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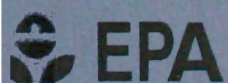
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EPA-453/R-98-010b  
December 1998

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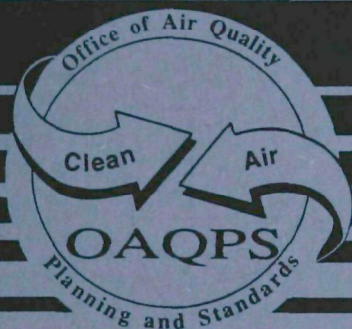
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# NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) FOR STEEL PICKLING - HCl PROCESS FACILITIES AND HYDROCHLORIC ACID REGENERATION PLANTS –

## BACKGROUND INFORMATION FOR PROMULGATED STANDARDS



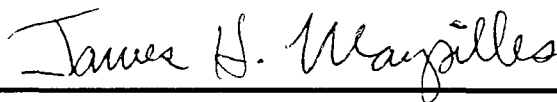
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U.S. ENVIRONMENTAL PROTECTION AGENCY

National Emission Standards for Hazardous Air Pollutants for Steel  
Pickling HCl Process Facilities and Hydrochloric Acid Regeneration  
Plants -- Background Information for Promulgated Standards

Prepared by:



April 29, 1999

(Date)

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1. The standards will reduce emissions of hydrochloric acid (HCl) from steel pickling facilities that use the HCl process and from acid regeneration plants that treat waste pickling liquor to produce reusable HCl. Chlorine emissions from acid regeneration plants will also be reduced. The rules establish final HCl control requirements for steel pickling lines, hydrochloric acid regeneration plants, and hydrochloric acid storage vessels. The final standards are promulgated under the authority of Section 112(d) of the Clean Air Act.
2. Copies of this document have been sent to the following Federal Departments: Agriculture, Commerce, Defense, Energy, Health and Human Services, Interior, Labor, and Transportation; the Office of Management and Budget; the National Science Foundation; and other interested parties.
3. Copies of this document may be obtained from:  
  
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## Table of Contents

	PAGE
1.0 INTRODUCTION . . . . .	1-1
1.1 SUMMARY OF RULE CHANGES SINCE PROPOSAL . . . . .	1-1
1.1.1 Applicability . . . . .	1-1
1.1.2 Definitions . . . . .	1-1
1.1.3 Emission Standards . . . . .	1-2
1.1.4 Operations and Maintenance . . . . .	1-3
1.1.5 Performance Testing . . . . .	1-4
1.1.6 Monitoring Requirements . . . . .	1-4
1.1.7 Delegation of Authority . . . . .	1-5
1.2 SUMMARY OF FINAL RULE IMPACTS . . . . .	1-5
2.0 COMMENTERS ON PROPOSED RULE . . . . .	2-1
3.0 APPLICABILITY . . . . .	3-1
3.1 CLARIFICATION OF THE MAJOR SOURCE PROVISION . . . . .	3-1
3.2 CLARIFICATION OF THE 50 PERCENT HCl PROVISION . . . . .	3-1
3.3 MULTI-LINE AND MULTI-ACID OPERATIONS . . . . .	3-2
3.4 HYDROCHLORIC ACID STORAGE VESSELS . . . . .	3-3
3.5 DEFINITION OF NEW OR RECONSTRUCTED SOURCE . . . . .	3-4
4.0 DEFINITIONS . . . . .	4-1
4.1 BATCH AND CONTINUOUS PICKLING LINES . . . . .	4-1
4.2 STEEL PICKLING . . . . .	4-1
5.0 STANDARDS FOR PICKLING LINES . . . . .	5-1
5.1 NUMERICAL STANDARDS . . . . .	5-1
5.2 FUME CAPTURE CONSIDERATIONS . . . . .	5-12
6.0 STANDARDS FOR ACID REGENERATION PLANTS . . . . .	6-1
6.1 BASIS FOR THE HCl NUMERICAL STANDARD . . . . .	6-1
6.2 BASIS FOR THE Cl <sub>2</sub> NUMERICAL STANDARD . . . . .	6-5
7.0 STANDARDS FOR ACID STORAGE VESSELS . . . . .	7-1
7.1 INCLUSION OF STANDARDS FOR ACID STORAGE VESSELS . . . . .	7-1
7.2 FLEXIBILITY IN CHOICE OF CONTROL SYSTEMS . . . . .	7-1
8.0 MAINTENANCE REQUIREMENTS . . . . .	8-1
8.1 ESTABLISHMENT OF NECESSITY FOR REQUIREMENTS . . . . .	8-1
8.2 SPECIFICITY OF REQUIREMENTS . . . . .	8-1
8.3 TIMING OF RESPONSE TO OPERATING PARAMETER EXCURSIONS . . . . .	8-3

## Table of Contents (Continued)

	PAGE
9.0 PERFORMANCE TESTING . . . . .	9-1
9.1 ESTABLISHMENT OF MONITORING PARAMETERS . . . . .	9-1
9.2 OPERATION OF PROCESS DURING TESTING . . . . .	9-2
10.0 TEST METHODS . . . . .	10-1
10.1 APPLICABILITY OF PROPOSED METHODS . . . . .	10-1
11.0 MONITORING REQUIREMENTS . . . . .	11-1
11.1 CEMS REQUIREMENT . . . . .	11-1
11.2 SCRUBBER MONITORING PARAMETERS . . . . .	11-2
11.3 MONITORING DURING PROCESS STOPPAGE . . . . .	11-4
11.4 ACID STORAGE VESSELS . . . . .	11-5
11.5 PROCESS MONITORING - ACID REGENERATION PLANTS . . . . .	11-5
11.6 FREQUENCY OF PERFORMANCE TESTING . . . . .	11-5
11.7 FREQUENCY OF MONITORING DEVICE CALIBRATION . . . . .	11-6
11.8 VIOLATIONS . . . . .	11-6
12.0 REPORTING REQUIREMENTS . . . . .	12-1
12.1 CERTIFICATION OF REPORTS . . . . .	12-1
12.2 COMBINING REPORTS . . . . .	12-1
13.0 RECORDKEEPING REQUIREMENTS . . . . .	13-1
13.1 USEFULNESS OF INFORMATION IN RECORDS . . . . .	13-1
14.0 MISCELLANEOUS COMMENTS . . . . .	14-1
14.1 POLLUTION PREVENTION MEASURES . . . . .	14-1
14.2 COST OF CONTROLS . . . . .	14-1

## Tables

	PAGE
2-1 List of Public Commenters on the Proposed NESHAP for Steel Pickling Facilities HCl Process . . . . .	2-3
5-1 Pickling line scrubber outlet HCl concentration data from one facility . . . . .	5-3
5-2a Pickling line configuration and scrubber design data from EPA's original data base . . . . .	5-5
5-2b Pickling line scrubber inlet/outlet HCl data from EPA's original data base . . . . .	5-6
5-3 Summary of emission data for new and existing source MACT . . . . .	5-8
6-1 Test data for HCl emissions from acid regeneration plants using two-stage scrubbing, water in first stage . . . . .	6-2
6-2 Test data for HCl emissions from acid regeneration plant using single-stage water scrubbing . . . . .	6-4
6-3 Test data for Cl <sub>2</sub> emissions from acid regeneration plant . . . . .	6-6

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## 1.0 INTRODUCTION

### 1.1 SUMMARY OF RULE CHANGES SINCE PROPOSAL

The EPA proposed the rule National Emission Standards for Hazardous Air Pollutants for Steel Pickling Facilities HCl Process (40 CFR Part 63) on September 18, 1997 (62 FR 49051). Based on the public comments received by the EPA at the proposal as well as the EPA's evaluation of additional information obtained after proposal, certain requirements of the rule have been changed from those proposed. The major changes affect provisions establishing the rule applicability, definitions, emission standards, operations and maintenance, performance testing, and monitoring. In addition, the EPA has made changes to the specific regulatory text to clarify the EPA's intent in the application and implementation of the rule requirements. The substantive changes to the rule since proposal are summarized as follows.

#### 1.1.1 Applicability

The promulgated rule clarifies that subject steel pickling sources include only those pickling hot-rolled or hot-formed carbon steel. Additionally, the acid solution used for pickling must contain 6 percent or more by weight of HCl and be at a temperature of 100 °F or higher. For the purposes of this rule, steel pickling is limited to hydrochloric acid pickling of carbon steel.

#### 1.1.2 Definitions

The title acid regeneration plant is changed to hydrochloric acid regeneration plant to clarify the applicability of the rule.

The title acid storage tank is changed to hydrochloric acid storage vessel to clarify the applicability of the rule. The definition is changed to apply only to a stationary vessel, not a temporary or mobile vessel, that is used for the bulk containment of virgin or regenerated hydrochloric acid. The term "vessel" rather than "tank" is used for bulk storage containers in order to be consistent with terminology used in other subparts of part 63 to define containers

that are used for chemical storage. Similarly, the term “tank” is used for containers that are integral parts of processes, such as acid baths used in pickling lines.

Carbon steel is defined as steel that contains approximately 2 percent or less carbon, 1.65 percent or less manganese, 0.6 percent or less silicon, and 0.6 percent or less copper.

The definition of closed-vent system is clarified to include a system containing any device that is capable of reducing or collecting emissions.

A definition for hydrochloric acid regeneration plant production mode has been added to help clarify that monitoring requirements apply only while the plant is operating in a manner to produce usable regenerated acid and iron oxide.

To ensure that a knowledgeable plant official signs maintenance records and reports, the term responsible maintenance official has been added and defined as a person designated by the owner or operator as having the knowledge and authority to sign documents that are required under the promulgated rule.

Specialty steel, which is excluded from the rule, is defined as a category of steel that includes silicon electrical, alloy, tool, and stainless steels.

The revised definition of steel pickling emphasizes that it is the chemical removal of iron oxide mill scale formed on steel surfaces during hot rolling and hot forming operations prior to shaping or coating of finished steel products. Removal of light rust or scale from finished steel products and activation of the metal surface prior to plating or coating are specifically excluded from the definition.

### 1.1.3 Emission Standards

The proposed rule required existing pickling sources to meet either a minimum HCl collection efficiency standard of 97.5 percent or, alternatively, a maximum process or control device outlet HCl concentration standard of 10 parts per million by volume (ppmv). Standards for new or reconstructed sources were 99 percent or 3 ppmv, respectively. The standards for existing pickling sources have been changed to 97 percent or 18 ppmv. For new or reconstructed sources, the standards are 99 percent or 6 ppmv for continuous lines, 97 percent or 18 ppmv for batch lines.

The proposed rule required existing hydrochloric acid regeneration plants to meet maximum outlet concentration standards of 8 ppmv for HCl and 4 ppmv for chlorine (Cl<sub>2</sub>). Standards for new or reconstructed sources were 3 ppmv for HCl and 4 ppmv for Cl<sub>2</sub>. The standards for existing sources are changed to 25 ppmv for HCl and 6 ppmv for Cl<sub>2</sub>. The standards for new or reconstructed sources are changed to 12 ppmv for HCl and 6 ppmv for Cl<sub>2</sub>. As in the proposed rule, owners or operators of existing acid regeneration facilities may determine an alternate Cl<sub>2</sub> emission standard specific for the source if they can show to the Administrator's satisfaction that the 6 ppmv Cl<sub>2</sub> standard cannot reasonably be met. The provision in the proposed rule for owners or operators of new or reconstructed hydrochloric acid regeneration plants to request approval for a source specific Cl<sub>2</sub> concentration standard is removed. Upon reconsideration, this provision is not consistent with the statutory requirement that all new sources are to achieve the new source MACT numerical limit. The expectation is that owners and operators are to design and construct new sources capable of meeting the standard.

#### 1.1.4 Operations and Maintenance

The revised rule requires an owner or operator of a pickling facility or acid regeneration plant to write an emission control device operation and maintenance plan that is consistent with good maintenance practices and, for scrubbers, contains at a minimum the elements described in § 63.1160(b)(2)(i) through § 63.1160(b)(2)(iv) of the final rule. The plan is no longer required to be submitted to the permitting authority, but it is required to be incorporated by reference into the source's Title V permit. The rule also requires hydrochloric acid regeneration plants to be operated in a manner consistent with good air pollution control practices.

Monitoring the pressure drop across the scrubber is now required as an aid for detecting changes that indicate a need for maintenance, not as an operating parameter.

When an operating problem is discovered, initiation of procedures to correct the problem must be begun within one working day. Procedures to be initiated are the applicable actions that are specified in the maintenance plan. Corrective actions must be completed as soon as practicable, and all records of repairs and inspections must be signed by a responsible maintenance official.

