UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1

IN THE MATTER OF **GAC Chemical Corporation** 34 Kidder Point Road Searsport, Maine 04974 **General Alum New England Corp.** 34 Kidder Point Road Searsport, Maine 04974 Respondents Proceeding under Section 113(a) of the Clean Air Act, 42 U.S.C. § 7413(a)	**CONSENT AGREEMENT AND FINAL ORDER** Docket No. CAA-01-2021-0070

A. PRELIMINARY STATEMENT

1. The issuance of this Consent Agreement ("Consent Agreement") and attached Final Order ("Final Order"), in accordance with 40 C.F.R. § 22.13(b), simultaneously commences and concludes an administrative penalty assessment proceeding brought under Section 113(d) of the Clean Air Act ("CAA"), 42 U.S.C. § 7413(d), and Sections 22.13 and 22.18 of the Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties and the Revocation/Termination or Suspension of Permits ("Consolidated Rules"), as codified at 40 C.F.R. Part 22.

2. Complainant is the United States Environmental Protection Agency, Region 1 ("EPA").

3. Respondents are GAC Chemical Corporation ("GAC") and General Alum New England Corp. ("GANE" and together with GAC, "Respondents"). Both are corporations that were organized under the laws of other states but were domesticated in the state of Maine in 2016.

4. Complainant and Respondents, having agreed that settlement of this action is in the public interest, consent to the entry of this consent agreement and the attached final order without adjudication of any issues of law or fact herein, and Respondents agree to comply with the terms of this Consent Agreement and Final Order ("CAFO").

B. JURISDICTION

5. This Consent Agreement is entered into under Sections 113(a)(3)(A) and (d) of the CAA, as

amended, 42 U.S.C. §§ 7413(a)(3)(A) and (d), and the Consolidated Rules, 40 C.F.R. Part 22.

6. The EPA and the United States Department of Justice jointly determined that this matter is appropriate for an administrative penalty assessment in accordance with Section 113(d) of the CAA, 42 U.S.C. § 7413(d) and 40 C.F.R. § 19.4.

C. GOVERNING LAW AND REGULATIONS

7. Pursuant to Section 112(r)(1) of the CAA, 42 U.S.C. § 7412(r)(1), owners and operators of stationary sources producing, processing, handling, or storing substances listed pursuant to Section 112(r)(3) of the CAA, 42 U.S.C. § 7412(r)(3), or any other extremely hazardous substance, have a general duty, in the same manner and to the same extent as section 654, title 29 of the United States code, 29 U.S.C. § 654, to: (a) identify hazards that may result from accidental releases of such substances, using appropriate hazard assessment techniques; (b) design and maintain a safe facility, taking such steps as are necessary to prevent releases; and (c) minimize the consequences of accidental releases that do occur. This section of the CAA is referred to as the "General Duty Clause" ("GDC").

8. The term, "extremely hazardous substances" under the GDC includes chemical substances that may, as a result of short-term exposures associated with releases to the air, cause death, injury or property damage due to the chemicals' toxicity, reactivity, flammability, or corrosivity. See Senate Committee on Environment and Public Works, Clean Air Act Amendments of 1989, Senate Report No. 228, 101st Congress, 1st Session 211 (1989). Pursuant to Section 112(r)(1) of the CAA, the term includes, but is not limited to, substances listed under Section 112(r)(3) of the CAA, 42 U.S.C. § 7412(r)(3) and in 40 C.F.R. § 68.130. In addition, the release of any substance that causes death or serious injury because of its acute toxic effect or as a result of an explosion or fire or that causes substantial property damage by blast, fire, corrosion or other reaction would create a presumption that such substance is extremely hazardous. Under Section 112(r)(3) of the CAA, the term "extremely hazardous substances" also includes, without limitation, the substances listed in 40 C.F.R. § 68.130 and those substances listed in 40 C.F.R. Part 355, Appendices A and B, published under Section 302 of the Emergency Planning and Community Right-to-Know Act ("EPCRA"), 42 U.S.C. § 11002.

9. The term "accidental release" is defined by Section 112(r)(2)(A) of the CAA, 42 U.S.C. § 7412(r)(2)(A), as an unanticipated emission of a regulated substance or other extremely hazardous substance into the ambient air from a stationary source.

10. Section 112(r)(2)(C) of the CAA, 42 U.S.C. § 7412(r)(2)(C), defines "stationary source" as any buildings, structures, equipment, installations, or substance-emitting stationary activities, located on one or more contiguous properties under the control of the same person, from which an accidental release may occur.

11. The term "have a general duty in the same manner and to the same extent as section 654, title 29 of the United States code" means owners and operators must comply with the General Duty Clause in the same manner and to the same extent as employers must comply with the Occupational Safety and Health Act administered by the Occupational Safety and Health Administration ("OSHA").

12. Separately, Section 112(r) of the CAA, 42 U.S.C. § 7412(r), authorizes EPA to promulgate regulations and programs to prevent and minimize the consequences of accidental releases of certain regulated substances. EPA's regulations, which contain risk management program requirements, are set out at 40 C.F.R. Part 68 and are generally known as the "RMP Rules."

13. The RMP Rules list the regulated substances ("RMP chemicals") at 40 C.F.R. § 68.130. This list identifies anhydrous ammonia as an RMP chemical with a threshold quantity of 10,000 pounds.

14. A "process" is defined by 40 C.F.R. § 68.3 as any activity involving a regulated substance, including any use, storage, manufacturing, handling, or on-site movement of such substances, or combination of these activities.

15. Pursuant to 40 C.F.R. § 68.10, each process in which a regulated substance is present in more than a threshold quantity ("covered process") is subject to one of three risk management programs. Program 1 is the least comprehensive, and Program 3 is the most comprehensive.

16. Pursuant to 40 C.F.R. § 68.10(g), a covered process is subject to Program 1 if, among other things, the distance to a toxic or flammable endpoint for a worst-case release assessment is less than the distance to any "public receptor" within the meaning of Section 68.3. Under 40 C.F.R. § 68.10(i), a covered process is subject to Program 3 if the process does not meet the eligibility requirements for Program 1 and is either in a specified NAICS code or subject to the Occupational Safety and Health Administration ("OSHA") process safety management ("PSM") standard at 29 C.F.R. § 1910.119. Under 40 C.F.R. § 68.10(h), a covered process that meets neither Program 1 nor Program 3 eligibility requirements is subject to Program 2.

17. Pursuant to 40 C.F.R. § 68.12(a) and (d), the owner or operator of a stationary source with a process subject to Program 3 requirements must, among other tasks, submit a Risk Management Plan ("RMP"), develop a management system to implement the risk management program, and implement the release prevention requirements of 40 C.F.R. §§ 68.65-87.

18. Sections 113(a) and (d) of the CAA, 42 U.S.C. §§ 7413(a) and (d), authorize EPA to assess civil penalties for violations of the CAA and regulations promulgated thereunder, including CAA Section 112(r)(1) and the RMP Rules at 40 C.F.R. Part 68. Pursuant to Section 113(d)(1) of the CAA, the Debt Collection Improvement Act of 1996 (as amended in 2015 by Section 701 of Pub. L. 114-74, 31 U.S.C. § 3701), and EPA regulations set out at 40 C.F.R. Part 19, EPA currently may assess penalties of up to $48,762 per day for each violation.

