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Via U.S. Mail and E-mail (French.chuck@epa.gov)

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**Re: Comments on EPA Proposed Rule
New Source Performance Standards Review for Nitric Acid Plants
Docket EPA-HQ-OAR-2010-0750
Comment Period Deadline: November 28, 2011**

Dear Mr. French:

We are respectfully submitting these comments on behalf of the Environmental Integrity Project, Sierra Club, and the Natural Resources Defense Council for consideration in the above-referenced rulemaking proceeding involving EPA's review and revision of the new source performance standards (NSPS) for nitric acid plants 40 C.F.R. Part 60, Subpart G, pursuant to 42 U.S.C. § 7411(b)(1)(B). In sum, we are generally supportive of EPA's proposed standards for nitrogen oxides (NO_x), but we believe EPA's failure to propose any standard for nitrous oxide (N₂O) and other greenhouse gas emissions is unlawful.

I. BACKGROUND

The NSPS program of the Clean Air Act requires EPA to “publish ... a list of categories of stationary sources,” and EPA must “include a category of sources in such list if in [the Administrator's] judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.”¹ Within one year after listing a particular category, EPA must “publish proposed regulations, establishing Federal standards of performance for new sources within such category,” and EPA must promulgate final performance standards within one year thereafter.² Congress thus directed EPA to promulgate

¹ 42 U.S.C. § 7411(b)(1)(A).

² *Id.* § 7411(b)(1)(B).

NSPS standards for each listed industry on a rigorous timeline, and Congress also required EPA to “review and, if appropriate, revise” these standards at least once every eight years.³

The performance standard for each industry must “reflect[] the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) has been adequately demonstrated.”⁴ This is commonly known as the “best demonstrated technology” or “BDT” standard.⁵ Through this standard, the Clean Air Act “directs EPA to set specific and rigorous limits on the amounts of pollutants that may be emitted from any ‘new source’ of air pollutants” and “reflect a commitment to requiring the best technology.”⁶ The BDT standard is designed to “enhance air quality and not merely to maintain it” by “forcing all newly constructed or modified ... facilities ... to employ pollutant control systems” that will reflect the best demonstrated system of reduction.⁷

It is well established that Section 111 is a technology-forcing program. Congress’s intent was “to induce, to stimulate, and to augment the innovative character of industry in reaching for more effective, less-costly systems to control air pollution.”⁸ As such, the courts have made it clear that the “standards should be stringent in order to force the development of improved technology.”⁹ Moreover, as the D.C. Circuit has explained, “Section 111 looks toward what may fairly be projected for the regulated future, rather than the state of the art at present, since it is addressed to standards for new plants.”¹⁰ The required technology need not “be in actual routine use somewhere;” rather, the “essential question,” is “whether the [required] technology would be available for installation in new plants.”¹¹

Since EPA is required to set standards that the industry as a whole can meet in the future,¹² it need not set a standard that can be met by every plant “currently in operation . . . at all times and

³ *Id.* § 7411(b)(1)(B).

⁴ *Id.* § 7411(a)(1).

⁵ *See, e.g.,* EPA, Air Quality Management: New Source Performance Standards (NSPS), <http://www.epa.gov/apti/course422/apc4c.html> (last visited Nov. 22, 2011). In this rulemaking, EPA has departed from its traditional usage of the term BDT and refers to the standard as “BSER.” We assume EPA’s terminological choice does not reflect any change in its interpretation of the statute. If the agency is changing its interpretation, it must do so explicitly and provide an adequate rationale for doing so. In these comments, we will continue to use the traditional term BDT.

⁶ *ASARCO Inc. v. EPA*, 578 F.2d 319, 322 & 322 n.6 (D.C. Cir. 1978).

⁷ *Id.* at 327. *See also National Asphalt Pavement Ass’n v. Train*, 539 F.2d 775, 785-86 (D.C. Cir. 1976) (discussing these standards).

⁸ *Sierra Club v. Costle*, 657 F.2d 298, 347 n.174 (D.C. Cir. 1981) (quoting legislative history). *See also ASARCO*, 578 F.2d at 322 & n.6 (The language of section 111 evinces the Congressional “commitment to requiring the best technology” as “[NSPS] are designed to force new sources to employ the best demonstrated systems of emission reduction.”).

⁹ *Sierra Club v. Costle*, 657 F.2d at 325.

¹⁰ *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973). *See Lignite Energy Council v. U.S. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999).

¹¹ *Portland Cement*, 486 F.2d at 391.

¹² *See id.*, 486 F.2d at 391-92.

under all circumstances.”¹³ In other words, “[a]n achievable standard is one which is within the realm of the adequately demonstrated system’s efficiency and which, while not at a level that is purely theoretical or experimental, need not necessarily be routinely achieved within the industry prior to its adoption.”¹⁴ Whether a performance standard is “achievable” and has been “adequately demonstrated” within the meaning of Section 111 is a question of reasonableness. An adequately demonstrated system is “one which has been shown to be reasonably reliable, reasonably efficient, and which can reasonably be expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way.”¹⁵ In determining what constitutes BDT, courts have held that EPA’s analysis can—indeed should, as appropriate—look beyond facilities within the United States. EPA may base its standards on the application of control technologies that are in use in other countries, as well as looking at technology transfers across industries.¹⁶

When establishing a performance standard for a particular industry, EPA should consider the costs “of achieving [the] reduction,” along with nonair quality health and environmental impacts and energy requirements, but EPA must not lose sight of the technology forcing nature of Section 111.¹⁷ With respect to cost, the issue before the agency is whether the cost of control is “greater than the industry could bear and survive.”¹⁸ An important factor in determining whether a particular technology is “adequately demonstrated” and not “exorbitantly costly” is whether some members of the industry are already implementing it in practice. Indeed, Section 111 provides that EPA “Administrator shall, when revising standards promulgated under this section, consider the emission limitations and percent reductions achieved in practice.”¹⁹

Under the NSPS program, EPA’s performance standards generally apply to “new” sources, which are defined to include “any stationary source, the construction or modification of which is commenced after the publication of the regulations (or, if earlier, proposed regulations)

¹³ *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 433-34 (D.C. Cir. 1973).

¹⁴ *Id.* at 433. See also *National Lime Ass’n v. EPA*, 627 F.2d 416, 431 (D.C. Cir. 1980) (explaining that achievability is determined “for the industry as a whole”).

¹⁵ *Essex Chem. Corp.*, 486 F.2d at 433.

¹⁶ See *Lignite*, 198 F.3d at 933-34 & n.3.

¹⁷ *Id.* at 933 (citing *New York v. Reilly*, 969 F.2d 1147, 1150 (D.C. Cir. 1992)).

¹⁸ *Portland Cement Ass’n v. EPA*, 513 F.2d 506, 508 (D.C. Cir. 1975) (“*Portland Cement II*”) (agreeing with EPA’s determination). See also *Lignite*, 198 F.3d at 933 (explaining that EPA may exclude emission controls that would impose “exorbitant” economic or environmental costs and citing *National Asphalt*, 539 F.2d at 786, for this proposition). Section 111 gives narrowly circumscribed authority to “promulgate a design, equipment, work practice, or operational standard, or combination thereof” where EPA has made a finding that it is “not feasible to prescribe or enforce a standard of performance.” 42 U.S.C. § 7411(h)(1). The statute defines only two circumstances in which it may be “not feasible” to set a standard of performance—(1) when “a pollutant or pollutants cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant,” or (2) when the “the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations.” *Id.* § 7411(h)(2).

¹⁹ 42 U.S.C. § 7411(b)(1)(B).

prescribing a standard of performance under this section which will be applicable to such source.”²⁰

The NSPS program is not exclusively limited to new and modified sources though. The Clean Air Act further provides that EPA “shall prescribe regulations” requiring each state to submit to EPA a plan which (1) “establishes standards of performance for any existing source for any air pollutant” (excluding criteria pollutants and hazardous air pollutants) where “a standard of performance ... would apply if such existing source were a new source,” and (2) “provides for the implementation and enforcement of such standards of performance.”²¹ EPA’s regulations provide that “[c]oncurrently upon or after proposal of standards of performance for the control of a designated pollutant [from sources subject to an NSPS],” EPA “will publish a draft guideline document containing information pertinent to control of the designated pollutant from designated facilities [existing sources],” and “a final guideline document will be published” “upon or after” the promulgation of standards of performance for new sources.²² EPA’s emission guidelines specify how the states should reduce air pollution from existing sources that emit certain air pollutants to which a standard of performance would apply if such existing source were a new source.²³ Like standards of performance for new sources, emission guidelines must reflect “best demonstrated technology.”²⁴ Emission guidelines can be tailored to the remaining useful life of existing sources, as well as other relevant factors.²⁵

EPA promulgated the current NSPS for nitric acid plants (40 C.F.R. Part 60, Subpart G) in 1971.²⁶ EPA has since reviewed this NSPS twice—once in 1979 and once in 1984—without making any substantive changes.²⁷

On October 7, 2008, the Environmental Integrity Project and Sierra Club filed a notice of intent to sue EPA for violation of its nondiscretionary duty to review the NSPS for nitric acid plants at least once every 8 years based on the fact that EPA’s required review was then 16 years

²⁰ *Id.* § 7411(a)(2).

²¹ *Id.* § 7411(d)(1) (emphasis added).

²² 40 C.F.R. § 60.22(a).

²³ *See id.* §§ 60.21(e) and 60.22.

²⁴ *Id.* § 60.22(b)(5) (providing that guideline documents “will” include “an emission guideline that reflects the application of the best system of emission reduction (considering the cost of such reduction) that has been adequately demonstrated for designated facilities...”). *See also id.* § 60.21(e) (“Emission guideline means a guideline set forth in subpart C of this part, or in a final guideline document published under § 60.22(a), which reflects ‘the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of such reduction) the Administrator determines has been adequately demonstrated for designated facilities.’”).

²⁵ *See* 42 U.S.C. § 7411(d)(1); 40 C.F.R. § 60.22(b) (describing content of emission guidelines).

²⁶ *See* EPA, Proposed Rule, New Source Performance Standards Review for Nitric Acid Plants, 76 Fed. Reg. 63878, 63880 (Oct. 14, 2011) (citing 36 Fed. Reg. 24881 (Dec. 23, 1971) and noting that only “[m]inor testing and monitoring changes” have been made since the rule’s promulgation in 1971) (hereafter, “EPA Proposed Nitric Acid NSPS Rule”).

²⁷ *See id.* (citing 44 Fed. Reg. 35265 (June 19, 1979) and 49 Fed. Reg. 13654 (April 5, 1984)).

overdue.²⁸ The complaint was filed on February 4, 2009,²⁹ and the case was resolved through a Consent Decree entered by the district court on February 12, 2010.³⁰ The Consent Decree originally provided that EPA would issue a proposed rule by November 15, 2010 and a final rule by November 15, 2011.³¹ Through a series of stipulations, the deadline for the proposed rule was extended until September 30, 2011 and the deadline for the final rule was extended until March 30, 2012.³²

EPA published its proposed rule revising the NSPS for nitric acid plants on October 14, 2011.³³ The proposal includes stronger standards for conventional NOx pollution, but it fails to include any standard for nitrous oxide or any other greenhouse gas pollutants.

II. PROPOSED REVISION OF STANDARDS FOR NITROGEN OXIDES (NO_x)

A. EPA's Proposed NO_x Emission Limit Satisfies the Requirements of Section 111.

We are supportive of EPA's proposal to adopt a significantly stronger standard for NOx emissions (0.50 lb/ton) as part of the NSPS for the nitric acid industry. This emission limit is well supported in the administrative record, and it comports with the requirements for NSPS standards established by Congress. Indeed, a standard any less stringent would not be adequate to satisfy EPA's statutory obligations.

As noted above, EPA promulgated the current NSPS for nitric acid plants, 40 C.F.R. Part 60, Subpart G, in 1971.³⁴ EPA has since reviewed this NSPS twice—once in 1979 and once in 1984—without making any substantive changes.³⁵ This means EPA's last review of the NSPS for nitric acid plants was conducted 27 years ago, and EPA's review is now being conducted 19 years past the statutory deadline. During this long delay, control techniques for NOx pollution have improved significantly, rendering this delayed revision's rigorous compliance with Section 111's high standards especially important, as so many sources have remained under-controlled for so long.

²⁸ See Notice of Intent Letter from Teresa Clemmer, et al, to EPA Administrator Stephen Johnson (Oct. 7, 2008), submitted herewith as Exhibit 1, and on compact disc as Exhibit 2—Item 1).

²⁹ See Complaint, *Environmental Integrity Project v. EPA*, Civ. No. 1:09-cv-00218-EGS, Docket No. 1 (D.D.C. Feb. 4, 2009).

³⁰ See Consent Decree, *Environmental Integrity Project v. EPA*, Civ. No. 1:09-cv-00218-EGS, Docket No. 14 (D.D.C. Feb. 12, 2010).

³¹ See *id.*

³² See Third Stipulation Extending Consent Decree Deadline, *Environmental Integrity Project v. EPA*, Civ. No. 1:09-cv-00218-EGS, Docket No. 21-1 (D.D.C. Oct. 20, 2011).

³³ See EPA Proposed Nitric Acid NSPS Rule, *supra* note 26.

³⁴ See *id.* at 63880 (citing 36 Fed. Reg. 24881 (Dec. 23, 1971) and noting that only “[m]inor testing and monitoring changes” have been made since the rule’s promulgation in 1971).

³⁵ See *id.* (citing 44 Fed. Reg. 35265 (June 19, 1979) and 49 Fed. Reg. 13654 (April 5, 1984)).

