

## **SUBPART E - National Emission Standard for Mercury (Delegation Effective 11/8/76)**

### **RULE 361.50. APPLICABILITY**

The provisions of this subpart are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge. **"New Sources"** for this subpart are those sources commencing construction or modification after December 7, 1971.

### **RULE 361.51. DEFINITIONS**

Terms used in this subpart are defined in Subpart A of this regulation, or in this rule as follows:

- (a) **"Mercury"** means the element mercury, excluding any associated elements, and includes mercury in particulates, vapors, aerosols, and compounds.
- (b) **"Mercury Ore"** means a mineral mined specifically for its mercury content.
- (c) **"Mercury Ore Processing Facility"** means a facility processing mercury ore to obtain mercury.
- (d) **"Condenser Stack Gases"** means the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury metal from mercury ore.
- (e) **"Mercury Chlor-Alkali Cell"** means a device which is basically composed of an electrolyzer section and a denuder (decomposer) section and utilizes mercury to produce chlorine gas, hydrogen gas, and alkali metal hydroxide.
- (f) **"Mercury Chlor-Alkali Cell Electrolyzer"** means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.
- (g) **"Denuder"** means a horizontal or vertical container which is part of a mercury chlor-alkali cell and in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short circuited, electrolytic reaction.
- (h) **"Hydrogen Gas Stream"** means a hydrogen stream formed in the chlor-alkali cell denuder.
- (i) **"End Box"** means a container(s) located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.

(j) **"End Box Ventilation System"** means a ventilation system which collects mercury emissions from the end-boxes, the mercury pump sumps, and their water collection systems.

(k) **"Cell Room"** means a structure(s) housing one or more mercury electrolytic chlor-alkali cells.

(l) **"Sludge"** means sludge produced by a treatment plant that process municipal or industrial waste waters.

(m) **"Sludge Dryer"** means a device used to reduce the moisture content of sludge by heating to temperatures above 65°C (ca. 150°F) directly with combustion gases.

### **RULE 361.52. EMISSION STANDARD**

(a) Emissions to the atmosphere from mercury ore processing facilities and mercury cell chlor-alkali plants shall not exceed 2300 grams of mercury per 24-hour period.

(b) Emissions to the atmosphere from sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges shall not exceed 3200 grams of mercury per 24-hour period.

### **RULE 361.53. STACK SAMPLING** (Rev. Effective 3/27/90)

(a) Mercury ore processing facility.

(1) Unless a waiver of emission testing is obtained under Rule 361.13, each owner or operator processing mercury ore shall test emissions from this source,

(i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(ii) Within 90 days of the startup in the case of a new source which did not have an initial startup date preceding the effective date.

(2) The Control Officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(3) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission level has been estimated by calculation and the results reported to the Control Officer.

(4) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. Each determination shall be reported to the Control Officer by a registered letter dispatched within 15 calendar days following the date such determination is completed.

(5) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Control Officer, for a minimum of 2 years.

(b) Mercury chlor-alkali plant--hydrogen and end-box ventilation gas streams.

(1) Unless a waiver of emission testing is obtained under Rule 361.13, each owner or operator employing mercury chlor-alkali cell(s) shall test emissions from his source,

(i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(2) The Control Officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(3) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emission which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission has been estimated by calculation and the results reported to the Control Officer.

(4) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. Each determination shall be reported to the Control Officer by a registered letter dispatched within 15 calendar days following the date such determination is completed.

(5) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by the Control Officer, for a minimum of 2 years.

(c) Mercury chlor-alkali plants--cell room ventilation system.

(1) Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with Subsection (c)(2) of this rule or demonstrate compliance with Subsection (c)(4) of this rule and assume ventilation emissions of 1,300 gms/day of mercury.

(2) Unless a waiver of emission testing is obtained under Rule 361.13, each owner or operator shall pass all cell room air in forced gas streams through stacks suitable for testing.