D. BACKGROUND FACTS

19. Respondent GAC is the operator of a chemical manufacturing and distribution facility located at 34 Kidder Point Road, Searsport, Maine (the "Facility"). Among other products, GAC uses anhydrous ammonia to produce several chemicals, including ammonium sulfate (made by reacting ammonia with sulfuric acid) and aqueous ammonia (a solution of anhydrous ammonia and water).

20. GAC is a corporation originally organized under the laws of Indiana, but which was domesticated in Maine in 2016. Its principal office is located in Searsport, Maine. As a corporation, GAC is a "person" within the meaning of Section 302(e) of the Act, 42 U.S.C. § 7602(e).

21. Respondent GANE owns the Facility. GANE is a wholly owned subsidiary of GAC. GANE is a corporation originally organized under the laws of Indiana, but which was also domesticated in Maine in 2016. Its principal office is located in Searsport, Maine. GANE is likewise a "person" within the meaning of 302(e) of the Act, 42 U.S.C. § 7602(e).

22. The Facility is located about two miles east of Searsport's downtown area, between U.S. Route 1 and Penobscot Bay. Anhydrous ammonia arrives by railcar and is distributed through pipes to chemical processes around the Facility. Sulfuric acid tanks and a chemical warehouse are located at the southern end of the Facility. Multiple railcars of chemicals are placed on rail sidings at the Facility.

23. The largest storage vessel of ammonia is a railcar of pressurized liquid anhydrous ammonia (an "Ammonia Railcar"). GAC connects an Ammonia Railcar to a piping system that distributes the anhydrous ammonia to storage/process vessels where GAC manufactures products using the chemical. Some of the buildings and equipment containing or circulating anhydrous ammonia include the following:

a) Ammonia Unloading Platform: Where anhydrous ammonia is unloaded from an Ammonia Railcar and sent to a 21,000-gallon anhydrous ammonia storage tank.

b) 21,000-gallon Tank: The largest tank of anhydrous ammonia on site. This tank is used for storage and is equipped with a non-contact steam line that runs into the tank. The steam line is pressurized below tank levels and equipped with a condensate trap that drains outside the tank.

c) 9,000-gallon Tank: A tank of anhydrous ammonia that is used in the ammonium sulfate process. It is equipped with a vaporizer and a non-contact steam line that runs into the tank. The steam line is pressurized below tank levels and equipped with a condensate trap that drains outside the tank.

d) Aqueous Ammonia Manufacturing Building/Building 19: The ammonia control and pump room, which controls the flow of ammonia and which is where anhydrous ammonia is pumped to the aqueous ammonia manufacturing processes.

e) Ammonium Sulfate Production Building.

24. The Facility includes buildings, structures, equipment, installations, or substance emitting stationary activities from which an "accidental release" may occur and is therefore a "stationary source," as defined at Sections 112(r)(2)(C) and (2)(A) of the CAA and in 40 C.F.R. § 68.3, respectively.

25. At all times relevant to the violations alleged herein, Respondent GANE was the "owner" of the Facility, within the meaning of CAA Sections 112(r)(1) and (7), 42 U.S.C. §§ 7412(r)(1) and (7), and 40 C.F.R. § 68.10.

26. At all times relevant to the violations alleged herein, Respondent GAC was the "operator" of the Facility, within the meaning of CAA Sections 112(r)(1) and (7), 42 U.S.C. §§ 7412(r)(1) and (7), and 40 C.F.R. § 68.10.

27. In 2015, GAC filed a Program 3 RMP Plan for three ammonia processes ("2015 RMP") and reported a total of 352,000 pounds of anhydrous ammonia and 237,000 pounds of aqueous ammonia (concentration 20% or greater) in those processes. The 2015 RMP listed 20,000 pounds of anhydrous ammonia in the Ammonium Sulfate Production process; 172,000 pounds of anhydrous ammonia in the Anhydrous Ammonia Receiving and Storage process; 160,000 pounds of anhydrous ammonia in the Aqueous Ammonia Production and Storage process; and 237,000 pounds of Ammonia ≥20% (aqueous ammonia) in the Aqueous Ammonia Production and Storage process. Prior to the 2015 RMP, the company had filed RMP Plans in other years, including, but not limited to, 2012 and 2014.

28. In 2020, GAC submitted a revised Program 3 RMP Plan ("2020 RMP") that listed four processes containing ammonia: 172,000 pounds of anhydrous ammonia and 190,294 pounds of ammonia ≥20% (aqueous ammonia) in the Aqua Ammonia process; 172,000 pounds of anhydrous ammonia in the Ammonia Handling process; 860,000 in the Ammonia Railcar Storage; and 42,799 pounds of anhydrous ammonia in the Ammonium Sulfate process.

29. Anhydrous ammonia presents a significant health hazard because it is corrosive to the skin, eyes, and lungs. Exposure to 300 parts per million ("ppm") is immediately dangerous to life and health. Anhydrous ammonia also is flammable at certain vapor concentrations with ignition. Anhydrous ammonia can be detected by smell at about 5 ppm. Additionally, although not combustible, aqueous ammonia ≥ 20% can decompose upon heating to produce corrosive and toxic fumes.

30. Respondent uses anhydrous ammonia in one or more "processes," as defined by 40 C.F.R. § 68.3. Because each process has more than the 10,000-pound threshold quantity of anhydrous ammonia, each is a "covered process," as defined by 40 C.F.R. § 68.3.

31. The Facility's anhydrous ammonia processes are subject to OSHA's PSM requirements at 29 C.F.R. § 1910.119.

32. According to Respondents' 2015 RMP, the endpoint for a worst-case release of the amount of anhydrous ammonia used in the Anhydrous Ammonia Receiving and Storage process was greater than the distance to a public receptor.

33. According to Respondents' 2020 RMP, the endpoint for a worst-case release of the amount of anhydrous ammonia used in the Ammonia Railcar Storage process is greater than the distance to a public receptor.

34. A worst-case release from an Ammonia Railcar could cause serious injury or death for many miles around the Facility, impacting homes, businesses, schools, churches, and Route 1, which is a major, interstate, coastal highway.

35. In accordance with 40 C.F.R. § 68.10(a)–(d), Respondent's use, storage, and handling of

anhydrous ammonia in four processes at the Facility is subject to the requirements of RMP Program 3.

36. Additionally, sulfuric acid is listed as an extremely hazardous substance pursuant to EPCRA Section 302, 42 U.S.C. § 11002. See 40 C.F.R. Part 355, App. A. Sulfuric acid is corrosive; exposure to it may result in severe burns and damage to skin or mucous membranes. It can also react violently with water. According to Respondents' 2017 EPCRA chemical inventory ("Tier II") report, Respondents stored an average of 5,898,000 pounds of sulfuric acid on site in above-ground tanks located at the southern end of the Facility. It reported averaging 6,702,000 pounds on its 2019 Tier II.

