

Statement of Basis for

Nucor Steel Seattle, Inc., AOP No. 10281

Permit Renewal #2

I. PURPOSE OF THIS STATEMENT OF BASIS

This document summarizes the legal and factual bases for the permit conditions for the Nucor Steel Seattle, Inc. (Nucor Steel) air operating permit (AOP) to be issued under the authority of the Washington Clean Air Act, Chapter 70.94 Revised Code of Washington, Chapter 173-401 of the Washington Administrative Code (WAC), and Puget Sound Clean Air Agency (Agency) Regulation I, Article 7. Unlike the permit, this document is not legally enforceable. It includes references to the applicable statutory or regulatory provisions that relate to Nucor Steel's emissions to the atmosphere. In addition, this statement of basis (SOB) provides a description of Nucor Steel's activities and a compliance history.

II. SOURCE DESCRIPTION

A. Regulatory Basis for Title V Permit

Nucor Steel operates a facility that melts steel into concrete reinforcing bars (rebar) and other small cross-section steel shapes and is located in Seattle, Washington. The facility is required to obtain a Title V permit because it has the potential to emit carbon monoxide (CO), oxides of nitrogen (NO_x) and particulate matter (PM) in excess of 100 tons per year, is subject to a federal New Source Performance Standard (Subpart AAa--Standards Of Performance For Steel Plants: Electric Arc Furnaces And Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983). In addition, the facility is an area source for hazardous air pollutants (HAPs), with the potential to emit less than 10 tons per year of any single HAP and less than 25 tons per year of the combination of all HAPs, and is subject to a federal National Emission Standard for Hazardous Air Pollutants (NESHAP) for electric arc furnaces at area sources of HAPs (40 CFR 63 Subpart YYYYY) as well as for stationary reciprocating internal combustion engines (40 CFR 63 Subpart ZZZZ). The facility Standard Industrial Classification code is 3312.

B. Manufacturing Process Description

The plant recycles scrap steel by melting it, along with other materials such as carbon, lime and alloying metals, in an electric arc furnace, casting it into billets, and rolling the billets into a finished product. The plant includes several sources of air pollutants that are regulated under the permit including the electric arc furnace, the combustion sources in the meltshop (ladle preheaters and flying cutting torches), the reheat furnace, lime delivery and storage, emergency internal combustion engines, fugitive dust emissions from storage piles, roadways and other sources, and other insignificant emission units.

The electric arc furnace is the largest source of air pollutants on the site and is identified in the permit as Emission Unit #1 or EU-1. Scrap steel is melted in the furnace with electrodes that are

placed directly into the steel. An arc is generated between the three electrode tips and the steel, resulting in sufficient heat to melt the steel. Additional energy for the melting process is provided by the chemical oxidation of carbon, which is added to the furnace in the form of coke, and natural gas. Other materials are also added to the furnace to create the desired composition of the end product, including lime and alloying metals. The majority of the exhaust from the electric arc furnace vents to the high temperature baghouse, but some escapes into the meltshop and is controlled by the low temperature baghouse.

The electric arc furnace generates NO_x, CO, carbon dioxide (CO₂), sulfur oxides (SO_x), PM and hazardous air pollutants (HAP). Oxygen injection serves to reduce NO_x formation and helps combust CO inside the furnace, which in turn provides additional heat. An even larger amount of CO is combusted with dilution air at the inlet of the duct to the high temperature baghouse.

In addition to the electric arc furnace, the facility has several natural gas combustion sources in the meltshop identified in the permit as Emission Unit #2 or EU-2, including the flying cutting torches and ladle preheaters. These are used in the process of forming billets from the molten steel. These sources emit pollutants typical of natural gas combustion (NO_x, CO, CO₂, SO_x, PM and HAP) and are vented into the meltshop and out via the low temperature baghouse.

Once the steel has been melted in the electric arc furnace it is formed into billets which go to a storage area where they cool. As billets are needed by the rolling mill, they are sent to the reheat furnace which heats them to a temperature at which they can be worked in the rolling mill. The reheat furnace, identified as Emission Unit #3 or EU-3, is fueled with natural gas and emits pollutants typical of natural gas combustion (NO_x, CO, CO₂, SO_x, PM and HAP). The reheat furnace does not have any add-on pollution control equipment.

The permit also contains requirements for the lime delivery and storage system which is identified as Emission Unit #4 or EU-4. Particulate emissions occur from the stacks of five dust collectors used to control particulate matter from two storage silos and pneumatic conveying associated with the lime delivery system.

The facility has six emergency stationary diesel engines identified in the permit as Emission Unit #5 or EU-5. These emit pollutants typical of diesel combustion including (NO_x, CO, CO₂, SO_x, PM and HAP) and do not have any add-on pollution control equipment.

Nucor Steel is approved to operate 24 hours per day, 365 days per year. The hours the facility actually operates varies with the demand and other business considerations.

III. OPERATING PERMIT HISTORY

A. Original Permit

An air operating permit application was received by the Agency from Birmingham Steel on April 15, 1995 pursuant to WAC 173-401-500(3). The application was acknowledged to be complete in a letter from the Agency to Birmingham Steel dated September 22, 1995. The original permit, Air Operating Permit No. 10281, was issued on January 22, 2001.

1. Minor Modification and Administrative Amendment 1

On September 21, 2000, Birmingham Steel Corporation submitted an application to change the Responsible Official from Paul Wilson to Eddie Lehner. Administrative Revision 1 to make this change was issued on October 2, 2001.

Birmingham Steel Corporation applied for a minor modification to the air operating permit on June 8, 2001. The purpose of the application was to change the methods for monitoring compliance with the requirements for fugitive dust control to more closely mirror the terms of the underlying applicable requirements. Minor modification 1 was issued on October 2, 2001.

2. Administrative Amendment 2

On December 9, 2002, the plant was purchased by Nucor Steel. Birmingham Steel submitted a request to approve transfer of the permit to Nucor Steel and to approve a change in the name of the responsible official from Eddie Lehner to Doug Jellison. The administrative amendment was issued on December 17, 2002.

3. Significant Modification 1

In April 2004, Nucor Steel proposed a modification to the steel mill, consisting of upgrading the caster by replacing the original water spraying system with a dual spray zone system. This system would control surface temperature on the billet once it exits the mold. It would improve control of internal quality problems such as halfway cracks, off-corner cracks and centerline porosity. This modification would allow an increase in production in the meltshop from 740,000 to 795,000 tons of steel per year by allowing the billets to move at a faster speed through the caster without sacrificing quality. Nucor Steel had also determined that this change, even though it would not involve physical changes to the electric arc furnace (EAF) or either of the baghouses, would cause an increase in the potential emissions of the facility. The potential increase in emissions of fine particulate matter (PM₁₀) was not enough to trigger review under the recently changed federal Prevention of Significant Deterioration Program (PSD), but it did trigger review under the not-then-updated state PSD program. All other potential emissions increases were reviewable under the Agency minor new source review program. Therefore Air Operating Permit No. 10281 required a significant permit modification.

On April 28, 2004 Nucor Steel applied with the Washington Department of Ecology for a PSD permit, and that application was determined to be complete on May 25, 2004. The Washington Department of Ecology issued the PSD permit on September 8, 2004.

Nucor Steel submitted a Notice of Construction Application to the Agency on September 20, 2004, and that application was determined to be complete on October 6, 2004. Nucor Steel submitted an application for a significant modification to its AOP on September 30, 2004. The Agency developed a draft Notice of Construction (NOC) Order of Approval, and placed the terms and conditions of the draft Order of Approval and the aforementioned PSD permit were placed into the draft modified AOP. The Agency issued the modified AOP on January 20, 2005.

B. First Renewal

On April 29, 2005, Nucor Steel submitted a renewal application for AOP No. 10281 for the Nucor Steel facility. The application consisted of a cover letter and critical items required under WAC 173-401-710, such as a compliance plan and certification by the responsible official. On May 3, 2005, the Agency sent a letter to Nucor Steel indicating that the renewal application had been found to be complete. No substantive changes to the permit were requested by Nucor Steel or made by the Agency, but numerous small items were changed, and those changes are described in detail technical support document issued with that AOP renewal. This renewal was issued April 12, 2006.

1. Significant Modification 2

The second significant permit modification incorporated into the AOP requirements established in Agency NOC Order of Approval 9669 and the Washington Department of Ecology PSD 07-02 which permitted Nucor Steel to upgrade one of the existing single hoist cranes at the scrap yard to a double hoist crane. This project debottlenecked the EAF and hence steel billet production to allow up to 1.1 million tons of billets per 12 month period. The increase in emissions necessitated that Nucor Steel obtain a PSD permit for CO and an NOC Order of Approval for increases in pollutants other than CO.

As part of the AOP modification, the Agency also removed the requirements of the rescinded PSD 04-02 from the AOP and NOC 9089 which was cancelled and superseded by NOC 9669. Both PSD 04-02 and NOC 9089 included a 795,000 tons steel production limit which conflicted with the new 1.1 million tons of billets limit in PSD 07-02. The Washington Department of Ecology rescinded PSD 04-02 on December 14, 2006 (Regulatory Order No. HQ-06-01).

This modification included an update to the AOP reference for Agency Regulation I, Section 3.07 to the most recent version in the rule since the newly incorporated requirements in NOC 9669 required annual source testing. This modification was issued March 4, 2008.

C. Second Renewal

On April 9, 2010, Nucor Steel submitted a renewal application for the facility. The application consisted of a cover letter and critical items required under WAC 173-401-710. On April 21, 2010, the Agency sent a letter to Nucor Steel indicating that the renewal application had been found to be complete. Changes made in this permit renewal include incorporation of new requirements in the National Emission Standard for Hazardous Air Pollutants (NESHAP) requirements (40 CFR Part 63 Subpart YYYYY and 40 CFR 63 Subpart ZZZZ), inclusion of requirements in NOC Orders of Approval issued to Nucor Steel since the last permit modification, as well as several small changes. Those changes are summarized in Section XV of this document.