EPA's proposed emission limit for NO_x (0.50 lb/ton) satisfies the requirements of Section 111 and helps remedy the longstanding under-regulation of NO_x emissions from nitric acid plants. EPA has identified three technologies—selective catalytic reduction (SCR), non-selective catalytic reduction (NSCR), and hydrogen peroxide injection (HPI)—that are already “used for NO_x control in the nitric acid production source category,” and EPA has noted that it “not aware of any other technologies or emerging technologies that should be considered” for purposes of this rulemaking.³⁶ EPA has determined that all three technologies are “effective” in controlling NO_x, with average emission reductions at the 40 nitric acid facilities in the United States ranging from 95% to 99%.³⁷ EPA has also explained that SCR, the technology upon which EPA has based its proposed performance standard, has been installed at “[a]ll recent nitric acid units” and that “[r]ecent BACT determinations have also identified SCR as BACT.”³⁸

EPA requested information from nitric acid production facilities around the nation, and the results showed that many facilities are actually achieving in practice NO_x emission levels significantly lower than these BACT standards. For instance, EPA's analysis of long-term continuous monitoring (CEMS) data submitted by three plants using SCR showed that all three were reaching or exceeding the proposed 0.50 lb/ton standard at least 99% of the time, based on a 30-day rolling average. At the 99th percentile, the North Bend plant maintained a 30-day average of 0.50 lb/ton in 2010; the PCS Geismar plant (Train 5) achieved 0.38 lb/ton for each 30-day rolling period in 2009; and the El Dorado plant averaged 0.37 lb/ton for each 30-day rolling period during a one-year timeframe spanning 2010-2011.³⁹

Moreover, EPA has presented some evidence suggesting that facilities “may be able to achieve the proposed emission limit” using NSCR.⁴⁰ For instance, at the Dyno Nobel-Deer Island facility and the JR Simplot-Helm facility both submitted monthly block averages for 2009 that achieved emission levels of 0.15-0.36 lb/ton.⁴¹

EPA also required stack testing in 2010 for twelve nitric acid production lines equipped with either SCR or NSCR controls for NO_x. Of the six lines with SCR, four reported NO_x emissions ranging from 0.04 to 0.46 lb/ton, well below the standard EPA has proposed.⁴² Of the six lines with NSCR, four reported test results between 0.01 and 0.35 lb/ton, and a fifth measured NO_x emissions at 0.52 lb/ton, just over the proposed limit.⁴³ If conducted properly, test results should reflect peak hourly emissions during normal operations, i.e., long-term averages should be somewhat lower.

³⁶ *See id.* at 63881.

³⁷ *Id.*

³⁸ *Id.*

³⁹ *See id.* at 63882.

⁴⁰ *Id.*

⁴¹ *See id.*

⁴² Memorandum, Summary of Test Data Received from Section 114 ICR, from Melissa Icenhour, RTI International to Bill Neuffer, OAQPS/SPPD/MMG, U.S. EPA, April 25, 2010 (updated December 17, 2010), p. 8 (Table 1, ICR Test Data for NO_x Emissions from Nitric Acid Trains) (filed on the docket EPA-HQ-OAR-2010-0750 on October 14, 2011).

⁴³ *Id.*

Finally, the “youngest” plant in EPA’s survey was built in 2000. Most of the remaining plants are at least 20 years old. It is reasonable to expect any new unit built today to meet or exceed standards that are being met by production lines installed decades ago.

Accordingly, EPA has clearly demonstrated that its proposed NOx standard of 0.50 lb/ton based on a 30-day rolling average is not only “achievable” and “adequately demonstrated,” it is already routinely being achieved at multiple facilities within the industry. Given the technology-forcing nature of Section 111’s BDT standard, EPA could arguably establish a standard more stringent than its current proposal. Nevertheless, we believe the proposed emission limit is within the range of what is reasonable for purposes of the NSPS program.

B. EPA Data Suggests that NSCR Can Meet Or Exceed Proposed Limit.

EPA’s suggestion that NSCR cannot meet or exceed the standard it has proposed is not supported by the record. The analysis of 2010 stack test results prepared by RTI for EPA found that “[t]he lowest NOx emissions (0.01 lb/ton) originated from two high pressure trains ... controlled by an NSCR.”⁴⁴ Conversely, the highest NOx emissions during testing came from PCS Geismar Unit 3, a production line controlled by SCR.⁴⁵ After comparing data from units with NSCR to those with SCR, the author concluded that “[b]oth abatement technologies are capable of emitting less than 0.05 lb/ton of NOx. Therefore, the type of abatement does not necessarily result in higher NOx emissions.”⁴⁶ Moreover, as noted previously, two other units equipped with NSCR (Dyno-Nobel Deer Island and J.R. Simplot-Helm) achieved monthly block averages between 0.01 and 0.35 lb/ton of NOx in 2009.

While EPA has appropriately given weight to long-term CEMS data in developing the standard, the two NSCR-equipped units included in the CEMS analysis (Agrium-Sacramento and PCS-Geismar Train 4) may not adequately represent performance at other units relying on the same control technology. For example, stack test results from Agrium-Sacramento and PCS-Geismar Train 4 averaged 0.52 and 0.86 lb/ton, respectively,⁴⁷ while results for four other plants with NSCR ranged from 0.01 to no higher than 0.35 lb/ton.⁴⁸ This discrepancy suggests that higher NOx emissions from Agrium-Sacramento and PCS-Geismar Train 4 may result from circumstances unique to those plants that are unrelated to NSCR performance.

Finally, the NSCR technologies reviewed by EPA were installed twenty years ago or longer, and the agency has not considered the potential for NSCR options available today to meet the NOx standard it has proposed at a reasonable cost. It is important for EPA to complete this evaluation before promulgating a final rule. If NSCR can meet or exceed the NOx standard EPA has proposed at a reasonable cost, the agency can and should simultaneously establish nitrous oxide limits based on this technology.

⁴⁴ *Id.* at 6.

⁴⁵ *Id.* at 6, 8 (Table 1).

⁴⁶ *Id.* at 6.

⁴⁷ *Id.* at 8 (Table 1).

⁴⁸ *Id.*

C. EPA's Proposed 30-Day Averaging Period May Be Adequate If Periods of Startup and Shutdown are Included, and if Malfunctions are Not Excused.

EPA's proposal of a 30-day rolling average is based on its evaluation of CEMS data and on the information about the impact of startup, shutdown, and malfunction (SSM) events on emission levels. As a general principle, averaging times should not be stretched simply to accommodate whatever emissions may result from these events. Rather, EPA should evaluate their causes and determine whether specific requirements should be included within the NSPS performance standards for each industry to reduce the frequency and severity of such episodes. For example, when determining the NSPS performance standard, EPA should consider the impact of downtime and accident history on emission levels from the different pollution control options it is evaluating before making its selection.

On the other hand, we recognize that starting up and shutting down units for repair in response to market conditions is an inevitable feature of plant operation. So long as EPA's 30-day rolling average is based on actual hours of operation, it may be reasonable in light of the limited information available in the docket. It is difficult to respond to EPA's invitation to comment on whether the averaging period should be shorter, as the information in the docket does not always distinguish between emissions resulting from malfunctions and those that are driven by startup and shutdown. Regardless of that distinction, the data does indicate that, at the very least, the 30-day averaging time should be more than adequate to accommodate startups and shutdowns, and that a shorter averaging time may not have a significant impact on emissions.

As EPA has recognized, there is no basis in law for excusing malfunctions,⁴⁹ either directly or by manipulating averaging times in anticipation that pollution control equipment will fail. Such a loophole would reward those companies that choose not to invest in maintenance or otherwise operate their facilities in a negligent manner. The CEMS data available indicate that malfunctions are relatively infrequent and should have no impact on compliance with the 30-day limit that EPA has proposed. For example, El Dorado Line 1 reported less than 90 hours of malfunctions during three years of continuous monitoring, from 2007 through 2009.⁵⁰ The malfunction events at this plant reflect less than 0.5% of operating time. In addition, Agrium North Bend had 50 hours of malfunctions in 2009.⁵¹ This is less than 1.0% operating time. In addition, EPA is basing its standard on emission levels that plants built long ago are already

⁴⁹ See 76 Fed. Reg. 63883 ("nothing in section 111 or in case law requires that the EPA anticipate and account for the innumerable types of potential malfunction events in setting emission standards"). See also *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008) (concluding that EPA's startup-shutdown-malfunction exemption under the Hazardous Air Pollutant program violated the Clean Air Act).

⁵⁰ EPA Information Collection Request for Nitric Acid NSPS (Subpart G), El Dorado Nitrogen, L.P., at 1, 7 (filed on the docket EPA-HQ-OAR-2010-0750 on October 14, 2011). In addition, it had 30 hours of reported malfunction emissions from July 1, 2010 through June 30, 2011. See Analysis of Section 114 Response for El Dorado Nitrogen (Baytown, TX): NO_x CEMS Data from 2010 (spreadsheet) (filed on the docket EPA-HQ-OAR-2010-0750 on October 14, 2011). This is also less than 0.5% operating time.

⁵¹ See Section 114 Response from Agrium (North Bend, Ohio): NO_x CEMS Data 2010 (filed on the docket EPA-HQ-OAR-2010-0750 on October 14, 2011).

achieving 99% of the time. Newer units should be expected to achieve higher performance levels.

D. EPA Should Eliminate the Affirmative Defense for Malfunctions.

EPA's proposed "affirmative defense" to civil penalties based on malfunction events is unlawful, would likely reduce compliance with the proposed standards, and would have harmful consequences for public health and the environment.

The affirmative defense proposed by EPA for nitric acid plants is fatally flawed for two main reasons— first, only courts and judges, not EPA, have the authority to decide whether and how to apply civil penalties in an enforcement action and, second, EPA's proposed rule would interfere with Congress's intent to grant citizens broad enforcement authority under the Clean Air Act.

The statute makes clear that only courts and judges are authorized to assess civil penalties, whether a case is brought by EPA or a citizen.⁵² Moreover, Congress expressed a clear intent as to how judges should determine the size of civil penalties whenever they are sought, and thus Congress flatly barred EPA from limiting when civil penalties can be assessed.⁵³ Indeed, the Clean Air Act itself spells out the only limits that Congress intended to impose on citizens' ability to seek and recover penalties in enforcement suits.⁵⁴ By attempting to impose additional agency-created limits, EPA exceeds its authority.

For example, in an enforcement action against a nitric acid plant for a violation of the NSPS performance standards, the owner might argue that it is exempt from paying civil penalties so long as the owner satisfied the requirements set forth in EPA's proposed affirmative defense regulations.⁵⁵ The owner must not be able to evade the civil penalties that apply when the congressionally mandated factors in the statute are met.⁵⁶ It is improper for a court to fail to

⁵² 42 U.S.C. §§ 7413(e), 7604(a). *See Sackett v. EPA*, 622 F.3d 1139, 1146-47 (9th Cir. 2010) *cert. granted in part*, 131 S. Ct. 3092 (2011) (holding, in interpreting analogous penalty provision of Clean Water Act, 33 U.S.C. § 1319(d), that "the civil penalties provision is committed to judicial, not agency, discretion").

⁵³ *See Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842-43 (1984) (explaining that, "[i]f the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress").

⁵⁴ *See* 42 U.S.C. §§ 7604, 7413(e).

⁵⁵ *See* 76 Fed. Reg. at 52787-88 (proposing 40 C.F.R. §§ 63.761-62, 1271-72).

⁵⁶ *See* 42 U.S.C. § 7413(e) (listing factors). Note that the proposed exemption would also be barred under *Chevron* step two or found to be arbitrary and capricious since, even if there exists some slight ambiguity, it is unreasonable to construe the statute as permitting EPA to short-circuit the consideration of specifically listed factors. *See Chevron*, 467 U.S. at 843 (explaining that, if the statute does not answer the question at issue, "the question for the court is whether the agency's answer is based on a permissible construction of the statute"); *S. Coast Air Quality Mgmt. Dist. v. EPA*, 472 F.3d 882, 895 (D.C. Cir. 2006) ("We further hold that EPA's interpretation of the Act in a manner to maximize its own discretion is unreasonable because the clear intent of Congress in enacting the 1990 Amendments was to the contrary."); *see also Gen. Instrument Corp. v. F.C.C.*, 213

consider these factors, or to fail to make its own determination of what civil penalties are “appropriate” under Section 304(a), and EPA should not ask a court to ignore its legal duty. It is simply impermissible for EPA to displace the civil penalty factors of the Clean Air Act or alter their significance by creating a bar to penalties if certain agency-defined considerations are met instead.⁵⁷

For comparison, the Clean Air Act grants EPA minimal discretion that only applies to administrative penalties, allowing EPA to “compromise, modify, or remit, with or without conditions, any administrative penalty which may be imposed under [subsection 113(d)].”⁵⁸ There is no similar grant of authority, however, for EPA to compromise, modify or limit civil penalties that a court may impose under Section 113(e) or Section 304. Section 304(a) grants courts the sole authority “to apply any appropriate civil penalties” in citizen suits.⁵⁹ The explicit reference to EPA’s ability to modify penalties in one subsection and its absence in the other subsection of the same provision can only be understood as an intentional delineation of EPA authority by Congress that EPA may not contravene by rule.

Congress plainly intended for citizens to be able to enforce emission standards under the Clean Air Act using the full range of civil enforcement mechanisms, subject only to the limitation that government not be “diligently prosecuting” its own civil enforcement action.⁶⁰ Under the proposed rule, however, citizen participation in Clean Air Act enforcement will be hindered, in violation of citizens’ rights to protect themselves from pollution and in direct conflict with congressional intent. The affirmative defense proposed here by EPA would likely be used on a

F.3d 724, 732 (D.C. Cir. 2000) (explaining that “an arbitrary and capricious claim and a *Chevron* step two argument overlap”); *Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (explaining that an agency acts in arbitrary and capricious manner if it fails to consider “relevant factors” or “entirely fail[s] to consider an important aspect of the problem”). By “upset[ting] the statutory balance struck by Congress,” as discussed above, the affirmative defense is unreasonable under *Chevron* step two. *Int’l Alliance of Theatrical & Stage Employees v. N.L.R.B.*, 334 F.3d 27, 35 (D.C. Cir. 2003).

⁵⁷ In another proceeding, EPA has argued that it may promulgate an affirmative defense as an interpretation of the ‘catchall’ provision of Section 113(e)(1), which directs “the Administrator or the court, as appropriate,” to consider the enumerated factors and “such other factors as justice may require.” Partial Approval of Texas SIP, 75 FR 68989, 68999 (Nov. 10, 2010). As noted above, however, with respect to civil penalties, this provision represents a Congressional delegation of discretion to *judges*, not EPA. Moreover, even if EPA had authority to interpret “other factors,” EPA’s proposed affirmative defense would require a court to elevate these additional factors above and in contradiction to those enumerated by the statute, and this is not a reasonable or permissible interpretation.