37. In light of the potential hazards posed by the mishandling of hazardous chemicals like anhydrous ammonia, industry trade associations have issued standards outlining the recognized and generally accepted good engineering practices ("RAGAGEP"). Examples of standards of care are set out in Attachment A.

38. Between April 30, 2018 and July 26, 2018, OSHA's Maine Area office inspected aspects of the Facility's aqueous ammonia manufacturing process (the "OSHA Inspection") and, in accordance with its National Emphasis Program procedures, focused on a few elements of the aqueous ammonia process. OSHA subsequently issued a citation for two violations, which GAC began to correct after the OSHA Inspection.

39. On November 6 and 7, 2018, EPA's chemical accident prevention team conducted an inspection ("November 2018 Inspection") to determine, in part, the Facility's compliance with Section 112(r) of the CAA, 42 U.S.C. § 7412(r), and its implementing regulations. On February 27 and 28, 2019, EPA conducted another inspection with specialists in process safety management, safe electrical practices, and ammonia systems ("February 2019 Inspection"). Key observations of concern from that inspection were communicated to Respondent in a letter dated March 21, 2019. The EPA inspectors observed some potentially dangerous conditions during the two inspections, including, but not limited to the following:

a) The ammonia tanks and other components, indoor and outdoor piping, valves, and support structures appeared severely corroded in places. Despite the age of some of the equipment (the two large anhydrous ammonia tanks were over 60 years old), testing and inspection information was not available to indicate whether corroded equipment was fit to remain in service. Some testing and inspection information was provided after the November 2018 Inspection, although the lack of equipment information and analysis on two of these reports made it difficult for EPA to ascertain the integrity of the equipment;

b) The insulation on the 21,000-gallon and 9,000-gallon anhydrous ammonia tanks was deteriorating to such an extent that rainwater would penetrate and promote corrosion;

c) A pressure relief valve that appeared to be beyond its service life;

d) The existing process hazard analysis was limited for such large, complicated chemical processes, especially given the number of potential hazards observed by inspectors;

e) The Ammonium Sulfate Production Building lacked adequate ventilation;

f) The inspectors observed what appeared to be fugitive ammonia emissions in three locations: the Aqueous Ammonia Tote-Filling Building, the upper levels of the Ammonium

Sulfate Production Building, and near the 21,000-gallon Tank;

g) Many chemical pipes, valves, and switches were unlabeled, although GAC had recently begun addressing these deficiencies in response to the OSHA Inspection;

h) The P&ID that Respondent provided for the Aqueous Ammonia process at the time of the November 2018 Inspection was originally drafted in 1992 and updated in 2007, 2009, and 2018. It was marked Draft and did not reflect as-built conditions and lacked a legend or key for interpreting the symbols in the diagram. Respondent has indicated the P&ID was in Draft form to incorporate recently installed remotely operated emergency shut-off valves and otherwise reflected as-built conditions.

i) The inspectors did not observe adequate emergency shutoff controls for the processes;

j) Many storage vessels and doors did not have appropriate NFPA diamonds and labeling to warn people of hazards;

k) Some ammonia tanks, valves, and pipes were in danger of getting inadvertently hit and did not have bump (impact) protection;

l) Ammonia piping did not have sufficient check valves or isolation valves to control ammonia released during an incident within the 1,200-foot run of piping. The 9,000-gallon Tank lacked remotely operated emergency shut-off or isolation valves;

m) The Aqueous Ammonia Manufacturing and Tote-Filling Buildings (Buildings 19 and 18) lacked ammonia sensors and alarms to warn of ammonia releases;

n) The audio/visual alarms for the chemical processes were unclear. Some locations had audio alarms while others had visual alarms, and it was not clear which chemical process related to which alarm;

o) The visual alarm in the ammonia sulfate production building was set to activate at 100 ppm instead of the recommended short-term (15-minute) exposure limit ("STEL") of 35 ppm. The alarm label incorrectly referenced a 300 ppm activation level;

p) Most doors in chemical storage and manufacturing areas lacked panic hardware for emergency exits;

q) The large sulfuric acid tank and railcars used for sulfuric acid storage did not have complete secondary containment despite their proximity to Penobscot Bay;

r) Some of the support structures used to hold pipes of anhydrous ammonia and other chemicals were inappropriate, such as a rock under a support footing, wood blocks under piping and valves, improperly cut and welded metal support, piping hung from other pipes; and

s) Some tanks were not fully attached to, or supported by, saddles and bases. One of the aqueous ammonia process tanks was not properly seated into its support saddle and the 9,000-gallon and 21,000-gallon Tanks were not fully secured to their concrete foundations, given that some bolts were missing.

40. On September 30, 2019, EPA and Respondents entered into an Administrative Order on Consent to address the majority of the issues identified by EPA. Respondents worked cooperatively with EPA and completed full implementation of the Administrative Order on Consent on-time, by

September 30, 2020.

E. ALLEGED VIOLATIONS

Count 1: Failure to Prepare and Submit RMP Plan that Includes all Covered Processes

41. Pursuant to 40 C.F.R. §§ 68.12(a) and 68.150(a), the owner or operator of a Program 3 process is required to prepare and submit an RMP that reflects all covered processes.

42. Respondents regularly receive, store, and handle more than 10,000 pounds of anhydrous ammonia in railcars for a period of time before connecting the railcars to the Ammonia Unloading Platform. Respondents may store up to five Ammonia Railcars on Respondents' private spur on the northeast portion of the Facility.

43. The storage and handling of Ammonia Railcars, disconnected from motive power prior to connection to the Ammonia Unloading Platform (the Ammonia Railcar Storage process) is a "covered process" as that term is defined in 40 C.F.R. § 68.3.

44. The 2015 RMP included a process titled "Anhydrous Ammonia Receiving and Storage" that addressed just one Ammonia Railcar. Additionally, it is inconsistent as to whether the Ammonia Railcar is "in storage" and disconnected from motive power, or it is "in receiving" and connected to the 21,000-gallon Tank through at the Ammonia Unloading Platform.

45. Therefore, and as described in paragraph 27 above, the 2015 RMP did not adequately address the Ammonia Railcar Storage process.[1]

46. Additionally, the quantities of anhydrous ammonia allocated to the Anhydrous Ammonia Receiving and Storage and Ammonium Sulfate processes, as described in Paragraph 27 above, do not include the maximum quantity of anhydrous ammonia in either process.

47. Accordingly, Respondents violated the requirement of 40 C.F.R. § 68.150(a) to submit an RMP that reflects all covered processes and includes for each, all of the required information, including the maximum quantity of each regulated substance or mixture in the process, as required by 40 C.F.R. § 68.160(b)(7).

Count 2: Failure to Comply with Safety Information Requirements

48. Complainant realleges and incorporates by reference Paragraphs 1 through 47 of this document.

49. Pursuant to 40 C.F.R. § 68.65(a), the owner or operator of a Program 3 process is required, among other things, to compile written process safety information before completing the Process Hazard Analysis. Forty C.F.R. § 68.65(d)(1) requires documenting information pertaining to the hazards of the RMP chemical in the process and information pertaining to the equipment of the

[1] The 2015 RMP correctly used a full railcar as the largest vessel at the Facility in performing an off-site consequence analysis.

process. Forty C.F.R. §§ 68.65(d)(2) and (3), also require documenting that the equipment complies with recognized and generally accepted good engineering practices ("RAGAGEP") and that any equipment designed according to outdated standards is designed, maintained, inspected, tested, and operated in a safe manner.