IV. RECENT NOTICE OF CONSTRUCTION HISTORY

Since the issuance of the last operating permit, the Agency has reviewed several proposed projects to determine if an NOC Order of Approval would be required. A summary of the results of each evaluation is provided below:

- On January 4, 2007, Nucor Steel submitted a request for an NOC applicability determination for the addition of one portable, 150-ton per hour rated capacity slag crusher (reviewed under NOC No. 9567). The Agency determined that this operation was exempt from the requirement to submit a NOC Order of Approval in accordance with Agency Regulation I, Section 6.03(c)(112) which exempts portable nonmetallic mineral processing plants. This was an “off-permit” change to the air operating permit in accordance with WAC 173-401-724.
- NOC Order of Approval No. 9669 was issued on February 14, 2008 and permitted Nucor Steel to upgrade one of the existing single hoist cranes at the scrap yard to a double hoist crane. This change was addressed in the most recent significant modification to the operating permit and is discussed in Section III.B.1 of this document. This Order cancelled and superseded Orders of Approval Nos. 5690 and 5710 (dated December 22, 1994), Approval Order No. 8433 (dated June 19, 2002) and Approval Order No. 9089 (dated December 1, 2004).
- NOC Order of Approval No. 9914 was issued on November 20, 2008 for a lime delivery and storage system, including two storage silo, pneumatic conveying, and five dust collectors. The project met the requirements of WAC 173-401-724, and therefore was handled as an off-permit change. The conditions of the Order of Approval are incorporated in this operating permit renewal. Part 64 Compliance Assurance Monitoring requirements do not apply since this unit’s pre-controlled emissions are less than 100 tons per year.
- On October 16, 2009, Nucor Steel submitted a request for an NOC applicability determination for the replacement of single speed fan drives with variable speed fan drives on the reheat furnace combustion air fan and ejection air fan, and removal of dampers currently used in conjunction with the single speed fans (reviewed under NOC No. 10111). The project only changed the method of delivery of air, not the amount, speed or location that the air is delivered and there was no impact on production from the project. Based on the information provided, the Agency determined that the project would not require an NOC Order of Approval in accordance with Agency Regulation I, Section 6.03(b)(10). This was an “off-permit” change to the air operating permit in accordance with WAC 173-401-724.
- NOC Order of Approval No. 10243 was issued on November 10, 2010 for one dust collector, rated at 300 cubic feet per minute (cfm), controlling emissions from the carbon injection system. A replacement baghouse dust collector was previously permitted under NOC Order of Approval No. 7387. The proposed baghouse dust collector had a slightly larger maximum theoretical flow rate (300 cfm versus 200 cfm). However, the actual flow rate was expected to remain the same at 180 cfm. There was no modification to the carbon injection system nor to the steel production rate. The project met the requirements of WAC 173-401-724, and therefore was handled as an off-permit change. The conditions of the Order of Approval are

incorporated in this operating permit renewal. Part 64 Compliance Assurance Monitoring requirements do not apply since this unit's pre-controlled emissions are less than 100 tons per year.

- On March 22, 2011, Nucor Steel submitted a request for an NOC applicability determination for adding lances to the existing soak zone burners in the reheat furnace (reviewed under NOC No. 10308). The project did not change input ratings of the burners nor increase potential throughput, but mitigated the buildup of carbon in the burners during low heat situations. Emissions of NO_x increased by approximately 1% from the furnace (less than 1 ton per year). Using the "past actual to future potential" methodology yields an increase of 2.7 tons per year NO_x which is still below the threshold at which a PSD permit would be required. Based on the information provided, the Agency determined that the project would not require an NOC Order of Approval in accordance with Agency Regulation I, Section 6.03(b)(10). This was an "off-permit" change to the air operating permit in accordance with WAC 173-401-724.
- On April 3, 2012, Nucor Steel submitted a request for a Notice of Construction applicability determination for installation of a paint marking machine to paint characters on billets (reviewed under NOC No. 10281). The machine uses non-VOC paint mixed with compressed air, and would replace current system of marking certain billets with a high temperature chalk and certain billets with spray paint. Based on the information provided, the Agency determined that the project would not require a Notice of Construction Order of Approval in accordance with Agency Regulation I, Section 6.03(b)(10). This was an "off-permit" change to the air operating permit in accordance with WAC 173-401-724.
- On September 5, 2012, Nucor Steel submitted an application for a Notice of Construction and Order of Approval to modify NOCOA 9669 to allow the use of a different sulfur dioxide emission factor for determining both baseline actual emissions and future projected actual emissions. In NOC 9669, the SO₂ factor used to calculate emissions was from AP-42. Nucor performed emission tests for SO₂ and calculated a site-specific emission factor. This factor was used to calculate emissions from both the meltshop and the EAF. This NOC will be processed concurrently with the renewal of the operating permit and will be incorporated into the renewed operating permit.
- On October 29, 2012, Nucor Steel submitted a request for a Notice of Construction applicability determination for an EAF shell replacement project. The Agency concluded that the furnace will not change in capacity, will not be able to operate more batches per hour, and emissions are not expected to change. Based on the information provided, the Agency determined that the project would not require a Notice of Construction Order of Approval in accordance with Agency Regulation I, Section 6.03(b)(10). This was an "off-permit" change to the air operating permit in accordance with WAC 173-401-724.
- On May 13, 2014, Nucor Steel sent a letter notifying the agency that they were planning to replace the motors on the high-temperature baghouse fans with new variable frequency drives (VFD) motors. These new VFD motors run at a higher voltage and lower amperage and substantially reduce energy consumption compared to the existing motors. The fans will continue to operate at the same speed as they have in the past when the electric arc furnace is

operating and no other changes are occurring which will affect the flowrate through the baghouse. However, the compliant amperage range for the baghouse fan motors that is required to be set under the NSPS needed to be updated. Because there was no increase in emissions, no Notice of Construction was required and the request was approved via letter from the agency in November of 2014.

- On August 19, 2014, Nucor Steel applied for a case-by-case exemption from the requirement to submit a Notice of Construction for a supplemental lime delivery system. Because the Agency typically permits these types of sources, and the low emissions rely on proper operation of control equipment. An Order of Approval was issued February 11, 2015. This was an “off-permit” change to the air operating permit in accordance with WAC 173-401-724.
- On April 20, 2015 Nucor Steel submitted a request for Notice of Construction applicability determination for a modification to the control system on the EAF. According to Nucor, the goal of installing the new equipment and expanding the control loop is to improve furnace melting efficiency and consistency. Based on the information provided by Nucor, the Agency concluded that the project was not a physical change or change in the method of operation under the Agency’s new source review rules and determined that the project would not require a Notice of Construction Order of Approval.
- On August 21, 2012 Nucor Steel submitted an application for a Notice of Construction and Order of Approval to adjust the emission factor used to calculate the SO₂ emissions for the electric arc furnace. Nucor requested that the emission factor generated from their performance testing be used to calculate their annual SO₂ emissions rather than an outdated EPA AP-42 emission factor. This change would contravene existing permit terms and required changes to the AOP. To accommodate this, the Order of Approval was issued concurrent with the issuance of the AOP second renewal on October 29, 2015.

V. APPLICABILITY OF NSPS AND NESHAP STANDARDS

NSPS: The Agency approved a modification to the current electric arc furnace on December 22, 1994 (Orders of Approval No. 5690 and No. 5710), which required the facility (then Birmingham Steel) to comply with 40 CFR Part 60 Subpart AAa, NSPS Standards for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed after August 17, 1983. These requirements apply only to Nucor Steel’s EAF and are incorporated into Table 2 of the AOP which includes requirements that apply to Emission Unit 1 only.

NESHAP: 40 CFR Part 63, Subpart YYYYYY applies to Nucor Steel as an EAF steelmaking facility that is an area source of HAP emissions. The facility is considered an existing source since it commenced construction on or before September 20, 2007 and has not since been reconstructed as defined in the regulations.

NESHAP: 40 CFR Part 63 Subpart ZZZZ applies to six existing emergency diesel engines located at Nucor steel. The facility is an area source of HAP and the RICE are considered existing because Nucor commenced construction on all five engines prior to June 12, 2006 (the

applicability date in the NESHAP). The engines to which the rule applies are listed with their construction dates in EU #5 in the air operating permit.

VI. COMPLIANCE HISTORY

A. Compliance and Inspection history prior to issuance of the original AOP

The Agency has inspected Nucor Steel annually since 1992. The operating permit for this plant and its subsequent modifications each included a support document, or Statement of Basis. The compliance history of the plant prior to the issuance of the original permit was documented and considered in that original Statement of Basis.

B. Complaint History since issuance of the Renewal 1 of AOP

Nucor Steel is located in an industrial area. The Agency has received approximately 100 complaints since the issuance of the first renewal of the permit, most for visible emissions and odor. Presently, the Agency has no open complaint investigations concerning Nucor Steel.

C. Compliance and Inspection history since issuance of the Renewal 1 of AOP

Since issuance of Renewal 1 of the AOP, the Agency has conducted eleven compliance inspections of the plant. Inspection dates were: July 28, 2005; October 26, 2005; November 21, 2006; January 9, 2007; April 25, 2007; November 6, 2007; November 4, 2008; October 23, 2009; July 27, 2010; May 5, 2011; October 18, 2011; March 5, 2013; and October 21, 2013, October 20, 2014, and April 20, 2015.

