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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[FRL 1442-1]

Standards of Performance for New Stationary Sources Primary Aluminum Industry; Amendments

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The amendments permit fluoride emissions to exceed, under certain circumstances, emission limits contained in the previously promulgated standards of performance for new primary aluminum plants. Such excursions cannot be more than 0.3 kg/Mg of aluminum produced (0.6 lb/ton) above the promulgated standards of 0.95 kg/Mg (1.9 lb/ton) and 1.0 kg/Mg (2.0 lb/ton) for prebake and Soderberg plants, respectively. For an excursion to be allowed, a proper emission control system must have been installed and properly operated and maintained at the time of the excursion. The intended effect of these amendments is to take into account an inherent variability of fluoride emissions from the aluminum reduction process.

The amendments require monthly testing of emissions and revise Reference Method 14 for measuring fluoride emission rates. The amendments also respond to arguments raised during litigation of the standards of performance.

DATES: The effective date of the amendments is June 30, 1980. The applicability date of the amendments is October 23, 1974. All primary aluminum plants which commence construction on and after the applicability date are subject to the standards of performance, as amended here.

ADDRESSES: *Background Information Document.* The background information documents for the proposed and final amendments may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone (919) 541-2777. Please refer to *Primary Aluminum Background Information: Proposed Amendments* (EPA 450/2-76-025a) and *Promulgated Amendments* (EPA 450/3-79-026).

Docket: Docket No. OAQPS-78-10, containing supporting information used to develop the amendments, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section, Room 2902, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: John Crenshaw, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-5477.

SUPPLEMENTARY INFORMATION:

Final Amendments

The amendments allow fluoride emissions from aluminum plant potrooms to exceed the original limits of 0.95 kg/Mg (1.9 lb/ton) for prebake plants and 1.0 kg/Mg (2.0 lb/ton) for Soderberg plants if the owner or operator of the plant can establish that a proper emission control system was installed and properly operated and maintained at the time the excursion above the original limits occurred. Emissions may not, however, exceed 1.25 kg/Mg (2.5 lb/ton) for prebake plants and 1.3 kg/Mg (2.6 lb/ton) for Soderberg plants at any time.

The amendments also require performance testing to be conducted at least once each month throughout the life of the plant. The owner or operator of a new plant may apply to the Administrator for an exemption from the monthly testing requirement for the primary control system and the anode bake plant. An exemption from the testing of secondary emissions from roof monitors, however, is not permitted.

Finally, the amendments: (1) require the potroom anemometers and associated equipment used in conjunction with Reference Method 14 to be checked for calibration once each year, unless the anemometers are found to be out of calibration, in which case an alternative schedule would be implemented; (2) clarify other Reference Method 14 procedures; (3) clarify the definition of *potroom group;* (4) replace English and metric units of measure with the International System of Units (SI); and (5) clarify the procedure for determining the rate of aluminum production for fluoride emission calculations. The amendments do not change the fluoride emission limit of 0.05 kg/Mg (0.1 lb/ton) of aluminum equivalent for anode baking facilities at prebake plants.

Summary of Environmental, Economic, and Energy Impacts

The amendments allow excursions above the original standard, but only under certain conditions. Each excursion must be reported to the Administrator and the adequacy of control equipment and operating and maintenance procedures must be established by the plant owner or operator. Based on emission test results at the Anaconda Aluminum Company's Sebree, Kentucky plant, such excursions may be expected approximately eight percent of the time. Assuming that each of these excursions is at the upper limit allowed (1.25 kg/Mg for a prebake plant), fluoride emissions from a typical new primary aluminum plant could be around three to four percent higher (3.8 Mg/yr, or 4.2 tons/yr, more) than had been originally calculated. It is important to stress that excursions are expected to occur at any new plant trying to meet the original standards; the amendments simply acknowledge that some excursions are unavoidable.

Although the emission control efficiency required by the original standards is still required, it would be theoretically possible to operate a new plant so that emissions were always at the upper limit permitted by these amendments. Using this "worst case" assumption, fluoride emissions from a typical new primary aluminum plant could increase above levels associated with the original emission limits by about 30 percent, or 33 Mg/yr (36 tons/yr). Assuming that two new plants become subject to the amended standards during the next five years, nationwide emissions of fluorides during that period could increase by 66 Mg/yr (72 tons/yr) above the levels which would result if the original limits were in effect. No other environmental impacts are associated with the amendments.

The amendments will result in performance test costs of about $415,000/yr during the first year and $330,000/yr during succeeding years of operation of a new plant. The increase in annualized costs, however, would be less than 0.5 percent for the first and succeeding years. There are no other significant costs associated with the amendments.

No increase in energy consumption will result from the amendments. The environmental, economic, and energy impacts are discussed in greater detail in *Primary Aluminum Background Information: Promulgated Amendments* (EPA 450/3-79-026).