⁵⁸ 42 U.S.C. § 7413(d)(2)(B). EPA itself must consider the Section 113(e)(1) factors in situations in which it is setting a penalty. 42 U.S.C. § 7413(e)(1).

⁵⁹ *Id.* § 7604(a).

⁶⁰ *Id.* § 7604(b)(1)(B). See *Pennsylvania v. Del. Valley Citizens’ Council for Clean Air*, 478 U.S. 546, 560 (1986) (explaining that Section 304(a) of the Clean Air Act “authorizes private citizens to sue any person violating the Clean Air Act” and that Congress had enacted this provision “specifically to encourage ‘citizen participation in the standards and regulations established under this Act’ in order “to afford ... citizens ... very broad opportunities to participate in the effort to prevent and abate air pollution”) (internal citations omitted).

routine basis by polluters seeking to avoid penalties, just as the malfunction exemption was. As a result, citizens who seek the assessment of civil penalties against polluters in order to protect themselves and achieve the Act's goals may be forced to engage in fact-intensive disputes over the cause of emission violations and the adequacy of responsive measures—an outcome Congress intended to prevent with the simple straightforward enforcement and penalty provisions in the Clean Air Act. As a result, compliance with the Act could suffer, for civil penalties provide a powerful deterrent to violators as Congress intended. As the Supreme Court has explained: “To the extent that [civil penalties] encourage defendants to discontinue current violations and deter them from committing future ones, they afford redress to citizen plaintiffs who are injured or threatened with injury as a consequence of ongoing unlawful conduct.”⁶¹ Thus, the affirmative defense runs counter to the clearly expressed intentions of Congress because the burden it places on citizens makes it less likely that they will enforce the Act, and several of the factors at issue in the affirmative defense undercut Congress's intent that citizen suit enforcement should avoid re-delving into “technological or other considerations.”⁶² Both result from the technical burden EPA is proposing to place on citizens with the affirmative defense, and both render the affirmative defense impermissible.

Congressional intent on civil penalties is clear—they are a remedy available for enforcement by citizen plaintiffs, and the Act gives judges a list of factors to consider in assessing them.⁶³ EPA cannot write regulations contravening that intent.⁶⁴ By shifting this careful balance and contravening these mandates, EPA's proposed affirmative defense for nitric acid plants will impermissibly chill citizen participation and hinder their ability to win an effective, deterrent remedy in Clean Air Act enforcement actions.

Much like citizens, neither EPA nor state agencies have the resources to investigate, much less contest, affirmative defenses. Promulgating this affirmative defense is equivalent to giving polluters “get out of jail free” cards for serious violations. Polluters are likely to claim that any violation of the standard is due to a malfunction in order to evade the applicable requirements and the consequences of violating them. Allowing polluters to evade financial penalties—which are the real teeth of the standards—through this type of measure is likely to lead to polluters simply ignoring or factoring potential standard violations into their cost of doing business, rather

⁶¹ *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs.*, 528 U.S. 167, 186 (2000). See *United States v. Lexington-Fayette Urban County Gov't*, 591 F.3d 484, 488 (6th Cir. 2010) (explaining, with respect to the Clean Water Act, that civil penalties “play an important role ... in achieving the goal of the Clean Water Act”).

⁶² *NRDC v. Train*, 510 F.2d 692, 724 (D.C. Cir. 1974) (setting forth in an appendix legislative history explaining that, under the citizen suit provision of the Clean Air Act, “[a]n alleged violation ... would not require reanalysis of technological or other considerations at the enforcement stage,” and that “an objective evidentiary standard would have to be met by the citizen who brings an action under this section”) (internal citations omitted).

⁶³ See *Sackett v. EPA*, 622 F.3d at 1146-47 (discussing civil penalty provisions of the Clean Water Act).

⁶⁴ See *Chevron*, 467 U.S. at 842-43; see also *Barnhart v. Sigmon Coal Co.*, 534 U.S. 438, 462 (2002) (“We will not alter the text in order to satisfy the policy preferences of the Commissioner.”); *North Carolina v. EPA*, 531 F.3d 896, 910 (D.C. Cir. 2008) (“All the policy reasons in the world cannot justify an agency reading a substantive provision out of a statute.”).

than actually trying to prevent malfunctions and violations of the standards as a way to avoid financial losses from the application of penalties.

Assuming *arguendo* that EPA does have authority to promulgate any type of affirmative defense to penalties for malfunctions, we question whether there is any basis in the record that EPA has developed for establishing an affirmative defense to an emission standard that is based on (a) a 30-day rolling average, and (b) performance already being achieved at older plants, rather than emission levels that ought to be expected from new or modified units using start of the art pollution controls. We understand that certain acts of God or *force majeure* events may be impossible to anticipate, but it is not clear that the affirmative defense discussed in EPA's preamble is limited to these extreme circumstances. Malfunctions should be of extremely limited duration, and EPA has not shown why any malfunction that is serious enough to cause a 30-day rolling average to be violated ought to qualify for an affirmative defense. These defenses were originally designed for short-term standards that had to be met every three hours, not emission limits that are based on much longer averaging times.

In sum, we urge EPA not to adopt in its final rule any affirmative defense because a regulatory limitation on civil penalties intrudes upon the authority Congress granted solely to courts to impose civil penalties for violations of the Clean Air Act, and because it interferes with citizen rights and remedies under the Act. If EPA can provide some legitimate rationale for adopting an affirmative defense, EPA should (1) limit the availability of the affirmative defense to true acts of God or *force majeure* events; (2) provide that the affirmative defense cannot be used by a specific facility or company more than once within a set period of time, such as 10 years; and (3) promulgate specific public reporting and notification requirements for all malfunctions and violations of which an operator is aware, including publication on EPA's website and other means to eliminate the need for any person to submit a FOIA request for such a report.

E. EPA Should Keep in Mind Public Health and Welfare Considerations.

When selecting a standard for controlling NO_x pollution from the nitric acid industry based on the "best system of emission reduction ... adequately demonstrated," we urge EPA to remain mindful that the fundamental goal of the NSPS program is to reduce air pollution which "may reasonably be anticipated to endanger public health or welfare."⁶⁵ Indeed, the statute calls for EPA to periodically review and revise its NSPS standards precisely because of the need to ensure that its standards keep pace with technological advances and therefore serve the statute's fundamental goal of protecting public health and welfare.

NO_x pollution endangers public health directly and also indirectly as it is a precursor to several other pollutants. NO_x pollution directly affects public health by causing harmful effects to the respiratory system. According to EPA, current scientific data shows a connection between short-term nitrogen dioxide (NO₂) exposure and "adverse respiratory effects including airway inflammation in healthy people and increased respiratory symptoms in people with asthma" as

⁶⁵ 42 U.S.C. § 7411(b)(1)(A).

well as “increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma.”⁶⁶

NOx is also dangerous to public health because it is a precursor to fine particulate pollution, which can “penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death.”⁶⁷ NOx is also a precursor to ground-level ozone. The severe public health and welfare impacts of ground-level ozone pollution have been extensively studied and documented. With respect to public health, EPA has long recognized that “[b]reathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion,” “worsen bronchitis, emphysema, and asthma,” “reduce lung function and inflame the linings of the lungs,” and “[r]epeated exposure may permanently scar lung tissue.”⁶⁸

EPA has recently proposed to strengthen its national ambient air quality standards (NAAQS) for ozone based on its finding that the 1997 standards were “not sufficient and thus not requisite to protect public health with an adequate margin of safety, and that revision is needed to provide increased public health protection” as well as its finding that “different standards than those set in 2008 are necessary to provide requisite protection of public health and welfare ...”.⁶⁹ At the eleventh hour, however, President Obama directed EPA to withdraw its draft final rules based on his interest in “reducing regulatory burdens and regulatory uncertainty.”⁷⁰ This decision contravenes an overwhelming body of evidence and EPA’s own findings that protection of public health requires more stringent ozone standards. This underregulation of ozone through the NAAQS-SIP programs of the Clean Air Act underscores the need for establishing adequate technology-based standards under the NSPS program.

NOx also poses a significant threat to public welfare because it is one of the “principal pollutants” responsible for acid rain⁷¹ and because it is a precursor to ozone which causes “detrimental effects on plants and ecosystems,” including making them “more susceptible to certain diseases, insects, other pollutants, competition and harsh weather,” “damaging the leaves

⁶⁶ EPA, Nitrogen Dioxide, <http://www.epa.gov/air/nitrogenoxides/health.html> (last visited Nov. 22, 2011).

⁶⁷ *Id.*

⁶⁸ EPA, Ground-Level Ozone, available at <http://www.epa.gov/air/ozonepollution/health.html> (last visited Nov. 22, 2011).

⁶⁹ EPA, Draft Preamble to Final Ozone NAAQS (withdrawn at the direction of the President), at 1, 34, EPA-HQ-OAR-2005-0172 (July 7, 2011), available at http://www.epa.gov/glo/pdfs/201107_OMBdraft-OzoneNAAQSpreamble.pdf (last visited Nov. 22, 2011).

⁷⁰ White House, Office of the Press Secretary, *Statement by the President on the Ozone National Ambient Air Quality Standards* (Sept. 2, 2011), available at <http://www.whitehouse.gov/the-press-office/2011/09/02/statement-president-ozone-national-ambient-air-quality-standards> (last visited Nov. 22, 2011).

⁷¹ EPA, The Plain English Guide to the Clean Air Act: Acid Rain, http://www.epa.gov/airquality/peg_caa/acidrain.html (last visited Nov. 22, 2011).

of trees and other plants,” “reducing forest growth and crop yields,” and “potentially impacting species diversity in ecosystems.”⁷²

With these considerations in mind, it is especially important for EPA to retain a performance standard at least as strong as that proposed regardless of any objections that may be raised by members of the nitric acid industry in their comments.

III. EPA’S FAILURE TO CONSIDER OR PROPOSE A STANDARD FOR NITROUS OXIDE AND OTHER GREENHOUSE GAS EMISSIONS FROM THE NITRIC ACID INDUSTRY IS UNLAWFUL.

A. EPA Must Establish a Standard for Nitrous Oxide and Other Greenhouse Gas Emissions Because the Nitric Acid Industry Contributes Significantly to Greenhouse Gas Pollution that Endangers Public Health and Welfare.

EPA is not free to ignore certain air pollutant emissions when conducting periodic reviews of the efficacy of existing standards. Section 111’s requirement that EPA “shall, at least every 8 years, review and, if appropriate, revise such standards following the procedure required by this subsection for promulgation of such standards” confirms this in two ways.⁷³ First, the term “such standards” incorporates the inclusive language in the definition of “standard of performance” as “a standard for the emission of air pollutants.”⁷⁴ Second, Section 111 specifically commands that the agency use the exact same procedure in reviewing the efficacy of existing standards of performance that Congress mandated EPA use when first establishing such standards. Congress’ decision to mandate this procedural step indicates that the agency must go back and review the impacts of all pollutants emitted by the source category.

Section 111(f) also supports the proposition that Congress required EPA to establish NSPS for all pollutants emitted by a category of sources.⁷⁵ Section 111(f) responded to the EPA’s past difficulties in promptly establishing NSPS for source categories listed under section 111(b). Congress placed EPA on a timetable to complete a specified number of delinquent NSPS by certain dates. In determining which source categories should be addressed first, Congress directed EPA to consider three factors: “(A) the quantity of air pollutant emissions which *each such category* will emit, or will be designed to emit; (B) the extent to which *each such pollutant* may reasonably be anticipated to endanger public health or welfare; and (C) the mobility and competitive nature of each such category of sources and the consequent need for nationally applicable new source standards of performance.”⁷⁶ Plainly, Congress intended for EPA to establish standards covering all air pollutants emitted by each source category in significant quantities.

⁷² EPA, Ground Level Ozone, <http://www.epa.gov/air/ozonepollution/health.html> (last visited Nov. 22, 2011).

⁷³ 42 U.S.C. § 7411(b)(1)(B).

⁷⁴ *Id.* § 7411(a)(1).

⁷⁵ *See id.* § 7411(f).

⁷⁶ *See id.* § 7411(f)(2) (emphasis added).

In its landmark decision in *Massachusetts v. EPA*, the U.S. Supreme Court held that nitrous oxide and other greenhouse gases fall within the broad definition of “air pollutant” under the Clean Air Act.⁷⁷ As the Court explained:

The Clean Air Act’s sweeping definition of “air pollutant” includes “any air pollution agent or combination of such agents, including any physical, chemical . . . substance or matter which is emitted into or otherwise enters the ambient air” § 7602(g) (emphasis added). On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word “any.” Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt “physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air.” The statute is unambiguous.⁷⁸

In reaching this conclusion, the Court further explained that the Clean Air Act reflects an “intentional effort” by Congress to provide enough flexibility to address “changing circumstances and scientific developments,” including our current understanding that the burning of fossil fuels and other human activities lead to global warming.⁷⁹

Two years after the *Massachusetts v. EPA* decision, EPA made an explicit finding that six well-mixed greenhouse gases, including nitrous oxide, endanger public health and welfare within the meaning of the Act.⁸⁰ This finding was based on research conducted by hundreds of eminent scientists over a period of more than twenty years demonstrating that elevated levels of nitrous oxide and other greenhouse gases in the atmosphere are causing global warming. According to EPA, global warming endangers public health and welfare in numerous ways, including the following:

Health Impacts⁸¹

- Serious adverse health effects in broad areas of the country due to exacerbation of ozone pollution problems
- Increased likelihood of heat waves and associated mortality and morbidity
- Increased risk of the occurrence and severity of extreme weather events that threaten human health and safety, including hurricanes, floods, and coastal storm events
- Increased risk of pathogen-borne diseases and aeroallergenic illnesses

Welfare Impacts⁸²

- Adverse effects on water resources, including water supplies, water quality, and adverse effects from extreme events such as floods and droughts

⁷⁷ See *Massachusetts v. EPA*, 549 U.S. 497, 528-29 (2007).

⁷⁸ *Id.*

⁷⁹ *Id.* at 532.

