, with the official's name, title, and signature, certifying the truth, accuracy and completeness of the content of the report.

(iii) Date of the report and beginning and ending dates of the reporting period.

(iv) Identification of the affected source, the pollutant being monitored, applicable requirement, description of deviation, and corrective action taken.

(d) If you had a malfunction during the reporting period, the compliance report required in § 63.11648(b) must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with § 63.11646(b), including actions taken to correct a malfunction.

(e) You must keep the records specified in paragraphs (e)(1) through (e)(3) of this section. The form and maintenance of records must be consistent with the requirements in section 63.10(b)(1) of the General Provisions.

(1) As required in § 63.10(b)(2)(xiv), you must keep a copy of each

notification that you submitted to comply with this subpart and all documentation supporting any Initial Notification, Notification of Compliance Status, and semiannual compliance certifications that you submitted.

(2) You must keep the records of all performance tests, measurements, monitoring data, and corrective actions required by §§ 63.11646 and 63.11647, and the information identified in paragraphs (c)(2)(i) through (c)(2)(vi) of this section for each corrective action required by § 63.11647.

(i) The date, place, and time of the monitoring event requiring corrective action;

(ii) Technique or method used for monitoring;

(iv) Operating conditions during the activity;

(v) Results, including the date, time, and duration of the period from the time the monitoring indicated a problem to the time that monitoring indicated proper operation; and

(vi) Maintenance or corrective action taken (if applicable).

(3) You must keep records of operating hours for each process as required by § 63.11646(a)(5) and records of the monthly quantity of ore and concentrate processed or produced as required by § 63.11646(a)(10).

(f) Your records must be in a form suitable and readily available for expeditious review, according to § 63.10(b)(1). As specified in § 63.10(b)(1), you must keep each record for 5 years following the date of each recorded action. You must keep each record onsite for at least 2 years after the date of each recorded action according to § 63.10(b)(1). You may keep the records offsite for the remaining 3 years.

(g) After December 31, 2011, within 60 days after the date of completing each performance evaluation conducted to demonstrate compliance with this subpart, the owner or operator of the affected facility must submit the test data to EPA by entering the data electronically into EPA's WebFIRE data base through EPA's Central Data Exchange. The owner or operator of an affected facility shall enter the test data into EPA's data base using the Electronic Reporting Tool or other compatible electronic spreadsheet. Only performance evaluation data collected using methods compatible with ERT are subject to this requirement to be submitted electronically into EPA's WebFIRE database.

## Other Requirements and Information

### § 63.11650 What General Provisions apply to this subpart?

Table 1 to this subpart shows which parts of the General Provisions in §§ 63.1 through 63.16 apply to you.

### § 63.11651 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, in § 63.2, and in this section as follows:

*Autoclave* means a pressure oxidation vessel that is used to treat gold ores (primarily sulfide refractory ore) and involves pumping a slurry of milled ore into the vessel which is highly pressurized with oxygen and heated to temperatures of approximately 350° to 430° F.

*Calomel-based mercury control system* means a mercury emissions control system that uses scrubbers to remove mercury from the gas stream of a roaster or combination of roasters by complexing the mercury from the gas stream with mercuric chloride to form mercurous chloride (calomel). These scrubbers are also referred to as "mercury scrubbers."

*Carbon adsorber* means a control device consisting of a single fixed carbon bed, multiple carbon beds or columns, carbon filter packs or modules, and other variations that uses activated carbon to remove pollutants from a gas stream.

*Carbon kiln* means a kiln or furnace where carbon is regenerated by heating, usually in the presence of steam, after the gold has been stripped from the carbon.

*Carbon processes with mercury retorts* means the affected source that includes carbon kilns, preg tanks, electrowinning cells, mercury retorts, and melt furnaces at gold mine ore processing and production facilities that use activated carbon, or resins that can be used as a substitute for activated carbon, to recover (adsorb) gold from the pregnant cyanide solution.

*Carbon processes without mercury retorts* means the affected source that includes carbon kilns, preg tanks, electrowinning cells, and melt furnaces, but has no retorts, at gold mine ore processing and production facilities that use activated carbon, or resins that can be used as a substitute for activated carbon, to recover (adsorb) gold from the pregnant cyanide solution.

*Concentrate* means the sludge-like material that is loaded with gold along with various other metals (such as silver, copper, and mercury) and various other substances, that is produced by electrowinning, the Merrill-Crowe

process, flotation and gravity separation processes. *Concentrate* is measured as the input to mercury retorts, or for facilities without mercury retorts, as the input to melt furnaces before any drying takes place. For facilities without mercury retorts or melt furnaces, *concentrate* is measured as the quantity shipped.

*Deviation* means any instance where an affected source subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart, including but not limited to any emissions limitation or work practice standard;

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or

(3) Exceeds any operating limit established under this subpart.

