



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

November 6, 2020

Mr. Matthew Stewart  
Senior Site Director  
c/o Ascend Performance Materials  
3000 Old Chemstrand Road  
Cantonment, Florida 32533

Dear Mr. Stewart:

This is in response to your letter dated August 25, 2020, to the Environmental Protection Agency's (EPA) Office of Air Quality Planning and Standards (OAQPS) in Research Triangle Park, North Carolina, requesting an applicability determination (AD) for Title 40, Code of Federal Regulation (CFR), Part 60, Subpart Ga — Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced after October 14, 2011, as it may apply to a proposed nitric acid manufacturing process at Ascend Performance Materials Operations, LLC (Ascend) in Pensacola, Florida. Due to OAQPS's tier classification of the request, EPA Region 4 is responding to your request. Based on the information provided by you, and research conducted by EPA Region 4, Subpart Ga does not apply to the proposed process. The details of our AD are explained in the remainder of this letter.

Overview of Proposed Nitric Acid Recovery Process

An existing adipic acid manufacturing process within the Pensacola operations produces a byproduct off gas rich in nitrous oxide ( $N_2O$ ) and nitrogen oxide ( $NO$ ). The adipic acid manufacturing process uses nitric acid as a raw material. Ascend proposes to manufacture nitric acid by processing the off gas, with the addition of natural gas, through a high-temperature thermal decomposition furnace (furnace) where  $N_2O$  will be converted to  $NO$  and nitrogen. The furnace will operate, non-catalytically, at a temperature of approximately 2,800 degrees Fahrenheit (F) and at atmospheric pressure of less than, or equal to, 10 pounds per square inch of gauge pressure (psig). Subsequent compression of the furnace effluent gas, under excess oxygen conditions, will favor the conversion of  $NO$  to nitrogen dioxide ( $NO_2$ ). The compressed furnace effluent will be processed through a pressurized absorber where  $NO_2$  will be absorbed in, and reacted with, water to produce an approximate 60-65 weight percent (wt%) nitric acid solution. The absorber's off gas, consisting of low concentrations of  $NO$ ,  $N_2O$  and  $NO_2$  will be processed through an atmospheric nitrogen oxides ( $NO_x$ ) emissions control device (selective catalytic reduction unit or thermal reduction unit). The manufactured nitric acid will be recycled back to the adipic acid manufacturing process, without isolation, and will be used as a raw material feedstock for that process. The technology reduces the amount of nitric acid raw material consumption rate for the same amount of adipic acid produced without the technology. Greenhouse gas emissions will be reduced by approximately 50 percent.

## Ascend's Bases of Proposed Subpart Ga Non-Applicability

As detailed in the information you provided to the EPA, and based on your review of information contained in AP-42 and associated background documentation, you reason that Subpart Ga is not applicable to the proposed nitric acid manufacturing process because Subpart Ga applies only to nitric acid plants that specifically produce “weak nitric acid” by catalytic oxidation of ammonia using either the “pressure” or “atmospheric” process. Additionally, you observe that the definition of “nitric acid production unit” remains unchanged from the definition promulgated in Subpart G in 1971. You propose that your new technology is technologically distinct from the conventional nitric acid production units intended to be regulated under the provisions of Subpart G or Ga.

## Historical Review and Perspective of Subpart G, Ga, and Promulgation Background Documentation

On October 29, 1962, a cooperative agreement was initiated between the U.S. Public Health Service (PHS) and the Manufacturing Chemists' Association to study the operations and emissions of selected chemical manufacturing processes. The coalition was implemented to support various initiatives, to include support for potential regulatory promulgation of emissions standards and control for selected industries. The coalition submitted an information collection request questionnaire to all facilities known to produce nitric acid in the United States in September 1964. Subsequently, in 1966, the results of the study for nitric acid production facilities were published as PHS PUB. 999-AP-27 (Atmospheric Emissions from Nitric Acid Manufacturing Processes)<sup>1</sup>. PHS PUB 999-AP-27 characterized the “nitric acid production unit” processes in terms of operating pressures and described the manufacturing processes in detail.