⁸⁰ Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496, 66497 (Dec. 15, 2009).

⁸¹ See *id.* at 66497-98.

⁸² See *id.* at 66498.

- Increased risk of storm surge and flooding in coastal areas due to sea level rise and more intense storms
- Land loss due to inundation, erosion, wetland submergence, and habitat loss
- Threats of harm to energy, transportation, and water resource infrastructure
- Disruption of food production and agriculture
- Cultural and environmental harm to indigenous communities, particularly in Alaska
- Harm to forests due to increased risk of wildfires and destructive pests and disease
- Negative consequences for wildlife, biodiversity, and ecosystem goods and services

EPA has further explained that children, the elderly, and the poor are the most vulnerable to these impacts; that greenhouse gas pollution endangers both current and future generations; and that the risk and severity of these impacts is expected to increase over time.⁸³

The nitric acid industry “contributes significantly” to this greenhouse gas pollution that EPA has already deemed dangerous to public health and welfare.⁸⁴ Nitrous oxide is a powerful greenhouse gas with a global warming potential 310 times that of carbon dioxide.⁸⁵ EPA has emphasized that nitrous oxide is an “important greenhouse gas” and that its “chemical characteristics and interactions in the atmosphere contribute to its significance as a greenhouse gas.”⁸⁶ The global atmospheric concentration of nitrous oxide has increased by approximately 18% as compared to pre-industrial levels.⁸⁷ In 2009, nitrous oxide emissions in the United States totaled 295.6 teragrams (million metric tons) or approximately 4.6% of total greenhouse gas emissions.⁸⁸ Nitric acid plants are the largest industrial source of nitrous oxide emissions in the United States.⁸⁹ In 2009, these facilities were responsible for 4.9% of all nitrous oxide emissions, or 14.6 teragrams of carbon dioxide equivalent.⁹⁰ Nitric acid plants are also responsible for emissions of carbon dioxide (CO₂) and methane (CH₄)⁹¹ and possibly other greenhouse gases.

Nitric acid plants thus contribute significantly to greenhouse gas pollution. As the Supreme Court held in *Massachusetts v. EPA*, even where the statute provides that EPA may exercise its

⁸³ See *id.* at 66498-99.

⁸⁴ 42 U.S.C. § 7411(b)(1)(B).

⁸⁵ U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009, EPA 430-R-11-005, at ES-3, tbl. ES-1 (April 15, 2011) (hereafter “EPA 2011 GHG Inventory”), available at http://epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Complete_Report.pdf (last visited Nov. 26, 2011) and submitted herewith as Exhibit 2—Item 83.

⁸⁶ EPA, Nitrous Oxide: Science, <http://www.epa.gov/nitrousoxide/scientific.html> (last visited Nov. 17, 2011).

⁸⁷ EPA 2011 GHG Inventory, at ES-11.

⁸⁸ See *id.* at ES-3 to ES-5; U.S. EPA, Available and Emerging Technologies for Reducing Greenhouse Gas Emissions From the Nitric Acid Production Industry, at 8 (Dec. 2010) (hereafter “EPA Emerging Technologies”), available at <http://www.epa.gov/nsr/ghgdocs/nitricacid.pdf> (last visited Nov. 27, 2011) and submitted herewith as Exhibit 2—Item 82.

⁸⁹ EPA 2011 GHG Inventory, at ES-10 (listing nitric plants fourth overall after agricultural soil management, fuel combustion in motor vehicles, and manure management).

⁹⁰ See *id.* at 4-2, tbl. 4-1.

⁹¹ See generally EPA Emerging Technologies, at 16-18.

“judgment” concerning the regulation of greenhouse gases, that does not provide the agency with a “roving license to ignore the statutory text;” instead, it is a “direction to exercise discretion within defined statutory limits.”⁹² Since greenhouse gas pollution endangers public health and welfare, and since nitric acid plants contribute significantly to that pollution, EPA has a duty to regulate such emissions from the nitric acid industry under the NSPS program, and its failure to consider or propose any standard for greenhouse gases in the present rulemaking is unlawful.

B. EPA Has Failed to Provide an Adequate Explanation for its Failure to Regulate Nitrous Oxide and Other Greenhouse Gas Emissions from Nitric Acid Plants.

The only way EPA could legitimately avoid establishing standards for nitrous oxide and other greenhouse gas emissions from nitric acid plants would be if it developed a record clearly demonstrating that such regulations would not be appropriate based on relevant and lawful considerations. EPA has made no effort to make such a showing with respect to nitric acid plants.

As discussed above, the Clean Air Act provides that EPA “shall . . . at least every 8 years review, and, if *appropriate*, revise” its new source performance standards for each regulated industrial sector.⁹³ In determining whether to revise an existing standard as well as whether to add standards for pollutants not previously covered by a performance standard, EPA has long-interpreted this “appropriateness” determination to turn on two, and only two, factors: (1) the quantity of emissions from the source category, and (2) the availability of demonstrated control measures.⁹⁴

When EPA has applied these criteria to the circumstances of particular industries in previous NSPS rulemakings, it has reached either a *positive* or *negative* determination.⁹⁵ In 1985, for example, EPA decided not to revise the cement kiln standards to regulate NO_x and SO₂ emissions, based on the absence of demonstrated control technology.⁹⁶ By 2010, however, EPA found that circumstances had changed such that it was now appropriate to set standards for NO_x and SO₂ because cement kilns emitted substantial quantities of each pollutant and demonstrated control technologies were available.⁹⁷

⁹² *Massachusetts v. EPA*, 549 U.S. at 532-33.

⁹³ *Id.* § 7411(b)(1)(B) (emphasis added).

⁹⁴ *See, e.g.*, 50 Fed. Reg. 36959, 36961 (Sept. 10, 1985) (making negative determination based on lack of demonstrated control technology); 75 Fed. Reg. 54994–95 (Sept. 9, 2010) (making positive determination based on significant emissions and existence of demonstrated control technology). *See also National Lime*, 627 F.2d at 426 n. 27 (discussing these factors).

⁹⁵ *See, e.g.*, 75 Fed. Reg. 54996–97 (“We have historically declined to propose standards for a pollutant where it is emitted in low amounts or where we determined that a [best demonstrated technology] analysis would result in no control. *National Lime Assoc’n v. EPA*, 627 F.2d [416] . . . 426 [n.27 (D.C. Cir. 1980)].”).

⁹⁶ *See* 50 Fed. Reg. 36959, 36961.

⁹⁷ *See* 75 Fed. Reg. 54994–95.

EPA has completely failed to apply these longstanding criteria in this instance. Instead, in the proposed rule, EPA vaguely suggests that there is “limited data” on nitrous oxide emissions and encourages facilities to voluntarily control such emissions:

We are not proposing an N₂O emission standard in this action. Although we have limited data from facilities in the U.S., we believe that owners/operators of nitric acid production units should consider technologies and technology combinations that would be appropriate for controlling both NO_x and N₂O.⁹⁸

In truth, however, there is a large body of scientific data and evidence that would provide a sound technical basis for EPA to establish nitrous oxide controls for nitric acid plants. If EPA had applied its traditional two-factor approach, there is only one conclusion it could have reached—that regulation of nitrous oxide is appropriate and required. With respect to the first factor, the nitric acid industry emits substantial quantities of nitrous oxide as well as other greenhouse gases. Indeed, as discussed above, nitric acid plants are the *largest* industrial source of nitrous oxide emissions in the United States.⁹⁹ In 2009, these facilities were responsible for 4.9% of all nitrous oxide emissions, which is equivalent to 14.6 million metric tons of CO₂eq.¹⁰⁰ With respect to the second factor, there are numerous well-established and highly effective control technologies available for regulating nitrous oxide emissions from the nitric acid industry at a reasonable cost, and there may well be feasible strategies for controlling other greenhouse gases as well, as discussed further below.

C. Nitrous Oxide Controls for Nitric Acid Plants Are Technically Feasible and Can Be Implemented at a Reasonable Cost.

As discussed above, under the Clean Air Act, a standard of performance must be “achievable,” and it must “take into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements.”¹⁰¹ This legal standard is meant to be technology-forcing, and courts have “recognized that section 111 ‘looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.’”¹⁰² In the case of nitrous oxide emissions from nitric acid plants, however, it is not necessary to look toward the future. EPA has already collected extensive data establishing beyond doubt that technically feasible and economically reasonable controls for nitrous oxide emissions are available now.

1. Technical Feasibility

According to EPA’s own reports dating back to 2008, the following seven technologies have been shown to be highly effective in reducing N₂O emissions during the nitric acid process:

⁹⁸ EPA Proposed Nitric Acid NSPS Rule, at 63880.

⁹⁹ EPA 2011 GHG Inventory, at ES-10 (listing nitric plants fourth overall after agricultural soil management, fuel combustion in motor vehicles, and manure management).

¹⁰⁰ *See id.* at 4-2, tbl. 4-1.

¹⁰¹ 42 U.S.C. § 7411(a)(1).

¹⁰² *Lignite*, 198 F.3d at 934 (quoting *Portland Cement*, 486 F.2d at 391).

Name/Description	N ₂ O Reduction Efficiency ¹⁰³
Non-selective catalytic reduction (NSCR)	80-90%
Grand Paroisse high temperature catalytic reduction method	78%
BASF high temperature catalytic reduction method	80%
Norsk Hydro high temperature catalytic reduction method	90%
HITK high temperature catalytic reduction method	100%
Krupp Uhde low temperature catalytic reduction method	95%
ECN low temperature selective catalytic reduction with propane addition	95%

More recently, in December 2010, EPA published a white paper that summarizes information on control techniques and measures to mitigate greenhouse gas emissions from the nitric acid industry.¹⁰⁴ In this document, EPA explains that nitrous oxide emissions “are a byproduct of the process stream and therefore characterized as ‘industrial process’ emissions.”¹⁰⁵ EPA further explains that nitrous oxide emissions can be controlled at three stages of the nitric acid production process. These are generally categorized as primary controls (which reduce the amount of nitrous oxide formed in the ammonia oxidation step); secondary controls (which reduce nitrous oxide immediately after it is formed in the ammonia oxidation step); and tertiary controls (which reduce nitrous oxide by installing a catalytic reactor either upstream or downstream of the tailgas expansion unit following ammonia oxidation).¹⁰⁶ According to EPA, the secondary and tertiary controls are the most commonly applied, and “[t]hese technologies are capable of and typically achieve greater than 80 percent reduction of N₂O emissions.”¹⁰⁷

EPA’s analysis includes an extensive discussion of nonselective catalytic reduction (NSCR), a tertiary control which is 80-95% effective in eliminating nitrous oxide emissions.¹⁰⁸ EPA notes that NSCR “has been installed in numerous nitric acid plants in the U.S. and throughout the world to reduce NO_x emissions,” and “NSCR achieves substantial N₂O reduction” as well.¹⁰⁹ More specifically, NSCR systems were widely installed in nitric acid plants between the years 1971 to 1977 as a means to control NO_x emissions, and they are presently used by about 25 percent of nitric acid plants in the United States.¹¹⁰ NSCR’s control of nitrous oxide emissions,

¹⁰³ See EPA, International Analysis of Methane and Nitrous Oxide Abatement Opportunities: Report to Energy Modeling Forum, Working Group 21, at Appendices B and C (June 2003) (hereafter “EPA International Analysis”), available at <http://www.epa.gov/methane/pdfs/methodologych4.pdf> (last visited Nov. 26, 2011) and submitted herewith as Exhibit 2—Item 36; EPA 2011 GHG Inventory, at 4-19 to 4-20; and U.S. EPA, Global Mitigation of Non-CO₂ Greenhouse Gases, Ex. 2, at IV-7 to IV-8 (June 2006) (hereafter “EPA Global Mitigation”), available at <http://www.epa.gov/climatechange/economics/downloads/GlobalMitigationFullReport.pdf> (last visited Nov. 26, 2011) and submitted herewith as Exhibit 2—Item 43.

¹⁰⁴ See generally EPA Emerging Technologies.

¹⁰⁵ *Id.* at 7.

¹⁰⁶ See *id.* at 9.

¹⁰⁷ *Id.*

¹⁰⁸ See *id.* at 13.

¹⁰⁹ *Id.* at 10.

¹¹⁰ See EPA 2011 GHG Inventory, at 4-20.

along with NO_x, has been a coincidental side benefit.¹¹¹ Since N₂O was not the primary pollutant of interest, and since the NSCR technology is being used mainly at older facilities, its performance has never been optimized at these facilities. As a result, the data generated by these facilities concerning its performance may be slightly misleading and may under-represent how effective newer versions of NSCR could be, particularly when installed at newer facilities for the express purpose of controlling nitrous oxide. Nevertheless, the fact that these systems have been successfully operated by many nitric acid plants for thirty years or more demonstrate the technical feasibility of controlling nitrous oxide emissions from nitric acid plants.

According to EPA, NSCR is typically used at plants that have the capability to preheat their tail gas to high temperatures.¹¹² More recently, however, new variants of the NSCR technology are emerging that are suitable for lower tail gas temperatures. For instance, two manufacturers of NSCR control technologies—Uhde and Süd-Chemie—have developed a process referred to as the EnviNO_x® process, and Variant 2 of this process “is suitable for lower tail gas temperatures.”¹¹³ This NSCR Variant 2 process has achieved “[c]onversion rates greater than 98 percent,” and this process “is not thought to produce significant CO₂ emissions when compared to the reduction of N₂O in the unit.”¹¹⁴

In its recent white paper, EPA also analyzed a number of other technologies and methods of controlling nitrous oxide emissions at nitric acid plants, including the following:¹¹⁵

Type	Name/Description	N ₂ O Reduction Efficiency	Notes
Primary— Suppression of N ₂ O Formation	Extension of the NH ₃ oxidation reactor	70-85%	Applicable to new plants with low additional investments; data available from 14 European units
Primary— Suppression of N ₂ O Formation	Modifying the ammonia oxidation gauzes, with non-platinum-based oxidation catalysts	80-90%	--

¹¹¹ See *id.*

¹¹² EPA Emerging Technologies, at 13.

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ See *id.* at 10-16.