Background

Standards of performance for new primary aluminum plants were proposed on October 23, 1974 (39 FR 37730), and promulgated on January 26, 1976 (41 FR 3826). These standards limited fluoride emissions to 1.0 kg/Mg (2 lb/ton) for Soderberg plants, 0.95 kg/Mg (1.9 lb/ton) for prebake plants, and 0.05 kg/Mg (0.1 lb/ton) for anode bake plants. There are two emission sources from Soderberg and prebake plants. The first source is the primary control system, which includes hoods to capture emissions from the pots and the control device

used to treat these emissions; the exhaust from this system still contains some fluorides. The second source is the roof monitor, through which flow the emissions (called secondary, or roof monitor, emissions) not captured by the primary control system. A few plants use secondary control systems to capture and collect roof monitor emissions.

Shortly after promulgation, petitions for review of the standards were filed by four aluminum companies. The principal argument raised by the petitioners was that the emission limits contained in the standards were too stringent and could not be achieved consistently by new, well-controlled facilities. Facilities which commenced construction prior to October 23, 1974, are not affected by the standard. Following discussions with the petitioning aluminum companies, EPA conducted an emission test program at the Anaconda Aluminum Company plant in Sebree, Kentucky. At the time of testing, the Sebree plant was the newest primary aluminum plant in the United States, and its emission control system was considered by the Administrator representative of the best technological system of continuous emission reduction. The purpose of the test program was to gather additional data for reevaluating the standards. The test results were available in August of 1977 and indicated that emissions for a new, well-controlled plant could exceed the original emission limits approximately eight percent of the time. The amendments proposed on September 19, 1978 (43 FR 42186) and promulgated here address this potential problem by amending the standards to permit excursions of fluoride emissions up to 0.3 kg/Mg (0.6 lb/ton) above the emission limits contained in the original standards provided that proper control equipment was installed and properly operated and maintained during the time the excursion occurred.

In addition to amending the original standards, EPA has revised Reference Method 14 to reflect knowledge gained during the Sebree test program. The revisions clarify and improve the reliability of the testing procedures, but do not change the basic test method and, therefore, do not invalidate earlier Method 14 test results.

Rationale

The Administrator's decision to amend the existing standard is based primarily on the results of the Sebree test program. The test results may be summarized as follows: (1) the measured emissions were variable, ranging from 0.43 to 1.37 kg/Mg (0.85 to 2.74 lb/ton) for single test runs; and (2) emission variability appeared to be inherent in the production process and beyond the control of plant personnel. Since the Sebree plant represents a best technological system of continuous emission reduction for new aluminum plants, the Administrator expects that the other new plants covered by the standard will also exhibit emission variability.

An EPA analysis of the nine Sebree test runs indicates that there is about eight percent probability that a performance test would violate the current standard. (A performance test is defined in 40 CFR 60.8(f) as the arithmetic mean of three separate test runs, except in situations where a run must be discounted or canceled and the Administrator approves using the arithmetic mean of two runs.) The petitioners have estimated chances of a violation ranging from about 2.5 to 10 percent. Although the Sebree data base is not large enough to permit a thorough statistical analysis, the Administrator believes it is adequate to demonstrate a need for amending the current standard.

The approach selected is to amend Subpart S to allow a performance test result to be above the current standard provided the owner or operator submits to EPA a report clearly demonstrating that the emission control system was properly operated and maintained during the excursion above the standard. The report would be used as evidence that the high emission level resulted from random and uncontrollable emission variability, and that the emission variability was entirely beyond the control of the owner or operator of the affected facility. Under no circumstances, however, would performance test results be allowed above 1.25 kg/Mg (2.5 lb/ton) for prebake plants or 1.3 kg/Mg (2.6 lb/ton) for Soderberg plants. The Administrator believes that emissions from a plant equipped with the proper control system which is properly operated and maintained would be below these limits at all times.

For performance test results which fall between the original standard and the 1.25 or 1.3 kg/Mg upper limit to be considered excursions rather than violations, the owner or operator of the affected facility must, within 15 days of receipt of such performance test results, submit a report to the Enforcement Division of the appropriate EPA Regional Office. As a minimum, the report should establish that all necessary control devices were on-line and operating properly during the performance test, describe the operation and maintenance procedures followed, and set forth any explanation for the excursion.

The amendments also require, following the initial performance test required under 40 CFR 60.8(a), additional performance testing at least once each month during the life of the affected facility. During visits to existing plants, EPA personnel have observed that the emission control systems are not always operated and maintained as well as possible. The Administrator believes that good operation and maintenance of control systems are essential and expects the monthly testing requirement to help achieve this goal. The Administrator has the authority under section 114 of the Clean Air Act to require additional testing if necessary.

It is important to emphasize that the purpose of the amendments is to allow for inherent emission variability, not to permit substandard control equipment installation, operation or maintenance. Unfortunately, proper control equipment and proper operation and maintenance are difficult to describe and may vary considerably on a case-by-case basis. There are, however, a few guidelines that can be used as indicators.

The first guideline is that the control equipment should be designed to meet the original standard. This means a 95–97 percent overall control efficiency (capture efficiency times collection efficiency) for a potroom group. Equipment capable of this level of control is described in the background document (EPA 450/2–74–020a). Assuming proper control equipment is installed, the adequacy of operating and maintenance procedures can be evaluated on the basis of the frequency of excursions above the original standard. Based on the Sebree test results, more than one excursion per year (assuming performance tests are conducted monthly) may indicate a problem. Note, however, that legally every performance test result could be an excursion as long as proper equipment, operation and maintenance are shown.