*Electrowinning* means a process that uses induced voltage on anode and cathode plates to remove metals from the continuous flow of solution, where the gold in solution is plated onto the cathode. Steel wool is typically used as the plating surface.

*Electrowinning Cells* means a tank in which the electrowinning takes place.

*Gold mine ore processing and production facility* means any industrial facility engaged in the processing of gold mine ore that uses any of the following processes: Roasting operations, autoclaves, carbon kilns, preg tanks, electrowinning, mercury retorts, or melt furnaces. Laboratories (see CAA section 112(c)(7)), individual prospectors, and very small pilot scale mining operations that processes or produces less than 100 pounds of concentrate per year are not a gold mine ore processing and production facility. A facility that produces primarily metals other than gold, such as copper, lead, zinc, or nickel (where these metals other than gold comprise 95 percent or more of the total metal production) that may also recover some gold as a byproduct is not a gold mine ore processing and production facility. Those facilities whereby 95 percent or more of total mass of metals produced are metals other than gold, whether final metal production is onsite or offsite, are not part of the gold mine ore processing and production source category.

*Melt furnace* means a furnace (typically a crucible furnace) that is used for smelting the gold-bearing material recovered from mercury retorting, or the gold-bearing material from electrowinning, the Merrill-Crowe

process, or other processes for facilities without mercury retorts.

*Mercury retort* means a vessel that is operated under a partial vacuum at approximately 1,100 ° to 1,300 °F to remove mercury and moisture from the gold bearing sludge material that is recovered from electrowinning, the Merrill-Crowe process, or other processes. Mercury retorts are usually equipped with condensers that recover liquid mercury during the processing.

*Merrill-Crowe process* means a precipitation technique using zinc oxide for removing gold from a cyanide solution. Zinc dust is added to the solution, and gold is precipitated to produce a concentrate.

*Non-carbon concentrate processes* means the affected source that includes mercury retorts and melt furnaces at gold mine ore processing and production facilities that use the Merrill-Crowe process or other processes and do not use carbon (or resins that substitute for carbon) to recover (adsorb) gold from the pregnant cyanide solution.

*Ore dry grinding* means a process in which the gold ore is ground and heated (dried) prior to additional preheating or prior to entering the roaster.

*Ore preheating* means a process in which ground gold ore is preheated prior to entering the roaster.

*Ore pretreatment processes* means the affected source that includes roasting operations and autoclaves that are used to pre-treat gold mine ore at gold mine ore processing and production facilities prior to the cyanide leaching process.

*Pregnant solution tank (or preg tank)* means a storage tank for pregnant solution, which is the cyanide solution that contains gold-cyanide complexes that is generated from leaching gold ore with cyanide solution.

*Pregnant cyanide solution* means the cyanide solution that contains gold-cyanide complexes that are generated from leaching gold ore with a dilute cyanide solution.

*Quenching* means a process in which the hot calcined ore is cooled and quenched with water after it leaves the roaster.

*Roasting operation* means a process that uses an industrial furnace in which milled ore is combusted across a fluidized bed to oxidize and remove organic carbon and sulfide mineral grains in refractory gold ore. The emissions points of the roasting operation subject to this subpart include ore dry grinding, ore preheating, the roaster stack, and quenching.

#### **§ 63.11652 Who implements and enforces this subpart?**

(a) This subpart can be implemented and enforced by the U.S. EPA or a delegated authority, such as your state, local, or tribal agency. If the U.S. EPA Administrator has delegated authority to your state, local, or tribal agency, then that agency has the authority to implement and enforce this subpart. You should contact your U.S. EPA Regional Office to find out if this subpart is delegated to your state, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a state, local, or tribal agency under 40 CFR part 63, subpart E, the authorities contained in paragraph (c) of this section are retained by the Administrator of the U.S. EPA and are not transferred to the state, local, or tribal agency.

(c) The authorities that will not be delegated to state, local, or tribal agencies are listed in paragraphs (c)(1) through (4) of this section.

(1) Approval of alternatives to the applicability requirements in § 63.11640, the compliance date requirements in § 63.11641, and the applicable standards in § 63.11645.

(2) Approval of an alternative nonopacity emissions standard under § 63.6(g).

(3) Approval of a major change to a test method under § 63.7(e)(2)(ii) and (f). A “major change to test method” is defined in § 63.90(a).

(4) Approval of a major change to monitoring under § 63.8(f). A “major change to monitoring” is defined in § 63.90(a).

(5) Approval of a waiver of recordkeeping or reporting requirements under § 63.10(f), or another major change to recordkeeping/reporting. A “major change to recordkeeping/reporting” is defined in § 63.90(a).