#### 1.1.5 Performance Testing

Under the revised rule, each scrubber control device must be monitored for makeup water flow rate and, for scrubbers that operate with recirculation, recirculation water flow rate. The minimum values for these rates must be established during initial or subsequent performance testing. Compliance with emission standards may be determined by either the average of three consecutive sampling runs or the average of any three of four consecutive runs during a test. Compliant operating parameter values for wet scrubbers and acid regeneration plants may be determined by the average values measured during any of the runs used to demonstrate compliance rather than the average values measured during the entire testing period. During testing under Method 1, no traverse point shall be within one inch of the stack or duct wall. For existing acid regeneration plants wishing to petition for a new  $\text{Cl}_2$  emission standard because they are not able to meet the published standard, it must be shown that a plant cannot meet a concentration standard of 6 ppmv.

#### 1.1.6 Monitoring Requirements

Each monitoring device used to monitor control device parameters must be calibrated in accordance with the manufacturer's instructions but not less frequently than once per year. Operation of a scrubber control device with makeup water and recirculation water flow rates less than the values established during initial or subsequent performance testing requires initiation of corrective action as specified in the facility's maintenance plan. The requirement to install and operate a continuous emission monitoring system (CEMS) if excursions of the control device operating parameters are excessive is removed.

The requirement for periodic performance tests is also revised. The final rule requires that the owner or operator conduct performance tests for each air pollution control device either annually or on an alternative schedule that is approved by the permitting authority, but no less frequently than every 2½ years or twice per title V permit term.

The proposed rule inadvertently stated that exceedances of scrubber operating parameters were violations of the emission limit. The intention was to state that exceedances of acid regeneration plant operating parameters were violations of the emission limit. This requirement has been changed so that exceedances of scrubber operating parameters only require initiation of corrective action according to the maintenance plan, and exceedances of acid regeneration plant operating parameters are not violations of the emission limit but instead are violations of the operational standard.

Monitoring requirements for acid storage vessels are revised. The definition of closed-vent system now includes provisions to transport emissions back into any device that is capable of reducing or collecting the emissions. Under the final rule, the owner or operator must make semiannual instead of monthly inspections of each vessel to ensure proper operation of the closed-vent system and either the air pollution control device or enclosed loading and unloading line, whichever is applicable.

#### 1.1.7 Delegation of Authority

The proposed rule specified that authority for approval of an alternative test method and alternative nonopacity emission standards would be retained by the Administrator and not transferred to a State. Authority for approval of monitoring parameters for hydrochloric acid regeneration plants and alternative monitoring requirements for wet scrubbers is also retained by the Administrator because these parameters are fundamental to effective monitoring and cannot be delegated. The Administrator will also retain authority to waive recordkeeping requirements. Authority to approve an alternative performance testing schedule is delegated to the States.

### 1.2 SUMMARY OF FINAL RULE IMPACTS

The EPA estimates that implementation of the subpart CCC standards will reduce nationwide HCl emissions from steel pickling operations and acid regeneration plants by approximately 2,200 Mg/yr. The total nationwide capital investment cost to pickling facility and acid regeneration plant owners to implement the subpart CCC standards is estimated by the EPA to be \$20 million. The total nationwide annual cost for these standards is estimated to be \$4.9 million per year.

The EPA concludes that the promulgation of the final subpart CCC standards will not have a significant economic impact on steel pickling facility or acid regeneration plant owners and operators. Model plant costs represent the cost to individual facilities, and these costs approximate 1.0 percent or are less than 1.0 percent of sales and of the cost of production for all model plants. The magnitude of the costs relative to production costs of the industry and sales revenues leads to a conclusion that this standard will not significantly adversely impact firms in the steel pickling industry. No plant closures are anticipated nor significant employment losses. Significant regional impacts are also not expected.

## 2.0 COMMENTERS ON PROPOSED RULE

The U.S. Environmental Protection Agency proposed standards on September 18, 1997 under the authority of Section 112 of the Clean Air Act as amended in November 1990 that would control air emissions from steel pickling lines that employ the HCl process and associated HCl acid regeneration plants. The preamble to the proposed rule discussed the availability of a background information document (BID) (EPA-453/R-97-012)<sup>1</sup> that presents information used in development of the proposed rule.

Comments from the public on the rulemaking were solicited at the time of proposal, and copies of the Federal Register notice and the BID for the proposed rule were distributed to interested parties. A 60-day comment period from September 18, 1997, to November 17, 1997, was provided to accept written comments from the public on the proposed rule and BID. The opportunity for a public hearing was provided to allow interested persons to present oral comments on the rulemaking. However, the EPA did not receive a request for a public hearing, so a public hearing was not held.

A total of 15 letters presenting comments on the proposed rule and on the BID for the proposed rule were received by the EPA. Copies of the comment letters are available for public inspection in the docket for the rulemaking (Docket No. A-95-43). This docket is located at the EPA's Air and Radiation docket and Information Center, Waterside Mall, Room M-1500, First Floor, 401 M Street, SW, Washington, DC 20460.

The commenters, their affiliations, and the EPA docket number assigned to their correspondence are presented in Table 2-1. The commenter affiliation distribution for these letters is as follows: nine individual companies, five trade associations (including STAPPA/ALAPCO), and one Federal agency.

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<sup>1</sup> National Emission Standards for Hazardous Air Pollutants (NESHAP) for Steel Pickling HCl Process -- Background Information for Proposed Standards, Publication Number EPA-453/R-97-012, June 1997.

The primary purpose of this document is to present the EPA's responses to the comments on the proposed rulemaking. Many of the comment letters contain multiple comments regarding various aspects of the rulemaking. For the purpose of orderly presentation, the comments are categorized by the following topics:

- Chapter 3.0      Applicability
- Chapter 4.0      Definitions
- Chapter 5.0      Standards for Pickling Lines
- Chapter 6.0      Standards for Acid Regeneration Plants
- Chapter 7.0      Standards for Acid Storage Vessels
- Chapter 8.0      Maintenance Requirements
- Chapter 9.0      Performance Testing
- Chapter 10.0     Test Methods
- Chapter 11.0     Monitoring Requirements
- Chapter 12.0     Reporting Requirements
- Chapter 13.0     Recordkeeping Requirements
- Chapter 14.0     Miscellaneous Comments

Table 2-1. List of Public Commenters on the Proposed NESHAP for Steel Pickling Facilities - HCl Process

Docket item number	Commenter name and address	Docket item number	Commenter name and address
IV-D-1	James R. Malloch Vice President-Iron Oxide Magnetics International Incorporated 1111 North State Road 149 Burns Harbor, Indiana 46304-9249	IV-D-5	Sarah B. Peirce-Sandner Kodak Park Environmental Services Health, Safety, and Environment Eastman Kodak Company Rochester, New York 14652-6263
IV-D-2	Matthew F. Johnston Corporate Engineer, Environmental Affairs Worthington Industries 1205 Dearborn Drive Columbus, Ohio 43085	IV-D-6	Arthur E. Hall, P.E. Supervisor, Chemical Processing Wheatland Tube Company 1 Council Avenue Wheatland, Pennsylvania 16161
IV-D-3	David A. Sulc Environmental Engineer Nucor Steel Division of Nucor Corporation Route 2, Box 311 Crawfordsville, Indiana 47933-9450	IV-D-7	John L. Wittenborn Chet M. Thompson Counsel to the Specialty Steel Industry of North America Collier, Shannon, Rill, and Scott, PLLC 3050 K Street, NW Suite 400 Washington, DC 20007
IV-D-4	Michael J. Wax Deputy Director Institute of Clean Air Companies 1660 L Street, NW Suite 1100 Washington, DC 20036-5603	IV-D-8	Walter Sieckman Chief Executive Officer International Steel Services, Incorporated Foster Plaza No. 7 661 Andersen Drive Pittsburgh, Pennsylvania 15220

(Continued)



Docket item number	Commenter name and address	Docket item number	Commenter name and address
IV-D-9	John L. Wittenborn Chet M. Thompson Counsel to the Steel Manufacturers Association Collier, Shannon, Rill, and Scott, PLLC 3050 K Street, NW Suite 400 Washington, DC 20007	IV-D-13	Felicia R. George Assistant Commissioner Indiana Department of Environmental Management 100 North Senate Avenue P.O. Box 6015 Indianapolis, Indiana 46206-6015
IV-D-10	David J. Holmberg Manager - Environmental Services Acme Steel Company 13500 S. Perry Avenue Riverdale, Illinois 60627-1182	IV-D-14	Neil Stone ESCO Engineering 179 Lansdowne Avenue Kingsville, Ontario, CANADA N9Y 3J2
IV-D-11	Bruce A. Steiner Vice President, Environment and Energy American Iron and Steel Institute 1101 17 <sup>th</sup> Street, NW Suite 1300 Washington, DC 20036-4700	IV-D-15	Robert H. Colby, Chair ALAPCO Air Toxics Committee Bliss M. Higgins, Chair STAPPA Air Toxics Committee STAPPA/ALAPCO 444 North Capitol Street, NW Washington, DC 20001
IV-D-12	Gary R. Allie Environmental Regulation Manager Environmental Affairs Inland Steel Company Indiana Harbor Works 3210 Watling Street East Chicago, Indiana 46312		

### 3.0 APPLICABILITY

#### 3.1 CLARIFICATION OF THE MAJOR SOURCE PROVISION

Comment: Four commenters (IV-D-1, IV-D-2, IV-D-11, IV-D-12) stated that the rule should be clarified to reflect the fact that it applies only to facilities or parts of facilities that are major sources of hazardous air pollutants (HAP). It does not apply to major sources of criteria pollutants or to area sources of HAP.

Response: The suggested clarification has been made.

#### 3.2 CLARIFICATION OF THE 50 PERCENT HCl PROVISION

Comment: Four commenters (IV-D-2, IV-D-7, IV-D-9, IV-D-11) requested clarification of the 50 percent acid threshold that defines pickling by the HCl process. They are uncertain if the 50 percent concentration refers to the acid in the bath or to acid used in a mixture of acids. They believe the 50-percent threshold may be arbitrary and capricious and that EPA should develop a *de minimis* value that excludes rinse tanks. They reason that EPA excludes wastewaters, therefore a *de minimis* value must exist. The 50-percent threshold and the methods for establishing it for specific facilities should be clarified. They ask if all tanks in a line are included or just the tanks in which acid concentration stays above 50 percent, and will EPA's rule prevent facilities from adding, e.g., more rinse tanks to bring the average line concentration below 50 percent acid. The commenters recommend that EPA establish a *de minimis* value on a tub-by-tub basis to impact only those tubs that contain 50 percent acid. One commenter suggests alternative language: "The provisions of this subpart apply to all new and existing steel pickling facilities using an acid solution in which hydrochloric acid (HCl) is the only pickling acid, or using a mixture of acids in which HCl constitutes at least 50 percent by weight of all acids in the pickling solution." Two other commenters recommend that applicability determinations be made on a tub-by-tub basis, and that only acid tubs that exceed the applicable threshold be subject to regulation. Another commenter asserts that the applicability provisions of the proposed rule can be interpreted to mean that HCl at concentrations greater than 50 percent are subject to the standard. This interpretation is

contrary to EPA's expressed intent. The commenter recommends that the provision be clarified.

Response: The EPA agrees with the commenters' observations that a great deal of confusion exists regarding the 50 percent HCl criterion. In searching for alternative criteria, the Metals Handbook, Ninth Edition, Volume 5: Surface Cleaning, Finishing, and Coating, published by the American Society for Metals, 1990, was consulted, and new criteria in terms of HCl concentration and bath temperature were identified. Based on these new criteria, the rule requires control of all ventilated tanks (acid tubs) containing pickling solution that contains 6 percent or more HCl (by weight) and has a temperature of 100 °F or higher; these conditions are the minimum HCl concentration and temperature at which HCl pickling is conducted according to the referenced handbook.

### 3.3 MULTI-LINE AND MULTI-ACID OPERATIONS

Comment: Two commenters (IV-D-7, IV-D-9) stated that the proposed rule is based in large part on models that do not depict the entire steel pickling universe. None of EPA's models analyzed the impacts of the rule on (1) lines that utilize both HCl acid tubs and other acid tubs, (2) lines that utilize HCl in conjunction with another acid in a single tub, (3) non-HCl dedicated scrubbers that also handle emissions from HCl rinse tubs, or (4) facilities that capture and control emissions from HCl and non-HCl lines using a common scrubber.