As a guide to proper operation and maintenance, the following are considered basic to good control of emissions:

(1) Hood covers should fit properly and be in good repair;

(2) If the exhaust system is equipped with an adjustable air damper system, the hood exhaust rate for individual pots should be increased whenever hood covers are removed from a pot (the exhaust system should not, however, be overloaded by placing too many pots on high exhaust);

(3) Hood covers should be replaced as soon as possible after each potroom operation;

(4) Dust entrainment should be minimized during materials handling operations and sweeping of the working aisles;

(5) Only tapping crucibles with functional aspirator air return systems (for returning gases under the collection hooding) should be used; and

(6) The primary control system should be regularly inspected and properly maintained.

The amendments affect not only prebake designs such as the Sebree plant, but also Soderberg plants. Available data for existing plants indicate that Soderberg and prebake plants have similar emission variability. Thus, the Administrator feels justified in extrapolating the conclusions about the Sebree prebake plant to cover Soderberg designs. It is unlikely that any new Soderberg plant will be built due to the high cost of emission control for these designs. However, existing Soderberg plants may be modified to such an extent that they would be subject to these regulations.

Under the amendments, anode bake plants would be subject to the monthly testing requirement, but emissions would not be allowed under any circumstances to be above the level of the current bake plant standard. Since there is no evidence that bake plant emissions are as variable as potroom emissions, there is no need to allow for excursions above the bake plant standard.

The amendments allow the owner or operator of a new plant to apply to the Administrator for an exemption from the monthly testing requirement for the primary control system and the anode bake plant. The Administrator believes that the testing of these systems as often as once each month may be unreasonable given that (1) the contribution of primary and bake plant emissions (after exhausting from the primary control system) to the total emission rate is minor, averaging about 2.5 and 5 percent, respectively; (2) primary and bake plant emissions are much less variable than secondary emissions; and (3) the cost of primary and bake plant emissions sampling is high. An application to the Administrator for an exemption from monthly testing would be required to include (1) evidence that the primary and bake plant emissions have low variability; (2) an alternative testing schedule; and (3) the method to be used to determine primary control system emissions for the purpose of calculating total fluoride emissions from the potroom group.

The Administrator estimates the costs associated with monthly performance testing to average about $4,200 for primary tests, $5,100 for secondary tests, and $4,200 for bake plant tests. These estimates assume that (1) testing would be performed by plant personnel; (2) each monthly performance test would consist of the average of three 24 hour runs; (3) sampling would be performed by two crews working 13-hour shifts; (4) primary control system sampling would be performed at a single point in the stack; and (5) Sebree in-house testing costs would be representative of average costs for other new plants. Although these assumptions may not hold for all situations, the Administrator believes they provide a representative estimate of what testing costs would be for new plants.

Also amended is the procedure for determining the rate of aluminum production. Previously, the rate was based on the weight of metal tapped during the test period. However, since the weight of metal tapped does not always equal the weight of metal produced, undertapping or overtapping during a test period would result in erroneous production rates. The Administrator believes it is more reasonable to judge the weight of metal produced according to the weight of metal tapped during a 30-day period (720 hours) prior to and including the test date. The 30-day period allows overtapping and undertapping to average out, and gives a more accurate estimate of the true production rate.

Public Comments

Upon proposal of the amendments, the public was invited to submit written comments on all aspects of the amendments and Reference Method 14 revisions. These comments were reviewed and considered in developing the final amendments. All of the comments received are summarized and discussed in *Primary Aluminum Background Information: Promulgated Amendments* (EPA 450/3-79-026).

The most significant change resulting from these comments concerns the requirement in Reference Method 14 to periodically check the calibration of the anemometers located in the roof monitors of aluminum plant potrooms. The use of anemometers is required by the test method to determine the velocity and flow rate of air exiting the potroom roofs. Commenters felt that the proposed requirement to check anemometer calibration every month was unnecessary and would lead to substantially increased costs.

Review of anemometer calibration data indicates that anemometer calibration checks as often as every month are unnecessary. Consequently, Reference Method 14 has been revised to require an anemometer calibration check 12 months after the initial anemometer installation. The results of this check will be used to determine the schedule of subsequent anemometer checks.

Several commenters noted that the proposed requirement to conduct performance testing at least once each month throughout the life of a new primary aluminum plant would impose a large economic burden on the plant. In general, the commenters believed that testing at less frequent intervals should be sufficient to determine compliance with the standard. Three alternatives to monthly performance testing were suggested:

(1) One commenter believed that an initial performance test would be sufficient to demonstrate compliance. Periodic visual inspections could then be used to determine whether the control systems were being properly maintained. If the visual inspections indicated that maintenance was poor, monthly testing could then be required. This procedure would not impose the burden of monthly testing on the entire industry.