Secondary— Catalytic Decomposition	Secondary catalyst	Up to 90%	No major modification of the ammonia oxidation reactor is typically required; no effect on ammonia conversion; Yara system presently operating in 17 plants ranging in size from 200-2,650 million tonnes per day; total of 53 process lines have implemented this technology worldwide, including 3 in the United States ¹¹⁶
Tertiary— Catalytic Reduction	Nonselective Catalytic Reduction (NSCR) – General	80-95%	Typically used at plants which have the ability to preheat the tailgas, but newer variants can be operated effectively at lower tail gas temperatures; can be used in conjunction with SCR; used at 14 process trains in the United States
Tertiary— Catalytic Reduction	Nonselective Catalytic Reduction (NSCR) – EnviNOx Variant 2	Greater than 98%	Can be operated effectively at lower tail gas temperatures; not thought to produce significant CO2 emissions compared to N2O reductions
Tertiary – Catalytic Decomposition	Catalytic Decomposition – General	Up to 99%	Can be operated with high or low temperature tail gas; does not require any additional reducing agents or additives; no undesirable byproducts are formed
Tertiary – Catalytic Decomposition	EnviNOx Variant 1	Not specified	Good for higher tail gas temperatures
Tertiary – Catalytic Decomposition	Shell N2O Abatement Technology (C-NAT)	Greater than 98%	Works best at higher temperatures, but can be used at lower temperatures
Tertiary – Catalytic Decomposition	BASF NOx CAT ZN2O Catalyst	Not specified	Removes both NOx and N2O at a wide range of temperatures

Numerous countries outside the U.S. have successfully implemented a variety of nitrous oxide control technologies in order to comply with their obligations under the Kyoto Protocol.¹¹⁷ For instance, as part of a program analogous to the NSPS program, the European Commission determined the “best available techniques” or “BAT” for various industries based on a comprehensive data review and exchange process.¹¹⁸ For the nitric acid industry, the European

¹¹⁶ The three U.S. facilities are (1) El Dorado’s Nitrogen LP’s Baytown, Texas plant (began operating July 2010); Terra Industries at Yazoo City, Mississippi facility; (3) Terra Industries at Claremore, Oklahoma facility.

¹¹⁷ See, e.g., European Commission, Integrated Pollution Prevention and Control Reference Document on Best Available Techniques for the Manufacture of Large Volume Inorganic Chemicals – Ammonia, Acids, and Fertilisers (Dec. 2006 and Aug. 2007), (hereafter “EuroBAT Documents”) submitted herewith as Exhibit 2—Items 45 and 47; and EPA International Analysis, Appendix B. A technology may be “adequately demonstrated” based on evidence drawn from other industries or other countries. See *Lignite*, 198 F.3d at 934 n.3.

¹¹⁸ See, e.g., EuroBAT Documents.

Commission determined that BAT involved the achievement of specified emission levels (0.12-0.6 kg/ton 100% HNO₃, or 20-100 ppmv, for new facilities; and 0.12-1.85 kg/ton 100% HNO₃, or 20-300 ppmv, for existing facilities) through the application of a combination of the following techniques and control technologies: (1) optimizing the filtration of raw materials; (2) optimizing the mixing of raw materials; (3) optimizing the gas distribution over the catalyst; (4) monitoring catalyst performance and adjusting the campaign length; (5) optimization of the NH₃/air ratio; (6) optimizing the pressure and temperature of the oxidation step; (7) N₂O decomposition by extension of the reactor chamber in new plants; (8) catalytic N₂O decomposition in the reactor chamber; and (9) combined NO_x and N₂O abatement in tail gases.¹¹⁹

In short, it is indisputable that nitrous oxide control technologies are technically feasible. A broad array of controls have been widely used in the nitric acid industry for a long time, both in the U.S. and abroad. If EPA had analyzed these technologies during its review, EPA would have had many different options to choose from in determining which technology constitutes BDT for purposes of a nitrous oxide performance standard. Indeed, EPA has made no attempt to argue that nitrous oxide control technologies are not technically feasible. EPA’s passing comment that it has “limited data” concerning nitrous oxide controls is simply not accurate in light of its own December 2010 white paper and its reliance on 24 recent technical papers and other reference materials in developing that document. In the absence of any explanation, it is difficult to understand why EPA failed to include this information in the administrative record and failed to propose an emission standard for nitrous oxide. Nevertheless, EPA’s failure to do so is clearly unlawful.

2. Economic Reasonableness

It is equally clear that control technologies for N₂O are economically reasonable. In a 2006 report, EPA sets forth detailed data for three types of N₂O emission control technology which shows that they are very cost-effective, as summarized below:

Control Technology	Total Capital Cost (per ton CO₂ equiv.)	Operating & Maintenance¹²⁰ Cost (per ton CO₂ equiv.)
High-temperature catalytic reduction	\$2.18 to \$3.27	\$0.14 to \$0.22
Low-temperature catalytic reduction	\$3.27 to \$3.55	\$0.27 to \$1.91
NSCR	\$6.27	\$0.16

EPA has recently reiterated its conclusions concerning the low cost of nitrous oxide controls in its 2010 white paper, explaining that “[t]he capital costs for control technology ranged from \$2 to \$6 per ton of carbon equivalent removed,” and “[o]perating costs ranged from \$0.14 to \$1.91 per ton carbon equivalent removed.¹²¹ Similarly, the European Commission’s BAT analysis for various catalytic N₂O reduction strategies showed that these technologies are very cost-effective,

¹¹⁹ See EuroBAT Document (2006), at iv; EuroBAT Document (2007), at iv.

¹²⁰ EPA Global Mitigation, at IV-7 to IV-8.

¹²¹ EPA Emerging Technologies, at 9.

ranging from 0.71 to 0.87 Euro (\$1.04 to \$1.28) per ton of CO₂ equivalent.¹²² Even looking only at N₂O reductions (rather than CO₂ equivalent), the technologies would be cost-effective. The low end of the range presented by EPA would involve only \$620 per ton in capital costs and \$43 per ton in operating costs.¹²³ The cost-effectiveness of nitrous oxide controls is further demonstrated by the fact that they have been in use, not only in Europe and the United States, but also at nitric acid plants in developing countries, such as China, Pakistan, Chile, South Africa, South Korea, and Egypt.¹²⁴

These costs are significantly lower than costs that EPA has found reasonable for reducing other pollutants. For example, according to EPA, the overall costs associated with wet scrubbers commonly used to control SO₂ emissions from power plants and other facilities ranges from \$200 to \$500 per ton of SO₂ for larger units, and from \$500 to \$5,000 per ton of SO₂ for smaller units, in 2001 dollars.¹²⁵ Moreover, EPA has recently emphasized that control technologies for SO₂ are “highly cost-effective” if they cost under \$2,300 per ton.¹²⁶

Accordingly, based on EPA’s own data and analysis, it is beyond dispute that the costs of nitrous oxide control technologies are reasonable. Indeed, nitrous oxide controls are among the most cost-effective for any type of pollutant. As with technical feasibility, EPA has made no attempt to argue that nitrous oxide control technologies are not economically reasonable, and EPA could not justify such an argument if it tried to do so. Accordingly, EPA’s failure to even consider the costs of nitrous oxide controls and its accompanying failure to establish any standards for this pollutant are clearly unlawful.

D. EPA Has a Duty to Gather the Information Needed to Develop Performance Standards for All Pollutants Emitted in Significant Quantities by a Listed Industry, Including Greenhouse Gas Pollutants.

The review and revision obligation in Section 111 carries with it the obligation to collect needed information in time to make the required statutory determinations. Indeed, Section 114 of the Act gives EPA the authority to collect a wide range of information “[f]or the purpose ... of

¹²² See EuroBAT Document (2006) , at 124-25; EuroBAT Document (2007), Ch. 3 (including similar cost estimates).

¹²³ These ranges were calculated by multiplying the prior ranges by 310 to convert the CO₂ equivalent back into actual tons of N₂O emissions.

¹²⁴ See, e.g., United Nations FCCC Projects – Project 1820: Chongqing Fuyuan (High Pressure) N₂O Abatement Project Summary (China), Project 0752: Omnia Fertilizer Limited Nitrous Oxide (N₂O) Reduction Project (South Africa), Project 0557: Catalytic N₂O Abatement Project in the Tail Gas of the Nitric Acid Plant of the Pakarab Fertilizer Ltd. (PVT) in Multan, Pakistan (Pakistan), *available at* <http://cdm.unfccc.int/Projects/registered.html>; UHDE, References of EnviNOx Systems (April 2008) (South Korea, Egypt, Pakistan, Chile, South Africa), submitted herewith as Exhibit 2—Item 53.

¹²⁵ See EPA CICA, Air Pollution Control Technology Fact Sheet: Flue Gas Desulfurization, EPA-452/F-03-034 (2003), *available at* <http://www.epa.gov/ttnecat1/dir1/ffdg.pdf> (last visited Nov. 27, 2011).

¹²⁶ U.S. EPA, Federal Implementation Plans: Interstate Transport of Fine Particulate matter and Ozone and Correction of SIP Approvals (aka Final Cross-State Air Pollution Rule (CSAPR)), 76 Fed. Reg. 48208, 48259 (Aug. 8, 2011).

developing or assisting in the development of... any standard of performance under section 7411 of this title.”¹²⁷ EPA has utilized this very information-gathering authority in developing this proposed rule.¹²⁸

If EPA felt it was lacking information concerning nitrous oxide control technologies for the nitric acid industry, it should have requested information from the industry, particularly from the 14 nitric acid process units in the United States which are already using NSCR,¹²⁹ a technology which controls both nitrous oxide and NOx.¹³⁰ Similarly, EPA should have used its information-gathering authority under Section 114 to develop the information needed to fully analyze the extent to which nitric acid plants emit carbon dioxide, methane, and other greenhouse gases and whether there are any technically feasible and economically reasonable methods for controlling such emissions.¹³¹ EPA’s failure to gather the necessary information concerning greenhouse gas emissions and controls, failure to conduct the required analysis of greenhouse gas emissions and controls, and failure to include any greenhouse gas standards in its proposed rule render this rulemaking unlawful.

EPA also should have used its information-gathering authority under Section 114 to develop information concerning whether the technologies under consideration for controlling target pollutants, such as NOx, may have collateral environmental effects by increasing emissions of greenhouse gas pollutants. For instance, EPA’s technology of choice for controlling NOx emissions—SCR—is known to generate additional emissions of nitrous oxide depending on the temperature of the exhaust gas.¹³² EPA should consider and evaluate this issue before issuing a final rule.

IV. EPA MUST PROMULGATE 111(D) STANDARDS FOR EXISTING FACILITIES WITHIN THE NITRIC ACID SECTOR.

As discussed above, the NSPS program is not limited solely to new and modified sources. The Clean Air Act provides that EPA “shall prescribe regulations” requiring each state to submit to EPA a plan which (1) “establishes standards of performance for any existing source for any air pollutant” (excluding criteria pollutants and hazardous air pollutants) where “a standard of performance ... would apply if such existing source were a new source,” and (2) “provides for the

¹²⁷ 42 U.S.C. § 7414(a).

¹²⁸ See EPA Proposed Nitric Acid NSPS Rule, at 63881 (explaining that “[f]or this review, information was collected from responses to a section 114 information collection request (ICR), through site visits and from trade associations.”).

¹²⁹ See *id.* at 63881.

¹³⁰ See *id.* at 63880.

¹³¹ See EPA Emerging Technologies, at 16-18.

¹³² EPA Emerging Technologies, at 16; Yong-Hyun Lee, Moon Hyeon Kim and Sung-Won Ham, The Formation of N₂O from NH₃-SCR Reaction over Commercial V₂O₅/TiO₂-Based Catalysts (Undated), available at <http://www.nacatsoc.org/21nam/data/papers/Paper2327.pdf> and submitted herewith as Exhibit 2—Item 20.

implementation and enforcement of such standards of performance.”¹³³ Since Section 111(d) excludes both criteria pollutants and hazardous air pollutants, it only applies to what EPA refers to as “designated pollutants,” which includes nitrous oxide and other greenhouse gases because they are not listed under either Sections 108 or 112, and because EPA has not issued any air quality criteria for them.¹³⁴ For the reasons discussed above, EPA has an obligation to establish controls for greenhouse gases in its NSPS governing new and modified nitric acid plants. Accordingly, promulgation of a performance standard for greenhouse gas emissions from newer nitric acid plants will enable (and compel) EPA to issue emission guidelines and to require states to submit implementation plans demonstrating how they will control greenhouse gas emissions from existing nitric acid plants.

It is very important for EPA to comply with this obligation. In its initial regulations under Section 111(d) (which have not been greatly altered), EPA explained that there were three categories of pollutants under the Act: those regulated as criteria pollutants under Sections 108-110 (and 111), HAPs regulated under Section 112, and a third category which “consists of pollutants that are (or may be) harmful to public health or welfare but are not or cannot be controlled under Section 108-110 or 112.”¹³⁵ Section 111(d) was meant to be a gap-filling provision intended to regulate this third category, and EPA’s main focus was on *pollutants* rather than source categories.¹³⁶ Here, nitrous oxide and other greenhouse gases are pollutants that endanger public health welfare, and existing nitric acid plants are significant sources of such pollution. Indeed, existing nitric acid plants account for the vast majority of the industry’s nitrous oxide emissions, and they will continue to do so for some time until older plants eventually retire and are replaced with newer plants. Since greenhouse gases fall within the third category of “designated” pollutants which, in the absence of Section 111(d), would continue to be emitted from existing nitric acid plants unabated, Section 111(d) plays a critical role in protecting the public.

V. CONCLUSION

We are supportive of EPA’s proposal to strengthen the NO_x standards for the nitric acid industry. We are bewildered, however, at EPA’s failure to propose or even seriously consider regulating greenhouse gas emissions from the nitric acid sector. In light of the overwhelming available information concerning the technical feasibility and reasonable cost associated with a standard for nitrous oxide emissions, EPA has a duty to regulate nitrous oxide emissions from nitric acid plants, and its failure to do so is unlawful. Similarly, EPA’s failure to either propose a standard for methane, carbon dioxide, and other greenhouse gas emissions from the nitric acid industry or provide a reasoned explanation for declining to do so is unlawful.