The EPA does not discuss "multiple acid" or "mixed-acid" pickling lines that have multiple acid tubs, some of which use HCl and others that use either sulfuric or nitric acid. The EPA has provided no data indicating whether mixed-acid emissions impact scrubber efficiency or whether scrubbers that handle mixed-acid lines are capable of meeting the proposed standards. The EPA should collect and analyze sufficient data to determine the impact on and whether its proposed standards are appropriate and achievable for these types of pickling lines.

Scrubbers that are not used primarily to control emissions from HCl lines and that only control rinse tub emissions should not be subject to the proposed rule. The EPA could rectify the situation by expressly providing in the rule or preamble that non-HCl dedicated scrubbers that also handle emissions only from HCl rinse tubs are not subject to the rule, or the EPA could establish a *de minimis* HCl concentration applicability threshold.

Response: The intent of the rule was to address the segment of the industry that pickles carbon steel using HCl. After the rule was proposed, the EPA received information on another segment of the industry that pickles steel using other acids or combinations of HCl and other acids. Steel pickled by these processes are specialty steels that include silicon electrical, alloy, tool, and stainless steels. Information received by the EPA included evidence that major sources for HCl may exist within the specialty steel pickling industry segment, but available source test data did not verify that the emission control technology employed in carbon steel pickling could be employed with the same effectiveness in specialty steel pickling. Consequently the EPA decided to defer regulation of the specialty steel pickling industry and proceed with its original intention to regulate only carbon steel pickling using the HCl process by this rulemaking. The applicability statement is revised and definitions for carbon steel and specialty steel are added to clarify this intent. Carbon steel is defined as steel that contains approximately 2 percent or less carbon, 1.65 percent or less manganese, 0.6 percent or less silicon, and 0.6 percent or less copper. Specialty steel is defined as a category of steels that includes silicon electrical, alloy, tool, and stainless steels. These definitions are taken from the publication Everything You Always Wanted to Know About Steel - A Glossary of Terms and Concepts, edited by M. G. Applebaum, Salomon Brothers Inc., Chicago, 1997. The EPA has also established a *de minimis* HCl concentration for operations that are subject to this rule that will probably exclude most rinse tanks. Thus, the situations described by the commenter will not be subject to this regulation. The EPA will determine at a later date if the specialty steel pickling industry should be regulated under this part of the CFR, and, if so, whether it will be regulated by amending subpart CCC or under a separate subpart.

### 3.4 HYDROCHLORIC ACID STORAGE VESSELS

Comment: Two commenters (IV-D-7, IV-D-9) recommended that mobile storage tanks be excluded from the rule; for example, 55-gallon drums and up to 500-gallon plastic containers on pallets should be excluded.

Response: The EPA agrees that small portable vessels should be excluded from the rule. Requiring the installation of controls on these sources would be burdensome and was not intended. The rule is revised to include only stationary storage vessels.

### 3.5 DEFINITION OF NEW OR RECONSTRUCTED SOURCE

Comment: One commenter (IV-D-8) believes that the proposed rule will require reconstruction of existing scrubber systems, forcing the process to become subject to new source rules. The definition of reconstructed source should be eliminated.

Response: Changes or additions to air pollution control devices do not constitute reconstruction of the source and are not included in the changes that would make a facility or process subject to reconstruction and modification requirements.

## 4.0 DEFINITIONS

### 4.1 BATCH AND CONTINUOUS PICKLING LINES

Comment: One commenter (IV-D-12) believes that the definition for batch and continuous pickling lines should exclude the phrase “. . . drained, and rinsed by spraying or immersion in one or more rinse tanks to remove residual acid.” This term could be misconstrued to require an air pollution control device. The commenter also believes that the definition for continuous pickling line should exclude the phrase “. . . rinsed in another vessel or series of vessels to remove residual acids.” This term could be misconstrued to require an air pollution control device.

Response: The rule is meant to include all ventilated tanks that are part of a steel pickling process to which the rule applies, which may include some rinse tanks. The rule does not require installation of ventilation systems not previously installed.

### 4.2 STEEL PICKLING

Comment: Five comments (IV-D-5, IV-D-7, IV-D-9, IV-D-11, IV-D-12) were submitted regarding the definition of “steel pickling” proposed for the rule. Two commenters believe that the proposed definition of pickling is too broad and can be interpreted to include maintenance activities such as preparing surfaces prior to painting, cleaning equipment, and cleaning parts. One commenter believes that the second sentence of the definition for steel pickling contradicts the first sentence regarding “removal of rust” and is concerned that the definition of steel pickling may capture non-manufacturing operations under the rule. This commenter also proposed language for the definition that would exclude the operations named above and would substitute “mill scale” for “scale” and “rust” for “light rust” on the basis that the former term is more accurate in describing the formation of surface material during the manufacture of steel and the latter term reduces the chance for subjective interpretation of the thickness of rust layers. This commenter proposed the following definition for steel pickling: “Chemical removal of iron oxide mill scale through contact of an aqueous solution of hydrochloric acid with semi-finished steel products where such contact occurs prior to shaping or coating of the finished steel product. This definition does not include operations

for the removal of rust and scale from finished steel products and/or equipment or for the activation of the metal surface prior to plating or painting.” Another commenter recommended that the definition of steel pickling should also exclude continuous annealing, normalizing, and coating.

Two other commenters recommended that cold pickling lines (those pickling cold rolled or reduced steel products) should be specifically excluded from the rule. Both commenters suggested adding the following sentence to § 63.1155: “The provisions of this subpart do not apply to HCl pickling lines that remove scale from steel prior to plating or coating (i.e., “cold pickling”). “Cold pickling” should be defined as “HCl pickling of cold rolled or reduced steel products.”

Another commenter stated that surface cleaning using HCl should be specifically excluded to avoid interpretation confusion. Include in the definition: “ This definition does not include operations for the removal of light rust, surface cleaning, or for activation of the metal surface prior to plating, including processes such a annealing, normalizing, coating, etc.”

Response: The EPA agrees that the definition of steel pickling should be crafted to avoid misinterpretation. The definition is revised so that steel pickling means the chemical removal of iron oxide mill scale that is formed on steel surfaces during hot rolling or hot forming of semi-finished steel products through contact with an aqueous solution of acid where such contact occurs prior to shaping or coating of the finished steel product. This definition does not include removal of light rust or scale from finished steel products or activation of the metal surface prior to plating or coating.

## 5.0 STANDARDS FOR PICKLING LINES

### 5.1 NUMERICAL STANDARDS

Comment: Five commenters (IV-D-6, IV-D-7, IV-D-9, IV-D-10, IV-D-11) stated that the EPA did not base the standards on the best performing 12 percent of sources. The language in the Act directs the EPA to derive numerical limits for new sources from the best performing scrubbers for a given option, but EPA used this approach in deriving existing source standards. The EPA only considered 10 of the 152 existing continuous pickling lines (seven percent), then used only four of the 10 available data sets and determined the concentration limit from only two data sets. The EPA has not justified not using all data sets. The averages of all ten tests, 29.3 ppmv and 97.3 percent, are more representative of the actual variation in the test data which could be expected for properly controlled sources and should be the basis for the limits.

Response: As explained in the preamble to the proposed rule, the EPA based MACT on technology, not on actual emissions. In determining MACT, the EPA considered alternative approaches for establishing the MACT floor; these include (1) information on State regulations and/or permit conditions, (2) source test data that characterize actual emissions discharged by sources, and (3) use of a technology floor and an accompanying demonstrated achievable emission level that accounts for process and air pollution control device variability. No Federal air emission standard currently apply to steel pickling or acid regeneration sources, and existing State standards cannot be directly related to the requirements of this rule. Applicable test data are only available from 10 of 152 continuous pickling lines. These data points are too few to establish 12 percent MACT floors based on actual releases. The best 18 points would be required for continuous lines, the best seven for batch lines, and substantially more data points than 18 and seven, respectively, would be required in order to identify those best points.

By comparison with the limited utility of State regulations and source test data, a substantial body of information is available on the types, configurations, and operating conditions of air pollution control devices applied across the industry. This information was collected through the comprehensive survey by the EPA of known steel pickling facilities that



was conducted in 1992 through the Information Collection Request (ICR) approved by the Office of Management and Budget for NESHAP information gathering. This survey produced substantial information on the design and operation of emission control equipment but little information on actual emissions. The EPA therefore used the technology floor approach to establishing MACT for pickling lines. Details of this approach are discussed in the preamble to the proposed rule.

The characteristics of the scrubbers constituting the existing source and new source levels of control were determined by evaluating the results of emission tests conducted on units currently employed in the industry. Ten valid sets of emission test data on scrubbers applied to continuous strip and push-pull strip pickling lines were collected and evaluated. All tests were conducted on sieve tray and vertical packed bed scrubbers. Fundamental design measures of performance for units of these types include the number of trays and depth of packing. Based on the data analysis, existing source MACT was represented by a sieve tray scrubber with three trays and vertical packed bed scrubbers with five to 10 feet of packing. Each scrubber was used in conjunction with either a mesh pad or chevron type droplet eliminator. New source MACT was represented by a six-plate tray scrubber with a mesh pad droplet eliminator and a packed bed scrubber with a two-stage droplet eliminator consisting of a mesh pad unit followed by a chevron unit. Data from pickling lines controlled by devices of these descriptions were used to represent the capabilities of MACT for this application. The EPA determined the standards from these data as discussed in the comments and responses below.

Comment: Two commenters (IV-D-3, IV-D-6) stated that the standards are unnecessarily stringent in that they do not reflect what is achievable on a continuous basis considering natural process and control device variations. One commenter states that based on experience, controls of 97.5 percent efficiency or 10 ppmv can be achieved on long term averages, but the process variability is typically plus or minus 50 percent in individual sampling runs. A more reasonable limitation for existing lines would be an average reduction of 95 percent or an average concentration of 15 ppmv, with a minimum reduction of 90 percent or a maximum concentration of 30 ppmv. New sources should be given similar considerations. The commenter submitted no data or specific rationale, however, to support these values. The other commenter stated that the EPA has no assurance that its data are representative of long term performance. This commenter submitted data showing a wide variation in HCl emissions over a three year period from one facility using the same control technology where no known malfunctions occurred to cause the variation (presented in table 5-1), and also stated that data presented in the EPA Background Information Document also

illustrate a wide variation in HCl emissions between and within facilities. Using a statistical argument based on standard deviations in data, the standard should be at least 15 ppmv for new sources and 35.8 ppmv for existing sources. One commenter believes that inaccuracies of the sampling methods do not permit setting an emission standard as low as that proposed.

**Table 5-1. Pickling line scrubber outlet HCl concentration data from one facility.**

Date (Month/Year)	Average (and range) HCl concentration, ppmv	
06/94	10.6	(7.3 12.9)
10/94	0.4	(0.41 0.48)
02/95	1.3	(0.95 1.5)
09/95	90.	(88 90)
03/96	4.5	(2.2 - 6.2)
05/96	2.9	(2.3 3.1)
10/96	5.6	(3.7 7.4)
03/97	2.4	(1.7 2.8)
08/97	178.	(72 - 245)

Response: The EPA is not required to use a specific statistical procedure in arriving at values for emission standards. Regarding the submitted data, the commenter's facility's nine tests are comprised of seven tests for which all data points, including individual sampling runs, are within a 13 ppmv concentration limit. The remaining two tests have averages that are about 19 and 37 times the average of the other seven tests. The EPA believes these two tests cannot be the result of normal air pollution control device operation during normal process operation.

Because the facility supplied only scrubber outlet concentration data, no inferences about scrubber efficiency could be drawn. Test reports and accompanying process data were

omitted from the comment, which allows for only an incomplete analysis. Although the facility states that no known malfunctions occurred to cause the high values for two tests, the EPA believes they represent abnormal conditions in the process or control system that are atypical of the scrubber's performance. The EPA believes that this view is sustained by the factors of 19 and 37 differences found from the average of the remaining tests. The two tests are not representative of a well-performing and well-maintained scrubber system.

It seems clear that, assuming that the testing procedure was valid and barring malfunctions or obvious errors in operations, the facility's scrubber can meet an annual compliance test based a concentration standard of 13 ppmv or higher on a continuous and long term basis and a lower standard most of the time.

Regarding accuracy of sampling, this issue is discussed in Sections 9.0 and 10.0, PERFORMANCE TESTING and TEST METHODS. The EPA believes that the test method is sufficiently accurate for the proposed emission standards for new and existing facilities.

Relative to the broad issues of stringency and achievability of the proposed standards, the EPA agrees with the commenters in that the data used to determine the numerical limits are sparse and that judgement should be used in considering variations in operations and in test results. The numerical limit was therefore reexamined. The EPA conducted a thorough review of all scrubber design and source test data. The original data base used to develop the proposed standard is reproduced in tables 5-2a and 5-2b. Table 5-2a gives the basic pickle line configuration and scrubber design data, and table 5-2b gives results for the individual sampling runs for all tests.