(2) Another commenter, noting that the proposed monthly testing requirement was excessively stringent, recommended that criteria be established for determining when monthly testing is required. For example, testing could be performed on a semi-annual basis until a violation occurred, when testing would revert to a monthly schedule.

(3) A third commenter suggested that the provisions permitting the Administrator, upon application, to establish an alternative test schedule for primary and bake plant emissions be extended to include secondary emissions. For example, quarterly testing of secondary emissions could be required until a violation occurred. Monthly testing could then be invoked for some period of time, possibly six months, until emissions were once again consistently below the level of the standard. Quarterly testing would then resume.

During the development of the amendments, the administrator learned that the operation and maintenance of aluminum plant emission control systems had seriously deteriorated during the past several years. The Administrator believes that regular emission testing will help remedy this situation by providing an incentive for

good operation and maintenance throughout the life of the plant. Although no continuous monitoring method is available, the level of roof monitor emissions provides a good indication of the adequacy of operation and maintenance procedures for the most sensitive portion of the primary control system: capture of the pot emissions. The frequency of testing selected—once per month—is a judgmental compromise between high testing costs (as would occur with weekly tests) and the possibility of inadequate maintenance between tests (which seems more likely to occur as the time between tests increases).

In evaluating comments on the proposed monthly testing requirement, the administrator focused his attention on costs. Since the cost of the monthly testing requirement is less than 0.5 percent of the annualized costs of a typical primary aluminum plant, the Administrator considered the requirement reasonable.

The original standards required potroom emissions to be below 0.95 kg/Mg (1.9 lb/ton) for prebake plants and 1.0 kg/Mg (2.0 lb/ton) for Soderberg plants. One commenter, noting that the 0.05 kg/Mg (0.1 lb/ton) difference between the standards is reasonable in view of the differences between the two types of plants, felt this same reasoning should be followed in developing the proposed never-to-be-exceeded limit of 1.25 kg/Mg (2.5 lb/ton) which applied to both prebake and Soderberg plants. The commenter recommended that a never-to-be-exceeded limit of 1.3 kg/Mg (2.6 lb/ton) be established for Soderberg plants while retaining the proposed 1.25 kg/Mg (2.5 lb/ton) limit for prebake plants.

This comment is incorporated in the final amendments, which allow emissions from Soderberg plants where exemplary operation and maintenance of the emission control systems has been demonstrated to be as high as 1.3 kg/Mg (2.6 lb/ton).

One commenter expressed concern over the correct number or Reference Method 14 sampling manifolds to be located in potroom groups where two or more potroom segments are ducted to a common control system. The regulation defines *potroom group* as an uncontrolled potroom, a potroom which is controlled individually, or a group of potrooms or potroom segments ducted to a common control system. In situations where a potroom group consists of a group of potroom segments ducted to a common control system, the manifold would be installed in only one potroom segment. The manifold may not be divided among potroom segments; however, additional sampling manifolds may be installed in the other segments, if desired.

When only one manifold is located in a potroom group, care must be taken to ensure that operations are normal in the potroom segments where manifolds are not located, but which are ducted to the same control system. During normal operation, most pots should be operating, no major upsets should occur, and the operating and maintenance procedures followed in each potroom segment, including the segment tested, should be the same. Otherwise, the emission levels measured in the tested potroom segment may not be representative of emission levels in the other potroom segments.

One commenter felt that the amendments would unjustly require the use of tapping crucibles with aspirator air return systems, since the preamble for the proposed amendment stated that certain operating and maintenance procedures, including the use of aspirator air return systems, represent good emission control and should be implemented. Although this statement reflects the Administrator's judgment about which procedures would enable the standards to be achieved, the regulation does not actually require that these procedures be implemented. Instead these procedures provide useful guidance for improving emission control when the standards are being exceeded.

If emissions are below 0.95 kg/Mg (1.9 lb/ton) for prebake potrooms and 1.0 kg/Mg (2.0 lb/ton) for Soderberg potrooms, any combination of procedures may be used. If emission levels are between 0.95 and 1.25 kg/Mg (1.9 and 2.5 lb/ton) for prebake potrooms or 1.0 and 1.3 kg/Mg (2.0 and 2.6 lb/ton) for Soderberg potrooms, the regulation requires the owner or operator of a plant to demonstrate that exemplary operating and maintenance procedures were used. Otherwise the excursion is considered a violation of the standard. The Administrator has not defined exemplary operating and maintenance procedures in the regulation because different plants, depending on plant design, may incorporate different procedures, but the basic procedures listed in the preamble rationale provide guidance as to which operating and maintenance procedures should be effected to reduce or prevent excursions.

Several commenters expressed concern that the standards of performance and test methods would be applied to existing primary aluminum plants. It is emphasized, however, that the standards and test methods apply only to new, modified, or reconstructed plants. Existing plants often differ in design from new plants and cannot be controlled to the same level, except at much higher costs. As an aid to the States in controlling emissions from existing primary aluminum plants, the Administrator has recently published draft emission guidelines for existing plants (44 FR 21754). These draft guidelines may be obtained from the U.S. EPA Library. Request *Primary Aluminum Draft Guidelines for Control of Fluoride Emissions from Existing Primary Aluminum Plants* (EPA 450/2-78-049a).