The Agency has taken the following enforcement actions against Nucor Steel since the issuance of Renewal 1 of the AOP:

Violation Date	NOV/WW #	Issue Date	Closure Date	Reg/AOP Citation	Note
012/22/08	Written Warning 2-007542	03/26/09	01/28/10	AOP, Section II.A.2	Failed to check and record daily opacity readings on Baumco and Wheelabrator baghouse. Evidence of violation provided in deviation report. Nucor Steel took corrective action per their ISO 14000 Management System.
06/15/10	Written Warning 2-008651	08/25/10	03/08/11	AOP, Section II.A.2(d)	Failed to check and record the baghouse system fan motor amperes and damper position on second shift as required by 40 CFR 60.274a(b). Evidence of violation provided in deviation report. Nucor Steel took corrective action per their ISO 14000 Management System.
09/21/10-09/22/10	Written Warning 2-008660	02/03/11	05/17/11	AOP, Section II.A.2(d)	Failed to check and record the baghouse system fan motor amperes and damper position on a once-per-shift basis according to 40 CFR 60.274a(b). Evidence of violation provided in October 2010 deviation report. Written report describing corrective action submitted. Nucor Steel took corrective action per their ISO 14000 Management System.
5/11/12	Written Warning 2-008688	05/24/12	02/06/13	PSCAA Reg I, 9.11(a)	Level 2 odors in nearby neighborhood caused by slag processing operation.
2/17/15	Written Warning 2-008981	3/11/15	06/22/15	PSCAA Reg I, 9.11(a)	Level 2 odors in nearby neighborhood caused by slag processing operation.

VII. EMISSION INVENTORY

The table below summarizes the reportable air emissions for the previous 5 years. Emissions of other pollutants have been below reporting thresholds. Emission inventories are estimates of actual emissions from the facility developed by Nucor Steel and submitted to the Agency annually. Emissions will vary from year to year depending on production loads.

Reportable Air Pollutant Emissions (ton/year)								
	2007 (tons)	2008 (tons)	2009 (tons)	2010 (tons)	2011 (tons)	2012 (tons)	2013 (tons)	2014 (tons)
Carbon Monoxide (CO)	673	594	464	494	405	709	257	436
Nitrogen Oxides (NO _x)	178	157	114	154	205	192	207	169
Sulfur Oxides (SO _x)	40	75	59	71	79	78	75	76
Particulate Matter (PM ₁₀)			27					
Volatile Organic Compounds (VOC)	55	25						

VIII. EXPLANATION OF APPLICABLE REQUIREMENTS

Applicable requirements are listed in several sections of this operating permit as outlined below. The permit only lists the requirements that the Agency has determined to be within the scope of the definition of “applicable requirements” under the operating permit program. Nucor Steel is legally responsible for complying with all applicable requirements of the operating permit as well as other requirements that do not fit the definition of “applicable requirements” found in Chapter 173-401 WAC. Some of the applicable requirements contain terms or monitoring, maintenance and recordkeeping that require detailed explanation in this Statement of Basis. The specific conditions are listed below, along with any necessary explanations in monitoring, maintenance and recordkeeping requirements.

A. Applicable Requirements

Nucor Steel is subject to all the requirements listed in Section I of the permit. Section I.A. contains the requirements that are applicable facility-wide and Section I.B. contains requirements applicable only to specific emission units. The requirements in Section I.B. only apply to the specific emission units cited; however, the requirements in Section I.A. also apply to the specific emission units or activities described in Section I.B. If the monitoring, maintenance and recordkeeping method for any requirement in Section I.A. is more extensive for specific emission units, that requirement is repeated in Section I.B. with the additional monitoring, maintenance and recordkeeping requirements.

B. Section I.A. (Facility-Wide)

The tables list the citation for the “applicable requirement” in the second column. The third column (Date) contains the adoption or effective date of the requirement. In some cases, the effective dates of the federally enforceable, or “SIP¹,” requirement and the non-federally enforceable, or “STATE ONLY,” requirement are different because only rules approved by EPA through Sections 110, 111, and 112 of the federal Clean Air Act are federally enforceable, and either the state of Washington has not submitted the regulation to the EPA or the EPA has not approved it.

The first column is used as an identifier for the requirement, and the fourth (Requirement Paraphrase) column paraphrases the requirement. The first and fourth columns are for information only and are not enforceable conditions of this permit. The actual enforceable requirement is embodied in the requirement cited in the second and third columns.

The fifth column (Monitoring, Maintenance & Recordkeeping Method) identifies the methods described in Section II of the permit. Following these methods is an enforceable requirement of

¹ “SIP” is an abbreviation for “state implementation plan” which is a plan for improving or maintaining air quality and complying with the Federal Clean Air Act. The Federal Clean Air Act requires states to submit these plans to the US EPA for its review and approval. This plan must contain the rules and regulations of the state agency or local air authority necessary to implement the programs mandated by Federal law. Once the EPA adopts the plan or elements of it, the plan and its requirements become “federally enforceable” by EPA. New or modified state or local rules are not federally enforceable until they are “adopted into the SIP” by the EPA.

this permit. The sixth column identifies the averaging time for the reference test method. The last column (Reference Test Method) identifies the reference method associated with an applicable emission limit that is to be used if and when a source test is required. In some cases where the applicable requirement does not cite a test method, one has been added.

In the event of conflict or omission between the information contained in the fourth and sixth columns and the actual statute or regulation cited in the second column, the requirements and language of the actual statute or regulation cited shall govern. For more information regarding any of the requirements cited in the second and third columns, refer to the actual requirements cited.

1. Requirement I.A.2 (Opacity)

Both WAC 173-400-040(1) and Agency Regulation I, Section 9.03 standards are 20% opacity and apply to all stationary sources.

The monitoring method is based on quarterly visual inspections of all non-fugitive emission points at Nucor Steel that do not have opacity monitoring requirements in the specific emission units. Nucor Steel must take corrective action or use the reference test method, WDOE Method 9A, to determine opacity if any visible emissions are noted. Inspections are to be performed while the facility is in operation during daylight hours. The Agency has determined that the monitoring should be quarterly for the reasons listed below. These factors are consistent with EPA's April 30, 1999 Draft *Periodic Monitoring Technical Reference Document*.

- (1) Initial compliance. The Agency has not observed visible emissions from these activities during any inspection, nor has Nucor Steel; therefore, we conclude that Nucor Steel is generally in compliance with the opacity requirements. The Agency has observed visible emissions from fugitive dust sources like truck traffic and scrap processing, but these activities are addressed elsewhere in the permit and have a higher frequency of monitoring.
- (2) Margin of compliance. The monitoring method is designed so that the source will take corrective action before a violation occurs. The emission units are unlikely to generate visible emissions except under the most unusual circumstances. In addition, the Agency has inspected this facility at least annually since 1992 and has not identified opacity issues; therefore, the Agency has determined that quarterly monitoring is adequate except as provided for under specific emission unit monitoring requirements. Recording of visible emissions is not necessarily a deviation of the opacity requirements. However, failure to take timely corrective action, as defined by the monitoring method, is a deviation of the specific permit term. Taking corrective action does not relieve Nucor Steel from the obligation to comply with the opacity requirement itself. If the Reference Test Method indicates that the opacity emissions are above 20% for more than 3 minutes in an hour, Nucor Steel would have to report an emission deviation under Section V.R.1 of the permit.
- (3) Variability of process and emissions. With scheduled downtime and production fluctuations, emissions from Nucor Steel are intermittent but are relatively constant on a yearly basis. Emissions from material transfer, including raw material loading into silos, generate fine particulate emissions in the form of carbon and lime dust as the material is loaded into and transferred out of the holding silos. Natural gas combustion yields

virtually no particulate emissions. All such activities are either vented to high-efficiency filters or combust natural gas which rarely cause visible emissions when maintained in accordance with the Operation and Maintenance (O & M) Plan. While these particulate emissions are minimal after filtration and combustion, they are the most likely sources of visible emissions. The most significant variable affecting emissions would be the degree to which Nucor Steel follows its O & M Plan.

- (4) Environmental impacts of problems. Observed opacity is generally related to emissions of particulate matter. Minor emitting stacks at Nucor Steel combined normally emit less than a ton of particulate per year. Particulate emissions from non-meltshop natural gas combustion are about two tons per year. A maintenance problem is unlikely to result in emissions that would have a significant environmental impact.
- (5) Technical considerations. Catastrophic failure of a dust collector, filtration system or significant malfunction of a natural gas-fired furnace or heating unit are the only likely causes of an opacity standard deviation at Nucor Steel. Nucor Steel is required to inspect all dust collectors once per quarter, thereby minimizing the chance of a catastrophic filtration system failure. Uncontrolled heating furnaces or other heating units at Nucor Steel can only be fired on natural gas, and in accordance with an acceptable O&M Plan, thereby minimizing the probability of an opacity standard violation.

2. Requirements I.A.3 and I.A.4 (PM₁₀)

Agency Regulation I, Section 9.09 limits particulate emissions to 0.05 grain per dry standard cubic foot (gr/dscf) from equipment used in a manufacturing process. WAC 173-400-060 limits particulate emissions to 0.1 gr/dscf from general process units (i.e., units using a procedure or a combination of procedures for the purpose of causing a change in material by either chemical or physical means, excluding combustion).

The Agency has determined that the monitoring should be quarterly, employing the same monitoring method at the same frequency as the opacity requirements in Requirement I.A.2. The monitoring method is based on the fact that particulate emissions less than 0.05 gr/dscf usually do not result in visible emissions. These factors are consistent with EPA's April 30, 1999 Draft *Periodic Monitoring Technical Reference Document*.

3. Requirement I.A.5 (PM₁₀ from combustion sources)

WAC 173-400-050(1) limits particulate emissions to 0.1 gr/dscf corrected to 7% O₂ from all combustion units, including both internal and external combustion units. There are SIP approved, federally enforceable, and newer, non-SIP-approved, non-federally enforceable versions of WAC 173-400-050(1). These requirements apply to all of Nucor Steel's combustion units, items such as space heaters and water heaters. Since Nucor Steel burns only pipeline grade natural gas, it is incapable of violating this standard while complying with the other requirements in the permit. Therefore, the permit does not contain additional monitoring requirements other than facility-wide monitoring.