Data from facilities 105 and 132 were used to establish the proposed numerical limits for new sources; data from facilities 101, 44, 114, and 17 were used to determine the proposed existing source limits. Data from facilities 115, 40, and 49 (both pickling lines) were based on fewer than three sampling runs and were therefore not included in these calculations.

In reconsidering the numerical limit determinations, data from all tests, including those with only one or two sampling runs, were examined primarily in regard to variability in individual test run results. The data are summarized in table 5-3. The data are grouped separately for new and existing source MACT and arranged within those groups in order of most efficient operation in terms of outlet concentration on the assumption that this option would be the easiest to verify and therefore the most likely design target.

**Table 5-2a. Pickling line configuration and scrubber design data  
from EPA's original data base.**

Facility ID no.	Type of line	Heating mode	Scrubber type	Design features	Demister
105	Continuous strip	Steam sparging	Sieve tray	Six trays	10" mesh pad
132	Continuous strip	Internal heat exchange (HX)	Packed tower	5' of 2" Tellerettes	Mistmaster® mesh pad plus 8.5" chevron
115	Push-pull strip	External HX	Sieve tray	Five trays	8" chevron
101	Push-pull strip	External HX	Packed tower	8.5' of 2" polypropylene pall rings	External 12" vane
40	Continuous strip	External HX	Packed tower	7' of 2.75" polypropylene Tellerettes	4" mesh pad
44	Continuous strip, vertical	External HX	Packed tower	8' of 3.5" Tri-packs	6" mesh pad
114	Continuous strip	External HX	Packed tower	10' of 3.5" Tri-packs	External mesh pad
49	Continuous strip	Steam sparging	Packed tower	6.4' of 1.5" to 3" saddles	4" mesh pad
17	Continuous strip	Internal HX	Sieve tray	Three trays	8" chevron
49	Continuous strip	Steam sparging	Packed tower	6.4' of 1.5" to 3" saddles	4" mesh pad

**Table 5-2b. Pickling line scrubber inlet/outlet HCl data  
from EPA's original data base.**

Facility ID no.	Sampling run no.	HCl collection efficiency, %	HCl concentration, ppmv	
			Inlet	Outlet
105	1	99.96	5,960.	2.4
	2	99.94	5,860.	3.5
	3	99.99	3,620.	0.3
	<u>Average</u>	<u>99.96</u>	<u>5,150.</u>	<u>2.1</u>
132	1	97.6	204.	5.9
	2	99.8	190.	0.4
	3	99.3	197.	1.5
	4	99.8	275.	0.7
	5	99.6	240.	1.1
	6	99.8	323.	0.6
	7	99.6	323.	1.6
	8	99.8	318.	0.8
	9	99.5	265.	1.5
	10	99.6	249.	1.2
	11	99.4	239.	1.9
	<u>Average</u>	<u>99.5</u>	<u>257.</u>	<u>1.6</u>
115	1	99.0	697.	7.7
101	1	97.5	1,880.	46.
	2	98.3	3,750.	65.
	3	98.1	3,600.	70.
	4	98.4	4,570.	69.
	<u>Average</u>	<u>98.1</u>	<u>3,450.</u>	<u>62.</u>

**Table 5-2b. Pickling line scrubber inlet/outlet HCl data  
from EPA's original data base (continued).**

Facility ID no.	Sampling run no.	HCl collection efficiency, %	HCl concentration, ppmv	
			Inlet	Outlet
40	1	96.8	112.	2.7
	2	98.8	83.	0.77
	<u>Average</u>	<u>97.8</u>	<u>98.</u>	<u>1.7</u>
44	1	98.8	1,000.	12.
	2	95.9	2,190.	90.
	3	97.8	1,140.	25.
	<u>Average</u>	<u>97.5</u>	<u>1,440.</u>	<u>42.</u>
114	1	97.6	247.	6.1
	2	96.8	442.	14.
	3	96.6	526.	18.
	<u>Average</u>	<u>97.0</u>	<u>405.</u>	<u>12.7</u>
49	1	96.7	1,660.	54.
	2	96.8	2,170.	72.
	<u>Average</u>	<u>96.8</u>	<u>1,920.</u>	<u>63.</u>
17	1	94.0	270.	15.
	2	96.0	97.	4.0
	3	94.1	86.	5.0
	<u>Average</u>	<u>94.7</u>	<u>151.</u>	<u>8.0</u>
49	1	93.3	1,180.	78.
	2	92.1	1,340.	106.
	<u>Average</u>	<u>92.7</u>	<u>1,260.</u>	<u>92.</u>

Table 5-3. Summary of emission data for new and existing source MACT.

Facility ID no.	New/existing source MACT	Outlet HCl concentration, ppmv		Inlet HCl concentration, ppmv; average	HCl collection efficiency, %	
		Average	Highest run		Average	Lowest run
132	New	1.6	5.9	257.	99.5	97.6
105	New	2.1	3.5	5,150.	99.96	99.94
115 <sup>1</sup>	New	7.7	7.7	697.	99.0	99.0
40 <sup>2</sup>	Existing	1.7	2.7	98.	97.8	96.8
17	Existing	8.0	15.	151.	94.7	94.1
114	Existing	12.7	18.	405.	97.0	96.6
44	Existing	42.	90.	1,440.	97.5	95.9
101	Existing	62.	70.	3,450.	98.1	97.5
49 <sup>2</sup>	Existing	63.	72.	1,920.	96.8	96.7
49 <sup>2</sup>	Existing	92.	106.	1,260.	92.7	92.1

<sup>1</sup> Data are from one sampling run.

<sup>2</sup> Data are from two sampling runs.

Based on performance and design for both outlet concentration and collection efficiency, three scrubbers appear to be superior to the others: the six tray scrubber employed at facility 105, the five tray scrubber at facility 115, and the packed tower scrubber with the combination mesh pad-chevron droplet eliminator at facility 132. Performance of the scrubbers used as the basis for new source MACT was considered on the basis of long term performance and variability in individual sampling runs. All three scrubbers served continuous pickling lines. On the basis of average performance, all three scrubbers meet the proposed new source standard for collection efficiency of 99 percent, and two meet the proposed new source standard for outlet concentration of 3 ppmv. On the basis of worst results from individual sampling runs, two scrubbers meet the proposed collection efficiency standard but no scrubber meets the proposed concentration standard. To accommodate the uncertainty in sampling, particularly in determining outlet concentration at these low levels, the EPA decided to consider a new source standard for outlet concentration that could be met

by the new source MACT scrubbers that did not meet the collection efficiency standard. This concentration is 6 ppmv HCl, which is 5.9 rounded up to the nearest whole number. Based on the worst individual sampling run results, all three scrubbers meet at least one of the two alternative standards; one scrubber meets both the concentration standard of 6 ppmv and the collection efficiency standard of 99 percent, one meets the concentration standard, and one meets the collection efficiency standard. New source standards of 6 ppmv maximum outlet concentration and 99 percent minimum collection efficiency are therefore promulgated for continuous pickling lines.

Performance of the seven scrubbers used for the basis of existing source MACT for continuous pickling lines was also considered on the basis of individual sampling runs. All of these scrubbers also served continuous pickling lines. As discussed in the preamble to the proposed rule, the concentration and collection efficiency standards were derived from the scrubbers that were the better performers in each respect. Three units produced outlet HCl concentrations of 1.7, 8.0, and 13 on the averages, 2.7, 15, and 18 ppmv for the worst runs; all the others produced HCl outlet concentrations of 42 ppmv or higher on the averages, 70 ppmv or higher for the worst runs. The concentration standard was therefore determined to be 18 ppmv HCl from the performance of these three scrubbers. On the basis of HCl collection efficiency, with worst run efficiencies rounded off to the nearest percent, four of the seven scrubbers meet a standard of 97 percent. The HCl collection efficiency standard of 97 percent was determined from the performance of the best four scrubbers. Five of the seven scrubbers meet at least one of the alternative standards. The remaining two scrubbers would be considered marginal to poor performers.

Comment: Two commenters (IV-D-7, IV-D-9) questioned the rationale of using data from the best performing scrubbers to establish separate collection efficiency and concentration limits because each owner or operator would have two options. The logic ignores the statistical ability of scrubbers to comply with the proposed standard continuously and the very basis for proposing alternative standards in the first instance. EPA “proposed alternative standards out of the recognition that facilities with high inlet concentrations could not meet the low HCl outlet concentration standard and vice versa. Deriving the standards from the best scrubbers for each option disregards the fact that the MACT floor is supposed to represent the average of the best 12 percent and those facilities that have HCl inlet concentrations too low to comply with the proposed collection efficiency impossible and too high to comply with the proposed 10 ppmv standard.”



Response: The EPA disagrees with the commenter. The logic expressed above is not clear. The fact that the standard is not based on a statistical average has been discussed previously. The assumption of the final standards is that at least some devices will not be able to meet both options but all would be able to meet one or the other. Therefore the numerical limits for each option were developed separately.

Comment: Two commenters (IV-D-7, IV-D-9) stated that the EPA has not sufficiently justified its MACT determination for batch pickling lines. The rulemaking record contains no data specific to batch pickling. Batch pickling lines are significantly different from continuous lines in terms of design, operation, air capture rates, inlet concentrations, hood design, product handling, and volume throughput rates. In light of these differences, the absence of test data from batch lines, and limited data from continuous lines, it may not be appropriate for the EPA to simply borrow and apply its MACT determination for continuous lines to batch operations.

If the EPA promulgates this rule prior to supporting its MACT determination, batch picklers will be in the position of not knowing if they can meet the standards until they have spent the money to install or upgrade their pollution control equipment. The EPA would be prudent to delay implementation of the proposed rule until it can demonstrate, based on batch pickling-specific data, that the proposed standards do in fact constitute MACT.

Response: The commenters stated that there are significant differences between batch and continuous pickling lines but do not give details nor any indication of how air pollution control requirements are different. The commenters do not express any technical considerations that have not already been addressed. Differences in fume capture systems between batch and continuous operations, for example, are discussed in detail in chapter 4 of the proposal Background Information Document. However, the effectiveness of the air pollution control system is based on the characteristics of the gas stream, not the capture system. According to scrubber manufacturers and designers, scrubber design considerations are the same for both types of operations; refer, for example, to the contact summaries in docket items IV-E-9 and IV-E-10. The major difference between batch and continuous operations is that the HCl concentration in batch line offgases varies during different phases of the operating cycle. For example, the concentration can increase when steel is raised out of the tank and allowed to drain before it is rinsed. Scrubbers can be designed on the basis of the maximum concentration experienced.

Regarding the ability of batch operations to meet the same standards as continuous operations, the EPA notes the view expressed below by two commenters, one with extensive relevant experience, that the proposed standards are reasonable and can be attained with available control equipment.

After the comment period, the EPA received emission data from a batch pickling operation (refer to docket item IV-D-23). Tests using EPA Method 26A were conducted in July 1995 on an operation in which fumes from an open tank were captured by a push-pull slot hood system and drawn through a vertical packed bed scrubber equipped with a mist eliminator. No details on pickling process conditions were given. The scrubber design is indicative of effective HCl control. Only the outlet gas was sampled. Concentrations of HCl measured in three sampling runs of one hour each were 5.1, 4.2, and 3.6 ppmv.

The only other information available for batch operations is from a test at another facility that was conducted in June 1992. Fumes from an open tank were captured by a side draft hood and drawn through a vertical packed bed scrubber. The pickling bath contained 14 percent HCl at 120 °F, conditions that are relatively extreme for batch operations. Only one sampling run, of one hour duration, was conducted on the scrubber outlet using the equivalent of EPA Method 26A. A concentration of 6.3 ppmv HCl was measured.

Results of these two tests give some indication that HCl emission control for these processes at levels achieved for continuous pickling lines is possible.

Based on these considerations, the EPA believes that control of batch pickling lines at the level of existing source standards is achievable. However, the EPA agrees with the commenters to the extent that control of batch lines at the new source standard level is less certain. Because no clear limitation for new batch pickling lines could be determined from the available information, particularly in considering the variation in operating conditions and ventilation system design, the rule is revised to make the new source standard for batch pickling lines the same as the existing source standard.

Comment: Five commenters (IV-D-3, IV-D-7, IV-D-9, IV-D-10, IV-D-15) stated that for pickling lines, the options of meeting either a collection efficiency or an outlet concentration standard should be retained. At a minimum, an outlet concentration standard should be offered.