Another commenter was concerned about the required length of each test run. Section 5.3.4 of Reference Method 14 states that each test run shall last at least eight hours, and if a question exists as to the representativeness of an eight-hour period, a longer period should be selected. It is essential that the sampling period be representative of all potroom operations and events, including tapping, carbon setting, and tracking. For most recently-constructed plants, 24 hours are required for all potroom operations and events to occur in the area beneath the sampling manifold. Thus, a 24-hour sampling period would be necessary for these plants.

Another commenter expressed concern about the procedure for conducting performance tests. The General Provisions for standards of performance for new stationary sources [40 CFR 60.8(f)] state that each performance test shall consist of the arithmetic mean of three separate test runs. Although the results of the three test runs are to be calculated separately, the runs may be conducted consecutively, as was done during the Sebree test program.

One commenter suggested that the rate of aluminum production, as used to calculate final emission rates, be based on the weight of metal tapped during the month in which testing was performed rather than on the test date. This, the commenter believed, would be a more convenient and practical method for calculating the aluminum production rate because production records are commonly kept on a monthly basis. The Administrator believes, however, that if the rate of aluminum production were determined on a calendar-month basis, as the commenter suggests, then in situations where testing is conducted at the beginning of a month, the final test results would not be known until the end of the month. This delay could allow emissions to be above the standard for nearly an entire month before a violation could be determined and corrective actions taken. It is

preferable that the test results be known as soon as possible after the testing is completed, as provided for in the proposed and final amendments.

As a result of comments, several other minor changes were made to the proposal. These include provisions allowing an owner or operator the option of: (1) installing anemometers halfway across the width of the potroom roof monitor; (2) balancing the sampling manifold for flow rate prior to its installation in the roof monitor; or (3) making anemometer installations non-permanent.

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered in the development of this rulemaking. The principal purposes of the docket are: (1) to allow interested parties to readily identify and locate documents so that they can intelligently and effectively participate in the rulemaking process; and (2) to serve as the record in case of judicial review. The docket is available for public inspection and copying, as noted under ADDRESSES.

Miscellaneous

The proposed amendments contained a revision to Section 60.8(d) of the General Provisions which would have allowed the owner or operator to give less than 30 days prior notice of testing if required to do so in specific regulations. Since this revision has already been promulgated with another regulation (44 FR 33580), it is not contained in the final amendments promulgated here.

The final amendments do not alter the applicability date of the original standards. The standards continue to apply to all new primary aluminum plants for which construction or modification began on or after October 23, 1974, the original proposal date.

As prescribed by section 111 of the Clean Air Act, promulgation of the original standards of performance (41 FR 3826) was preceded by the Administrator's determination that primary aluminum plants contribute significantly to air pollution which causes or contributes to the endangerment of public health or welfare. In accordance with section 117 of the Act, publication of the originally proposed standards (39 FR 37730) was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies.

It should be noted that standards of performance for new sources established under section 111 of the Clean Air Act reflect:

> * * * application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated [section 111(a)(1)].

Although there may be emission control technology available that can reduce emissions below those levels required to comply with standards of performance, this technology might not be selected as the basis of standards of performance due to costs associated with its use. Accordingly, standards of performance should not be viewed as the ultimate in achievable emission control. In fact, the Act requires (or has the potential for requiring) the imposition of a more stringent emission standard in several situations.

For example, applicable costs do not necessarily play as prominent a role in determining the "lowest achievable emission rate" for new or modified sources locating in nonattainment areas, i.e., those areas where statutorily-mandated health and welfare standards are being violated. In this respect, section 173 of the Act requires that new or modified sources constructed in an area which exceeds the National Ambient Air Quality Standard (NAAQS) must reduce emissions to the level which reflects the "lowest achievable emission rate" (LAER), as defined in section 171(3) for such category of source. The statute defines LAER as that rate of emissions based on the following, whichever is more stringent:

> (A) The most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or
>
> (B) The most stringent emission limitation which is achieved in practice by such class or category of source.

In no event can the emission rate exceed any applicable new source performance standard (section 171(3)).

A similar situation may arise under the prevention of significant deterioration of air quality provisions of the Act (Part C). These provisions require that certain sources (referred to in section 169(1)) employ "best available control technology" (BACT) as defined in section 169(3) for all pollutants regulated under the Act. Best available control technology must be determined on a case-by-case basis, taking energy, environmental and economic impacts and other costs into account. In no event may the application of BACT result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 111 (or 112) of the Act.

In all events, State Implementation Plans (SIP's) approved or promulgated under section 110 of the Act must provide for the attainment and maintenance of NAAQS designed to protect public health and welfare. For this purpose, SIP's must in some cases require greater emission reduction than those required by standards of performance for new sources.

Finally, States are free under section 116 of the Act to establish even more stringent limits than those established under section 111 and prospective owners and operators of new sources should be aware of this possibility in planning for such facilities.