50. At the time of the Inspections, Respondent had not compiled all of the necessary process safety information pertaining to the equipment of the ammonia processes at the Facility, including an adequate P&ID, specific information about the design codes and standards employed, complete information about ventilation system designs, the relief system design of two processes, and information about the schedule of piping used.

51. Additionally, as further described in Attachment A, Respondent failed to document that the equipment complied with RAGAGEP and that equipment designed according to outdated standards was designed, maintained, inspected, tested, and operated in a safe manner. Specifically, among other things:

a) Some ammonia tanks, valves, and pipes did not have adequate impact protection;

b) Various tanks, pipes, valves, and doors lacked appropriate labeling and signage;

c) There were inadequate ammonia detection systems and alarms;

d) Filling connections and piping did not have adequate check valves, or emergency isolation or shut off valves to keep large amounts of ammonia from being released during a spill from pipes or tanks;

e) The ammonium sulfate building lacked adequate ventilation;

f) Some ammonia piping lacked adequate support, including some ammonia pipes that were being supported by, or were supporting, electrical conduit in several places; and

g) Certain ammonia tanks were not properly supported.

52. Accordingly, by failing to compile the necessary information about the equipment of the ammonia processes, including by documenting that they complied with RAGAGEP, Respondent violated 40 C.F.R. § 68.65 and Section 112(r)(7)(E) of the CAA, 42 U.S.C. § 7412(r)(7)(E).

Count 3: Failure to Adequately Identify, Evaluate, and Control Hazards

53. Complainant realleges and incorporates by reference Paragraphs 1 through 52 of this document.

54. Pursuant to 40 C.F.R. § 68.67, the owner or operator of a Program 3 process must, among other things, perform an initial process hazard analysis ("PHA") on each covered process. The PHA must identify, evaluate, and control the hazards involved in the process. The owner or operator must update the PHA every five years and when a major change in the process occurs. Additionally, the owner or operator must establish a system for addressing the recommendations identified in the PHA, including by defining a schedule for completing the action items, taking the actions as soon as possible, and documenting the resolution of the recommendations. Forty C.F.R. § 68.67(c) requires that the PHA address: 1) hazards of the process; 2) previous incidents with a likely potential for

catastrophic releases; 3) engineering and administrative controls applicable to the hazards and their interrelationships; 4) consequences of failure of engineering and administrative controls; 5) stationary source siting; 6) human factors; and 7) an evaluation of the range of the possible safety and health effects of failure of control.

55. Respondents provided EPA with a PHA for its ammonia processes dated July 20, 2016 ("2016 PHA"). In general, the 2016 PHA listed some possible scenarios that could cause a release or system failure and provided emergency operating steps that an operator could take to abate the scenario.

56. The 2016 PHA did not fully identify hazards of the processes, failing to comply with 40 C.F.R. § 68.67(c)(1). For example, the 2016 PHA missed the hazards posed by the potential of a toxic chemical release due to: corroded piping, tank, and supports and the deterioration of insulation, physical impacts on pipes, valves, and tanks, insufficient ventilation, electrical issues, limited ability to quickly and safely abate toxic releases due to lack of gas detectors, excess flow valves, isolation valves, and remote emergency shutoffs in some of the ammonia processes[2], among others.

57. The 2016 PHA did not address appropriate application of detection methodologies to provide early warning of releases, in violation of 40 C.F.R. § 68.67(c)(3).

58. The 2016 PHA did not identify the consequences of failure of engineering and administrative controls, in violation of 40 C.F.R. § 68.67(c)(4).

59. The 2016 PHA did not address stationary source siting, in violation of 40 C.F.R. § 68.67(c)(4), such as:

a) proximity to Penobscot Bay, a maritime environment that can accelerate corrosion, risks flooding and storms, and exacerbate the environmental consequence of a release;

b) lack of proximity to external trained emergency responders;

c) facility layout, such as proximity of shutdown valves to operations.

60. The 2016 PHA did not include an evaluation of human factors for processes other than the ammonia rail car unloading process, in violation of 40 C.F.R. § 68.67(c)(6).

61. The 2016 PHA did not include a qualitative evaluation of the range of the possible safety and health effects of failure of control, in violation of 40 C.F.R. § 68.67(c)(7).

62. The 2016 PHA did not include a process to schedule and timely address, track, and document actions taken in response to the recommendations/action items identified, or to communicate the recommendations and action items to employees who may be affected by the recommendations/action items, in violation of 40 C.F.R. § 68.67(e).

63. By failing to adequately identify, evaluate, and control hazards for the ammonia processes, Respondents violated the PHA requirements of 40 C.F.R. § 68.67.

[2] The 2016 PHA discusses several situations in which operators would be required to move toward an ammonia release to manually close valves or otherwise abate a hazard, rather than evacuate from the area.

Count 4: Failure to Comply with Program 3 Mechanical Integrity Requirements

64. Complainant realleges and incorporates by reference Paragraphs 1 through 63 of this document.

65. Pursuant to 40 C.F.R. § 68.73(b), the owner or operator of a Program 3 process must establish and implement written procedures to maintain the ongoing integrity of certain process equipment and train employees accordingly. Inspections and testing procedures shall follow RAGAGEP, and the frequency of inspections and tests shall be consistent with manufacturer's recommendations and good engineering practices, or more frequently if needed based on prior operating experience.

66. At the time of the November 2018 Inspection, GAC did not have adequate maintenance plans or procedures, although GAC's Safety # 210 Memorandum, Process Safety Management (Aug. 31, 2016), expressed the intent to set up such procedures.

67. Forty C.F.R. § 68.73(d) requires that inspections and tests be performed on process equipment according to RAGAGEP and each inspection and test be documented. As further set out in Attachment A, the RAGAGEP for inspecting and testing pipes and pressure vessels at chemical manufacturing plants include, for example, American Petroleum Institute ("API") Standard 570, API 510, API RP 574, American Society for Mechanical Engineers ("ASME") Standard B31.3, ASME B31.4, and manufacturer's recommendations. API 570 and 510 set out programs for regular inspection and testing of pipes and pressure vessels to determine whether corrosion has rendered the metal in such equipment too thin for the equipment's intended use.

68. At the time of the November 2018 Inspection, testing and inspection information was not available for piping, tanks, and valves in the ammonia processes, although some testing documentation was provided later. Inspections and tests of tanks and piping was not consistent with RAGAGEP, as further detailed in Attachment A.

a) *Tanks*: Respondents only provided written documentation for one visual external inspection and one internal inspection of the 69-year old 21,000-gallon Tank (in 2018 pursuant to an OSHA citation). The visual and spot UT thickness testing evaluation of the 64-year old 9,000-gallon Tank that occurred after EPA's November 2018 Inspection did not include calculations to determine minimum allowable wall thickness based on the 1955 stress values or compare the wall thickness measurements to the minimum allowable wall thickness values to determine where the repairs are needed. No test results were available for the aqueous ammonia storage tanks.

b) *Piping*: Respondents had no written documentation for any testing performed on the forty-year-old ammonia process piping until after the November 2018 Inspection, but that information did not constitute a comprehensive report or analysis. The majority of the provided measurements exceeded the stated original thickness of the piping, without explanation of this apparent anomaly.[3] The report did not assess the current condition of the piping, state the minimum required thickness allowable under the code calculations (which

[3] A susbsequent testing effort pursuant to the Administrative Order on Consent with EPA revealed that a misidentification of the piping schedule explained the unexpected measurements.

consider pressure, mechanical, and structural loadings), assess whether the piping is at risk of failure, calculate remaining life, or explain the listed recommended reinspection interval, per the requirements of API 570, Section 7.