(i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(3) The Control Officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(4) An owner or operator may carry out approved design, maintenance, and house-keeping practices. A list of approved practices is provided in Appendix A of "Review of National Emission Standards for Mercury", EPA-450/3-84-014a, December, 1984. Copies are available from EPA's Central Docket Section. Docket item number A-84-41, III-B-1.

(d) Sludge incineration and drying plants.

(1) Unless a waiver of emission testing is obtained under Rule 361.13, each owner or operator of a source subject to the standard in Rule 361.52(b) shall test emissions from that source. Such tests shall be conducted in accordance with the procedures set forth either in Section (d) of this rule or in Rule 361.54.

(2) Method 101 in Appendix B to CFR Part 61 shall be used to test emissions as follows:

(i) The test shall be performed within 90 days of the effective date of these regulations in the case of an existing source or a new source which has an initial startup date preceding the effective date.

(ii) The test shall be performed within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(3) The Control Officer shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(4) Samples shall be taken over such a period or periods as are necessary to determine accurately the maximum emissions which will occur in a 24-hour period. No changes shall be made in the operation which would potentially increase emissions above the level determined by the most recent stack test, until the new emission level has been estimated by calculation and the results reported to the Control Officer.

(5) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. Each determination shall be reported to the Control Officer by a registered letter dispatched within 15 calendar days following the date such determination is completed.

(6) Records of emission test results and other data needed to determine total emissions shall be retained at the source and shall be made available, for inspection by the Control Officer, for a minimum of 2 years.

**RULE 361.54. SLUDGE SAMPLING** (Rev. Effective 3/27/90)

(a) As an alternative means for demonstrating compliance with Rule 361.52(b), an owner or operator may use Method 105 of Appendix B to 40 CFR Part 61 and the procedures specified in this rule.

(1) A sludge test shall be conducted within 90 days of the effective date of these regulations in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(2) A sludge test shall be conducted within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(b) The Control Officer shall be notified at least 30 days prior to a sludge sampling test, so that he may at his option observe the test.

(c) Sludge shall be sampled according to Subsection (c)(1) of this rule, sludge charging rate for the plant shall be determined according to Subsection (c)(2) of this rule, and the sludge analysis shall be performed according to Subsection (c)(3) of this rule.

(1) The sludge shall be sampled after dewatering and before incineration or drying, at a location that provides a representative sample of the sludge that is charged to the incinerator or dryer. Eight consecutive grab samples shall be obtained at intervals of between 45 and 60 minutes and thoroughly mixed into one sample. Each of the eight grab samples shall have a volume of at least 200 ml but not more than 400 ml. A total of three composite samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period shall not exceed 72 hours after the first grab sample is obtained. Samples shall not be exposed to any condition that may result in mercury contamination or loss.

(2) The maximum 24-hour period sludge incineration or drying rate shall be determined by use of a flow rate measurement device that can measure the mass rate of sludge charged to the incinerator or dryer with an accuracy of  $\pm 5$  percent over its operating range. Other methods of measuring sludge mass charging rates may be used if they have received prior approval by the Control Officer.

(3) The handling, preparation, and analysis of sludge samples shall be accomplished according to Method 105 in Appendix B to 40 CFR Part 61.

(d) The mercury emissions shall be determined by use of the following equation:

$$EHg = 1 \times 10^{-3} cQ$$

where

Ehg = Mercury emissions, g/day

c = Mercury concentration of sludge on a dry solids basis,  $\mu$ /g (ppm)

Q = Sludge charging rate, kg/day

(e) No changes in the operation of a plant shall be made after a sludge test has been conducted which would potentially increase emissions above the level determined by the most recent sludge test, until the new emission level has been estimated by calculation and the results reported to the Control Officer.

(f) All sludge samples shall be analyzed for mercury content within 30 days after the sludge sample is collected. Each determination shall be reported to the Control Officer by a registered letter dispatched within 15 calendar days following the date such determination is completed.