4. Requirement I.A.6 (SO₂)

Both Agency Regulation I, Section 9.07 and WAC 173-400-040(6) are equivalent requirements (SO₂ emissions not to exceed 1000 ppmv), except for the second paragraph of the WAC, which is not in the Agency regulation. That paragraph, which is not federally enforceable, allows for exceptions to this requirement if the source can demonstrate that there is no feasible method of reducing the SO₂ concentrations to 1000 ppm. Since the Agency rules do not allow the exception, the second paragraph does not apply to Nucor Steel.

In the combustion units, Nucor Steel can only burn pipeline quality natural gas and propane. "Natural gas" means a mixture of gaseous hydrocarbons, with at least 80 percent methane (by volume), and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the Washington Utilities and Transportation Commission. Natural gas may also be referred to as "pipeline quality natural gas." Nucor Steel receives the same natural gas as all of the other natural gas consumers, private and industrial, in the Northwest. According to Section 1.4-3 of AP-42, natural gas contains approximately 2000 grains of sulfur per million cubic feet, which is equivalent to approximately 3.4 parts of sulfur per million cubic feet of natural gas, as shown in the following calculation:

$$\frac{2,000 \text{ gr } S}{1,000,000 \text{ ft}^3 \text{ nat. gas}} \times \frac{1 \text{ lb}}{7000 \text{ gr}} \times \frac{385 \frac{\text{ft}^3}{\text{mole } S}}{32 \frac{\text{lb}}{\text{mole } S}} = 3.44 \times 10^{-6} \frac{\text{ft}^3 S}{\text{ft}^3 \text{ nat. gas}} \equiv 3.44 \text{ ppm } S$$

According to *Perry's Chemical Engineer's Handbook*, each cubic foot of natural gas requires approximately 10 cubic feet of air for combustion, yielding approximately 11 cubic feet of combustion exhaust gases, consisting mostly of nitrogen, water vapor, and carbon dioxide. The sulfur in the natural gas will almost all be converted to sulfur dioxide, with each cubic foot of sulfur producing the same volume of sulfur dioxide. Since each cubic foot of natural gas contains 4.08×10^{-5} cubic foot of sulfur, each cubic foot of stack exhaust will contain approximately:

$$3.44 \times 10^{-6} \frac{\text{ft}^3 S}{\text{ft}^3 \text{ nat. gas}} \times \frac{1 \text{ ft}^3 \text{ SO}_2}{1 \text{ ft}^3 S} \times \frac{1 \text{ ft}^3 \text{ nat. gas}}{11 \text{ ft}^3 \text{ stack exhaust}} = 3.13 \times 10^{-7} \frac{\text{ft}^3 \text{ SO}_2}{\text{ft}^3 \text{ stack exhaust}}$$

This is equivalent to 0.31 ppmv SO₂. Note that this estimated value is less than one-tenth of one percent of the 1,000 ppm SO₂ standard. Therefore, it is reasonable to assume that combustion units that are fired on natural gas cannot exceed the 1,000 ppm SO₂ limits in Agency Regulation I, Section 9.07 and WAC 173-400-040(6). The other emission units are not capable of generating SO₂ emissions as permitted. Therefore, the permit does not contain monitoring requirements. Nucor Steel may burn propane as an alternate to gas. This fuel has a similarly low SO₂ concentration.

5. Requirement I.A.7 (HCl)

Agency Regulation I, Section 9.10 specifies that HCl emissions shall not exceed 100 ppm (dry), corrected to 7% O₂ for combustion sources, including both internal and external combustion units. Since Nucor Steel burns only pipeline-grade natural gas, the facility is incapable of

violating the standard while complying with the other requirements in the permit. Therefore, the permit does not contain additional monitoring requirements.

6. Requirements I.A.8 and I.A.9 (nuisance)

Agency Regulation I, Section 9.11(a) and WAC 173-400-040(5) are similar requirements that address emissions that may be environmentally detrimental or cause a nuisance. WAC 173-400-040(5) has SIP-approved and non-SIP approved versions that are virtually identical. Agency Regulation I, Section 9.11 has not been adopted into the SIP. The monitoring method for all these requirements is based on responding to complaints and general inspections of the facility to identify any emissions that are likely to be injurious to human health, plant or animal life, or property, or that unreasonably interfere with enjoyment of life and property. Therefore, the Agency has determined that complaint response requirements of Section II.A.1(b) and the quarterly facility-wide inspections required in Section II.A.1(c) of the permit are sufficient to monitor for changes that would cause a fugitive emission or unexpected buildup of dust on the roadways and plant grounds.

Agency Regulation I, Section 9.11(b) (non-Federally enforceable) and the WAC 173-400-040(4) address odors. The monitoring method is based on responding to complaints, quarterly inspections of the facility to identify emissions of odor-bearing contaminants and correcting any problems identified as a result of the inspection or investigation. Receiving complaints does not necessarily mean Nucor Steel is in violation of this requirement, since the regulation does not prohibit the emission of odors, but prohibits the emissions of odors if good practices are not employed to control emissions. Nucor Steel does not generally emit odors that would cause a complaint. Complaints will trigger action by Nucor Steel to investigate and correct problems that could result in a violation.

The Agency has determined that the monitoring should be quarterly for the reasons listed below. These factors are consistent with EPA's April 30, 1999 Draft *Periodic Monitoring Technical Reference Document*.

- (1) Initial compliance. The Agency has received minimal complaints regarding fugitive dust or odor emissions over the past five years, and has not observed visible or odorous emissions from plant activities during any inspection, therefore, we conclude that it is generally in compliance with the nuisance requirements.
- (2) Margin of compliance. The emission of fugitive dust or odor is unlikely to generate off-site fallout or complaints except under the most unusual circumstances. The monitoring method is designed so that the source will take corrective action before a violation occurs. In addition, in the past six years the Agency has not noted nor received complaints about Nucor Steel causing emissions that are likely to be injurious to health, plant or animal life, or property or that unreasonably interfere with enjoyment of life and property. Therefore, the Agency has determined that quarterly monitoring is adequate. Receiving complaints does not necessarily mean Nucor Steel is in violation of this requirement, but Nucor Steel has a responsibility to investigate complaints and take corrective action if necessary. Failure to take timely corrective action, as defined by the monitoring method, is a deviation of the specific permit term. Taking corrective action does not relieve Nucor Steel from the

obligation to comply with the nuisance requirement itself.

- (3) Variability of process and emissions. With scheduled downtime and production fluctuations, emissions of a pollutant that could cause a potential nuisance could occur intermittently around the clock. Annual production rates vary significantly and annual emissions from Nucor Steel are generally proportionate to production rates. The raw materials handling systems generate fine particulate that is handled by small dust collectors. Trucks traveling on plant roads and raw materials unloading may generate fugitive particulate emissions. All such activities are controlled by watering, sweeping, vacuuming or high-efficiency dust collectors, that are maintained in accordance with the O & M Plan. The most significant variable affecting emissions would be the degree to which Nucor Steel follows its O & M Plan.
- (4) Environmental impacts of problems. Nuisance emissions are generally related to fugitive emissions of particulate matter. While emissions of fugitive dust are minimal, this type of emission is also not quantifiable. A maintenance problem is unlikely to result in emissions that would have a significant environmental impact.
- (5) Technical considerations. Catastrophic failure of a silo dust collector or significant malfunction of watering nozzles or watering trucks are the only likely causes of a nuisance causing deviation at Nucor Steel. Nucor Steel is required to inspect all sources of fugitive dust at least weekly, thereby minimizing the chance of generating emissions that may cause a nuisance. Upset emissions of nuisance-causing particulate or odor-bearing contaminants at Nucor Steel are handled more frequently on an as-needed basis and in accordance with "Complaint Monitoring" procedures and the O & M Plan. This minimizes the probability of causing an emission that could be injurious to health, plant or animal life, or property or that unreasonably interfere with enjoyment of life and property.

7. Requirements I.A.10, I.A.11, I.A.12, and I.A.13 (fugitive particulate emissions)

WAC 173-400-040(3) addresses fugitive dust emissions for some activities, and WAC 173-400-040(8) requires reasonable precautions or reasonably available control technology (RACT) to control fugitive emissions. Agency Regulation I, Section 9.15 requires the use of reasonable precautions for fugitive dust and lists some examples of reasonable precautions. Monitoring, maintenance and recordkeeping methods II.A.1(b) through II.A.2.(f) are used to monitor for fugitive dust. Method II.A.1(b) describes complaint response requirements, and all the rest of the methods involve periodic monitoring for visible emissions.

NOC Order of Approval 9669 requires Nucor to regularly wet down paved roads and to spray water on the scrap yard (Conditions 10 and 11, contained in AOP Requirements I.A.12 and I.A.13, respectively). The NOC Order of Approval used the exact wording that is contained in Sections II.A.1(e) and (f) of the AOP as monitoring methods for Requirements I.A.12 and I.A.13. Although this NOC Order of Approval is being superseded by NOC Order of Approval 10237, the conditions remain the same.

The Agency has determined that the weekly fugitive dust inspections required in Sections II.A.1(b) through (f) of the permit are sufficient to monitor for changes that would cause a fugitive emission or unexpected buildup of dust on the roadways and parking lots. The monitoring method is based on visual inspections with Nucor Steel taking corrective action within 24 hours if any fugitive dust emissions are noted. The monitoring method is consistent with Agency's "Agency Policy on Fugitive Dust Controls, March 1995," which specifies reasonable precautions that must be taken to prevent fugitive dust emissions, but does not necessarily define BACT for all processes.

The Agency has determined that monitoring should be weekly for the reasons listed below. These factors are consistent with EPA's April 30, 1999 Draft *Periodic Monitoring Technical Reference Document*.