69. Forty C.F.R. § 68.73(e) requires the owner or operator to correct equipment deficiencies that are outside acceptable limits (defined by the process safety information) before further use or in a safe and timely manner after taking necessary measures to assure safe operation.

70. At the times of the Inspections, Respondents had not corrected equipment deficiencies that are outside acceptable limits before further use or in a safe and timely manner after taking necessary measures to assure safe operation, as further detailed in Attachment A. For example, among other things:

a) Many system components, including piping, valves, tanks, and support systems, were significantly corroded;

b) Insulation on several ammonia tanks was deteriorating, which can worsen corrosion by allowing water to seep through, and become trapped under, the insulation and then corrode the metal underneath;

c) A PRV on the ammonia compressor in the Aqueous Ammonia Manufacturing Building was beyond its service life (dated to 1988); and

d) At the time of the November 2018 Inspection, there were fugitive emissions from the ammonia processes in three locations.

71. By failing to establish and implement a sufficient mechanical integrity program and by not correcting equipment deficiencies before further use or in a safe and timely manner, Respondents violated 40 C.F.R. § 68.73.

Count 5: Failure to Comply with Program 3 Operating Procedure Requirements

72. Complainant realleges and incorporates by reference Paragraphs 1 through 71 of this document.

73. Pursuant to 40 C.F.R. § 68.69(a), the owner or operator of a Program 3 process must develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements: (1) steps for each operating phase, including initial startup, normal operation, temporary operation, and emergency shutdown (including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner); emergency operations; normal shutdown; and startup following a turnaround or emergency shutdown; (2) operating limits (including consequences of deviation); (3) safety and health considerations; and (4) safety systems and their functions.

74. At the time of the November 2018 Inspection, Respondents provided an operating procedure for the off-loading of anhydrous ammonia (dated Nov. 2, 2018), and in January 2019, Respondents additionally provided the "Procedure for filling aqua ammonia totes" (dated 12/26/18) and

"Ammonium Sulfate Manufacturing" (rev. Nov. 2, 2018). None of these procedures contained all of the required RMP elements. They did not include emergency shutdown procedures or include steps required to correct or avoid the deviation from the operating limits. The procedures did not address the hazards of anhydrous ammonia used in the process, personnel protective equipment that should be worn by operators during each operating phase, control measures to be taken if exposure to anhydrous ammonia occurs, or safety systems (like alarms and E-stop switches). Additionally, although GAC provided statements from 2015 and 2018 stating that its operating procedures were up-to-date, it did not have such verification for the years 2016 and 2017, indicating that GAC is not annually certifying operating procedures are current and accurate.

75. By failing to comply with the operating procedures requirements, Respondents violated 40 C.F.R. § 68.69.

Count 6: Failure to Identify Hazards under the General Duty Clause

76. Complainant realleges and incorporates by reference Paragraphs 1 through 75 of this document.

77. Under the General Duty Clause, 42 U.S.C. § 7412(r)(1), owners and operators of stationary sources producing, processing, handling or storing extremely hazardous substances have a general duty, in the same manner and to the same extent as 29 U.S.C. § 654, to identify hazards that may result from accidental releases of such substances, using appropriate hazard assessment techniques.

78. To identify hazards that may result from accidental releases of extremely hazardous substances under the GDC and Section 112(r)(1) of the CAA, owners and operators of stationary sources must determine: (a) the intrinsic hazards of the chemicals used in the processes; (b) the risks of accidental releases from the processes through possible release scenarios; and (c) the potential effect of these releases on the public and the environment, using appropriate hazard assessment techniques like using standard, industry-developed checklists, a "What If" analysis, a Hazard and Operability study, or a Consequence Analysis. *See, e.g.*, U.S. Envtl. Prot. Agency, *Guidance for Implementation of the General Duty Clause Clean Air Act Section 112(r)(1)*, § 2.3.1 (2000); NFPA 400-2016 Hazardous Materials Code, §§ 7.2.1, 7.2.2. (together, specifying that industrial processes be reviewed and written plans prepared by qualified personnel to ensure that fire and explosion and chemical hazards resulting from loss of containment or potential chemical interaction are prevented); Center for Chemical Process Safety, *Guidelines for Hazard Evaluation Procedures* (2008).

79. At the time of Inspection, Respondent had not conducted an adequate hazard review for sulfuric acid tanks and piping using appropriate hazard assessment techniques.

80. By failing to conduct an adequate hazard review for its use of sulfuric acid using appropriate hazard assessment techniques, Respondent failed to identify hazards that may result from accidental releases, in violation of the first requirement of the General Duty Clause, Section 112(r)(1) of the CAA, 42 U.S.C. § 7412(r)(1).

Count 7: Failure to Design and Maintain a Safe Facility under the General Duty Clause

81. Complainant realleges and incorporates by reference Paragraphs 1 through 80 of this document.

82. Under the General Duty Clause, 42 U.S.C. § 7412(r)(1), owners and operators of stationary sources producing, processing, handling or storing extremely hazardous substances have a general duty, in the same manner and to the same extent as 29 U.S.C. § 654, to design and maintain a safe facility to prevent releases.

83. The standard of care for designing and maintaining a safe facility to prevent chemical releases or minimize their impacts is to, among other things, base design considerations upon applicable design codes, federal and state regulations, and recognized industry practices. Such industry standards of care show that 1) a given hazard is recognized in the industry, and 2) there are feasible ways to eliminate or reduce the hazard.

84. At the time of the Inspection, Respondent had failed in its general duty to design and maintain a safe facility taking such steps as are necessary to prevent a release of an extremely hazardous substance, as summarized below and further described in Attachment B. For example, the Facility had:

a) Inadequate signs and labels (large outdoor sulfuric acid storage tanks lacked NFPA diamonds, and portable hoses used for sulfuric acid transfer from railcars to process piping lacked permanent identification);

b) Incomplete secondary containment around large sulfuric acid tanks;

c) Corroded sulfuric acid tanks and racks containing sulfuric acid;

d) Incomplete tank testing documentation;

e) No emergency stop system between the rail car and the sulfuric acid piping system to reduce the amount of acid released during an unloading incident; and

f) A manual valve at the top of the sulfuric acid unloading station while an emergency stop button is adjacent to the platform where releasing sulfuric acid could potentially fall.

85. By failing to design and maintain a safe facility to prevent accidental releases of an extremely hazardous substance used, handled, or stored at the Facility, Respondent violated the General Duty Clause at Section 112(r)(1) of the Clean Air Act.