(g) Records of sludge sampling, charging rate determination and other data needed to determine mercury content of wastewater treatment plant sludges shall be retained at the source and made available, for inspection by the Control Officer, for a minimum of 2 years.

#### **RULE 361.55. MONITORING OF EMISSIONS AND OPERATIONS**

(Rev. Effective 3/27/90)

(a) Wastewater treatment plant sludge incineration and drying plants. All the sources for which mercury emissions exceed 1600 g per 24-hour period, demonstrated either by stack sampling according to Rule 361.53 or sludge sampling according to Rule 361.54, shall monitor mercury emissions at intervals of at least once per year by use of Method 105 of Appendix B to 40 CFR Part 61, or the procedures specified in Rule 361.53(d)(2) and (4). The results of monitoring shall be reported and retained according to Rules 361.53(d)(5) and (6) or 361.54(f) and (g).

(b) Mercury cell chlor-alkali plants - hydrogen and end-box ventilation gas streams.

(1) The owner or operator of each mercury cell chlor-alkali plant shall, within 1-year of the date of publication of these amendments or within 1-year of startup for a plant with initial startup after the date of publication, perform a mercury emission test that demonstrates compliance with the emission limits in Rule 361.52, on the hydrogen stream by Reference Method 102 and on the end-box stream by Reference Method 101 for the purpose of establishing limits for parameters to be monitored.

(2) During tests specified in Subsection (b)(1) of this rule, the following control device parameters shall be monitored, except as provided in Section (c) of this rule, and recorded manually or automatically at least once every 15 minutes:

- (i) the exit gas temperature from uncontrolled streams;
- (ii) the outlet temperature of the gas stream for the final (i.e., the farthest downstream) cooling system when no control devices other than coolers and demisters are used;
- (iii) the outlet temperature of the gas stream from the final cooling system when the cooling system is followed by a molecular sieve or carbon adsorber;
- (iv) outlet concentration of available chlorine, pH, liquid flow rate, and inlet gas temperature of chlorinated brine scrubbers and hypochloride scrubbers;
- (v) the liquid flow rate and exit gas temperature for water scrubbers;
- (vi) the inlet gas temperature of carbon adsorption systems; and
- (vii) the temperature during the heating phase of the regeneration cycle for carbon adsorbers or molecular sieves.

(3) The recorded parameters in Subsections (b)(2)(i) through (b)(2)(vi) of this rule shall be averaged over the test period (a minimum of 6 hours) to provide an average number. The highest temperature reading that is measured in Subsection (b)(2)(vii) of this rule is to be identified as the reference temperature for use in Subsection (b)(6)(ii) of this rule.

(4) (i) Immediately following completion of the emission tests specified in Subsection (b)(1) of this rule, the owner or operator of a mercury cell chlor-alkali plant shall monitor and record manually or automatically at least once per hour the same parameters specified in Subsections (b)(2)(i) through (b)(2)(vi) of this rule.

(ii) Immediately following completion of the emission tests specified in Subsection (b)(1) of this rule, the owner or operator shall monitor and record manually or automatically, during each heating phase of the regeneration cycle, the temperature specified in Subsection (b)(2)(vii) of this rule.

(5) Monitoring devices used in accordance with Subsections (b)(2) and (b)(4) of this rule shall be certified by their manufacturer to be accurate to within 10 percent, and shall be operated, maintained, and calibrated according to the manufacturer's instructions. Records of the certifications and calibrations shall be retained at the chlor-alkali plant and made available for inspection by the Control Officer as follows: Certification, for as long as the device is used for this purpose; calibration for a minimum of 2 years.

(6) (i) When the hourly value of a parameter monitored in accordance with Subsection (b)(4)(i) of this rule exceeds, or in the case of liquid flow rate and available chlorine falls below the value of that same parameter determined in Subsection (b)(2) of this rule for 24 consecutive hours, the Control Officer is to be notified within the next 10 days.