On March 13, 1970, the Secretary of Health, Education and Welfare issued a National Emissions Standard Study Report (Doc. No. 91-03) to Congress (Senate) recommending amendments to the Clean Air Act of 1967, which included the recommendation to implement national emissions standards for new major stationary sources, including standards for nitric acid production plants.<sup>2</sup> Document No. 91-03 referenced PHS PUB. 999-AP-27 as documentation supporting the report. On March 31, 1971, the Administrator published a list of categories of stationary sources which were determined to contribute significantly to air pollution. Nitric acid plants were included as a source category in the standards origination list.<sup>3</sup> On August 17, 1971, the Administrator established Title 42, CFR Part 466, Subpart E, and proposed Standards of Performance for New Stationary Sources (NSPS) for the source category of nitric acid plants.<sup>4</sup> APTD-0711 (Background Information for Proposed New Source Performance Standards: Steam Generators, Incinerators, Portland Cement Plants, Nitric Acid Plants, and Sulfuric Acid Plants) was published concurrently with the proposed NSPS to facilitate review and comment prior to the promulgation of the standards.<sup>5</sup> APTD-0711 included PHS PUB. 999-AP-27 as a reference.

Promulgation of Title 40, CFR, Part 60- Standards of Performance for New Stationary Sources, Subpart G, became effective on December 23, 1971.<sup>6</sup> Responses to comments received during the public

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<sup>1</sup> U.S. Department of Health, Education and Welfare, Atmospheric Emissions from Nitric Acid Manufacturing Processes: PHS Publication No. 999-AP-27 (1966).

<sup>2</sup> Report of the Secretary of Health, Education and Welfare to the United States 91st Congress, Second Session, Senate: National Emissions Standard Study, Document 91-03 (March 13, 1970), Senate Resolution 372 (April 27, 1970).

<sup>3</sup> Air Pollution and Prevention and Control, List of Categories of Stationary Sources, 36 Fed. Reg. 5931 (March 31, 1971).

<sup>4</sup> Standards of Performance for New Stationary Sources; Proposed Rules, 36 Fed. Reg. 15704 (August 17, 1971).

<sup>5</sup> The USEPA, Office of Air Programs: Technical Report No. APTD-0711, Background Information for Proposed New Source Performance Standards: Steam Generators, Incinerators, Portland Cement Plants, Nitric Acid Plants, and Sulfuric Acid Plants (August 1971).

<sup>6</sup> Standards of Performance for New Stationary Sources: Final Rule, 77 Fed. Reg. 24876 (December 23, 1971).

comment period for the proposed standards of Title 42 CFR 466, Subpart E, referenced APTD 0711 as supporting information regarding intended applicability.<sup>6</sup>

On October 14, 2011, the EPA proposed a rule review of Subpart G.<sup>7</sup> Prior to this review, rule reviews of the Nitric Acid Plants NSPS were completed on June 19, 1979 (44 FR 35265), and April 5, 1984 (49 FR 13654), and no changes were made to Subpart G as a result of those reviews.<sup>7</sup> Minor testing and monitoring changes were made to Subpart G as a result of three reviews since the original promulgation in 1971. The reviews were completed on October 6, 1975 (40 FR 46258), April 22, 1985 (50 FR 15894), and February 14, 1989 (54 FR 6666)].<sup>7</sup> Also on October 14, 2011, the EPA concurrently proposed Subpart Ga—Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After October 14, 2011.<sup>8</sup> The final rule of the NSPS Review for Nitric Acid Plants was published on August 14, 2012.<sup>9</sup> Concurrent promulgation of Subpart Ga occurred on the same date.<sup>10</sup> The definition for a “nitric acid production unit” within Subpart Ga did not change from the definition promulgated in Subpart G.