F. TERMS OF CONSENT AGREEMENT

86. For the purpose of this proceeding, as required by 40 C.F.R. § 22.18(b)(2), Respondent:

a) admits that the EPA has jurisdiction over the subject matter alleged in this CAFO;

b) neither admits nor denies the specific factual allegations contained in this CAFO;

c) consents to the assessment of a civil penalty as stated below;

d) consents to the issuance of any specified compliance or corrective action order;

e) consents to the conditions specified in this CAFO;

f) consents to any stated Permit Action;

g) waives any right to contest the alleged violations of law set forth in Section D of this CAFO; and

h) waives its rights to appeal the Final Order accompanying this Consent Agreement.

87. For the purpose of this proceeding, Respondent:

a) agrees that this CAFO states a claim upon which relief may be granted against Respondent;

b) acknowledges that this CAFO constitutes an enforcement action for purposes of considering Respondent's compliance history in any subsequent enforcement actions;

c) waives any and all remedies, claims for relief and otherwise available rights to judicial or administrative review that Respondent may have with respect to any issue of fact or law set forth in this CAFO, including any right of judicial review under Section 307(b)(1) of the CAA, 42 U.S.C. § 7607(b)(1);

d) consents to personal jurisdiction in any action to enforce this Consent Agreement or Final Order, or both, in the United States District Court for the District of Maine; and

e) waives any rights it may possess at law or in equity to challenge the authority of the EPA to bring a civil action in a United States District Court to compel compliance with the Consent Agreement or Final Order, or both, and to seek an additional penalty for such noncompliance, and agrees that federal law shall govern in any such civil action.

88. Respondent certifies that it has corrected the violations alleged in this CAFO and is currently in compliance with the CAA's General Duty Clause and the RMP Rules at the Facility, as qualified by the subparagraphs below:

a) Respondent has worked with an outside engineering consultant to design a secondary containment system for its sulfuric acid tanks. The design and survey work, tank inspections, and utility relocation are now complete, and the excavation and wall construction is expected to be completed in November 2021; and

b) Respondent is installing acid-specific air-actuated emergency stop valves at both sulfuric acid railcar unloading areas. Respondent has purchased the valves and is awaiting delivery.

Penalty Payment

89. Pursuant to Sections 113(d)(2)(B) and (e) of the CAA, 42 U.S.C. § 7413(d)(2)(B) and (e), and taking into account the relevant statutory penalty criteria, the applicable penalty policy, EPA has determined that it is fair and proper to assess a civil penalty of $305,000 for the violations alleged in this matter.

90. Respondent consents to the issuance of this CAFO and consents for purposes of settlement to pay the civil penalty $305,000 within 30 calendar days of the Effective Date of this CAFO.

91. Respondent agrees to pay the EPA Penalty using any method, or combination of methods,

provided on the website http://www2.epa.gov/financial/additional-instructions-making-payments-epa, and identifying every payment with "Docket No. CAA-01-2021-0070." Within 24 hours of payment of the EPA Penalty, email and mail proof of payment to

Wanda I. Santiago
Regional Hearing Clerk
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Mail Code 4-6
Boston, Massachusetts 02109-3912
R1_Hearing_Clerk_Filings@epa.gov

and

Christine M. Foot, Enforcement Counsel
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Mail Code 04-2
Boston, MA 02109-3912
foot.christine@epa.gov

"Proof of payment" means, as applicable, a copy of the check, confirmation of credit card or debit card payment, confirmation of wire or automated clearinghouse transfer, and any other information required to demonstrate that payment has been made according to the EPA requirements, in the amount due, and identified with "Docket No. CAA-01-2021-0070."

92. **Collection of Unpaid Civil Penalty:** If Respondent fails to timely pay any portion of its civil penalty or any stipultated penalties assessed under this CAFO, EPA may request that the U.S. Department of Justice institute a civil collection action pursuant to Section 113(d)(5) of the CAA, 42 U.S.C. § 7413(d)(5). In any such collection action, the validity, amount, and appropriateness of the penalty shall not be subject to review. In addition, EPA may also: (a) refer the debt to a credit reporting agency or a collection agency, pursuant to 42 U.S.C. § 7413(d)(5) and 40 C.F.R. §§ 13.13, 13.14, and 13.33; (b) collect the debt by administrative offset (i.e., the withholding of money payable by the United States to, or held by the United States for, a person to satisfy the debt the person owes the Government), which includes, but is not limited to, referral to the Internal Revenue Service for offset against income tax refunds, pursuant to 40 C.F.R. Part 13, Subparts C and H; (c) suspend or revoke Respondent's licenses or other privileges, or (d) suspend or disqualify Respondent from doing business with EPA or engaging in programs EPA sponsors or funds, pursuant to 40 C.F.R. § 13.17.

G. ADDITIONAL PROVISIONS

93. The terms, conditions, and compliance requirements of this CAFO may not be modified or amended except upon the written agreement of both parties, and approval of the Regional Judicial Officer.

94. By signing this CAFO, Respondent acknowledges that this CAFO will be available to the

public and agrees that this CAFO does not contain any confidential business information or personally identifiable information.

95. By signing this CAFO, the undersigned representative of Complainant and the undersigned representative of Respondent each certify that he or she is fully authorized to execute and enter into the terms and conditions of this CAFO and has the legal capacity to bind the party he or she represents.

96. By signing this CAFO, both parties agree that each party's obligations under this CAFO and EPA's compromise of statutory maximum penalties constitute sufficient consideration for the other party's obligations.

97. By signing this CAFO, Respondent certifies that the information it has supplied concerning this matter was at the time of submission true, accurate, and complete for each such submission, response, and statement. Respondent acknowledges that there are significant penalties for submitting false or misleading information, including the possibility of fines and imprisonment for knowing submission of such information, under 18 U.S.C. § 1001.

98. The Parties each consent to the use of digital signatures on this document, and Respondent further consents to receipt of service of the ESA, once filed, by electronic mail. Respondent understands that the provided e-mail address may be publicly available when the CAFO and Certificate of Service are filed and uploaded to a searchable database.

H. EFFECT OF CONSENT AGREEMENT AND ATTACHED FINAL ORDER

99. In accordance with 40 C.F.R. § 22.18(c), completion of the terms of this CAFO resolves only Respondent's liability for federal civil penalties for the violations specifically alleged above.

100. Penalties paid pursuant to this CAFO shall not be deductible for purposes of federal taxes.

101. This CAFO constitutes the entire agreement and understanding of the parties and supersedes any prior agreements or understandings, whether written or oral, among the parties with respect to the subject matter hereof.

102. Any violation of this CAFO may result in a civil judicial action for an injunction or civil penalties as provided in Section 113(b)(2) of the Act, 42 U.S.C. § 7413(b)(2), as well as criminal sanctions as provided in Section 113(c) of the Act, 42 U.S.C. § 7413(c). EPA may use any information submitted under this CAFO in an administrative, civil judicial, or criminal action.