¹³³ 42 U.S.C. § 7411(d)(1); 40 C.F.R. § 60.21(b) (defining facilities to which emission guidelines apply as those “which would be subject to a standard of performance for that pollutant if the existing facility were an affected facility”).

¹³⁴ See 42 U.S.C. § 7611(d); 40 C.F.R. § 60.21(a).

¹³⁵ 40 Fed. Reg. 53340, 53340 (Nov. 17, 1975).

¹³⁶ See *id.*; see also *id.* at 53342 (explaining that EPA was designing controls for pollutants which are neither “criteria pollutants [n]or hazardous pollutants.”); 39 Fed. Reg. 36102, 36102 (Oct. 7, 1974) (also describing this categorization).

Thank you very much for considering our views. Please feel free to contact me at (802) 831-1136 or tclemmer@vermontlaw.edu if you have any questions or would like further information.

Very truly yours,

A handwritten signature in black ink, appearing to read 'T B Clemmer', with a long horizontal flourish extending to the right.

Teresa B. Clemmer
Acting Director ENRLC and Associate Professor of Law

Patrick A. Parenteau
Senior Counsel ENRLC and Professor of Law

Christopher D. Ahlers
Staff Attorney ENRLC and LLM Fellow

Kenneth Rumelt
Staff Attorney ENRLC and LLM Fellow

Enclosures: Exhibit 1 – Notice of Intent to Sue (Oct. 7, 2008) (attached)
Exhibit 2 – Studies and Information Relating to NSPS for Nitric Acid Industry
(submitted on compact disc via Federal Express)

Cc: Eric Schaeffer, Environmental Integrity Project
Joanne Spalding, Sierra Club
Meleah Geertsma, Natural Resources Defense Council
Meredith Wilensky, Natural Resources Defense Council



October 7, 2008

Via U.S. Mail and Email to johnson.stephen@epa.gov

The Honorable Stephen Johnson
Administrator, U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington DC, 20460

Re: Notice of Intent to Sue for Violation of Nondiscretionary Duty to Review New Source Performance Standard for Nitric Acid Plants Every Eight Years Under Section 111 of Clean Air Act

Dear Administrator Johnson:

On behalf of our clients Sierra Club and Environmental Integrity Project (“EIP”), and pursuant to 42 U.S.C. § 7604(b)(2), we are writing to provide you with notice of our intent to sue the U.S. Environmental Protection Agency (“EPA”) for its failure to review the new source performance standard (“NSPS”) for nitric acid plants set forth in 40 C.F.R. Subpart G at least once every eight years, as required under 42 U.S.C. § 7411(b)(1)(B). The persons giving notice by means of this letter are:

David Bookbinder
Chief Climate Counsel
Sierra Club
408 C Street, NE
Washington, DC 20002

Eric Schaeffer
Executive Director
Environmental Integrity Project
1920 L Street, NW, Suite 800
Washington, DC 20036

I. BACKGROUND

Congress created the NSPS program as part of the Clean Air Act amendments of 1970.¹ Under this program, EPA is required to promulgate federal “standards of performance” as a means to control air pollution from “new” stationary sources within various listed categories.² Nitric acid

¹ See Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1683 (Dec. 31, 1970).

² Clean Air Act, 42 U.S.C. § 7411 (b)(1)(B).

plants are considered “new” if they were constructed, modified, or reconstructed after EPA issued its proposed NSPS regulation for nitric acid plants in August 1971.³

The “standard of performance” required by the Clean Air Act is a “standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.”⁴ In common parlance, the NSPS must be based upon “best demonstrated technology” or “BDT.”⁵

II. EPA HAS VIOLATED ITS MANDATORY DUTY TO REVIEW THE NSPS FOR NITRIC ACID PLANTS AT LEAST ONCE EVERY EIGHT YEARS.

The Clean Air Act provides that EPA “shall, at least every 8 years, review” the NSPS for each industrial source category listed in its regulations.⁶ It is well established that this type of language creates a mandatory duty to act. Indeed, when the Clean Air Act sets forth a “bright-line rule for agency action,” such as a deadline for periodic reviews, “there is no room for debate—congress has prescribed a categorical mandate that deprives EPA of all discretion over the timing of its work.”⁷

As noted above, the NSPS for nitric acid plants was promulgated in 1971.⁸ The information available to us indicates that EPA has only reviewed this NSPS twice — once in 1979 and once in 1984.⁹ As the last review was conducted twenty-four years ago, a review of Subpart G is now

³ See 42 U.S.C. § 7411(a)(2), (b)(1); Review of Standards of Performance for New Stationary Sources – Nitric Acid Plants, 49 Fed. Reg. 13654, 13654 (Apr. 5, 1984); Part 60 – Standards of Performance for New Stationary Sources, 36 Fed. Reg. 24876, 24876 (Dec. 23, 1971).

⁴ 42 U.S.C. § 7411(a)(1) (emphasis added).

⁵ See, e.g., Tenn. Valley Auth. v. Whitman, 336 F.3d 1236, 1244 n.14 (11th Cir. 2003), reh’g denied 82 Fed. Appx. 220 (11th Cir. 2003), cert. denied 541 U.S. 1030 (2004) (explaining that “[t]he NSPS program requires that the EPA issue federal performance standards based upon the best demonstrated technology ...”) (emphasis added).

⁶ 42 U.S.C. § 7411(b)(1)(B).

⁷ American Lung Ass’n. v. Reilly, 962 F.2d 258, 263 (2d Cir. 1992) (citing Sierra Club v. Thomas, 828 F.2d 783, 791 (D.C. Cir. 1987)). See Env’tl. Defense Fund v. Thomas, 870 F.2d 892, 897 (2d Cir. 1989), cert. denied 1989 (explaining that the “revision provisions” of the Clean Air Act that “include stated deadlines should, as a rule, be construed as creating non-discretionary duties” and holding that EPA had a nondiscretionary duty to make a formal decision as to whether or not it would revise the NAAQS for sulfur oxides) (internal citations omitted).

⁸ See Part 60, 36 Fed. Reg. at 24876, 24881.

⁹ See generally Review, 49 Fed. Reg. 13654; EPA OAQPS, REVIEW OF NEW SOURCE PERFORMANCE STANDARDS FOR NITRIC ACID PLANTS, EPA-450/3-84-011 (Apr. 1984); Review of Standards of Performance for New Stationary Sources: Nitric Acid Plants, 44 Fed. Reg. 35265 (June 19, 1979); MARVIN DRABKIN, A REVIEW OF STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES – NITRIC ACID PLANTS, EPA-450/3-79-013 (Mar. 1979).

sixteen years overdue.¹⁰ Accordingly, EPA is in violation of its nondiscretionary duty to review Subpart G at least once every eight years.¹¹

The foregoing establishes that EPA has clearly violated a nondiscretionary duty within the meaning of 42 U.S.C. § 7604(a)(2) and 40 C.F.R. § 54.3(a). The remainder of this notice letter will explain why it will not be acceptable for EPA to conduct a cursory review, to determine that no review is necessary, or to delay its review any further. Moreover, for the reasons discussed below, EPA must ultimately revise the existing NSPS for nitric acid plants to reflect the current best demonstrated technology for controlling nitrogen oxide (“NO_x”) emissions, as well as to incorporate a new standard based on the best demonstrated technology for controlling nitrous oxide (“N₂O”) emissions.¹²

III. THE EXISTING NO_x STANDARD IS IN NEED OF REVIEW AND REVISION.

A. The Existing NO_x Standard Is Based on Outdated Technology That No Longer Constitutes the Best Demonstrated Technology.

In promulgating the 1971 standard for nitric acid plants, EPA relied heavily on a study of catalytic reduction control technology that was published in 1966, i.e., data that is now forty-two years old.¹³ According to this data, the existing standard requires NO_x emissions to be reduced by roughly 93 percent below the emissions produced by an uncontrolled facility.¹⁴ Although

¹⁰ Since 1971, EPA has made no changes to the NO_x emission standard in 40 C.F.R. § 60.72, nor has it added standards for any other pollutants. EPA has issued a few technical and clarifying amendments to Subpart G. *See, e.g.*, Standards of Performance for New Stationary Sources – Amendments to Test Methods and Procedures, 54 Fed. Reg. 6660, 6666 (Feb. 14, 1989) (consolidating and clarifying provisions of §§ 60.73 and 60.74 relating to test methods and emphasizing that “[t]his rulemaking does not impose emission measurement requirements beyond those specified in the current regulations, nor does it change any emission standard”). However, none of these changes demonstrate that EPA has conducted the necessary “review” or made an appropriate “revision” of the substantive NO_x standard within the meaning of the Clean Air Act.

¹¹ The Clean Air Act establishes only one exemption to the eight-year review requirement, which is not applicable here. Under the Act, EPA “need not review any [performance] standard” if EPA “determines that such review is not appropriate in light of readily available information on the efficacy of such standard.” 42 U.S.C. § 7411(b)(1)(B). Our research has not disclosed any notice of such a determination in the Federal Register. Moreover, we submitted a FOIA request to EPA seeking records relating to “reviews of the NSPS requirements for nitric acid plants” in August 2008. EPA’s response in September 2008 did not identify or provide records relating to any such determination.

¹² *See* 42 U.S.C. § 7411(b)(1)(B) (providing that EPA “shall, at least every 8 years, review and, if appropriate, revise” the NSPS for each industrial source category listed in its regulations) (emphasis added).

¹³ *See* EPA OFFICE OF AIR PROGRAMS, BACKGROUND INFORMATION FOR PROPOSED NEW-SOURCE PERFORMANCE STANDARDS: STEAM GENERATORS, INCINERATORS, PORTLAND CEMENT PLANTS, NITRIC ACID PLANTS, SULFURIC ACID PLANTS, Tech. Report No. EPA/APTD-0711, at 39, 42 (Aug. 1971) (referencing Gerstle, R.W. and R.F. Peterson, U.S. DHEW, PHS, Division of Air Pollution, *Atmospheric Emissions from Nitric Acid Manufacturing Processes*, PHS Public. No. 999-AP-27 (1966)).

¹⁴ *See id.* at 38.

EPA has since conducted two reviews, the 1971 performance standard for nitric acid plants has never been revised.¹⁵

In 1991, however, EPA issued a report discussing the various control technologies that were available at that time for controlling NO_x emissions from nitric acid plants.¹⁶ The report explained that “[s]everal control technologies have been demonstrated that reduce NO_x emissions from nitric acid manufacturing plants,” including “(1) extended absorption, (2) nonselective catalytic reduction, and (3) selective catalytic reduction.”¹⁷ The report also concluded that these three technologies achieved average reductions of roughly 95 to 98 percent, which substantially exceeds the 93 percent reduction required under the 1971 standard.¹⁸ The 1991 report further observed that “[a]ll three of these control techniques are suitable for new and existing plant applications.”¹⁹

Seven years later, in 1998, EPA revised its Air Pollutant Emission Factors reference document for nitric acid plants.²⁰ The following excerpts show that technologies readily available ten years ago were capable of achieving substantially greater NO_x reductions than the existing standard requires:

<u>Average Emission Factor kg (NO_x) / Mg (100% HNO₃)²¹</u>	
Existing NSPS	1.5
Extended absorber	0.590
Extended absorber with caustic scrubber	0.920

<u>Average Emission Factor lb (NO_x) / ton (100% HNO₃)²²</u>	
Existing NSPS	3.0
Extended absorption	1.179
Extended absorber with caustic scrubber	1.84

¹⁵ The existing NSPS prohibits nitric acid plants from emitting “nitrogen oxides, expressed as NO₂, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.” 40 C.F.R. § 60.72(a)(1) (2008).

¹⁶ See generally EPA OAQPS, ALTERNATIVE CONTROL TECHNIQUES DOCUMENT – NITRIC AND ADIPIC ACID MANUFACTURING PLANTS, EPA-450/3-91-026 (Dec. 1991). This report was not prepared in connection with an NSPS review for nitric acid plants. Instead, it was meant to “provide[] technical information for use by State and local agencies to control NO_x emissions from nitric and adipic acid manufacturing facilities.” *Id.* at 2-1.

¹⁷ *Id.* at 5-1 (emphasis added).

¹⁸ See *id.* at 5-31.

¹⁹ *Id.* at 5-1.

²⁰ See EPA OAQPS, COMPILATION OF AIR POLLUTANT EMISSION FACTORS, VOLUME I: STATIONARY POINT AND AREA SOURCES, AP-42 (5th ed. Jan. 1995), Ch. 8.8 Nitric Acid (rev. Feb. 1998).

²¹ See *id.* (Attachment) PACIFIC ENVTL. SERVS., BACKGROUND REPORT AP-42 SECTION 5.9, NITRIC ACID (Jan. 1996), at 27, tbl. 4.2-1.

²² See *id.* at 28, tbl. 4.2-1.

These are just a few examples from a wealth of information demonstrating that the NSPS for nitric acid plants is outdated and in need of both review and revision.

Under the Clean Air Act, when it becomes apparent that emission reductions “beyond those required by the standards ... are achieved in practice,” then EPA “shall ... consider” the reductions achieved in practice when revising the NSPS for a particular source category.²³ As explained above, there is ample evidence that many members of the nitric acid industry are achieving greater reduction than the existing NSPS requires. This indicates that the 1971 standard is outdated and does not reflect the best demonstrated technology.

As discussed above, EPA has a mandatory duty to review the NSPS for nitric acid plants. In doing so, it must take into account the data showing that many members of the nitric acid industry routinely achieve greater reduction in practice than the existing standard requires. We anticipate that EPA’s review will, in fact, show that further advancements in technology have taken place since the 1990s and that even greater NO_x reductions are now readily achievable. More generally, EPA must conduct a thorough review of all of the control technologies that have been developed or improved since its last review in 1984, and it must do so without any further delay.

Ultimately, EPA must revise the performance standard for nitric acid plants to ensure that it is based on the “best system of emission reduction ... adequately demonstrated.”²⁴ The fact that there are several readily available technologies capable of reducing NO_x emissions beyond what is required under the existing NSPS provides strong evidence that the existing standard is inadequate.

B. The Adverse Impacts of NO_x Are Much Greater Than Previously Known, and Other Air Programs Are Not Adequately Addressing Them.