Response: Both options are retained.

Comment: Two commenters stated that the proposed emission standards and options are reasonable and can be attained cost-effectively with available control equipment. One of these commenters has extensive credentials, having been involved in the design, operation, testing, and evaluation of HCl scrubbers, both packed bed and plate, on pickle lines and acid regeneration plants for over 35 years and the original developer of the use of plate scrubbers for HCl absorption on pickle lines.

Response: The EPA acknowledges these comments.

## 5.2 FUME CAPTURE CONSIDERATIONS

Comment: One commenter (IV-D-13) believes that requirements for ventilation system hoods should be included in the standard, or should be characterized in the preamble as to expected capture efficiency. The commenter requests guidance as to verification of air flows to assist in determinations regarding non-conforming sources.

Response: The EPA is responsible for regulating emissions discharged to the ambient air, not the workplace. If sources can meet and maintain workplace standards without hooding or ventilation systems, it is not EPA's responsibility to require such systems.

Comment: Two commenters (IV-D-7, IV-D-9) stated that the EPA should clarify that the proposed standard for efficiency is based on control efficiency, not capture efficiency

Response: The rule specifies that control device inlet/outlet measurements are to be made to establish compliance with a collection efficiency standard.

## 6.0 STANDARDS FOR ACID REGENERATION PLANTS

### 6.1 BASIS FOR THE HCl NUMERICAL STANDARD

Comment: One commenter disagreed that sufficient source test data were available to pursue an actual emissions approach for determining the MACT floor. The EPA evaluated five measured scrubber outlet concentration values, then noted that one value was far out of line with the others and did not consider this value is establishing the floor. No attempt to review the next appropriate value was made by the EPA. Constructing a fifth data point in lieu of actual data has no technical or regulatory basis under section 112 of the Clean Air Act. The EPA should have used another facility's actual test data or conducted additional tests to establish a fifth point.

A second commenter observed that the MACT floor on which the EPA bases its standard is not representative of single stage water scrubbing. Caustic scrubbing technology, contrary to EPA's belief, has been shown to be more effective in reducing HCl emissions than scrubbing with unneutralized water. The EPA notes in the proposed rule that no single stage scrubber has demonstrated the capability of meeting the proposed existing source standard of 8 ppmv HCl. The EPA should consider the cost impacts to the industry for waste water treatment and sludge disposal if the standard is to be based on caustic scrubbing.

A third commenter provided additional data, presented in table 6-1, which are from the two acid plants that use two stage scrubbing. The data include outlet concentration data for the first stage water scrubbers. All tests except for two consisted of three sampling runs of three hours each using EPA Method 26A; the remaining two tests consisted of two sampling runs.

Response: The EPA agrees with the first commenter in that the method used at proposal to determine the floor was not appropriate, specifically, the manufacturing of a fifth data point in lieu of having actual data followed by averaging. Furthermore, the EPA agrees with the suggestion of the second commenter that the proposed existing source standard of 8 ppmv HCl is not demonstrated to be achievable with single stage water scrubbing, the predominant control technology used in the industry.

**Table 6-1. Test data for HCl emissions from acid regeneration plants using two-stage scrubbing, water in first stage.**

Date (Month/Year)	Plant (A or B)	<u>Average (and range) HCl concentration, ppmv</u>		
		First stage outlet/ second stage inlet	Second stage outlet	
03/93	A	---	49	(38 58) <sup>1</sup>
	B	---	19.5	(9.0 26.7) <sup>1</sup>
04/94	A	23 (17 31)	3.1	(2.8 3.7) <sup>1</sup>
	B	20 (14 25)	0.9	(0.9 1.0) <sup>1,2</sup>
11/95	A	---	7.4	(7.3 7.5) <sup>1</sup>
	B	---	11.1	(10.7 11.9) <sup>1</sup>
03/96	A	11.2 (9.1 14.6)	3.5	(2.9 - 4.5) <sup>1</sup>
	B	5.6 (5.5 5.6) <sup>2</sup>	1.8	(1.4 2.1) <sup>1</sup>
11/96	A	19.4 (18.3 20.3)	12.4	(9.9 15.7) <sup>3</sup>
	B	13.7 (11.6 17.6)	11.5	(7.2 17.1) <sup>3</sup>

<sup>1</sup> Caustic solution was used in the second stage scrubber.

<sup>2</sup> Two sampling runs were made instead of three.

<sup>3</sup> Water was used in the second stage scrubber.

The floor was therefore reexamined on the basis of the median of the best five controlled sources on a technology basis. The best two controlled sources employ either two stage acid recovery or two stage scrubbing, with neutralized water used in the last scrubbing stages in both cases. The third best controlled source employs single stage scrubbing with unneutralized water; this technology is also used by all of the remaining sources in this subcategory. The standard for existing sources is therefore developed based on the performance of single stage water scrubbing, which addresses the main concern of the second commenter.

With the inclusion of the information in table 6-1, long term data from two acid regeneration plants are now available. Data from the plant for which the measured HCl concentration was 16 ppmv were still restricted to the one test, which consisted of two sampling runs with measured HCl concentrations of 15.6 and 15.8 ppmv. The final data point available was 137 ppmv HCl, which is so far out of line with the other data that the plant tested could not be considered well controlled; data from this plant could therefore not be used to establish an emission standard.

In order to determine a numerical concentration standard from all of the available information, process and control system variability over time were taken into account by considering HCl concentration averages and also values for individual sampling runs. On the basis of average outlet concentrations, it seems clear that the three plants being considered meet a limit of 25 ppmv HCl. Considering all 19 individual runs from the three plants, except for one run of 31 ppmv, all others are 25 ppmv or less. A maximum outlet concentration of 25 ppmv HCl therefore seems reasonable for a standard based on single stage water scrubbing.

Regarding the new source standard for HCl, the data in table 6-1 include outlet concentration data from four tests from each plant on second stage scrubbers that use neutralized water. In these tests, three sampling runs of two or three hours were made using Method 26A. Results of the first tests are much higher than those from the more recent three tests and apparently do not reflect current operations. Results of the last three tests are average HCl concentrations ranging from 0.9 to 11.1 ppmv, with results of individual runs ranging up to 11.9 ppmv.

The only other HCl concentration data that have not already been discussed are from the plant that employs two stage acid recovery plus a venturi scrubber that uses neutralized water. Results from only one test are available; the average HCl outlet concentration was 1.0 ppmv.

Considering the capability of a scrubber to meet a long term standard, results from the first two plants seem more meaningful. These plants clearly meet an outlet concentration HCl standard of 12 ppmv over the most recent three tests. A new source maximum outlet concentration standard of 12 ppmv HCl has therefore been demonstrated. Consequently, the final standard is a maximum outlet HCl concentration of 25 ppmv for existing sources, 12 ppmv for new sources.

Comment: Two commenters (IV-D-1, IV-D-3) stated that the EPA did not demonstrate that its standards for existing and new sources are based on a sustainable level of performance. One commenter stated that there is a wide variation in HCl emissions at different times using the same control technology. This commenter provided the data given in table 6-2 at the EPA's request to support the statement. Emissions range from 26 to 542 ppmv HCl with, according to the commenter, no obvious anomalies in the acid regeneration data. The EPA's data illustrate that there is a wide variation between and within facilities. The standard deviation for all data from which EPA determined its standard is 7.2 ppmv, which is far out of range of the proposed limit.

**Table 6-2. Test data for HCl emissions from acid regeneration plant using single stage water scrubbing.**

Date (Month/ Year)	Average (and range) HCl concentration, ppmv		
06/94	69	(26	152)
10/94	308	(52	467)
02/95	64	(50	87)
09/95	298	(245	387)
11/95	59	(43	82)
06/96	31	(28	35)
10/96	49	(45	63)
03/97	470	(336	542)
06/97	90	(37	164)
08/97	34	(30 - 35)	

Response: By comparison with data from other facilities, the plant for which the data in table 6-2 were taken cannot be well controlled, particularly considering the extreme range in values between the lowest and highest measurements. Data from this facility are not relevant in determining a standard based on the best performing plants. The issue of sustainable performance has been addressed in the previous comment and response.

Comment: One commenter (IV-D-8) recommended that the new source standard for HCl be set no lower than 5 ppmv and the existing source standard be set no lower than the current permitting levels or 10 ppmv, whichever is lower. No rationale is given for these values except that interference in testing due to ammonium chloride in the spent liquor may complicate the measurement of HCl at 3 ppmv.

Response: The revised HCl standard accommodates the commenter's recommendation, although in response to other considerations. The issue of interference in testing due to ammonium chloride is discussed in section 10.0, TEST METHODS.

Comment: One commenter (IV-D-15) stated that the option of meeting a performance standard such as either a collection efficiency or an outlet concentration standard for HCl should be offered for acid regeneration plants as well as for pickling lines.

Response: The HCl outlet concentration standard offered is in fact a performance standard. In view of the fact that the concentration standard is relaxed substantially for both existing and new sources from the proposed standard, the EPA believes that no alternative is necessary.

Comment: Two commenters (IV-D-4, IV-D-14) believe that the proposed standard is reasonable and can be attained cost-effectively with available control equipment.

Response: The EPA acknowledges these comments.

## 6.2 BASIS FOR THE $\text{Cl}_2$ NUMERICAL STANDARD

Comment: Two commenters (IV-D-1, IV-D-3) stated that the  $\text{Cl}_2$  limit should be based on five sources instead of three. The small sample size probably does not reflect variability at each source. The 4 ppmv limit has not been shown to be continuously achievable. One commenter stated that the existing source emission limits should be determined from the average of five facilities plus two standard deviations; the standard should be at least 74.3 ppmv. For new sources, the standard should be 60 ppmv based on two standard deviations from the mean of the EPA's data. The other commenter did not recommend specific standards but provided additional data at the EPA's request (table 6-3).



Table 6-3. Test data for Cl<sub>2</sub> emissions from acid regeneration plant.

Date (Month/Year)	Plant (A or B)	Average (and range) Cl <sub>2</sub> concentration, ppmv	
03/93	A	0.7	(0.5 - 0.9) <sup>1</sup>
	B	1.0	(0.9 1.1) <sup>1</sup>
04/94	A	2.1	(1.1 3.4) <sup>1</sup>
	B	0.3	(0.2 0.4) <sup>1, 2</sup>
03/96	A	0.5	(0.4 0.6) <sup>1</sup>
	B	0.4	(0.1 0.6) <sup>1</sup>
11/96	A	5.3	(3.4 7.1) <sup>1</sup>
	B	0.4	(0.4 0.4) <sup>1</sup>
04/94	A	5.1	(3.6 7.3) <sup>3</sup>
	B	9.9	(7.7 14) <sup>2, 3</sup>
03/96	A	0.4	(0.3 0.5) <sup>3</sup>
	B	0.4	(0.4 0.4) <sup>3</sup>
11/96	A	4.2	(2.3 5.6) <sup>3</sup>
	B	0.4	(0.4 0.5) <sup>3</sup>

<sup>1</sup> Outlet of caustic scrubber preceded by water scrubber.

<sup>2</sup> Two sampling runs were made instead of three.

<sup>3</sup> Outlet of water scrubber that precedes caustic scrubber.

Response: As discussed under the basis for the HCl numerical standard, the standards for acid regeneration plants are now being based on technology, which is single stage water scrubbing. As in the case of the HCl standard, the Cl<sub>2</sub> numerical standard was reconsidered based on the body of data available for this technology.

In addition to the data in the second half of table 6-3, Cl<sub>2</sub> outlet concentration data from other facilities are 3.3 and 60 ppmv, each based on one test. The 60 ppmv value is so far out of line with the others that it cannot be considered representative of effective operation and therefore cannot be used in determining the standard. Considering the data in the second half of table 6-3, except for the 9.9 ppmv value measured for one test on acid plant B in 1994, all other results are 5.1 ppmv or less. The 9.9 ppmv value from the 1994 test appears to not be representative of current operations because the results of the 1996 tests are much lower, 0.4 ppmv in each case. It appears that a limit of 6 ppmv Cl<sub>2</sub> can be met by these operations, considering the variability in measurements (except for the one nonrepresentative value) because only one sampling run gives a higher result (7.3 ppmv). The concentration standard for Cl<sub>2</sub> is therefore revised to 6 ppmv for existing sources.

Regarding the standard for new sources, the EPA is required to set the standard according to the capabilities of the best controlled facility. The data in table 6-3 include results of the four tests on the outlets of second stage scrubbers that use neutralized water. Results are similar to those for the first stage water scrubbers. Average Cl<sub>2</sub> concentrations range from 0.4 to 5.3 ppmv, with results of individual tests ranging from 0.1 to 7.1 ppmv. An individual plant cannot be identified that provides better performance than existing source MACT. The new source standard for Cl<sub>2</sub> is therefore the same as the existing source standard, 6 ppmv.