Section 317 of the Clean Air Act requires the Administrator to prepare an economic impact assessment and environmental impact statement for substantial revisions to standards of performance. Although these amendments are not substantial revisions, certain economic information was developed and is presented in *Primary Aluminum Background Information: Promulgated Amendments* (EPA 450/3-79-026). The revisions to the standards of performance were not significant enough to warrant preparation of an environmental impact statement.

Dated: June 24, 1980.

Douglas M. Costle,

Administrator.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

40 CFR Part 60 is revised as follows:

1. Subpart S is revised to read as follows:

Subpart S—Standards of Performance for Primary Aluminum Reduction Plants

Authority: Sections 111 and 301(a) of the Clean Air Act as amended (42 U.S.C. 7411, 7601(a)), and additional authority as noted below.

Section 60.190 paragraph (a) is revised as follows:

§ 60.190 Applicability and designation of affected facility.

(a) The affected facilities in primary aluminum reduction plants to which this subpart applies are potroom groups and anode bake plants.

* * * * *

Section 60.191 is revised to read as follows:

§ 60.191 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

"Aluminum equivalent" means an amount of aluminum which can be produced from a Mg of anodes produced by an anode bake plant as determined by § 60.195(g).

"Anode bake plant" means a facility which produces carbon anodes for use in a primary aluminum reduction plant.

"Potroom" means a building unit which houses a group of electrolytic cells in which aluminum is produced.

"Potroom group" means an uncontrolled potroom, a potroom which is controlled individually, or a group of potrooms or potroom segments ducted to a common control system.

"Primary aluminum reduction plant" means any facility manufacturing aluminum by electrolytic reduction.

"Primary control system" means an air pollution control system designed to remove gaseous and particulate flourides from exhaust gases which are captured at the cell.

"Roof monitor" means that portion of the roof of a potroom where gases not captured at the cell exit from the potroom.

"Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in § 60.195 or by equivalent or alternative methods (see § 60.8(b)).

Section 60.192 is revised to read as follows:

§ 60.192 Standards for fluorides.

(a) On and after the date on which the initial performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases containing total fluorides, as measured according to § 60.8 above, in excess of:

(1) 1.0 kg/Mg (2.0 lb/ton) of aluminum produced for potroom groups at Soderberg plants: except that emissions between 1.0 kg/Mg and 1.3 kg/Mg (2.6 lb/ton) will be considered in compliance if the owner or operator demonstrates that exemplary operation and maintenance procedures were used with respect to the emission control system and that proper control equipment was operating at the affected facility during the performance tests;

(2) 0.95 kg/Mg (1.9 lb/ton) of aluminum produced for potroom groups at prebake plants; except that emissions between 0.95 kg/Mg and 1.25 kg/Mg (2.5 lb/ton) will be considered in compliance if the owner or operator demonstrates that exemplary operation and maintenance procedures were used with respect to the emission control system and that proper control equipment was operating at the affected facility during the performance test: and

(3) 0.05 kg/Mg (0.1 lb/ton) of aluminum equivalent for anode bake plants.

(b) Within 30 days of any performance test which reveals emissions which fall between the 1.0 kg/Mg and 1.3 kg/Mg levels in paragraph (a)(1) of this section or between the 0.95 kg/Mg and 1.25 kg/Mg levels in paragraph (a)(2) of this section, the owner or operator shall submit a report indicating whether all necessary control devices were on-line and operating properly during the performance test, describing the operating and maintenance procedures followed, and setting forth any explanation for the excess emissions, to the Director of the Enforcement Division of the appropriate EPA Regional Office.

Section 60.193 is revised to read as follows:

§ 60.193 Standard for visible emissions.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere:

(1) From any potroom group any gases which exhibit 10 percent opacity or greater, or

(2) From any anode bake plant any gases which exhibit 20 percent opacity or greater.

Section 60.194 paragraphs (a) and (b) are revised as follows:

§ 60.194 Monitoring of operations.

(a) The owner or operator of any affected facility subject to the provisions of this subpart shall install, calibrate, maintain, and operate monitoring devices which can be used to determine daily the weight of aluminum and anode produced. The weighing devices shall have an accuracy of ± 5 percent over their operating range.

(b) The owner or operator of any affected facility shall maintain a record of daily production rates of aluminum and anodes, raw material feed rates, and cell or potline voltages.

(Section 114 of the Clean Air Act as amended (42 U.S.C. 7414))

* * * * *

Section 60.195 is revised as follows:

§ 60.195 Test methods and procedures.

(a) Following the initial performance test as required under § 60.8(a), an owner or operator shall conduct a performance test at least once each month during the life of the affected facility, except when malfunctions prevent representative sampling, as provided under § 60.8(c). The owner or operator shall give the Administrator at least 15 days advance notice of each test. The Administrator may require additional testing under section 114 of the Clean Air Act.

(b) An owner or operator may petition the Administrator to establish an alternative testing requirement that requires testing less frequently than once each month for a primary control system or an anode bake plant. If the owner or operator show that emissions from the primary control system or the anode bake plant have low variability during day-to-day operations, the Administrator may establish such an alternative testing requirement. The alternative testing requirement shall include a testing schedule and, in the case of a primary control system, the method to be used to determine primary control system emissions for the purpose of performance tests. The Administrator shall publish the alternative testing requirement in the Federal Register.