- (1) Initial compliance. The Agency documented fugitive dust emissions from the plant grounds, and Nucor Steel has stepped up a monitoring program to deal with these emissions on a regular basis. Nucor Steel employs BACT for dust emissions from truck traffic, scrap unloading and for smoke and dust emissions from slag handling in the scrap yard. Fugitive dust from these processes is controlled with regular watering, sweeping and vacuuming. Slag processing is conducted indoors, using water mist to arrest any visible emissions. The Agency has not observed fugitive emissions during any inspection in the past five years, nor has Nucor Steel; therefore, we conclude that it is generally in compliance with this requirement.
- (2) Margin of compliance. For known sources of potential fugitive dust, the buildings at Nucor Steel are enclosed and most of the roadways and parking lots are paved and are maintained in a clean state. Nucor Steel controls fugitive emissions generated by material transfer in the scrap yard by constant water spray. All plant areas are paved. Emission Unit No. 2 addresses opacity monitoring from fugitive meltshop emissions, and most significant air pollution generating equipment has air pollution control devices and is inspected by Nucor Steel daily. In addition, Nucor Steel performs facility-wide inspections quarterly, so there is a good margin for compliance.
- (3) Variability of process and emissions. BACT for controlling fugitive dust at the Nucor Steel facility consists primarily of managing mud and dirt deposition on roads and keeping raw materials piles damp. Nucor Steel uses its judgment and experience to avoid generating fugitive dust. Generally, Nucor Steel maintains potential fugitive dust emitting materials in a damp state, and cleans all roadways leading to processing areas as needed to avoid generating fugitive dust. Therefore, process and emission variability is minimized. Variation of employing dust-arresting techniques as described in Nucor Steel's O & M Plan could cause fugitive emissions but is addressed elsewhere in the permit. The most significant variable affecting emissions would be the degree to which Nucor Steel follows its O & M Plan.
- (4) Environmental impacts of problems. Because Nucor Steel employs BACT for fugitive dust control as specified in its O & M Plan, insignificant environmental impacts are expected. A lapse in fugitive dust abatement techniques is unlikely to result in emissions that would have a significant environmental impact.

- (5) Technical considerations. Nucor Steel follows a good O & M Plan to maintain facility-wide control of fugitive dust that allows the identification and correction of potential fugitive dust problems that does not represent BACT. Nucor Steel is required to inspect all areas of the plant that could emit fugitive dust once each week, thereby minimizing the chance of a catastrophic fugitive emission.

8. Requirement I.A.14 (maintain equipment)

Agency Regulation I, Section 9.20 requires Nucor Steel to maintain equipment in good working order. Section 9.20(a) applies to sources that received a Notice of Construction Order of Approval under Agency Regulation I, Article 6. Section 9.20(b) applies to equipment not subject to Section 9.20(a). Section II.A of the permit identifies the minimum monitoring criteria for maintaining equipment in good working order. The section identifies both facility-wide criteria and specific criteria for the emission units and activities. In addition, the facility-wide inspections provide monitoring of the general effectiveness of Birmingham Section II.A as the monitoring method because many parts of Section II.A apply to several emission units and activities. Where there are specific monitoring requirements for specific emission units, the Agency has listed them in Section II.A.2. The Agency has determined that following the requirements of Section II of the permit provides sufficient monitoring criteria to certify that the equipment has been maintained in good working order. However, the Agency reserves the right to evaluate the maintenance of each piece of equipment to determine if it has been maintained in good working order.

9. Requirement I.A.15 (O & M plan)

In accordance with Agency Regulation I, Section 7.09(b), Nucor Steel is required to develop and implement an O & M Plan to assure continuous compliance with Agency Regulations I, II and III. The requirement specifies that the plan shall reflect good industrial practice, but does not define how to determine good industrial practice. To clarify the requirement, Agency added that in most instances following the manufacturer's operations manual or equipment operational schedule, minimizing emissions until the repairs can be completed and taking measures to prevent recurrence of the problem may be considered good industrial practice. This language is consistent with a Washington Department of Ecology requirement in WAC 173-400-101(4). The Agency also added language establishing criteria for determining if good industrial practice is being used. These may include, but are not limited to, monitoring results, opacity observations, review of operations and maintenance procedures, and inspections of the emission unit or equipment. The Agency added this wording in response to Washington State court decision, Longview Fibre Co. v. DOE, 89, Wn. App. 627 (1998), which held that similar wording was not vague and gave sufficient notice of the prohibited conduct. Agency Regulation I, Section 7.09(b) also requires Nucor Steel to promptly correct any defective equipment. However the underlying requirement in most instances does not define "promptly"; hence for significant emission units and applicable requirements that Nucor Steel has a reasonable possibility of violating or that a violation would cause an air quality problem, the Agency added clarification that "promptly" usually means within 24 hours. For many insignificant emission units and equipment not listed in the permit, the meaning of "promptly" will vary because the emission sources and suitable pollution control techniques vary widely, depending on the

contaminant sources and the pollution control technology employed. However, the permit identifies a means by which to identify if Nucor Steel is following good industrial practice.

As described in Section V.R, Nucor Steel must report to the Agency any instances where it failed to promptly repair any defective equipment. In addition, Nucor Steel has the right to claim certain problems were a result of an emergency (Section V.S) or unavoidable (Section V.T).

Following these requirements demonstrates that Nucor Steel has properly implemented the O&M Plan, but it does not prohibit the Agency or EPA from taking any necessary enforcement action to address violations of the underlying applicable requirements after proper investigation.

10. Requirement I.A.16 (maintain equipment)

RCW 70.94.040 is similar to Agency Regulation I, Section 9.11 and is listed separately here because it is not a federally enforceable requirement.

11. Requirements I.A.17 & I.A.18 (Pollution Prevention Plan)

Nucor Steel operates an electric arc furnace at a steelmaking facility and as such the facility to the Electric Arc Furnace NESHAP (40 CFR 63 Subpart YYYYYY). In accordance with section 40 CFR 63.10685(a) of the NESHAP, Nucor Steel submitted a pollution prevention plan (PPP) to minimize the amount of chlorinated plastics, lead, and free organic liquids charged to the furnace. Nucor Steel submitted this plan to EPA Region 10 and the Agency on June 30, 2008. The Agency was not delegated authority for this regulation as of the date the PPP was submitted, but subsequently sought and received delegation (see delegation letter from EPA Region 10 to Dennis McLerran, Agency, dated 11/14/08). At the time the PPP was submitted, EPA Region 10 had the authority to approve or disapprove Nucor Steel's PPP. They did not disapprove the PPP. The Agency also reviewed the PPP at the time it was submitted, determined it contained the requirements in 40 CFR 63.10685(a)(1)(i) through (iii), and found it to be adequate. The Agency is currently delegated to enforce this regulation and continues to believe the PPP is adequate.

Nucor's PPP contains requirements for motor vehicle scrap which may contain mercury. As required by 40 CFR 63.10685, Nucor Steel's scrap specifications to its suppliers include a requirement for removal of mercury switches from vehicle bodies used to make the scrap. Nucor Steel will be using the option under 10685(b)(2) for the majority of its scrap sources, which requires that scrap be purchased only from scrap providers who participate in the EPA-approved National Vehicle Switch Recovery Program or other EPA program for switch removal. However, for sources that provide scrap from Canada, Nucor Steel will follow the requirements in 10685(b)(1), for a site specific plan.

40 CFR 63.10685(c) of the Subpart YYYYYY NESHAP requires that sources send in semi-annual compliance reports to the Agency for the control of contaminants from scrap according to the requirements in 63.10(e). The report must identify deviations from the requirements 63.10685(a) and (b), the corrective action taken, and which compliance option in (b) applies to each scrap provider, contract, or shipment. These reporting requirements are included in Section V.R.7 of the AOP.

For purposes of determining who is the “permitting authority” or “Administrator” as cited in the NESHAP, the Agency became the “permitted authority” or “Administrator” as of 11/14/08 when EPA Region 10 delegated the NESHAP to the Agency. The 11/14/08 delegation letter and 40 CFR 63.10691 both cite specific authorities that are not delegated to the Agency. These include:

- installation of fewer monitoring systems when multiple sources are vented through a single point,
- approval of alternative emission standards,
- approval of major changes to testing, monitoring, and recordkeeping/reporting, and
- approval of a program for the removal of mercury switches.

With the exception of those things specifically NOT approved to be delegated in the EPA’s delegation letter or 40 CFR 63.10691, the Agency is the permitting authority or Administrator.

C. Section EU-1: Electric Arc Furnaces

- Agency Regulation I, Section 9.03 applies to this emission unit, but the opacity standards in 40 CFR Part 60, Section 60.272a(2) and (3) and 40 CFR 63.10686(b)(2) are more stringent.
- Opacity standards and particulate matter emission limits in 40 CFR 60.272a(a)(1) and 40 CFR 63.10686(b)(1) apply to emissions from the EAF control device. In the NSPS, it is clear these standards do not apply during startup, shutdown and malfunction periods in accordance with 40 CFR 60.11(c) and this reference has been including with the NSPS requirements. However, the U.S. Court of Appeal for the District of Columbia (D.C.) Circuit issued a decision in December 2008 which set aside similar provisions in the NESHAP (40 CFR 63.6(f)(1) and (h)(1)). Although this decision was appealed, the U.S. Court of Appeals for the D.C. Circuit issued a mandate in October 2009 vacating the startup, shutdown and malfunction provisions in the Subpart A General Provisions to the NESHAPs. The Agency understands that EPA will strike these provisions from their regulations in the near future. Therefore, the Agency has not included the provisions 40 CFR 63.6(f)(1) and (h)(1) in the AOP.
- 40 CFR 60.274a(b) and (c) specify required monitoring to reasonably assure compliance with the NSPS requirements. This includes a requirement to check and record the high temperature baghouse fan motor amperes and damper position on a once-per-shift basis when the furnace is operating to verify they are within the given range established during a performance test. The NESHAP does not specify monitoring, but requires monitoring according to the compliance assurance monitoring requirements in 40 CFR part 64. Nucor Steel submitted this plan and the requirements have been incorporated into the AOP in Section II.C.
- Notice of Construction Orders of Approval 10537, 10243, 9914 and 4492 all contain applicable requirements for the facility. Nucor Steel applied for and received these Orders of

Approval based on the information in the respective applications. The Orders were issued consistent with PSCAA Regulation 1, Section 6.03. See section IV. of this Statement of Basis for a discussion of Orders issued since the first renewal of the operating permit.