103. Nothing in this CAFO shall relieve Respondent of the duty to comply with all applicable provisions of the CAA and other federal, state, or local laws or statutes. Nor shall it restrict the EPA's authority to seek compliance with any applicable laws or regulations, or be construed to be a ruling on, or determination of, any issue related to any federal, state, or local permit.

104. Nothing herein shall be construed to limit the power of the EPA to undertake any action against Respondent or any person in response to conditions that may present an imminent and

substantial endangerment to the public health, welfare, or the environment.

105. This CAFO in no way relieves Respondent or its employees of any criminal liability, and EPA reserves all its other criminal and civil enforcement authorities, including the authority to seek injunctive relief and the authority to undertake any action against Respondent in response to conditions which may present an imminent and substantial endangerment to the public health, welfare, or the environment.

106. Except as qualified by Paragraphs 92 (overdue penalty collection), each party shall bear its own costs and fees in this proceeding including attorney's fees. Respondent specifically waives any right to recover such costs from EPA pursuant to the Equal Access to Justice Act, 5 U.S.C. § 504, or other applicable laws.

I. EFFECTIVE DATE

107. Respondent and Complainant agree to issuance of the attached Final Order. Upon filing, the EPA will transmit a copy of the filed CAFO to the Respondent. This CAFO shall become effective after execution of the Final Order by the Regional Judicial Officer on the date of filing with the Regional Hearing Clerk.

The foregoing Consent Agreement In the Matter of GAC Chemical Corporation, *et al*, Docket No. CAA-01-2021-0070, is Hereby Stipulated, Agreed, and Approved for Entry.

FOR RESPONDENT:

David M. Colter, President
GAC Chemical Corporation
General Alum of New England

9/20/21
Date

FOR COMPLAINANT:

JAMES CHOW Digitally signed by JAMES CHOW Date: 2021.09.29 10:15:22 -04'00'

James Chow, Deputy Director *for* Karen McGuire, Director
Enforcement and Compliance Assurance Division
U.S. Environmental Protection Agency
Region 1 – New England

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
BEFORE THE ADMINISTRATOR

IN THE MATTER OF **GAC Chemical Corporation** 34 Kidder Point Road Searsport, Maine 04974 **General Alum New England Corp.** 34 Kidder Point Road Searsport, Maine 04974 Respondents Proceeding under Section 113(a) of the Clean Air Act, 42 U.S.C. § 7413(a)	**FINAL ORDER** Docket No. CAA-01-2021-0070

Pursuant to 40 C.F.R. §§ 22.18(b) and (c) of the EPA's Consolidated Rules of Practice and sections 113(d)(1) of the Clean Air Act, 42 U.S.C. §§ 7413(d)(1), the attached Consent Agreement resolving this matter is incorporated by reference into this Final Order and is hereby ratified.

The Respondent is ORDERED to comply with all terms of the Consent Agreement, which shall become effective on the date it is filed with the Regional Hearing Clerk.

So ordered.

LEANN JENSEN Digitally signed by LEANN JENSEN Date: 2021.09.29 12:46:17 -04'00'

LeAnn Jensen
Regional Judicial Officer

Attachment A

RMP Table of Recognized and Generally Accepted Good Engineering Practices ("RAGAGEP")

Industry standards of care for handling anhydrous ammonia safely include, among others, National Fire Protection Association ("NFPA") codes, some of which are incorporated into state fire codes and safety information provided by primary chemical manufacturers and distributors. These include but are not limited to NFPA 1 *Fire Code*, NFPA 55 *Compressed Gases and Cryogenic Fluids Code*, and NFPA 400 *Hazardous Materials Code*. In collaboration with the American National Standards Institute ("ANSI"), the American Society of Mechanical Engineers ("ASME") issues and updates ASME A13.1 *Scheme for the Identification of Piping Systems*, ASME B31.3 *Process Piping*, which covers, among other things, materials, design, inspection and testing of piping, and ASME B31.4 *Pipeline Transportation Systems for Liquids and Slurries*. Also in collaboration with ANSI, the Compressed Gas Association ("CGA") issues and updates CGA G-2.1 *Requirements for the Storage and Handling of Anhydrous Ammonia*, which applies to the design, construction, repair, alteration, location, installation, and operation of anhydrous ammonia systems. OSHA has published regulations for the storage and handling of anhydrous ammonia at 29 C.F.R. § 1910.111. The American Petroleum Institute ("API") publishes standards that are used in the oil and chemical industries, such as API 570 *Piping Inspection Code*, API RP 574 *Inspection Practices for Piping System Components*, and API 510 *Pressure Vessel Inspection Code*.

EPA is citing to the last version published before the inspection.

Alleged Condition	**Examples of RAGAGEP**
Count 2 - Certain ammonia tanks, valves, and pipes did not have adequate impact protection.	29 C.F.R. § 1910.111(c)(7) (precaution to be taken against any damage to ammonia systems from vehicles); CGA G-2.1, § 6.7.1 (containers and appurtenances to be located or protected by suitable barriers to avoid damage by trucks or other vehicles); NFPA 55, §§ 4.11.1.1 (areas with compressed gas tanks, piping, valves, and fittings to be protected from vehicular damage using guard posts or other approved means), 7.1.10.1 (compressed gas tank valves to be protected from physical damage by means of protective caps, collars, or similar devices).
Count 2 - Various tanks, pipes, valves, and doors lacked appropriate labeling and signage.	NFPA 55, §§ 6.12.1 (all entrances to spaces containing compressed gases be marked in accordance with NFPA 704), 7.1.8.3.1 (tanks to be marked in accordance with NFPA 704), 7.1.8.4 (piping systems to be marked in accordance with ASME A13.1); CGA G-2.1, § 6.6.2 (containers to be conspicuously marked with a hazard warning label in accordance with 29 C.F.R. § 1910.1200); 29 C.F.R. § 1910.111(b)(3) (outlining labeling and signage requirements for non-refrigerated containers of anhydrous ammonia); ANSI/ASME A13.1 (pipe labeling); NFPA 704, §§ 4.1.1, 4.3 (hazard diamond).
Count 2 - There were inadequate ammonia detection systems and alarms.	NFPA 55, §§ 7.9.6 (requiring a continuous gas detection system for the indoor use of toxic compressed gases), 7.9.6.2 (requiring that the gas detection be equipped to initiate audible and visible alarms).