### Overview of Subpart Ga

Under provisions of §60.70a(b), Subpart Ga applies to any nitric acid production unit that commences construction or modification after October 14, 2011. Under definitions of §60.71a, nitric acid production unit “... means any facility producing weak nitric acid by either the pressure or atmospheric pressure process.” Weak nitric acid means “... acid which is 30 to 70 percent in strength.” Under provisions of §60.72a, an affected facility may not discharge into the atmosphere “... any gases which contain NO<sub>x</sub>, expressed as NO<sub>2</sub>, in excess of 0.50 pounds (lb) per ton of nitric acid produced, as a 30-day emission rate calculated based on 30 consecutive operating days, the production being expressed as 100 percent nitric acid.” Under definitions of §60.2, affected facility means “... with reference to a stationary source, any apparatus to which a standard is applicable.”

### The EPA’s Applicability Determination

Based on the supporting information as detailed above, the EPA has concluded that the proposed facility is not an affected facility under Subpart Ga. The EPA does not contest the production of “weak nitric acid” by the proposed technology. We also note that the proposed nitric acid manufacturing technology neither utilizes ammonia as a raw material nor includes the oxidation of ammonia, catalytically, or otherwise, to achieve the production of weak nitric acid as discussed in PHS PUB. 999-AP-27 and APTD 0711.<sup>1,5</sup> An adipic acid off gas stream, rich in NO and N<sub>2</sub>O, serves as the feedstock to the technology’s decomposition furnace, where the N<sub>2</sub>O portion of the off gas is decomposed to NO, resulting in a furnace effluent which is essentially NO.

The basis of EPA’s determination is as follows:

The proposed nitric acid manufacturing process unit operates under a circumstance of operating pressures that is not characterized by either the “atmospheric” or “pressure” process as specified for

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<sup>7</sup> New Source Performance Standards Review for Nitric Acid Plants: Proposed Rule 76 Fed. Reg. 63878 (August 14, 2011).

<sup>8</sup> Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After August 14, 2011: Proposed Rule, 76 Fed. Reg. 63888 (August 14, 2011).

<sup>9</sup> New Source Performance Standards Review for Nitric Acid Plants: Final Rule 77 Fed. Reg. 48433 (August 12, 2012).

<sup>10</sup> Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After August 14, 2012: Final Rule, 77 Fed. Reg. 48455 (August 14, 2012).

applicability in the definition of “nitric acid production unit” in Subpart Ga. PHS PUB 999-AP-27, the focal background document utilized to support promulgation of Subpart G, characterized the nitric acid production unit processes in terms of operating pressure according to the following classifications:

- i.) Atmospheric: Both oxidation of ammonia and absorption of the resulting nitrogen oxides occur at atmospheric pressure (10 psig maximum).
- ii.) Combination: The oxidation of ammonia occurs at pressures from atmospheric to approximately 30 psig and the resulting oxides of nitrogen are then cooled and generally compressed to 30-50 psig before being absorbed.
- iii.) Intermediate: Both oxidation of ammonia and absorption of the resulting nitrogen oxides occur at intermediate pressure of 20-60 psig.
- iv.) Pressure: Both oxidation of ammonia and absorption of the resulting nitrogen oxides occur at 80-120 psig.

Applicability under the provisions of the definition for “nitric acid production unit” specifically includes the atmospheric (i) or pressure (iv) systems and does not include the combination (ii) and intermediate (iii) pressure processes. Additionally, only the combination (ii) pressure process is characterized as a pressure process that does not require “both” oxidation and absorption to occur within the same pressure range specification.

Nothing in this AD excludes the EPA from expanding the source category in the future to include this technology in rule proposal/promulgation acts to establish standards for this technology.

This AD was coordinated with the EPA’s Office of Enforcement and Compliance Assurance and Office of Air Quality Planning and Standards. If you have any questions about this AD, please contact Tracy Watson at (404) 562-8998, or by email at [watson.marion@epa.gov](mailto:watson.marion@epa.gov).

Sincerely,

**KENNETH MITCHELL**  
Digitally signed by  
KENNETH MITCHELL  
Date: 2020.11.06  
13:12:13 -05'00'

For Caroline Y. Freeman  
Director  
Air and Radiation Division

cc: John Cox, EPA OECA  
Matt Spangler, OAQPS  
Nate Topham, OAQPS  
Allen Faulkner, Ascend  
Ilana Saltzbar, King & Spalding  
Adam Sowatzka, King & Spalding