D. Section EU-2: Meltshop Combustion Sources

Agency Regulation I, Section 9.03 applies to this emission unit. Daily visual opacity observations required in Section II.A.(2)(c), taken directly from the monitoring requirement in 40 CFR 60.273a(d) and 40 CFR 276a(g), are used to reasonably assure continuous compliance.

Agency Regulation I, Section 9.09 and WAC 173-400-050(1) apply to this emission unit. Daily visual opacity observations required in Section II.A.(2)(c) are used to reasonably assure continuous compliance.

E. Section EU-3: Reheat Furnace

Condition No. 4 of Agency Order of Approval No. 4492 (issued on June 16, 1992) imposes a 0.25 lb/MMBtu limit on NO_x emissions from the Bricmont reheat furnace stack. The Agency has determined that there should be no monitoring for the reasons listed below. These factors are consistent with EPA's April 30, 1999 Draft *Periodic Monitoring Technical Reference Document*.

- (1) Initial compliance. Nucor Steel demonstrated compliance with this requirement during the required source test in 1995; therefore, Agency concludes that Nucor Steel complies with the Order of Approval NO_x limit.
- (2) Margin of compliance. During a requisite source test required by the Order of Approval, Nucor Steel emitted NO_x emissions at 68 percent of the allowable limit.
- (3) Variability of process and emissions. Aside from scheduled downtime and production fluctuations, emissions from the reheat furnace are relatively constant. Nucor Steel has not changed the type of fuel it uses for combustion, nor has it increased the heat input rating of the reheat furnace. The most significant variable affecting emissions would be the degree to which Nucor Steel follows its O & M Plan.
- (4) Environmental impacts of problems. Emissions of NO_x are generally related to emissions of particulate matter. The reheat furnace at Nucor Steel normally emits 60 to 70 tons of NO_x per year. A maintenance problem is unlikely to result in emissions that would have a significant environmental impact.
- (5) Technical considerations. Catastrophic failure of the reheat furnace is the only likely cause of a NO_x limit deviation at Nucor Steel. Nucor Steel is required to perform routine maintenance, thereby minimizing the chance of a catastrophic filtration system failure. The most significant variable affecting emissions would be the degree to which Nucor Steel follows its O & M Plan.

Agency Regulation I, Section 9.09 and WAC 173-400-050(1) limit particulate emissions to 0.05 gr/dscf corrected to 7% oxygen from fuel burning equipment. However, the reheat furnace burns

natural gas, and could burn propane. It can be shown that the latter fuel has similarly low particulate rates. The Agency has determined that the monitoring should be quarterly for the same reasons listed under Requirements I.A.1 and 1.A.16 above, as opacity and particulate emissions are related. These factors are consistent with EPA's April 30, 1999 Draft *Periodic Monitoring Technical Reference Document*.

- (1) Initial compliance. The Agency has not observed visible emissions from the reheat furnace during any inspection, nor has Nucor Steel; therefore, we conclude that Nucor Steel complies with the particulate matter requirements.
- (2) Margin of compliance. The emission units are unlikely to generate particulate matter emissions except under the most unusual circumstances. The monitoring method is designed so that Nucor Steel will take corrective action before a violation occurs. In addition, the Agency has inspected the reheat furnace at least annually since 1992 and has not identified opacity or particulate matter issues; therefore, the Agency has determined that quarterly monitoring is adequate. Recording of visible emissions is not necessarily a deviation of the particulate requirements. However, failure to take timely corrective action, as defined by the monitoring method, is a deviation of the specific permit term. Taking corrective action does not relieve Nucor Steel from the obligation to comply with the particulate requirement itself.
- (3) Variability of process and emissions. Except for scheduled downtime and production fluctuations, particulate emissions from natural gas combustion in the reheat furnace are relatively constant. Natural gas combustion yields virtually no particulate emissions when the furnace is maintained in accordance with the O & M Plan. The most significant variable affecting emissions would be the degree to which Nucor Steel follows its O & M Plan.
- (4) Environmental impacts of problems. Observed opacity is generally related to emissions of particulate matter. Particulate emissions from natural gas combustion at the reheat furnace stack normally are less than two tons per year. A maintenance problem is unlikely to result in emissions that would have a significant environmental impact.
- (5) Technical considerations. Catastrophic failure or some other significant malfunction of oxygen feed to the burners are the only likely causes of opacity from the reheat furnace and, indirectly, a particulate matter standard deviation at Nucor Steel. The reheat furnace can only be fired on natural gas, and in accordance with an acceptable O & M Plan. Nucor Steel is required to read opacity once per quarter, thereby minimizing the chance of a catastrophic system failure.

F. Section EU-4: Lime Delivery and Storage System

Conditions No. 3 and No. 4 of Agency NOC Orders of Approval No. 9914 and No. 10828 impose visible emission and particulate matter emission limits on the seven dust collectors controlling emissions from the primary and supplemental lime delivery and storage system. The new primary system for unloading lime and transferring it to the furnace was installed to reduce emissions of lime compared to the old system. The old system was initially kept on-site as a back-up, but was later permitted to be refurbished and used as a supplemental delivery system. The Orders specify required monitoring and recordkeeping in Conditions 5 through 8 which are incorporated into Section II.A.2(g) of the AOP.

IX. MONITORING, MAINTENANCE AND RECORDKEEPING PROCEDURES

A. General

Nucor Steel must follow the procedures contained in Section II of the permit, Monitoring, Maintenance and Recordkeeping Procedures. Failure to follow a requirement in Section II may not necessarily be a violation of the underlying applicable emission standard in Section I. However, not following a requirement of Section II is a violation of Section II and Nucor Steel must report such violations, as well as violations or deviations from any other permit condition, as a deviation under Section V.R.2 of the permit. In addition, all information collected as a result of implementing Section II can be used as credible evidence under Section V.O.1 of the permit. Reporting a permit deviation and taking corrective action does not relieve Nucor Steel from its obligation to comply with the underlying applicable requirement. According to WAC 173-401-615 (3)(b), Nucor Steel must report a deviation from permit requirements within 30 days after the end of the month in which it is discovered. In this context, any exceedances and excesses that must be reported semiannually elsewhere (as in 40 CFR Section 60.276a(b)(c)&(g)) also have to meet this schedule.

The permit requires Nucor Steel to conduct quarterly facility-wide inspections. These inspections are to include checking for prohibited activities under Section III of the permit and activities that require additional approval under Section IV of the permit, as well as checking for any “nuisance” odor bearing contaminants. The Agency determined the frequency of these inspections after considering the potential for emissions, the lack of federally required monitoring, Nucor Steel in-house training practices and similar factors. If problems are identified, Nucor Steel has the responsibility to not only correct the specific problem, but also to adjust the work practices and training to prevent future problems.

For fugitive dust monitoring, Agency employed three methods to monitor compliance at Nucor Steel. Together, they effectively reinforce that BACT is being administered. This is very important at a source like Nucor Steel that may have potential for unknown sources of fugitive dust. In addition to directly monitoring weekly for known fugitive dust sources, performing quarterly inspections of all potential sources via the “complaint” and “facility-wide” monitoring methods is the easiest way to monitor for unidentified sources of fugitive dust.

In determining the appropriate monitoring frequencies for monitoring identified in Section II.A of the permit, the Agency considered several factors, including the following:

- Nucor Steel's compliance history and the likelihood of violating the applicable requirement,
- The complexity of the emission unit including the variability of emissions over time,
- The likelihood that the monitoring would detect a compliance problem,
- The likely environmental impacts of a deviation,
- Whether add-on controls are necessary for the unit to meet the emission limit,
- Other measures that Nucor Steel may have in place to identify problems,
- The type of monitoring, process, maintenance, or control equipment data already available for the emissions unit,
- The technical and economic considerations associated with the range of possible monitoring methods, and
- The type of monitoring found on similar emissions units.
- Recordkeeping requirements that are specific to the actual monitoring method are included with the monitoring requirement in Section II of the permit. However, general recordkeeping requirements for the permit are included in Section V.P, and apply to all records required by the permit.

B. Compliance Assurance Monitoring

1. The CAM rule (40 CFR 64)

The CAM rule requires owners and operators to monitor the operation and maintenance of their control equipment so that they can evaluate the performance of their control devices and report whether or not their facilities meet established emission standards. If owners and operators of these facilities find that their control equipment is not working properly, the CAM rule requires them to take action to correct any malfunctions and to report such instances to the appropriate enforcement agency (i.e., State and local environmental agencies). Additionally, the CAM rule provides some enforcement tools that will help State and local environmental agencies require facilities to respond appropriately to the monitoring results and improve pollution control operations.

The CAM rule applies at major sources with emission units that have control devices, and emissions from the emission unit could exceed 100 tons per year if the control device was not operated.

Nucor is a major source, so the CAM rule can apply. There are several emission units at the facility, but only the electric arc furnace has a control device (two parallel baghouses) with pre-control device potential to emit greater than 100 tons per year:

- (3) Furnace
 - #1 Custom Fuchs High Impedance Elec Arc 3200 Deg F
 - Rated: 125 Ton/Hr Year Installed: 1995 NC/NOT #: 8433
 - CE (1) Baghouse
 - Arc Furnaces 14 Compartments Residual Smoke Melt S
 - Rated: 500000 CFM Year Installed: 1992 NC/NOT #: 8433
 - CE (2) Baghouse
 - Baumco 180f. Withdraws From 4th Hole Duct&Canopy/R
 - Rated: 800000 CFM Year Installed: 1992 NC/NOT #: 8433

The baghouses control PM₁₀. In 2003, PM₁₀ emissions were 20.9 tons. If the baghouses are 99.5% effective, the pre-control PM₁₀ emission rate of the EAF would be 4,173 tons. According to 40 CFR 64.5(b), the Nucor Steel EAF is classified as a as an “other pollutant-specific emission unit.” An “other pollutant-specific emission unit” CAM emission unit is one that has a potential to emit more than 100 tons per year of a pollutant *without* the control device, but has the potential to emit less than 100 tons per year of that same pollutant *with* the control device. The CAM rule requirements apply to “other pollutant-specific emission units” upon air operating permit renewal.