(c) Except as provided in § 60.8(b), reference methods specified in Appendix A of this part shall be used to determine compliance with the standards prescribed in § 60.192 as follows:

(1) For sampling emissions from stacks:

(i) Method 1 for sample and velocity traverses,

(ii) Method 2 for velocity and volumetric flow rate,

(iii) Method 3 for gas analysis, and

(iv) Method 13A or 13B for the concentration of total fluorides and the associated moisture content.

(2) For sampling emissions from roof monitors not employing stacks or pollutant collection systems:

(i) Method 1 for sample and velocity traverses,

(ii) Method 2 and Method 14 for velocity and volumetric flow rate,

(iii) Method 3 for gas analysis, and

(iv) Method 14 for the concentration of total fluorides and associated moisture content.

(3) For sampling emissions from roof monitors not employing stacks but equipped with pollutant collection systems, the procedures under § 60.8(b) shall be followed.

(d) For Method 13A or 13B, the sampling time for each run shall be at least 8 hours for any potroom sample

and at least 4 hours for any anode bake plant sample, and the minimum sample volume shall be 6.8 dscm (240 dscf) for any potroom sample and 3.4 dscm (120 dscf) for any anode bake plant sample except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Administrator.

(e) The air pollution control system for each affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined using applicable methods specified under paragraph (c) of this section.

(f) The rate of aluminum production is determined by dividing 720 hours into the weight of aluminum tapped from the affected facility during a period of 30 days prior to and including the final run of a performance test.

(g) For anode bake plants, the aluminum equivalent for anodes produced shall be determined as follows:

(1) Determine the average weight (Mg) of anode produced in anode bake plant during a representative oven cycle using a monitoring device which meets the requirements of § 60.194(a).

(2) Determine the average rate of anode production by dividing the total weight of anodes produced during the representative oven cycle by the length of the cycle in hours.

(3) Calculate the aluminum equivalent for anodes produced by multiplying the average rate of anode production by two. (Note: An owner or operator may establish a different multiplication factor by submitting production records of the Mg of aluminum produced and the concurrent Mg of anode consumed by potrooms.)

(h) For each run, potroom group emissions expressed in kg/Mg of aluminum produced shall be determined using the following equation:

$$Epg = \frac{(CsQs)_1 10^{-6} + (CsQs)_2 10^{-6}}{M}$$

Where:

Epg = potroom group emissions of total fluorides in kg/Mg of aluminum produced.

Cs = concentration of total fluorides in mg/dscm as determined by Method 13A or 13B, or by Method 14, as applicable.

Qs = volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2 and/or Method 14, as applicable.

10^{-6} = conversion factor from mg to kg.

M = rate of aluminum production in Mg/hr as determined by § 60.195(f).

$(CsQs)_1$ = product of Cs and Qs for measurements of primary control system effluent gas streams.

$(CsQs)_2$ = product of Cs and Qs for measurements of secondary control system or roof monitor effluent gas streams.

Where an alternative testing requirement has been established for the primary control system, the calculated value $(CsQs)_1$ from the most recent performance test will be used.

(i) For each run, as applicable, anode bake plant emissions expressed in kg/Mg of aluminum equivalent shall be determined using the following equation:

$$Ebp = \frac{CsQs\ 10^{-6}}{Me}$$

Where:

Ebp = anode bake plant emissions of total fluorides in kg/Mg of aluminum equivalent.

Cs = concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.

Qs = volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2.

10^{-6} = conversion factor from mg to kg.

Me = aluminum equivalent for anodes produced by anode bake plants in Mg/hr as determined by § 60.195(g).

(Section 114 of the Clean Air Act as amended (42 U.S.C. 7414))

2. Method 14, under Appendix A—Reference Methods, is revised to read as follows:

Appendix A—Reference Methods

* * * * *

METHOD 14—DETERMINATION OF FLUORIDE EMISSIONS FROM POTROOM ROOF MONITORS FOR PRIMARY ALUMINUM PLANTS

1. *Applicability and Principle.*

1.1 Applicability. This method is applicable for the determination of fluoride emissions from stationary sources only when specified by the test procedures for determining compliance with new source performance standards.

1.2 Principle. Gaseous and particulate fluoride roof monitor emissions are drawn into a permanent sampling manifold through several large nozzles. The sample is transported from the sampling manifold to ground level through a duct. The gas in the duct is sampled using Method 13A or 13B—Determination of Total Fluoride Emissions from Stationary Sources. Effluent velocity and volumetric flow rate are determined with anemometers located in the roof monitor.