Comment: One commenter (IV-D-8) recommended that the Cl<sub>2</sub> limit be based on water scrubbing in order to avoid generating caustic scrubbing solution for treatment and disposal. A limit of 5 ppmv is recommended based on three tests on the same plant in which the chlorine levels in the stack ranged from “not detectable” to 5.5 ppmv.

Response: The revised standard accommodates the commenter’s recommendations. The data cited are consistent with the data presented above.

Comment: One commenter (IV-D-3) supported the optional Cl<sub>2</sub> concentration standard to be established for each source.

Response: The optional standard is retained for existing sources but removed for new sources, as discussed in Section 1.1, SUMMARY OF RULE CHANGES SINCE PROPOSAL.

## 7.0 STANDARDS FOR ACID STORAGE VESSELS

### 7.1 INCLUSION OF STANDARDS FOR ACID STORAGE VESSELS

Comment: One commenter (IV-D-11) believes that storage vessels are not significant sources of HCl and may be much more costly to control than indicated in the EPA's models if remotely located from the scrubber. The commenter suggests that costs for installing vent piping may be considerably higher than estimated by the models. The commenter also suggests that storage vessels be excluded from the rule.

Response: The rule will be reworded to make clear that alternative means for controlling storage vessels are allowed. If the vessels are distant from the pickling or acid regeneration scrubber, a bubbler type device, for example, could be used that does not require forced ventilation. Vent lines can be routed to the bubbler such that a water (or caustic solution) seal is maintained and the scrubbing medium is kept below its HCl saturation concentration.

### 7.2 FLEXIBILITY IN CHOICE OF CONTROL SYSTEMS

Comment: Two commenters (IV-D-7, IV-D-9) believe the EPA should clarify that "control devices" for storage vessels are not a specific control technology, and that facilities can use any method that is demonstrated to minimize emissions to the atmosphere (e.g., bubbling through a drum or small tank of caustic solution or water).

Response: The EPA agrees with the commenter. No specific control device is required for storage tanks. The definition of closed-vent system has been reworded to make the EPA's intention clear. Examples of devices that might be used include systems that bubble emissions through a small tank of water or caustic without the aid of a fan. However, larger facilities may find it advantageous to route emissions from a tank farm or acid regeneration plant to a pickling line scrubber or to build a separate scrubber system for control.

Comment: One commenter (IV-D-6) described a fumeless pickling system in which the pickling tanks are not ventilated to a scrubber. Because the pickling line has no control

system, acid storage vessels serving this line could not use the same system serving the pickling line and, therefore, would require a separate control system. The commenter recommended that allowances be made for storage vessels serving fumeless pickling lines.

Response: Referring to the previous response, requirements for acid storage vessel emission controls are flexible enough to accommodate this situation. In addition, unless the subject facility is part of or collocated with a major source, it is likely not a major source and not subject to regulation.

## 8.0 MAINTENANCE REQUIREMENTS

### 8.1 ESTABLISHMENT OF NECESSITY FOR REQUIREMENTS

Comment: One commenter (IV-D-12) stated that the maintenance activities should be guidelines and not requirements. They do not further the rule (beyond required monitoring) to limit emissions and assure compliance with the limits. The EPA did not show authority to require specific maintenance activities and did not demonstrate that the required activities are correlated to emissions.

Response: The EPA has the authority to establish operation and maintenance requirements pursuant to section 112 of the Clean Air Act. These requirements are enforceable independently of emissions limitations or other requirements in relevant standards. Maintenance requirements are necessary to help ensure that emission control equipment continues to operate at a level consistent with its operation at the time of compliance testing. The EPA's statement of these requirements is in 40 CFR 63.6(e)(1)(iii), Operation and Maintenance Requirements.

### 8.2 SPECIFICITY OF REQUIREMENTS

Comment: Three commenters (IV-D-3, IV-D-7, IV-D-9) stated the following. The EPA's maintenance plan should not establish specific elements of the required maintenance plan, i.e., following manufacturer's recommended maintenance, cleaning scrubber internals and mist eliminators at intervals sufficient to prevent fouling, having set intervals for inspecting system components to identify, repair, or replace as needed. The "Any Credible Evidence Rule" obviates the need for the maintenance plan with specific actions. Two of the commenters recommend that the EPA amend proposed § 63.1159 by eliminating the requirement that maintenance plans must include the elements set forth at § 63.1159(b)(2)(i)-(iv); these elements should be included only as potential elements that may be included in the plan. Another commenter believes that the operation and maintenance plan should not require strict adherence to the manufacturer's operating manual. Many manufacturer's manuals contain steps that are determined not be necessary and/or that only the manufacturer's proprietary products should be used. The EPA should change the wording to,

for example, “substantially include” the elements set forth in the manufacturer’s operating manual.

Response: The EPA has reviewed the proposed maintenance plan requirements and decided that revisions are appropriate. Manufacturer’s instructions for older equipment may require materials no longer available. Manufacturers may no longer be in business so that required parts or materials cannot be purchased except by substitution from a source other than the original manufacturer. Therefore, the EPA has revised the rule so that it no longer requires adherence to the manufacturer’s manual. The facility must write an operation and maintenance plan that is consistent with good maintenance practices and includes, at a minimum, the list of items described in the rule. The EPA believes that inclusion of these items is reasonable. Additionally, pressure drop must be monitored once per shift as a means of discovering scrubber operational anomalies that may require maintenance. No specific pressure drop deviation limit is required, but the monitoring records are required to be kept along with the recycle and makeup water flow rates as discussed in Section 11.0, MONITORING REQUIREMENTS.

Comment: Three commenters stated that the operation and maintenance plan should not be part of the source’s Title V operating permit. Plan approval places a substantial burden on permitting authorities. The details of these plans are frequently changed as operational problems are addressed. Such a requirement could cause administrative nightmares if a source is required to go through the Title V permit modification process every time it modifies a plan, especially during the early stages of the rule. Approval of plans by informal action would encourage timely revision.

Response: The EPA agrees and has revised the rule so that the maintenance plan is only required to be incorporated by reference into the permit. Also, it is not required to be submitted to the permitting authority

Comment: One commenter (IV-D-3) believes the requirement that the “responsible plant official” sign records of inspections is overly burdensome. The requirement is acceptable if “responsible plant official” means that an employee delegated the responsibility by the “responsible official” must sign.

Response: The EPA agrees with the commenter and has added the definition “Responsible Maintenance Official,” who is a person having signature authority for signing reports required under the rule.

### 8.3 TIMING OF RESPONSE TO OPERATING PARAMETER EXCURSIONS

Comment: One commenter (IV-D-3) stated that the requirement to initiate repairs within one day is excessive and unworkable. It is unclear what “initiate corrective action” means. In some cases, corrective action may require engineering analysis to determine the source of the problem and effective corrective action. If this provision is retained, the commenter recommended that it be written as a requirement that repairs begin promptly and provide a “safe harbor” that repairs commenced within one day are considered to be prompt.

Two commenters (IV-D-7, IV-D-9) stated that the proposed requirement that maintenance plans be implemented within one working day is too stringent. There may be situations when initiating the plan within 24 hours would be impractical or impossible. In some cases, a facility may have to rely on an outside contractor to conduct necessary action. Instead of establishing a time-specific deadline, the EPA should provide that “facilities must initiate corrective action as soon as practically possible, but no later than three working days.”

One commenter (IV-D-11) stated that the requirement for corrective action within one day of detection of an operating problem with a control device is neither reasonable or in keeping with the notification and repair requirements of other NESHAP rules. The commenter recommended that the requirement be changed to include a first attempt at repair within five working days of detection.

Response: The EPA believes that it is reasonable to expect operators to initiate procedures towards corrective action within one day and complete repairs or maintenance as soon as practicable. Initiation of procedures may consist of notification of a contractor or service group that corrective action is necessary. The rule is revised to clarify that the procedures to be initiated are the actions that are specified in the maintenance plan.

## 9.0 PERFORMANCE TESTING

### 9.1 ESTABLISHMENT OF MONITORING PARAMETERS

Comment: One commenter (IV-D-1) stated that establishment of site specific scrubber operating parameters as a measure of compliance without first establishing the relationship between the parameters and the emissions in question is not appropriate. The EPA has made not established any relationship between the proposed mandated parameters and actual emissions. This information was not evaluated during the MACT development; therefore, site specific parameters should not become mandated compliance parameters.

Response: Without implementation of continuous emissions monitoring systems, monitoring of relevant operating parameters in combination with routine and preventative maintenance is essential to enhanced compliance assurance. The requirement for operating parameter monitoring is retained in the rule.

Comment: One commenter (IV-D-11) stated that in setting parameter operating limits, the full range of values observed during a compliance test should be used, not the average. Because an average is being established, at least one of the tests must necessarily be above the average if all three tests are not identical. Alternatively, operation within the manufacturer's recommendation should be considered compliant unless other limits are demonstrated to be appropriate. Another commenter (IV-D-3) believes that owners and operators should be able to establish compliant operating parameters using individual runs from compliance tests and not be restricted to multiple tests. Using multiple runs during a test will greatly diminish costs and repetitive sampling without substantially diminishing the assurance of compliance.

Response: The EPA agrees that some flexibility in establishing operating parameter compliant values is appropriate. The rule is revised to allow an average parameter value measured during any of the runs used to demonstrate compliance to be used as the compliant value rather than the average value measured over the entire testing period.

Comment: Two commenters (IV-D-11, IV-D-3) believe operators should have the option of conducting compliance demonstration tests as needed to show appropriate ranges of



scrubber parameters. Establishment of parameters should not be limited to the initial performance test.

Response: A facility always has the opportunity to conduct additional compliance tests. The rule allows facilities to conduct multiple performance tests to establish alternative compliant operating parameter values and to reestablish compliant values during any performance test conducted after the initial performance test.

Comment: One commenter (IV-D-14) stated that requirements for adhering to operating parameter limits should be set so that a facility is not penalized for improving scrubber operation. For example, gas flow rate might be lowered if a more effective capture system were installed without reducing scrubber efficiency, but could lead to out-of-permit-range operating conditions for pressure drop. This type of situation is counterproductive. Two other commenters (IV-D-1, IV-D-10) discussed mist eliminators and associated them with performance. They described a scenario in which a company installs a mist eliminator after initial compliance testing that causes increased pressure drop. The increased pressure drop violates the standard.

Response: It is not the intent of the rule to prevent improvements to emission control systems. The emission limits, however, are not to be exceeded. Documentation must be provided that a change in system hardware or operation is beneficial in terms of emission reduction, or does not degrade emission control below the permitted limits. As previously discussed, the operator is always free to establish new operating parameter averages or limits. The issue will be less significant with the choice of makeup and recirculating water flow rates as the scrubber operating parameters instead of pressure drop.

## 9.2 OPERATION OF PROCESS DURING TESTING

Comment: One commenter (IV-D-2) stated that testing should be performed at representative conditions rather than worst-case conditions. There is no relationship between worst-case conditions and maximum rated capacity.

Response: The proposed standards require testing “. . . under conditions representative of normal process operations.” This requirement, typical of many standards, is retained for steel pickling and acid regeneration standards and is consistent with the commenter’s request.

## 10.0 TEST METHODS

### 10.1 APPLICABILITY OF PROPOSED METHODS

Comment: Two commenters (IV-D-11, IV-D-14) had the following statement. Method 26A is not validated for steel pickling, only for municipal waste incinerators (MWIs). MWIs have higher temperatures, less moisture (and no liquid droplets), and no ferric chloride content, which could interfere with test results. The EPA's tests also show variations of as much as 700 percent for the same pickling line. Test bias may have resulted in an improperly low standard. Inexplicable negative biases are reported in the EPA municipal waste incinerator validation report<sup>2</sup> for Method 26A. These biases are such that validation for pickling sources is required. The practical level of quantification (PLQ) for Method 26A has not been established for pickling sources, and should be developed using Method 301. Also, ferric chloride might cause a positive bias for the HCl measurements. One commenter believes that conditions encountered with HCl pickling tests include high humidity in the gas stream, extremely high solubility of HCl gas in water, condensation in the gas stream, refluxing in the stack, and the use of stack tip entrainment eliminators. These conditions lead to several measurement problems, all of which tend to bias results towards improperly high HCl concentration because of enriched droplet capture in the sampling probe or maldistribution of HCl with regard to sampling probe location. Sampling data show six cases in which the range of measured maximum concentrations varies from 1.3 to 9.3 times the minimum concentration for heated pickling lines or acid regeneration plants. They recommend that the testing protocol include provisions for testing after all control devices (including stack-tip mist eliminators) and allow for discard of test results more than 50 percent above the average.