Nucor Steel submitted a CAM plan with its air operating permit renewal application. The plan was reviewed by the Agency and found to satisfy the requirements of 40 CFR 64. The CAM plan was subsequently incorporated into the air operating permit and can be found in new Section II.C.

The CAM Plan uses existing monitoring activities, specifically those found in Sections II.A.2(b) *Baghouse opacity monitoring* and (d) *Baghouse operation monitoring*. Additional features of the Compliance Assurance Monitoring rule, such as *Response to an excursion*, *Quality Improvement Plan (QIP)*, and *CAM reporting and recordkeeping* have been incorporated into the AOP.

CAM Plan Revision: 40 CFR 63.10686(e) of the Subpart YYYYY NESHAP required Nucor Steel to amend its CAM plan by June 30, 2008 to "monitor the capture system and PM control device, maintain records, and submit reports in accordance with the requirements of 40 CFR Part 64." According to Nucor Steel, the requirements of the existing CAM plan sufficiently cover the new additional requirements of the NESHAP. Therefore, no amendments are necessary other than to incorporate the Subpart YYYYY PM emission limit into the list of applicable requirements references in Subsection 1 of the CAM Plan.

X. PROHIBITED ACTIVITIES

Some of the requirements Nucor Steel identified in the operating permit application are included in Section III as prohibited activities. Since these activities are prohibited, routine monitoring of parameters is not appropriate. Instead, Agency has listed these activities in this section to highlight that they cannot occur at the facility.

Agency Regulation I, Section 9.13 and WAC 173-400-040(7) contain similar requirements addressing concealment and masking of emissions. Although both requirements apply, the permit language has been simplified by grouping these requirements together.

XI. ACTIVITIES REQUIRING ADDITIONAL APPROVAL

Some of the requirements Nucor Steel identified in the operating permit application are included in Section IV as activities that require additional approval. For new source review, the permit language has been simplified. Both the state (WAC 173-400-110 and Chapter 173-460 WAC) and Agency (Regulation I, Article 6) new source review programs require approval to construct, install, establish, or modify an air contaminant source. All these requirements apply, but the language in these requirements has been incorporated into one section to simplify the permit language.

XII. STANDARD TERMS AND CONDITIONS

Some of the requirements Nucor Steel identified in the operating permit application are included in Section V, Standard Terms and Conditions. This provided a mechanism for describing requirements that are more general in nature. This section also contains the standard terms and conditions specifically listed in WAC 173-401-620.

XIII. BASIS FOR INAPPLICABLE REQUIREMENTS

The requirements listed in Section VIII of Nucor Steel's Air Operating Permit do not apply to the facility, or to the specific emissions units listed in the permit for the reasons listed below. The permit shield applies to all requirements so identified.

- Agency Regulation I, Section 9.08(a) and RCW 70.94.610 do not apply because Nucor Steel does not have the capability to burn fuel oil.
- WAC 173-490 Emission Standards and Controls for Sources Emitting Volatile Organic Compounds (VOCs) is an inapplicable requirement because Nucor Steel does not conduct any affected activities and must obtain Agency approval before conducting any such activity.
- WAC 173-470, 173-474, 173-475, 173-480 and 173-481 are inapplicable requirements by definition in WAC 173-401-200(4)(ix).
- WAC 173-400-035 and Puget Sound Clean Air Agency Reg. I Section 15.03 are inapplicable to yard locomotives because the regulation exempts any nonroad engine that is "In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function;"
- WAC 173-400-040(3)(a) does not apply because no emission units at Nucor Steel are located in a PM10 attainment area. WAC 173-400-040(3)(b) does not apply because no

emission units at Nucor Steel have been designated a significant contributor of pollutant to a nonattainment area.

- WAC 173-400-040(8)(b) does not apply because no emission units at Nucor Steel have been designated a significant contributor to a PM-10 nonattainment area.
- WAC 173-400-100 through 104 and Agency Regulation I, Article 5 do not apply because WAC 173-400-101(7) and Regulation I, Section 5.03 exempt Title V sources from the registration requirements of the WAC and Regulation I, Article 5.
- WAC 173-400-151 does not apply because Ecology has not identified Nucor Steel as a source that can cause or contribute to visibility impairment in a Class I area.
- 40 CFR Part 60.273a(a) is inapplicable because Section 60.273a(c) waives the requirement for continuous opacity monitoring for sources that perform Method 9 observations.
- 40 CFR 60.273a(e) – (g) and 40 CFR 60.276a(h) are inapplicable because a bag leak detection system is required only for single stack fabric filters, per section 60.273a(e). Nucor Steel's EAF control system does not employ single stacks.
- 40 CFR 60.274a(c) and 40 CFR 60.276a(c) are inapplicable because Section 60.274a(c) gives the affected facility a choice between monitoring control system fan motor amperes and damper positions, or monitoring volumetric flow rate. Nucor Steel chose to monitor fan motor amperes.
- 40 CFR Part 60.274a(b) and (g) are inapplicable because Sections 60.273a(d) and (f) waive the requirement for furnace static pressure monitoring for sources that monitor for shop opacity.
- 40 CFR Part 60.274a(f) is inapplicable because Section 60.273a(d) waives the requirement to install a furnace static pressure monitoring device for sources that monitor for shop opacity.
- 40 CFR 60.276a(b), (c) and (g) require a semi-annual report to EPA of control device opacity exceedances, furnace operating parameter anomalies and shop opacity exceedances. These requirements were made inapplicable by a letter of February 5, 2003 from Betty Weise to Dennis McLerran EPA delegated to the Agency the authority to receive all notifications and reports required by NSPS promulgated prior to July 1, 2002. Condition V.R.1 requires that these reports be filed with PSCAA.
- 40 CFR Part 60 Subpart AA is inapplicable because Nucor Steel did not construct, modify or reconstruct an electric arc furnace between October 21, 1974 and August 17, 1983.
- NESHAP Initial Notification of Compliance status per 40 CFR 63.9(h) and 63.10690 submitted June 30, 2008. Included the requirements of 63.10690(b)(1) – (6).

- Although 40 CFR 63.10685(a)(2) in the Subpart YYYYYY NESHAP provides the option to reject certain types of motor vehicle scrap instead of developing a PPP, Nucor Steel has elected to operate under a PPP at all times. Therefore, 40 CFR 63.10685(a)(2) is listed as an inapplicable requirement in the AOP.
- Nucor Steel has elected not to include the compliance option in 40 CFR 63.10685(b)(3) in the Subpart YYYYYY NESHAP to limit scrap purchases to specialty metal scrap, and therefore that requirement is listed as an inapplicable requirement in the AOP.

XIV. OBSOLETE REQUIREMENTS

A standard Agency Notice of Construction Approval condition, Condition No. 1, requires that the equipment, device or process be installed according to plans and specifications submitted to the Agency. Once the equipment is installed, the Agency requires certification by the applicant that the installation was as approved; this is usually done with a Notice of Completion. Normally within six months to a year after receiving a Notice of Completion, an Agency inspector verifies by inspection that the equipment was installed as specified and in accordance with the Approval Order. While the Notice of Completion is a one-time requirement that Nucor Steel has complied with, Nucor Steel cannot change the approved equipment in such a manner that requires an NOC without first obtaining an NOC approval which is addressed in Section IV.A of the permit. Once Nucor Steel has filed the Notice of Completion and an Agency inspector has verified that the equipment was installed according to the Approval Order, the Agency considers NOC Condition No. 1 an obsolete condition.

Condition 12 of NOC Order of Approval No. 9669 states that NOC No. 9669 supersedes and terminates NOCs 5690, 5710, 8433, and 9089. All conditions from NOCs 5690, 5710, 8433, and 9089 are considered “obsolete requirements” and have been removed from the AOP.

Condition 13 of NOC Order of Approval 10537 cancels and superseded 9669 making its conditions obsolete requirements.

XV. EXPLANATION OF CHANGES MADE DURING THE COURSE OF PERMIT RENEWAL

In preparing the air operating permit renewal, numerous regulatory references throughout the AOP were updated due to rule changes since the last time the permit was open. This mainly addressed updating the rule effectiveness date. Note that the most recent update to WAC 173-400-040 included renumbering of these requirements. Therefore, the SIP approved version of the rule is often a different reference than the “STATE ONLY” version of the rule.

More substantive changes are described below:

- The previous version of the operating permit included a note that Nucor Steel acquired the Seattle plant from Birmingham Steel Corporation on December 9, 2002 and that certain underlying documents referred to in previous permits were issued to Birmingham Steel, but applied exactly the same to Nucor Steel. This note has been removed since

there are no remaining approval orders cited in this permit that mention Birmingham Steel. Approval Order 9669, issued on February 14, 2008, canceled orders 5690 and 5710, both of which were issued to Birmingham Steel. Condition EU 3.1 references Approval Order 4492, which was issued to Salmon Bay Steel in June 1992. Nucor Steel understands that it must comply with NSR approval orders issued to former owners of the plant, and does not see any need to recite the chain of succession in a Title V permit.