#### **§ 63.11653 [Reserved]**

#### **Tables to Subpart EEEEEEE of Part 63**

**TABLE 1 TO SUBPART EEEEEEE OF PART 63—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART EEEEEEE**

[As stated in § 63.11650, you must comply with the applicable General Provisions requirements according to the following table]

| Citation                                                                                                    | Subject                                                 | Applies to subpart EEEEEEE | Explanation                                                                                                           |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------|
| § 63.1(a)(1), (a)(2), (a)(3), (a)(4), (a)(6), (a)(10)–(a)(12), (b)(1), (b)(3), (c)(1), (c)(2), (c)(5), (e). | Applicability .....                                     | Yes.                       |                                                                                                                       |
| § 63.1(a)(5), (a)(7)–(a)(9), (b)(2), (c)(3), (c)(4), (d).                                                   | Reserved .....                                          | No.                        |                                                                                                                       |
| § 63.2 .....                                                                                                | Definitions .....                                       | Yes.                       |                                                                                                                       |
| § 63.3 .....                                                                                                | Units and Abbreviations .....                           | Yes.                       |                                                                                                                       |
| § 63.4 .....                                                                                                | Prohibited Activities and Circumvention.                | Yes.                       |                                                                                                                       |
| § 63.5 .....                                                                                                | Preconstruction Review and Notification Requirements.   | Yes.                       |                                                                                                                       |
| § 63.6(a), (b)(1)–(b)(5), (b)(7), (c)(1), (c)(2), (c)(5), (e)(1)(iii), (f)(2), (f)(3), (g), (i), (j).       | Compliance with Standards and Maintenance Requirements. | Yes.                       |                                                                                                                       |
| § 63.6(e)(1)(i) and (ii), (e)(3), and (f)(1)                                                                | Startup, Shutdown and Malfunction Requirements (SSM).   | No .....                   | Subpart EEEEEEE standards apply at all times.<br>Subpart EEEEEEE does not contain opacity or visible emission limits. |
| § 63.6(h)(1), (h)(2), (h)(4), (h)(5)(i), (ii), (iii) and (v), (h)(6)–(h)(9).                                | Compliance with Opacity and Visible Emission Limits.    | No .....                   |                                                                                                                       |
| § 63.6(b)(6), (c)(3), (c)(4), (d), (e)(2), (e)(3)(ii), (h)(3), (h)(5)(iv).                                  | Reserved .....                                          | No.                        |                                                                                                                       |
| § 63.7, except (e)(1) .....                                                                                 | Applicability and Performance Test Dates.               | Yes.                       |                                                                                                                       |
| § 63.7(e)(1) .....                                                                                          | Performance Testing Requirements Related to SSM.        | No.                        |                                                                                                                       |

TABLE 1 TO SUBPART EEEEEEE OF PART 63—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART EEEEE—  
Continued

[As stated in § 63.11650, you must comply with the applicable General Provisions requirements according to the following table]

| Citation                                                                                                       | Subject                                                                                           | Applies to<br>subpart EEEEEEE | Explanation                                                                       |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------|
| § 63.8(a)(1), (b)(1), (f)(1)–(5), (g) .....                                                                    | Monitoring Requirements .....                                                                     | Yes.                          | Except cross references to SSM requirements in § 63.6(e)(1) and (3) do not apply. |
| § 63.8(a)(2), (a)(4), (b)(2)–(3), (c), (d), (e), (f)(6), (g).                                                  | Continuous Monitoring Systems .....                                                               | Yes .....                     |                                                                                   |
| § 63.8(a)(3) .....                                                                                             | [Reserved] .....                                                                                  | No.                           |                                                                                   |
| § 63.9(a), (b)(1), (b)(2)(i)–(v), (b)(4), (b)(5), (c), (d), (e), (g), (h)(1)–(h)(3), (h)(5), (h)(6), (i), (j). | Notification Requirements .....                                                                   | Yes.                          |                                                                                   |
| § 63.9(f) .....                                                                                                | .....                                                                                             | No.                           |                                                                                   |
| § 63.9(b)(3), (h)(4) .....                                                                                     | Reserved .....                                                                                    | No.                           |                                                                                   |
| § 63.10(a), (b)(1), (b)(2)(vi)–(xiv), (b)(3), (c), (d)(1)–(4), (e), (f).                                       | Recordkeeping and Reporting Requirements.                                                         | Yes.                          |                                                                                   |
| § 63.10(b)(2)(i)–(v), (d)(5) .....                                                                             | Recordkeeping/Reporting Associated with SSM.                                                      | No.                           |                                                                                   |
| § 63.10(c)(2)–(c)(4), (c)(9) .....                                                                             | Reserved .....                                                                                    | No.                           |                                                                                   |
| § 63.11 .....                                                                                                  | Control Device Requirements .....                                                                 | No.                           |                                                                                   |
| § 63.12 .....                                                                                                  | State Authority and Delegations .....                                                             | Yes.                          |                                                                                   |
| §§ 63.13–63.16 .....                                                                                           | Addresses, Incorporation by Reference, Availability of Information, Performance Track Provisions. | Yes.                          |                                                                                   |

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