Response: The comments do not bring up any technical concerns regarding measurements at pickling or acid regeneration sites. A well designed and conscientiously run field validation of Method 26A specifically at these source categories would not likely uncover

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<sup>2</sup> Laboratory and Field Evaluation of a Methodology for Determination of Hydrogen Chloride Emissions from Municipal and Hazardous Waste Incinerators, EPA:AREAL, Publication No. EPA-600/3-89-064, April 1989.

any evidence that there is a problem in this application. The EPA knows from its studies that the method is capable of measuring to fractional ppmv levels. Review of data from a 1997 study<sup>3</sup> at a light weight aggregate kiln burning hazardous waste provides a minimum detection limit estimate of about 0.04 ppmv. The EPA estimated the method precision (reported as the standard deviation of individual runs) to be 0.42 ppmv at 3 ppmv. This value would lead to the precision estimate of the mean of a 3 run test of 0.24 ppmv ( $0.42 \div 3^{0.5}$ ). If water droplets are routinely present, then the method has to be followed carefully to avoid gathering poor quality data. The EPA has not knowingly field validated the method in the presence of water droplets, but isokinetic sampling is the accepted way to address this problem.

The commenters contended that the EPA provides no justification to the preamble statement "the EPA considers the method is equally valid for measuring emissions for pickling and acid regeneration sources." They go on to say that HCl pickling emissions are generally 100 to 200 °F and contain water droplets. The presence of water droplets increases the potential for negative bias.

The EPA responds that the method is validated at a municipal waste combustor (MWC) where the sample matrix is a more severe test of the method in terms of potential chemical interferents, and the stack is at a higher temperature. The higher stack temperature at MWCs is a more severe test of the method in that the probe and filter temperatures are less than the stack temperature, which, in theory, could lead to condensation of HCl in the probe. An effective control system would be expected to include a mist eliminator, thus minimizing the potential for excessive water droplet effect. In addition, the test method has provisions to overcome the potential negative bias encountered if water droplets are present. These provisions include maintaining the probe and filter temperature during sampling, the use of a cyclone separator ahead of the filter to collect the water prior to its reaching the filter, and a documented end-of-test purging provision to evaporate this collected moisture and HCl prior to sample recovery to assure that it is accounted for. The EPA knows that if these procedures are not followed, then there is a potential for loss of HCl in the probe and (optional) cyclone. Field validation of the method at a pickling operation to assure that these procedures, when conscientiously applied, overcome the potential negative bias caused by excess moisture droplets would be expensive, difficult to design, do little to improve the design of the method,

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<sup>3</sup> Dioxins/Furans, HCl, Cl<sub>2</sub>, and Related Testing at a Hazardous Waste Burning Light-Weight Aggregate Kiln, EPA:OSW, Draft Report, Prepared by Energy and Environmental Research Corporation, October 10, 1997.

or assure that future data are collected conscientiously following the documented method's procedures.

One commenter also remarked on the MWC validation being done with midget impingers rather than the large impingers. The EPA report No. 600/3-89-064<sup>4</sup> concludes that there is an inexplicable negative bias compared to those using midget impinges. The most likely cause of the low bias at low (3 to 4 ppmv) concentrations is absorption of HCl on alkaline particulate matter collected on the filter. This condition is not expected at steel pickling plants and, hence, field validation would not be of value. For added clarification, see pages 48 and 49 of the previously cited report.<sup>5</sup>

The commenter also stated that proper field validation of Method 26A would provide the true PLQ that would take into account the normal variations resulting solely from the test procedures. Determining the actual PLQ of Method 26A on HCl pickling emissions is essential to ensure that the final NESHAP limitations are not set lower than the level that can be consistently quantified by the required testing. The recommendation already discussed in this response should also apply to HCl regeneration plants since the limit of 3 ppmv HCl is at the lower limit of the range tested.

The EPA notes that the commenter provided the Method 301 definition of PLQ. There is general agreement that the intent of the Method 301 calculation procedure of 10 times the standard deviation should use the standard deviation at or near the limit of detection. (The actual Method 301 language adds "...at the blank level.") The EPA believes the commenter cites an erroneous conclusion from a Rigo and Rigo Associates, Incorporated, document,<sup>6</sup> that a recent quad-train study at an MWC had a PLQ of at least 125 ppmv at 7 percent oxygen for Method 26A. The study was done in a concentration range of 105 to 636 ppmv at 7 percent oxygen, instead of near the acceptable blank limit of the method. These conditions lead to an inflated standard deviation estimate and a subsequent over estimate of the PLQ. Draft results from the 1997 EPA study<sup>7</sup> using a quad-train arrangement at a light weight aggregate kiln

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<sup>4</sup> See footnote 2

<sup>5</sup> See footnote 2

<sup>6</sup> Quantitation Limits for Reference Methods 23, 26, and 29. H. Rigo, Rigo and Rigo Associates, Inc., and A. Chandler, A. S. Chandler and Associates Ltd. Undated document.

<sup>7</sup> See Footnote 3

where the actual (uncorrected for dilution) stack concentration of HCl ranged from 0.22 to 1.29 ppmv (more closely approaching the theoretical lower limit of the method) results in an estimated method standard deviation of 0.12 ppmv at zero. The EPA used these data to extrapolate an estimated method standard deviation of 0.42 ppmv at 3 ppmv as described above. This value compares favorably with the original MWC validation report's estimate of standard deviations of 0.24 ppmv and 0.49 ppmv at concentration of 3.9 ppmv and 15.3 ppmv, respectively.

Regarding positive bias caused by ferric chloride, it would have to have a significant vapor pressure at the filter temperature to pass through the Teflon matte filter in the test equipment. This is not the case.

The EPA believes the test method is appropriate for steel pickling and acid regeneration operations and will continue to require its use (or an approved substitute) for the standard. However, in order to reduce the possibility of collecting water droplets from the stack walls that may be present because of refluxing in the stack or high humidity, the EPA believes that Reference Method 1 should be modified for this application to specify that no sampling point be closer to the stack wall than one inch.

Comment: One commenter (IV-D-8) stated that ammonia is commonly used as a precipitating agent in waste HCl, resulting in ammonium chloride formation. The commenter believes that some ammonium chloride will be decomposed in the acid regeneration plant roaster, but significant amounts may exit in the waste gas and will be recovered along with HCl in gas cleaning. The commenter is currently investigating the possibility of direct measurement of ammonium chloride in the acid plant scrubbers but does not at present have data to offer. The commenter understands that ammonium chloride can interfere in the measurement of HCl at low levels.

Response: Ammonium chloride is identified as a possible interferent in EPA Reference Method 26A that would be expected to appear as chloride ion and thus be measured as HCl. If an acid regeneration plant cannot meet the standard for HCl, it would have the option of demonstrating that ammonium chloride is present in the waste pickle liquor fed to the plant and seeking relief in the HCl emission limit on that basis. However, the need for relief seems unlikely. Ammonium chloride would not be expected to pass the filter that is required for this method at the filter temperature. Ammonium chloride decomposes from the solid state at 339 °C, which is far above the probe temperature of 248 °F (120 °C) used for sampling acid regeneration plant emissions.

## 11.0 MONITORING REQUIREMENTS

### 11.1 CEMS REQUIREMENT

Comment: Four commenters (IV-D-1, IV-D-7, IV-D-9, IV-D-10) stated that excessive excursions of operating parameters should not trigger implementation of CEMS. Process parameter variations are a normal part of a well run operation. The relationship between site specific parameters and emissions is not demonstrated. Installation of a CEMS would not affect the number of excursions. Two other commenters (IV-D 3, IV-D-11) stated that more than six excursions of operating parameters should not be the criterion for CEMS installation. Either a five percent criterion or a statistical representation of variations from established levels would be more appropriate. In addition, seven commenters (IV-D-7, IV-D-8, IV-D-9, IV-D-10, IV-D-11, IV-D-14, IV-D-15) stated that the use of CEMS should not be required. No systems have been demonstrated to have the capability to accurately measure and record compliance for this application. Commercially available systems for monitoring at the proposed levels are expensive, difficult to calibrate and maintain, and not reliable to the level of operation required. Manufacturers have cautioned that using such devices in an acidic application containing water droplets would interfere with test methodology and be corrosive to the testing apparatus. Conditions of high humidity and acidity make it unlikely that an *in situ* sensor will ever work.

Response: After reviewing the comments, the EPA agrees that reliable operation of currently available CEMS cannot be assured for this application. At best, inordinately burdensome maintenance and operating procedures would be required. The CEMS requirement is therefore deleted.

Comment: Four commenters (IV-D-4, IV-D-7, IV-D-8, IV-D-12) suggested alternatives to the CEMS requirement. The rule should allow discretion by the permitting authority to consider good cause or correction. Implementation of a quality improvement plan (QIP) would be a better alternative that would have the effect of reducing emissions. Stack testing could be allowed to see if the source was really in noncompliance.

Response: The CEMS requirement has been deleted. The requirement to initiate corrective action upon any operating parameter excursion is retained, which would have the effect of reducing emissions, similar to the intent of a QIP. A source still has the option of conducting another performance test to reestablish compliant parameter values.

Comment: One commenter (IV-D-4) applauded giving sources the option of continuously monitoring emissions as an alternative to performing annual tests and monitoring control device parameters.

Response: Sources may voluntarily use continuous monitors if they comply with all applicable provisions of subpart A to part 63. The requirement to use a CEMS under certain circumstances is deleted.

## 11.2 SCRUBBER MONITORING PARAMETERS

Comment: Five commenters (IV-D-1, IV-D-7, IV-D-9, IV-D-10, IV-D-11) stated that the allowed variations in pressure drop and acidity are too restrictive. Pressure drop can change due to factors unrelated to HAP emissions. Limiting the variation to one inch of water column is arbitrary. Operating requirements should encompass the range recommended by the manufacturer, or facilities should be allowed to develop appropriate ranges using a variety of methods such as compliance testing, engineering principles, and manufacturer warranties. Minimum pH should not be restricted to the maximum recorded during testing. Requirements for acidity or pH should encompass the full range of conditions recommended by the manufacturer, or acidity should be monitored only to assure that it is not too high.

Two other commenters (IV-D-3, IV-D-12) stated that the frequency of monitoring pressure drop and acidity is excessive. If acidity is monitored at all, once a day is sufficient, which would be in line with pressure drop readings.

Response: The EPA agrees that some flexibility is justified. Some guidelines in operating parameter variations, however, are appropriate. Manufacturers' warranties or recommendations are not always available. The option of conducting additional performance tests addresses some of the commenters' concerns, including the one inch water column variation in pressure drop. However, referring to the discussion below, pressure drop and acidity will no longer be the operating parameters required to be monitored.

Comment: Five commenters (IV-D-3, IV-D-6, IV-D-10, IV-D-14, IV-D-15) stated that pressure drop and acidity are not appropriate monitoring parameters. A relationship between these parameters and scrubber efficiency has not been demonstrated. Given the lack of variation of scrubbing efficiency between caustic solution and clear water, monitoring acidity is questionable. Also, the requirement to measure acidity is vague.

Three commenters (IV-D-6, IV-D-11, IV-D-14) suggested that other parameters than pressure drop and acidity would be better indicators of scrubber performance. Scrubber water flow rate is a more valid indicator of efficient scrubbing. For packed bed scrubbers, better parameters are pressure drop, air flow rate, and water flow rate to the top of the packing. For plate scrubbers, pressure drop and visual observation provide assurance of correct operation. Other parameters suggested are fan amps and liquid conductivity.

Response: In considering all of these comments, the EPA concludes that scrubber makeup water and recycle water flow rates are better indicators of scrubber performance than pressure drop and acidity, on the basis that the mechanism for HCl collection is absorption in water, which can be done effectively even with slightly acidic water. The rule is revised, eliminating the requirements for monitoring scrubber pressure drop and scrubbing effluent acidity and replacing them with the requirements to monitor scrubber makeup water flow rate and, for scrubbers that operate with recirculation, recirculation water flow rate. The monitoring requirements are as follows:

- Scrubber makeup water and recirculation water flow rates must be monitored continuously and recorded at least once per shift while the scrubber is operating,
- the compliant values for flow rates are established during initial performance testing or any subsequent performance testing that is done to determine compliance with emission standards or to establish new operating conditions,
- corrective action must be taken if either of the flow rates falls below the compliant value that is established during performance testing,
- initiation of corrective action procedures must begin within 1 working day, and
- the monitoring devices must be calibrated according to the manufacturer's schedule, or not less frequently than once per year in the absence of a manufacturer's schedule.