Although the NSPS program uses a technology-based, rather than health-based, approach for controlling air pollution, the fundamental goal of the NSPS program is to reduce air pollution which “may reasonably be anticipated to endanger public health or welfare.”²⁵ In the twenty-four years since the NSPS for nitric acid plants was last reviewed, EPA’s understanding of the adverse health and welfare impacts from NO_x, particularly as a precursor to fine particulate matter and ground-level ozone, has improved dramatically.

For instance, at the time of the 1984 review, the national ambient air quality standard (“NAAQS”) for particulate matter did not distinguish between fine and coarse particulate matter. During the 1990s, however, it became clear that the existing NAAQS was not adequate to protect human health and that fine particulates posed distinct and significant health risks. As EPA has explained,

²³ 42 U.S.C. § 7411(b)(1)(B).

²⁴ *Id.* § 7411(a)(1).

²⁵ *Id.* § 7411(b)(1)(A).

By 1996, evidence had accumulated that suggested day-to-day exposures to ambient particulate matter (PM) at or near the level of the then current National Ambient Air Quality Standards (NAAQS) were eliciting significant human health effects in the U.S. population, including hospitalizations and attributable deaths. This evidence led to the promulgation of PM NAAQS in 1997 that included new standards for PM smaller than 2.5 μm in aerodynamic diameter (PM_{2.5}).²⁶

Remaining uncertainties and concerns led to substantial federal funding for additional research.²⁷ Based on several years of intensive research thereafter, EPA concluded that there was even stronger evidence that “ambient PM_{2.5}, alone and in combination with other pollutants, is causally linked with cardiovascular, respiratory, and lung cancer associations observed in epidemiologic studies,” particularly for vulnerable subpopulations, such as the elderly, children, asthmatics, and people with preexisting heart or lung conditions.²⁸ Accordingly, in 2006, EPA revised the 1997 NAAQS for fine particulate matter to make it more protective of human health.²⁹ Similar advances have been made in EPA’s understanding of the health and welfare impacts associated with ground-level ozone, for which NO_x emissions are also a precursor.³⁰

Despite EPA’s increasing scientific understanding of the adverse health and welfare impacts resulting from NO_x precursor emissions, however, federal and state regulatory programs have not adequately addressed these problems. Today, 208 counties remain in nonattainment for the PM_{2.5} standard, and 293 counties are in nonattainment for the ozone 8-hour standard.³¹ EPA attempted to bring many of these areas into attainment by adopting the Clean Air Interstate Rule (“CAIR”) in 2005.³² Unfortunately, the D.C. Circuit recently vacated CAIR in its entirety, creating a great deal of uncertainty and leaving NO_x inadequately regulated for the foreseeable future.³³

In addition, contrary to EPA’s findings in its 1997 and 2006 rulemakings regarding the distinct and serious health problems associated with PM_{2.5}, EPA has recently waived and delayed compliance with the PM_{2.5} NAAQS for new major sources subject to the new source review

²⁶ EPA OFFICE OF RESEARCH AND DEVELOPMENT, PARTICULATE MATTER RESEARCH PROGRAM: FIVE YEARS OF PROGRESS, EPA 600/R-04/058, at 1 (July 2004).

²⁷ See *id.*

²⁸ National Ambient Air Quality Standards for Particulate Matter, 71 Fed. Reg. 61144, 61153 (Oct. 17, 2006).

²⁹ See *id.* at 61161.

³⁰ See, e.g., EPA OFFICE OF RESEARCH AND DEVELOPMENT, AIR QUALITY CRITERIA FOR OZONE AND RELATED PHOTOCHEMICAL OXIDANTS, EPA 600/R-05/004aF (Feb. 2006).

³¹ See Nonattainment Areas Map – Criteria Air Pollutants, <http://www.epa.gov/air/data/nonat.html?us~usa~United%20States> (last visited Sept. 22, 2008).

³² See Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule), 70 Fed. Reg. 25162, 25162 (May 12, 2005).

³³ See *North Carolina v. EPA*, 531 F.3d 896, 901 (D.C. Cir. July 11, 2008).

("NSR") program.³⁴ This decision has been criticized as unlawful and as posing a serious threat to the health of millions of Americans.³⁵

In short, there is overwhelming scientific evidence of serious health and welfare impacts from NO_x precursor emissions, and federal and state programs are not adequately regulating these emissions. Both of these circumstances underscore the importance of reviewing and updating the NO_x standard for nitric acid plants within the NSPS program.

C. The Existing NO_x Standard Does Not Cover Plants Producing Strong Nitric Acid.

The NSPS for nitric acid plants only governs "weak nitric acid" plants, i.e., those producing acid "which is 30 to 70 percent in strength."³⁶ Given the improvements in control technology and scientific understanding of the health and welfare impacts resulting from NO_x emissions that have arisen in the past twenty-four years, as discussed above, EPA should expand its rule to cover all of the nitric acid plants in the United States.

IV. AS PART OF ITS REVIEW, EPA MUST CONSIDER LIMITING N₂O EMISSIONS FROM NITRIC ACID PLANTS, AND IT MUST ULTIMATELY REVISE THE NSPS TO INCLUDE AN N₂O STANDARD.

In addition to NO_x, nitric acid plants emit substantial quantities of nitrous oxide ("N₂O"), which has become a concern in recent years because of its climate change impacts. EPA is obligated to regulate a source category under the NSPS program if it "contributes significantly" to "air pollution which may reasonably be anticipated to endanger public health or welfare."³⁷ For the reasons discussed below, N₂O emissions from nitric acid plants easily satisfy both of these criteria. Moreover, there is abundant evidence that N₂O control technologies are both technically and economically feasible. Thus, EPA has an obligation to, first, consider NO_x controls as part of its NSPS review for nitric acid plants and, then, to establish an N₂O standard at the conclusion of its review.

³⁴ See Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM_{2.5}), 73 Fed. Reg. 28321 (May 16, 2008).

³⁵ See Natural Resources Defense Council v. EPA, Civ. No. 08-1250, Environmental Petitioners' Motion for Stay Pending Review (D.C. Cir. Aug. 18, 2008).

³⁶ 40 C.F.R. §§ 60.70, 60.71 (2008).

³⁷ 42 U.S.C. § 7411(b)(1)(A).

It should be noted that EPA has routinely set NSPS standards for non-criteria pollutants in the past, indicating that its NSPS reviews are not limited solely to criteria pollutants.³⁸ It has also been common practice for EPA to consider new pollutants beyond those covered by the original regulation.³⁹ Thus, a pollutant's omission from the original NSPS promulgation for a particular source category does not preclude EPA from considering it during an eight-year review.

A. Climate Change Endangers Public Health and Welfare.

In May of 2008, the federal government issued two scientific reports detailing the public health and welfare impacts of climate change.⁴⁰ The following are just a few examples of the impacts that multiple federal agencies have concluded are already occurring and will continue to occur as a result of climate change:

Heat Stress-Related Deaths: "It is *very likely* that heat-related morbidity and mortality will increase over the coming decades High temperatures tend to exacerbate chronic health conditions. An increased frequency and severity of heat waves is expected, leading to more illness and death, particularly among the young, elderly, frail, and poor."⁴¹

Infectious Diseases: "Climate change is *likely* to increase the risk and geographic spread of vector-borne infectious diseases, including Lyme disease and West Nile virus."⁴²

³⁸ See, e.g., Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources – Municipal Waste Combustors, 60 Fed. Reg. 65387, 65416 (Dec. 19, 1995) (setting cadmium emission standards for municipal waste combustors); Standards of Performance for New Stationary Sources – Flexible Vinyl and Urethane Coating and Printing, 49 Fed. Reg. 26884, 26893 (June 19, 1984) (setting VOC emission standards for flexible vinyl and urethane coating and printing industry); Standards of Performance for New Stationary Sources – Kraft Pulp Mills, 43 Fed. Reg. 7568, 7573 (Feb. 23, 1978) (setting total reduced sulfur standards for kraft pulp mills); Standards of Performance for New Stationary Sources – Primary Aluminum Industry, 41 Fed. Reg. 3826, 3828 (Jan. 26, 1976) (setting fluoride emission standards for aluminum reduction plants).

³⁹ See, e.g., Standards of Performance for Petroleum Refineries, 72 Fed. Reg. 27178, 27180 (May 14, 2007) (setting a new NO_x emission standard for fluid catalytic cracking units, which previously were regulated only for sulfur oxide); Standards of Performance for Stationary Combustion Turbines, 70 Fed. Reg. 8314, 8320-21 (Feb. 18, 2005) (considering whether to establish limits for CO, VOC, and PM emissions for stationary combustion turbines for the first time); Standards of Performance for New Stationary Sources; Industrial-Commercial-Institutional Steam Generating Units, 49 Fed. Reg. 25102, 25106-07 (June 19, 1984) (considering whether to set new standards for CO and SO₂ emissions for certain steam generating units).

⁴⁰ See NATIONAL SCIENCE AND TECHNOLOGY COUNCIL, SCIENTIFIC ASSESSMENT OF THE EFFECTS OF GLOBAL CLIMATE CHANGE ON THE UNITED STATES (May 2008); U.S. CLIMATE CHANGE SCIENCE PROGRAM, THE EFFECTS OF CLIMATE CHANGE ON AGRICULTURE, LAND RESOURCES, WATER RESOURCES, AND BIODIVERSITY IN THE UNITED STATES, SYNTHESIS AND ASSESSMENT PRODUCT (May 2008).

⁴¹ NSTC, SCIENTIFIC ASSESSMENT, at 14 (emphasis in original).

⁴² *Id.* at 15 (emphasis in original).

Air Pollutant-Related Diseases: “In studies holding pollution emissions constant, climate change was found to lead to increases in regional ground-level ozone pollution in the United States and other countries. It is well-documented that breathing air containing ozone can reduce lung function, increase susceptibility to respiratory infection, and contribute to premature death in people with heart and lung disease.”⁴³

Storms and Flooding: “Coastal population increases together with *likely* increases in hurricane rainfall and wind speeds and greater storm surge due to sea level rise will continue to increase coastal vulnerabilities in the Southeast and Gulf Coast. Urban centers that were once assumed to have a high adaptive capacity remain vulnerable to extreme events such as hurricanes.”⁴⁴

Drought and Water Shortages: “Less reliable supplies of water are expected to create challenges for managing urban water systems as well as for industries that depend on large volumes of water.”⁴⁵

Wildfires: “[W]ildfires have increased in extent and severity in recent years and are *very likely* to intensify in a warmer future. At the same time, the population has been expanding into fire-prone areas, increasing society’s vulnerability to wildfire. . . . Wildfires, with their associated decrements to air quality and pulmonary effects, are likely to increase in frequency, severity, distribution, and duration in the Southeast, the Intermountain West and the West.”⁴⁶

Societal Disturbances: “Globally, the most vulnerable industries, settlements, and societies are generally those in coastal and river flood plains, those whose economies are closely linked with climate-sensitive resources, and those in areas prone to extreme weather events, especially in places that are being rapidly urbanized. Poor communities can be especially vulnerable, particularly those concentrated in high-risk areas.”⁴⁷

In light of this overwhelming body of evidence and scientific consensus, the U.S. Supreme Court recently acknowledged that “[t]he harms associated with climate change are serious and well recognized” and that “EPA’s steadfast refusal to regulate greenhouse gas emissions presents a risk of harm to Massachusetts that is both ‘actual’ and ‘imminent.’”⁴⁸ Moreover, it is well known that EPA has, in fact, prepared a comprehensive endangerment finding that would serve as a basis for regulating greenhouse gas emissions, but that it has not yet been released to the public.⁴⁹

⁴³ Id.

⁴⁴ Id. at 14 (emphasis in original).

⁴⁵ Id. at 12.

⁴⁶ Id. at 14-16 (emphasis in original).

⁴⁷ Id. at 13.

⁴⁸ Massachusetts v. EPA, 127 S.Ct. 1438, 1455 (2007).

⁴⁹ See, e.g., Letter from Rep. Henry Waxman, Chairman of the Comm. on Oversight and Gov’t Reform, to Stephen Johnson, EPA Administrator (Mar. 13, 2008), available at <http://oversight.house.gov/documents/20080310110952.pdf>.

In short, the endangerment to public health and welfare from climate change is undeniable, and EPA will not be able to issue a legitimate non-endangerment finding. Accordingly, this factor weighs heavily in favor of a review and revision of the NSPS for nitric acid plants to incorporate an N₂O emission standard.

B. Nitric Acid Plants Contribute Significantly to Climate Change.

EPA's own website, and the numerous documents and reports compiled therein, proclaim the importance of nitrous oxide as a greenhouse gas.⁵⁰ For instance, EPA has determined that nitrous oxide is 310 times as potent as carbon dioxide in terms of its global warming potential,⁵¹ and it has observed that "[n]itrous oxide's chemical characteristics and interactions in the atmosphere contribute to its significance as a greenhouse gas."⁵² Moreover, EPA estimates that N₂O is the third largest contributor to U.S. greenhouse gas emissions after carbon dioxide and methane.⁵³

Similarly, EPA reports point to the nitric acid industry as being one of the most important sources of N₂O emissions in the United States. Nitric acid production is, by far, the largest industrial source of N₂O emissions.⁵⁴ And, overall, it is the third largest source of N₂O emissions, after agricultural soil management and mobile source combustion.⁵⁵

Accordingly, nitric acid plants contribute significantly to climate change and the harmful effects discussed above, and this factor weighs in favor of a review and revision of the NSPS for nitric acid plants.

C. It Is Technically and Economically Feasible to Reduce N₂O Emissions from Nitric Acid Plants.

Under the Clean Air Act, a standard of performance must be "achievable" and it must "take into account the cost of achieving such reduction."⁵⁶

⁵⁰ See, e.g., EPA, Nitrous Oxide, <http://www.epa.gov/nitrousoxide/index.html> (last visited Sept. 25, 2008); EPA, Nitrous Oxide: Science, <http://www.epa.gov/nitrousoxide/scientific.html> (last visited Sept. 25, 2008).

⁵¹ See EPA, GLOBAL MITIGATION OF NON-CO₂ GREENHOUSE GASES, at 1-3 (June 2006).