2. *Apparatus.*

2.1 Velocity measurement apparatus.

2.1.1 Anemometers. Propeller anemometers, or equivalent. Each anemometer shall meet the following specifications: (1) Its propeller shall be made of polystyrene, or similar material of uniform density. To insure uniformity of performance among propellers, it is desirable that all propellers be made from the same mold; (2) The propeller shall be properly balanced, to optimize performance; (3) When the anemometer is mounted horizontally, its threshold velocity shall not exceed 15 m/min (50 fpm); (4) The measurement range of the anemometer shall extend to at least 600 m/min (2,000 fpm); (5) The anemometer shall be able to withstand prolonged exposure to dusty and corrosive environments; one way of achieving this is to continuously purge the bearings of the anemometer with filtered air during operation; (6) All anemometer components shall be properly shielded or encased, such that the performance of the anemometer is uninfluenced by potroom magnetic field effects; (7) A known relationship shall exist between the electrical output signal from the anemometer generator and the propeller shaft rpm, at a minimum of three evenly spaced rpm settings between 60 and 1800 rpm; for the 3 settings, use 60±15, 900±100, and 1800±100 rpm. Anemometers having other types of output signals (e.g., optical) may be used, subject to the approval of the Administrator. If other types of anemometers are used, there must be a known relationship (as described above) between output signal and shaft rpm; also, each anemometer must be equipped with a suitable readout system (See Section 2.1.3).

2.1.2 Installation of anemometers.

2.1.2.1 If the affected facility consists of a single, isolated potroom (or potroom segment), install at least one anemometer for every 85 m of roof monitor length. If the length of the roof monitor divided by 85 m is not a whole number, round the fraction to the nearest whole number to determine the number of anemometers needed. For monitors that are less than 130 m in length, use at least two anemometers. Divide the monitor cross-section into as many equal areas as anemometers and locate an anemometer at the centroid of each equal area. See exception in Section 2.1.2.3.

2.1.2.2 If the affected facility consists of two or more potrooms (or potroom segments) ducted to a common control device, install anemometers in each potroom (or segment) that contains a sampling manifold. Install at least one anemometer for every 85 m of roof monitor length of the potroom (or segment). If the potroom (or segment) length divided by 85 is not a whole number, round the fraction to the nearest whole number to determine the number of anemometers needed. If the potroom (or segment) length is less than 130 m, use at least two anemometers. Divide the potroom (or segment) monitor cross-section into as many equal areas as anemometers and locate an anemometer at the centroid of each equal area. See exception in Section 2.1.2.3.

2.1.2.3 At least one anemometer shall be installed in the immediate vicinity (i.e., within 10 m) of the center of the manifold (See Section 2.2.1). For its placement in relation to the width of the monitor, there are

two alternatives. The first is to make a velocity traverse of the width of the roof monitor where an anemometer is to be placed and install the anemometer at a point of average velocity along this traverse. The traverse may be made with any suitable low velocity measuring device, and shall be made during normal process operating conditions.

The second alternative, at the option of the tester, is to install the anemometer halfway across the width of the roof monitor. In this latter case, the velocity traverse need not be conducted.

2.1.3 Recorders. Recorders, equipped with suitable auxiliary equipment (e.g. transducers) for converting the output signal from each anemometer to a continuous recording of air flow velocity, or to an integrated measure of volumetric flowrate. A suitable recorder is one that allows the output signal from the propeller anemometer to be read to within 1 percent when the velocity is between 100 and 120 m/min (350 and 400 fpm). For the purpose of recording velocity, "continuous" shall mean one readout per 15-minute or shorter time interval. A constant amount of time shall elapse between readings. Volumetric flow rate may be determined by an electrical count of anemometer revolutions. The recorders or counters shall permit identification of the velocities or flowrate measured by each individual anemometer.

2.1.4 Pitot tube. Standard-type pitot tube, as described in Section 2.7 of Method 2, and having a coefficient of 0.99 ± 0.01.

2.1.5 Pitot tube (optional). Isolated, Type S pitot, as described in Section 2.1 of Method 2. The pitot tube shall have a known coefficient, determined as outlined in Section 4.1 of Method 2.

2.1.6 Differential pressure gauge. Inclined manometer or equivalent, as described in Section 2.1.2 of Method 2.

2.2 Roof monitor air sampling system.

2.2.1 Sampling ductwork. A minimum of one manifold system shall be installed for each potroom group (as defined in Subpart S, Section 60.191). The manifold system and connecting duct shall be permanently installed to draw an air sample from the roof monitor to ground level. A typical installation of a duct for drawing a sample from a roof monitor to ground level is shown in Figure 14–1. A plan of a manifold system that is located in a roof monitor is shown in Figure 14.2. These drawings represent a typical installation for a generalized roof monitor. The dimensions on these figures may be altered slightly to make the manifold system fit into a particular roof monitor, but the general configuration shall be followed. There shall be eight nozzles, each having a diameter of 0.40 to 0.50 m. Unless otherwise specified by the Administrator, the length of the manifold system from the first nozzle to the eighth shall be 35 m or eight percent of the length of the potroom (or potroom segment) roof monitor, whichever is greater. The duct leading from the roof monitor manifold shall be round with a diameter of 0.30 to 0.40 m. As shown in Figure 14–2, each of the sample legs of the manifold shall have a device, such as a blast gate or valve, to enable adjustment of the flow into each sample nozzle.

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