(ii) When the maximum hourly value of the temperature measured in accordance with Subsection (b)(4)(ii) of this rule is below the reference temperature recorded according to Subsection (b)(3) of this rule for three consecutive regeneration cycles, the Control Officer is to be notified within the next 10 days.

(7) Semiannual reports shall be submitted to the Control Officer indicating the time and date on which the hourly value of each parameter monitored according to Subsections (b)(4)(i) and (b)(4)(ii) of this rule fell outside the value of that same parameter determined under Subsection (b)(3) of this rule; and corrective action taken, and the time and date of the corrective action. Parameter excursions will be considered unacceptable operation and maintenance of the emission control system. In addition, while compliance with the emission limits is determined primarily by conducting a performance test according to the procedures in Rule 361.53(b), reports of parameter excursions may be used as evidence in judging the duration of a violation that is determined by a performance test.

(8) Semiannual reports required in Subsection (b)(7) of this rule shall be submitted to the Control Officer on September 15, and March 15, of each year. The first semiannual report is to be submitted following the first full 6-month reporting period. The semiannual report due on September 15 (March 15) shall exclude all excursions monitored through August 31 (February 28) of the same calendar year.

(c) As an alternative to the monitoring, recordkeeping, and reporting requirements in Subsections (b)(2) through (8) of this rule, an owner or operator may develop and submit for the Control Officer's review and approval a plant-specific monitoring plan. To be approved, such a plan must ensure not only compliance with the emission limits of Rule 361.52(a) but also proper operation and maintenance of emissions control systems. Any site-specific monitoring plan submitted must, at a minimum, include the following:

(1) Identification of the critical parameter or parameters for the hydrogen stream and for the end-box ventilation stream that are to be monitored and an explanation of why the critical parameter(s) selected is the best indicator of proper control system performance and of mercury emission rates.

(2) Identification of the maximum or minimum value of each parameter (e.g., degrees temperature, concentration of mercury) that is not to be exceeded. The level(s) is to be directly correlated to the results of a performance test, conducted no more than 180 days prior to submittal of the plan, when the facility was in compliance with the emission limits of Rule 361.52(a).

(3) Designation of the frequency for recording the parameter measurements, with justification if the frequency is less than hourly. A longer recording frequency must be justified on the basis of the amount of time that could elapse during periods of process control system upsets before the emission limits would be exceeded, and consideration is to be given to the time that would be necessary to repair the failure.

(4) Designation of the immediate actions to be taken in the event of an excursion beyond the value of the parameter established in Paragraph 2.

(5) Provisions for reporting, semiannually, parameter excursions and the corrective actions taken, and provisions for reporting within 10 days any significant excursion.

(6) Identification of the accuracy of the monitoring device(s) or of the readings obtained.

(7) Recordkeeping requirements for certifications and calibrations.

(d) Mercury cell chlor-alkali plants - cell room ventilation system.

(1) Stationary sources determining cell room emissions in accordance with Rule 361.53(c)(4) shall maintain daily records of all leaks or spills of mercury. The records shall indicate the amount, location, time, and date the leaks or spills occurred, identify the cause of the leak or spill, state the immediate steps taken to minimize mercury emissions and steps taken to prevent future occurrences, and provide the time and date on which corrective steps were taken.

(2) The results of monitoring shall be recorded, retained at the source, and made available for inspection by the Administrator for a minimum of 2 years.

**NOTE: DELEGATION OF AUTHORITY (40 CFR Part 60)**

(a) In delegating implementation and enforcement authority to a State under Section 112(d) of the Act, the authorities contained in paragraph (b) of this note shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States: Sections 61.53(c)(4) and 61.55(d). The authorities not delegated to States listed are in addition to the authorities in the General Provisions, Subpart A of 40 CFR Part 61, that will not be delegated to States [ §§61.04(b), 61.12(d)(1), and 61.13(h)(1)(ii)].