⁵² EPA, Nitrous Oxide: Science, <http://www.epa.gov/nitrousoxide/scientific.html> (last visited Sept. 25, 2008).

⁵³ See EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990 – 2006, at ES-5 to ES-6, tbl. ES-2 (April 15, 2008).

⁵⁴ See *id.* at 4-2, tbl. 4-1.

⁵⁵ See *id.* at ES-5, tbl. ES-2.

⁵⁶ 42 U.S.C. § 7411(a)(1). The standard of performance should also take into account "any nonair quality health and environmental and energy requirements." *Id.* Our research has shown that the adverse environmental impacts and energy requirements of N₂O controls are negligible.

1. *Technical Feasibility*

The legal standard for what constitutes best demonstrated technology is very broad. For instance, courts have “recognized that section 111 ‘looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.’”⁵⁷ In the case of N₂O emissions from nitric acid plants, however, it is not necessary to look toward the future. According to EPA’s own reports, the following seven technologies have already been shown to reduce N₂O emissions during the nitric acid production process:

<u>Name / Description</u>	<u>N₂O Reduction Efficiency (approx.)⁵⁸</u>
Non-selective catalytic reduction (“NSCR”)	80-90%
Grand Paroisse high temperature catalytic reduction method	78%
BASF high temperature catalytic reduction method	80%
Norsk Hydro high temperature catalytic reduction method	90%
HITK high temperature catalytic reduction method	100%
Krupp Uhde low temperature catalytic reduction method	95%
ECN low temperature selective catalytic reduction with propane addition	95%

NSCR systems were widely installed in nitric acid plants between the years 1971 to 1977 as a means to control NO_x emissions, and they are presently used by about 20 percent of nitric acid plants in the United States.⁵⁹ NSCR’s control of N₂O emissions, along with NO_x, has been a coincidental side benefit. Nevertheless, the fact that these systems have been successfully operated by many nitric acid plants for thirty years or more demonstrates the technical feasibility of controlling N₂O emissions from nitric acid plants.

Moreover, numerous countries outside the U.S. have successfully implemented a variety of N₂O control techniques in order to comply with their obligations under the Kyoto Protocol.⁶⁰ For instance, as part of a program analogous to the NSPS program, the European Commission determines the “best available techniques” or “BAT” for various industries based on a comprehensive data review and exchange process.⁶¹ For the nitric acid industry, the European Commission has determined that BAT involves the achievement of specified emission levels

⁵⁷ Lignite Energy Council v. EPA, 198 F.3d 930, 934 (D.C. Cir. 1999) (quoting Portland Cement Ass’n v. Ruckelshaus, 486 F.2d 375, 391 (D.C. Cir. 1973)).

⁵⁸ See EPA, INTERNATIONAL ANALYSIS OF METHANE AND NITROUS OXIDE ABATEMENT OPPORTUNITIES: REPORT TO ENERGY MODELING FORUM, WORKING GROUP 21, at Appendix C: Nitric Acid Production Sector (June 2003); EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS, at 4-19 to 4-20.

⁵⁹ EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS, at 4-20.

⁶⁰ A technology may be “adequately demonstrated” based on evidence drawn from other industries or other countries. See Lignite, 198 F.3d at 934 n.3.

⁶¹ See, e.g., EUROPEAN COMMISSION, DIRECTORATE-GENERAL JOINT RESEARCH CENTRE, INTEGRATED POLLUTION PREVENTION AND CONTROL, REFERENCE DOCUMENT ON BEST AVAILABLE TECHNIQUES FOR THE MANUFACTURE OF LARGE VOLUME INORGANIC CHEMICALS – AMMONIA, ACIDS AND FERTILISERS (Dec. 2006).

(0.12 – 0.6 kg/ton 100% HNO₃, or 20 – 100 ppmv, for new facilities; and 0.12 – 1.85 kg/ton 100% HNO₃, or 20-300 ppmv, for existing facilities) through the application of a combination of the following techniques and control technologies: (1) optimizing the filtration of raw materials; (2) optimizing the mixing of raw materials; (3) optimizing the gas distribution over the catalyst; (4) monitoring catalyst performance and adjusting the campaign length; (5) optimization of the NH₃/air ratio; (6) optimizing the pressure and temperature of the oxidation step; (7) N₂O decomposition by extension of the reactor chamber in new plants; (8) catalytic N₂O decomposition in the reactor chamber; and (9) combined NO_x and N₂O abatement in tail gases.⁶²

In short, it is indisputable that N₂O reductions are technically feasible. In its review, EPA will have many different options to choose from in determining which technology constitutes BDT. Moreover, EPA’s review may very well identify additional technologies and strategies beyond those described above.

2. *Economic Feasibility*

It is equally clear that control technologies for N₂O are economically feasible. In a 2006 report, EPA sets forth detailed data for three types of N₂O emission control technology which shows that they are very cost-effective, as summarized below:

Control Technology	Total Capital Cost (per ton CO₂ equiv.)	Operating & Maintenance⁶³ Cost (per ton CO₂ equiv.)
High-temperature catalytic reduction	\$2.18 to \$3.27	\$0.14 to \$0.22
Low-temperature catalytic reduction	\$3.27 to \$3.55	\$0.27 to \$1.91
NSCR	\$6.27	\$0.16

Similarly, the European Commission’s BAT analysis for various catalytic N₂O reduction strategies showed that these technologies are very cost-effective, ranging from 0.71 to 0.87 Euro (\$1.04 to \$1.28) per ton of CO₂ equivalent.⁶⁴

These costs are quite low compared to the cost of reducing other pollutants. For example, according to EPA, the overall costs associated with the wet scrubbers commonly used to control SO₂ emissions from power plants and other facilities ranges from \$200 to \$500 per ton of SO₂ for larger units, and from \$500 to \$5,000 per ton of SO₂ for smaller units, in 2001 dollars.⁶⁵

⁶² See *id.* at iv.

⁶³ EPA, GLOBAL MITIGATION, at IV-7 to IV-8.

⁶⁴ See EUROPEAN COMMISSION, REFERENCE DOCUMENT, at 124-25.

⁶⁵ See EPA CICA, AIR POLLUTION CONTROL TECHNOLOGY FACT SHEET: FLUE GAS DESULFURIZATION, EPA-452/F-03-034 (2003), available at <http://www.epa.gov/ttn/catc/dir1/ffdg.pdf>.

The cost-effectiveness of N₂O controls is further demonstrated by the fact that they are in use, not only in Europe and the United States, but also at nitric plants in developing countries, such as China, Pakistan, Chile, South Africa, South Korea, and Egypt.⁶⁶

D. EPA Must Revise Subpart G to Control N₂O Emissions from Nitric Acid Plants.

For all the reasons discussed above, (i) climate change endangers public health and welfare; (ii) N₂O emissions from nitric acid plants substantially contribute to the climate change problem; and (iii) numerous control technologies and strategies designed to reduce N₂O emissions at nitric acid plants are both technically and economically feasible. This compelling information not only triggers EPA's obligation to consider N₂O emissions in its review of the NSPS for nitric acid plants, it supports the actual adoption of such a standard at the conclusion of EPA's review process. While the review will surely develop these issues in more detail, EPA will not be able to provide a valid, reasoned basis for declining to incorporate an N₂O emission standard in its revised regulation.

V. PROMPT ACTION IS NEEDED BECAUSE THE NITRIC ACID INDUSTRY IS LIKELY TO EXPAND SUBSTANTIALLY IN THE NEXT 5 TO 10 YEARS.

Nitric acid is the principle ingredient in ammonium nitrate, a fertilizer used to grow corn. U.S. corn production is skyrocketing to meet the recent demand for corn-based ethanol.⁶⁷ More specifically, ethanol production increased from 3 billion gallons in 2003 to over 6 billion gallons in 2007.⁶⁸ Before the enactment of the Energy Independence and Security Act ("EISA") in December 2007, ethanol production was projected to reach 12 billion gallons by 2010, 13 billion by 2015, and over 14 billion by 2017.⁶⁹ Under the EISA, the U.S. government has now mandated ethanol production of at least 15 billion gallons by 2015, which represents an increase of 2 billion gallons over the previous estimate for this date.⁷⁰ In response to the EISA, EPA has increased the renewable fuel standard ("RFS") for 2008 from 4.66 to 7.76 percent.⁷¹

⁶⁶ See, e.g., UNITED NATIONS FCCC PROJECTS – PROJECT 1820: CHONGQING FUYUAN (HIGH PRESSURE) N₂O ABATEMENT PROJECT SUMMARY (China), PROJECT 0752: OMNIA FERTILIZER LIMITED NITROUS OXIDE (N₂O) REDUCTION PROJECT (South Africa), PROJECT 0557: CATALYTIC N₂O ABATEMENT PROJECT IN THE TAIL GAS OF THE NITRIC ACID PLANT OF THE PAKARAB FERTILIZER LTD. (PVT) IN MULTAN, PAKISTAN (Pakistan), available at <http://cdm.unfccc.int/Projects/registered.html>; UHDE, REFERENCES OF ENVINOX SYSTEMS (April 2008) (South Korea, Egypt, Pakistan, Chile, South Africa).

⁶⁷ U.S. Dept. Agric., AGRICULTURAL PROJECTIONS TO 2017, at 22 (Feb. 2008), available at <http://www.ers.usda.gov/Publications/OCE081/OCE20081.pdf>.

⁶⁸ See *id.*

⁶⁹ See *id.* at 22-23.

⁷⁰ See *id.* at 23.

⁷¹ Compare Renewable Fuel Standard Under Section 211(o) of the Clean Air Act as Amended by the Energy Policy Act of 2005, 72 Fed. Reg. 66171, 66173 (Nov. 27, 2007) with Revised Renewable Fuel Standard for 2008, Issued Pursuant to Section 211(o) of the Clean Air Act as Amended by the Energy Independence and Security Act of 2007, 73 Fed. Reg. 8665, 8667 (Feb. 14, 2008).

The market for nitric acid and related chemicals to fertilize these new corn crops is likewise experiencing rapid growth. For instance, Terra Industries has been operating at nearly maximum capacity at its three U.S. nitric acid plants, and it is planning to reopen a fourth facility in Louisiana.⁷² According to Terra's CEO, Mike Bennett, "[t]he market views this as something more than simply a one-year or one-quarter phenomenon but rather a very extended cycle of higher crop production as farmers globally do there [*sic*] best to rebuild grain inventories."⁷³ Other nitrogen-based fertilizer companies have been reporting similar trends and ramped-up operations.⁷⁴

For several years, high natural gas prices limited U.S. nitric acid plants' ability to meet the demands of the ethanol boom. More recently, however, natural gas production in the U.S. has increased dramatically, prices have fallen, and these trends are projected to continue through at least 2014.⁷⁵ Longer-term projections show natural gas prices in the U.S. continuing to fall through 2020.⁷⁶ The increasing availability and lower prices of natural gas in the U.S. will help facilitate expansion in the nitrogenous fertilizer industry. In addition, the high cost of transporting nitric acid and ammonia over long distances from foreign suppliers creates a strong demand for locally produced fertilizer, and this will reinforce the growth of the U.S. nitric acid industry.⁷⁷

In light of the nitric acid industry's projected growth over the next five to ten years and beyond, prompt action is necessary to prevent additional harm to human health and welfare from the resulting increase in NO_x and N₂O emissions.

VI. CONCLUSION

Accordingly, EPA is subject to a clear statutory mandate to conduct a review of the NSPS for nitric acid plants. Moreover, strong evidence indicates that EPA's review of the existing NSPS for nitric acid plants will reveal the need for significant revisions. The existing standards for NO_x do not reflect best demonstrated technology, and there is a compelling need to reduce NO_x emissions in the U.S. in order to protect public health and welfare. In addition, the looming

⁷² See Dave Dreeszen, *Sioux City Journal*, *High Crop Demand Ups Terra Profits* (Sept. 16, 2008)

⁷³ *Id.*

⁷⁴ See, e.g., LSB INDUSTRIES, INC., ANNUAL REPORT (2007), available at http://www.lsb-okc.com/PDFs/LSB_2007AnnualReport.pdf; CF INDUSTRIES, ANNUAL REPORT (2007), available at http://media.corporate-ir.net/media_files/irol/19/190537/Reports/2007CFIAnnualReporta.pdf.

⁷⁵ See U.S. DEPT. ENERGY, ENERGY INFO. ADMIN., ENERGY IN BRIEF (June 11, 2008), available at http://tonto.eia.doe.gov/energy_in_brief/natural_gas_production.cfm; U.S. DEPT. ENERGY, MONTHLY NATURAL GAS PRODUCTION REPORT (Aug. 29, 2008), available at http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_monthly/current/pdf/ngm_all.pdf; U.S. DEPT. ENERGY, ANNUAL ENERGY OUTLOOK, DOE/EIA-0383 (June 2008), available at [http://www.eia.doe.gov/oiaf/aeo/pdf/0383\(2008\).pdf](http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2008).pdf).

⁷⁶ See U.S. DEPT. ENERGY, ANNUAL ENERGY OUTLOOK.

⁷⁷ See U.S. DEPT. AGRIC., IMPACT OF RISING NATURAL GAS PRICES ON U.S. AMMONIA SUPPLY, at 12 (Aug. 2007) (explaining that "[a]mmonia is a hazardous material and it must be transferred in refrigerated vessels or in pressurized containers").

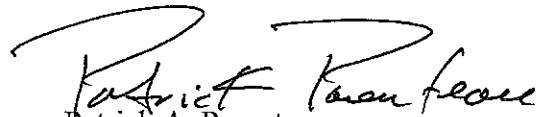
threat of climate change, combined with readily available and inexpensive N₂O controls, weighs heavily in favor of including an N₂O standard in the revised rule. Accordingly, on behalf of Sierra Club and EIP, we intend to sue EPA to compel compliance with its mandatory duty to review the NSPS for nitric acid plants set forth in 40 C.F.R. Subpart G.

If you have any questions or would like to discuss this matter further, please contact us by telephone at (802) 831-1630, or by email at tclemmer@vermontlaw.edu or pparenteau@vermontlaw.edu.

Very truly yours,



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