- New requirements in 40 CFR Part 63, Subpart YYYYY were incorporated into the AOP. This includes facility-wide requirements to operate under a scrap metal pollution prevention plan and opacity and particulate matter limits that apply strictly to Emission Unit #1 (Electric Arc Furnace).
 - New requirements pertaining to Order of Approval No. 10243 that apply to the lime delivery system dust collector were added to Table 2 (Emission Unit #1).
 - New requirements in NOC Order of Approval 10537 relating to SO₂ emission factors were added.
 - Existing requirements in Agency Regulation I, Section 9.09 and WAC 173-400-050(1) that limit particulate matter emissions were added to Table 3 (Emission Unit #2, Meltshop Combustion Sources). Although these requirements were already included under the facility-wide requirements, they have been repeated in this section since emission unit specific monitoring is applicable to reasonable assure compliance with these requirements.
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- A new emission unit was added for seven dust collectors used to control particulate matter from the three storage silos and pneumatic conveying associated with the primary and supplemental lime delivery systems. The requirements in Orders of Approval No. 9914 and 10828 that pertain to these dust collectors are included in Table 5.
 - A new emission unit was added for six emergency diesel engines that are subject to 40 CFR 63 Subpart ZZZZ.
 - The requirement in WAC 173-441 to comply with applicable reporting requirements for the emissions of greenhouse gases was added to the AOP. This is a “State Only” requirement.

XVI. PUBLIC COMMENTS AND RESPONSES DURING RENEWAL PROCESS

A. 2015 Permit Renewal Public Comment Period

All public comment procedures called for a draft permit in WAC 173-401-800 were addressed by the Agency, including publishing of the following notice on the Agency web site. A public comment period for NOC 10537 was run concurrently with the public notice for the air operating permit renewal.

⊖ NUCOR STEEL SEATTLE INC | CLOSING DATE: 8/24/2015

Permit:

10281

Applicant:

Nucor Steel Seattle Inc

Address:

2424 SW Andover St, Seattle, WA 98106

Comment Period:

Open Date: 7/23/2015 Close Date: 8/24/2015

Application Proposal:

Puget Sound Clean Air Agency (the Agency) is seeking comments on a proposed Notice of Construction Order of Approval (NOC No. 10537) and a draft renewal Air Operating Permit (Permit No. 10281) for Nucor Steel Seattle, Inc. (Nucor), located at 2424 SW Andover Street in Seattle, Washington 98106. Nucor is a steel mill that releases particulate matter, carbon monoxide, oxides of nitrogen, sulfur dioxide, volatile organic compounds, and hazardous air pollutants to the outside air.

The proposed Order of Approval is for a change in the way Nucor determines the amount of sulfur dioxide they are releasing to the outside air. They currently use a method that relies on default data from the U.S. Environmental Protection Agency that is based on average data from steel mills across the country. The proposed Order of Approval is to allow Nucor to use data gathered from testing of their Seattle facility to calculate the amount of sulfur dioxide they are releasing. This will allow Nucor to have a more accurate method of determining their emissions. The proposal does not involve any physical changes to the site nor does it actually allow any increase in emissions, but rather more accurately defines what their emission increase was for a project permitted in 2008 for a modification to their cranes. It also allows for more accurate calculations of their past sulfur dioxide emissions and what they are expected to be in the future. The new emission calculation results in an updated emission increase calculation for the crane project of 29.6 tons per year of sulfur dioxide. This proposed Order of Approval would cancel a supersede the previous approval (Order of Approval No. 9669). That previous order of approval was included in the Air Operating Permit for this site. This proposed Order of Approval is included in this Public Notice for comments with the draft Air Operating Permit because the previous order of approval cannot be modified in the operating permit through an NOC decision alone.

Related Documents:

[DRAFT] Air Operating Permit

[DRAFT] Statement of Basis

[DRAFT] Order of Approval

Engineer Worksheet

Public Notice

How You Can Comment:

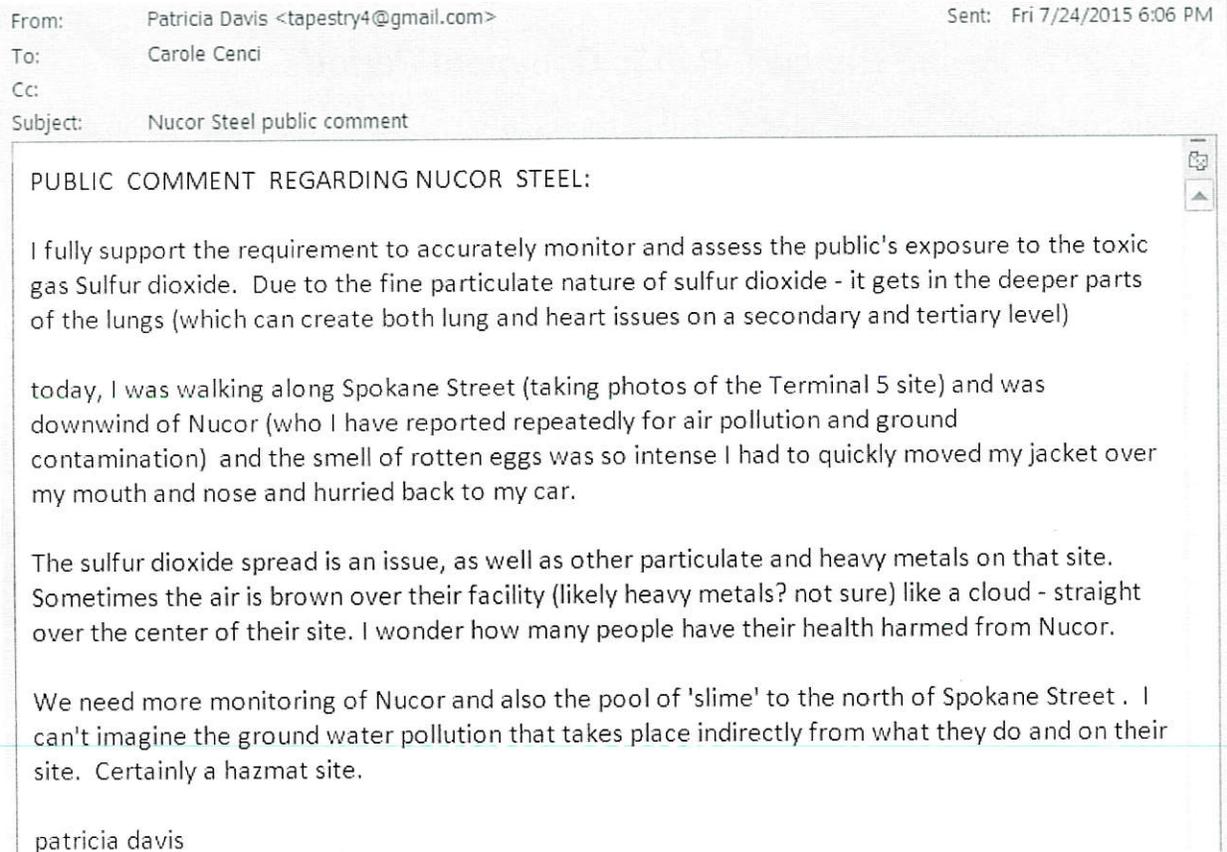
Please send written comments relating to the issuance of these permits by August 24, 2015, to:

Carole Cenci
Air Operating Permit Program
Puget Sound Clean Air Agency
1904 Third Ave, Suite 105
Seattle, WA 98101

or by e-mail to: CaroleC@pscleanair.org

Below are the comments received and the Agency responses:

Comment #1:



Response to comment #1:

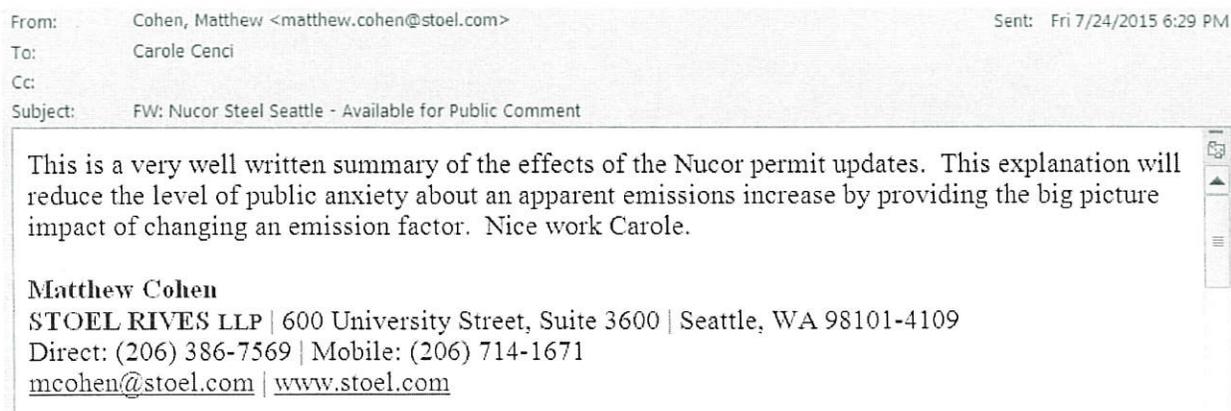
Section II.A.1(b) of the draft permit contains a requirement for Nucor to record and investigate all complaints that they or the Agency receive. If they find any problems with any equipment or operations at the plant, they are required to correct it within 24 hours or shut down the equipment or operation causing the problem. These complaint response requirements include all complaints received, whether odor or any other type of emissions. The Agency would encourage the commenter to contact Nucor directly with any complaints of odor, smoke or other visible emissions and/or to file a complaint online with the Agency on our website at <http://www.pscleanair.org/contact/Pages/complaint.aspx>.

This permit increases the monitoring that Nucor must do, specifically for sulfur dioxide. The new permit will require Nucor to measure the amount of sulfur dioxide coming from the facility every year. If the amount of sulfur dioxide increases significantly, they must notify the Agency.

We have no information that would indicate air emissions from Nucor are contributing to groundwater effects nor any information on any existing groundwater issues in the area. Groundwater pollution is outside the scope the Agency's authority.

No changes were made to the draft permit in response to these comments.

Comment #2:



Response to Comment #2:

No changes were made to the draft permit in response to this comment.

B. 2015 Permit Renewal EPA 45-Day Review

The proposed permit and statement of basis were sent to EPA on September 3, 2015 and no response was received.