Monitoring of pressure drop is moved from the monitoring requirements section to the maintenance requirements section. Pressure drop must be monitored as a means of discovering scrubber operational anomalies that may require maintenance. No specific pressure drop deviation limit is required, but the monitoring records are required to be kept in addition to the recycle and makeup water flow rates. Flow rate increases large enough to cause flooding would be considered malfunctions.

Comment: Four commenters (IV-D-7, IV-D 9, IV-D-11, IV-D-12) stated that facilities should be allowed to develop their own monitoring protocols. The EPA should set forth minimum monitoring requirements and allow facilities to develop site specific protocols that they can justify. Allowing facilities to have the opportunity to propose and have approved alternative parameters to measure scrubber performance would be consistent with the CAM rule.

Response: Alternative monitoring options can be approved under §63.8(b) of the general provisions to this part. This provision is clarified in the final rule.

### 11.3 MONITORING DURING PROCESS STOPPAGE

Comment: Six commenters (IV-D-1, IV-D-6, IV-D-10, IV-D-11, IV-D-12, IV-D-15) believe that monitoring should not be required during nonoperating periods such as stoppage for maintenance and repair. One commenter suggests that a simple process should be used whereby the facility provides a preventive maintenance plan that incorporates the downturns and maximizes efforts to reduce acid mist emissions during that period.

Response: Periods of stoppage for maintenance and repairs would be covered under the Startup, Shutdown, and Malfunction Plan (SSMP). The rule is revised to state that monitoring scrubber operation is required only while the scrubber is operating. Scrubber operation is determined by the operation and maintenance requirements.

The rule is also revised to clarify that monitoring acid plant operations is required only while the plant is operating in production mode. Discussions with plant operators after proposal have revealed that plants often operate in modes that are designed, for example, to maintain temperature while acid and iron oxide production are temporarily suspended. These operations are conducted under conditions that are not predicted to produce byproduct chlorine.

#### 11.4 ACID STORAGE VESSELS

Comment: Two commenters (IV-D-3, IV-D-11) stated that storage vessel inspections should be changed from a monthly to a semiannual basis to be consistent with the requirement under other Subpart L NESHAP rules. Inspection of control devices on storage vessels should be conducted at the same frequency as compliance testing on the scrubber.

Response: The reference is to Subpart L of part 61, National Emission Standard for Benzene Emissions from Coke Byproduct Recovery Plants. The requirement in subpart L is to monitor connections and seals on each control system that recovers or destroys emissions from process vessels, tar storage tanks, and tar-intercepting sumps. The EPA believes that the requirements for this subpart should not be more stringent than those for rules with similar monitoring requirements and has revised the rule to require semiannual rather than monthly acid storage vessel inspections.

#### 11.5 PROCESS MONITORING ACID REGENERATION PLANTS

Comment: One commenter (IV-D-3) stated that monitoring excess air feed rate every eight hours is excessive. Once a day or once per shift is sufficient to reflect performance.

Response: The EPA agrees that once per shift, which was the original intent of the requirement, is reasonable and is requiring that parameters that determine excess air feed rate be monitored and recorded at least once per shift.

#### 11.6 FREQUENCY OF PERFORMANCE TESTING

Comment: Three commenters (IV-D 1, IV-D 11, IV-D-12) stated that annual stack testing is excessive when coupled with parametric monitoring. One commenter recommended that stack testing only be required if the control device is out of range. The other commenters recommended testing no more frequently than every 2-1/2 years or every five years.

Response: In lieu of continuous emissions monitoring or other means for determining continuous compliance, enhanced compliance assurance is established in this rule by monitoring of relevant operating parameters in combination with routine and preventive maintenance plus periodic performance testing. Annual testing is typically required in such situations. The EPA believes, however, that some flexibility can be allowed in view of the requirement to also monitor parameters. The rule is revised to allow facilities to conduct

performance testing on an alternative schedule that is approved by the applicable permitting authority but no less frequently than every 2-1/2 years or twice per Title V permit term.

## 11.7 FREQUENCY OF MONITORING DEVICE CALIBRATION

Comment: One commenter (IV-D-12) believes that parametric monitoring devices should not have to be calibrated semiannually unless drift is seen. Also, manufacturers may certify calibration for periods longer than six months.

Response: The EPA disagrees that instruments need not be calibrated if no drift is seen. While drift may be apparent in some case, conditions may exist that mask drift, such as a change in parameter value opposite drift. However, the EPA will accept the manufacturer's stated calibration interval up to one year. If the manufacturer's stated interval is less than one year, the facility must use that stated interval.

## 11.8 VIOLATIONS

Comment: One commenter (IV-D-10) believes that there should be no violation if the operators monitor the required parameters and decline to take corrective action if they note excursions of the parameters that they determine are not affecting emissions or normal operations.

Response: Operating within the range of parameter values found at the time of compliance indicates that the scrubber is operating so that emission limits are being met. The purpose of monitoring scrubber parameters is to determine when the scrubber is operating outside the allowed range of values determined at the time of the compliance test. If operating outside the allowed range, the scrubber may not be meeting its emission limit. Judgement by the operator as to emission levels from the scrubber, based solely on observation of the system, is contrary to the intent of the rule.

Comment: Four commenters (IV-D-3, IV-D-10, IV-D-11, IV-D-12) stated that excursions of control device or acid plant operating parameters should not be considered violations. Out of range measurements should be treated as indicators of potential problems requiring further investigation or corrective action, which would be consistent with the CAM rule. A strong enough relationship between variations in pressure drop or acidity and HCl emissions has not been demonstrated.

Response: The proposed rule inadvertently stated that exceedances of scrubber operating parameters were violations of the emission limit. The intention was to state that exceedances of acid regeneration plant operating parameters were violations of the emission limit. The rule is revised to state that excursions of scrubber monitoring parameters only require corrective action as specified by the maintenance requirements and are not violations of the emission limit.

Regarding acid plant monitoring parameters, the EPA's policy is that linking excursions of operating parameters to violations of the emissions limit is preferred but is only defensible where a strong correlation between the parameters values and emissions can be demonstrated. The EPA reexamined the appropriateness of the linkage of acid regeneration plant operating parameters with emissions and agrees with the commenters that a strong enough correlation has not been demonstrated. The rule is revised so that excursions of acid regeneration plant operating parameters are a violation of the operational standard and not the emission limit.

## 12.0 REPORTING REQUIREMENTS

### 12.1 CERTIFICATION OF REPORTS

Comment: One commenter (IV-D-12) stated that reports should only require certification by the inspector who has intimate knowledge of the operation of the system. The reporting requirements should not be specified in the rules, but in the Title V reporting requirements as the individual States deem adequate.

Response: The duty to report is required under §63.10 of the General Provisions of Title III regulations. The rules for steel pickling and acid regeneration extend the requirement to a specific category of sources.

One reason for specifying a Responsible Plant Official (see definitions in 40 CFR parts 70 and 71) is to identify an individual who has sufficient responsibility and authority to ensure that required actions are properly taken and to understand the consequences of improper action. However, the EPA recognizes that knowledge of facility systems is important to understanding how actions should be implemented.

The action taken to accommodate this recognition is the definition of a new category of official (see responsible maintenance official in Section 1.1.2, Definitions) who has the knowledge and the authority to sign reports required under the rule.

### 12.2 COMBINING REPORTS

Comment: One commenter (IV-D-3) believes that the regulations should allow the facility to combine its malfunction and shutdown plan with its operations and maintenance plan, if so desired.

Response: The commenter provided no rationale for the statement. For environmental purposes, the various procedures described above have separate purposes and separate requirements, and therefore they are retained as separately required plans.

## 13.0 RECORDKEEPING REQUIREMENTS

### 13.1 USEFULNESS OF INFORMATION IN RECORDS

Comment: One commenter (IV-D-3) believes that the requirement for maintaining startup and shutdown records is ambiguous, burdensome, and of no environmental benefit. No guidance is provided on what constitutes a startup or shutdown. If required, startup and shutdown should be defined to exclude the normal stopping and starting of the pickling line during its daily operation.

Response: The EPA disagrees that no environmental benefit is gained from keeping startup and shutdown records. These records can be used as an enforcement tool to ensure continued compliance with environmental rules or to show periods of inactivity when, for example, emissions would not be expected to occur.

The EPA agrees that maintaining records of normal daily interruptions in line operations is onerous if not routinely practiced. This is not the intent of the recordkeeping requirement. Each facility writes its own SSMP and therefore can provide specific definitions of normal startup and shutdown versus intermittent stops and starts characteristic of daily operation. However, as part of the SSMP, these definitions are subject to approval by the facility's permitting authority.

Comment: One commenter (IV-D-3) suggested that for the air pollution control device recordkeeping, startup and shutdown should be defined to include only "abnormal" cases, perhaps periods of a day or more. Startup and shutdown recordkeeping of the pickle line is overly burdensome and would require recordkeeping for routine operations and maintenance, and should not be required.

Response: As described in the previous response, each facility writes its own SSMP and can define normal startup and shutdown. It is not the intent of the rule to require recording of normal line stoppages.

Comment: One commenter (IV-D-3) stated that the requirement to record “all” maintenance is overly burdensome. The requirement should be limited to specific, named items.

Response: Maintenance records provide the facility with a means of ensuring that required preventive maintenance is performed in a timely manner and of showing compliance with required actions.

Each facility writes its own maintenance plan. Preventive maintenance performed on the air pollution control equipment is defined in the plan, in addition to steps that would be appropriate for on-demand maintenance. The facility is required to record all maintenance activities specified in the maintenance plan.

## 14.0 MISCELLANEOUS COMMENTS

### 14.1 POLLUTION PREVENTION MEASURES

Comment: One commenter (IV-D-15) stated that pollution prevention and waste minimization are very important routes to good waste management and eventual compliance with the standard. Although pollution prevention is not the complete answer, it is imperative that the final standard clearly define the avenues by which the affected sources may comply with the standard through pollution prevention.

Response: Two pollution prevention measures have been identified and are already in common use: using rinse water for scrubbing, and regenerating waste pickle liquor. The EPA is not aware of any other obvious pollution prevention measures and is therefore reluctant to be more prescriptive than it is in the final rule. For example, the use of acids other than HCl may produce additional waste streams and thus cannot be verified as pollution prevention options.

### 14.2 COST OF CONTROLS

Comment: One commenter (IV-D-8) stated that in the preamble to the proposed rule, on page 49063, last paragraph, the incremental cost of reducing regeneration plant HCl emissions is given as \$2.9 million for capital costs and \$1.0 for annual cost. The latter figure should be \$1.0 million.

Response: The commenter is correct.



**TECHNICAL REPORT DATA***(Please read Instructions on the reverse before completing)*

1. REPORT NO. EPA-453/R-98-010b	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE National Emission Standards for Hazardous Air Pollutants (NESHAP) for Steel Pickling HCl Process Facilities and Hydrochloric Acid Regeneration Plants -- Background Information for Promulgated Standards		5. REPORT DATE December 1998
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.	
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Research Triangle Park, NC 27711		10. PROGRAM ELEMENT NO.
		11. CONTRACT/GRANT NO. 68-D6-0014
12. SPONSORING AGENCY NAME AND ADDRESS Director, Office of Air Quality Planning and Standards Office of Air and Radiation U.S. Environmental Protection Agency Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final
		14. SPONSORING AGENCY CODE EPA/200/04
15. SUPPLEMENTARY NOTES		
16. ABSTRACT A rule regulating hazardous air pollutant emissions from the steel pickling (HCl process) industry is being promulgated under the authority of sections 101, 112, 114, 116, and 301 of the Clean Air Act. This document presents background information for the final rule that includes a summary of rule changes since proposal, a summary of final rule impacts, a list of commenters on the proposed rule, and detailed comments on the proposed rule and responses by the EPA. The rule is promulgated under 40 CFR 63, subpart CCC.		
17. KEY WORDS AND DOCUMENT ANALYSIS		
a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air Pollution Hazardous Air Pollutants Steel Pickling National Emission Standards Hydrochloric Acid Hydrogen Chloride Chlorine	Air Pollution Control Scrubbers	
18. DISTRIBUTION STATEMENT Release Unlimited	19. SECURITY CLASS ( <i>This Report</i> ) Unclassified	21. NO. OF PAGES 72
	20. SECURITY CLASS ( <i>This Page</i> ) Unclassified	22. PRICE