Alleged Condition	Examples of RAGAGEP
Count 2 - Filling connections and piping did not have adequate check valves, or emergency isolation or shut off valves to keep large amounts of ammonia from being released during a spill from pipes or tanks.	29 C.F.R. § 1910.111(c)(2)(i) (each filling connection to be equipped with a combination of a back-pressure check valve and excess-flow valve, one double or two single back-pressure check valves, or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve); NFPA 55, §§ 4.6.2 (provisions shall be made for controlling and mitigating unauthorized releases); 7.3.1.3.2 (backflow or check valves required where backflow could create a hazardous condition or cause unauthorized discharges); 7.3.1.12.1 (requiring an approved means of leak detection with emergency shutoff or excess flow control for pressurized piping carrying health hazard class 3 or 4 gases); 7.3.1.12.1.2 (specifying required location of excess flow control valve at the bulk source at a point immediately downstream of the source valve when piping originates from bulk source); and 7.9.3.2.1 (requiring, for toxic gases, a gas detection system that triggers an automatic closing fail-safe valve, which must be located on or immediately adjacent to and downstream of active tank valves); CGA G-2.1, §§ 5.5.1.1 (each filling connection on a nonrefrigerated container opening should have a positive shutoff valve with either an internal check valve or excess flow valve), 5.10.8 (container piping should have excess flow valves and backpressure check valves should be considered where practical for filling connections).
Count 2 - Ammonia-containing building lacked adequate ventilation.	The Safety Data Sheet ("SDS") for anhydrous ammonia, which recommends that the chemical be used in a well-ventilated space; NFPA 55, §§ 6.16 (indoor storage and use areas shall be provided with mechanical exhaust ventilation or fixed natural ventilation, where natural ventilation is shown to be acceptable for the material stored), 6.16.4.4 (location of the exhaust and inlet air openings shall be designed to provide air movement across the area to prevent accumulation of vapors).
Count 2 - Some ammonia piping lacked adequate support, including some ammonia pipes that were being supported by, or were supporting, electrical conduit in several places	CGA G-2.1, § 5.6.3 (all piping should be supported in accordance with good piping practices, and that provisions shall be made as necessary for expansion, contraction, impact, vibration, and settlement); API RP 574, § 10.1.1.3 and ASME B31.3, § VI 341.4 – Erection (10) (both addressing need to visually inspect piping supports for corrosion, distortion, and general physical damage); Process Industry Practices, PNSC0011 – *Installation of ASME B31.3 Metallic Piping*, (2015 ed.), § 4.4.4.6 (warning against hanging piping from other piping, duct, or conduit).
Count 2 - Certain ammonia tanks were not properly supported.	CGA G-2.1, § 6.4.2 (horizontal aboveground containers to be supported to prevent the concentration of excessive loads and to provide suitable means for preventing corrosion on that portion of the container in

Alleged Condition	Examples of RAGAGEP
	contact with the foundations or saddles); API 510, § 6.2.1.1(b) (requiring pressure vessel supports be adequate and secured).
Count 4 – Insufficient tests and inspections of tanks and piping	The RAGAGEP for inspecting and testing pipes and pressure vessels at chemical manufacturing plants include, for example, API 570, API 510, API RP 574, ASME B31.3, ASME B31.4, and manufacturer's recommendations. API 570 and 510 set out programs for regular inspection and testing of pipes and pressure vessels to determine whether corrosion has rendered the metal in such equipment too thin for the equipment's intended use. API 570 requires that each piping system be monitored by taking thickness measurements at various locations, and that the thinnest reading or an average of several measurement readings taken within the area of a test point shall be recorded and used to calculate corrosion rates, remaining life, and the next inspection date. API 510, § 6.4.1 (visual external inspection of pressure vessels should be conducted every five years); API RP 574, § 13.1 (requiring detailed and orderly records be retained); 29 CFR 1910.119 (same).
Count 4 - Many system components, including piping, valves, tanks, and support systems, were significantly corroded.	API 570, § 5.5.2 (inspector is to calculate corrosion rates, remaining life, and the next inspection date of the inspected piping); NFPA 400-2016, § 6.1.16.1 (equipment associated with hazardous materials should be maintained in operable condition).
Count 4 - Insulation on ammonia tanks was deteriorating, which can worsen corrosion by allowing water to seep through, and become trapped under, the insulation and then corrode the metal underneath.	NFPA 400-2016, § 6.1.16.1 (equipment associated with hazardous materials should be maintained in operable condition).
Count 4 - Valve in the aqueous ammonia process were beyond its service life.	CGA G-2.1, § 5.8.16 (pressure relief valves should be replaced or recertified (by disassembling, inspecting, repairing, and testing to confirm its performance equals its original standards) no more than 5 years from their date of manufacture).
Count 4 - Fugitive emissions from the ammonia processes.	NFPA 55, §§ 4.6.2 (provisions shall be made for controlling and mitigating unauthorized releases, 7.1.15 (requiring replacement or repair of leaking, damaged, or corroded compressed gas systems); NFPA 400-2016, § 6.1.3 (operators should prevent, control, and mitigate the unauthorized release of hazardous materials).

Attachment B

GDC Table of Recognized and Generally Accepted Good Engineering Standards and Industry Standards of Care

Industry standards of care for handling sulfuric acid safely include, among others, National Fire Protection Association ("NFPA") codes, some of which are incorporated into state fire codes and safety information provided by primary chemical manufacturers and distributors. These include but are not limited to NFPA 1 Fire Code and NFPA 400 Hazardous Materials Code. For sulfuric acid specifically, the National Association of Corrosion Engineers ("NACE") publishes NACE SP0294-2006 – *Design, Fabrication, and Inspection of Storage Tank Systems for Concentrated Fresh and Process Sulfuric Acid and Oleum at Ambient Temperatures* and NACE RP0391-2001 – *Materials for the Handling and Storage of Commercial Concentrated (90 to 100%) Sulfuric Acid at Ambient Temperatures*. The Steel Tank Institute publishes STI/SPFA SP001-2018 – *Standard for the Inspection of Aboveground Storage Tanks*. Other references include NorFalco LLC's Sulfuric Acid Handbook.

EPA is citing to the last version published before the inspection.

Alleged Hazards/Dangerous Condition	**How Condition Could Lead to or Exacerbate the Consequences of a Release, Causing Harm**	**Examples of Industry Standards of Care**
Inadequate signs and labels (large outdoor sulfuric acid storage tanks lacked NFPA diamonds, portable hoses used for sulfuric acid transfer from railcars to process piping lacked permanent identification).	Lack of NFPA hazard diamonds increases the chance of inadvertent exposure to these chemicals and could frustrate efforts to react quickly and fully recognize dangers during a release. Inadequate or missing piping and associated hose labeling increases the chance of inadvertent exposure to these chemicals and could frustrate efforts to react quickly and fully recognize dangers during a release.	The industry standard of care is to mark the area and containers with NPFA hazard diamonds. *See, e.g.*, NFPA 1-2015, § 60.5.1.8.2.1 (above-ground tanks of hazardous materials should be marked with NPFA 704 diamonds). *See generally* NFPA 704 (2012) (Chapter 4 sets out guidelines for marking the health, instability and flammability of material hazards to assist in identifying hazards within a facility and requires, at a minimum, signs to be posted at each room or area). The industry standard of care is to provide piping systems (*i.e.*, conduits conveying fluids) with labels that identify the pipes' contents, physical state, and direction of flow at sufficient intervals and close to valves, flanges, bends, or branches in the piping. *See, e.g.*, ANSI/ASME 13.1 (2007). *See also* NFPA 400-2016, § 6.1.6.2(2) (piping and tubing shall be identified in accordance with ASME 13).
Incomplete secondary containment around large sulfuric acid tanks.	Secondary containment is critical to ensure the impact of any accidental spill is minimized and limited to the immediate area.	The industry standard of care is to provide secondary containment for outdoor storage of hazardous liquids like sulfuric acid. *See, e.g.*, NFPA 400-2016, §§ 6.3.3.2.2.2 & 6.3.1.4.2; NFPA 1-2015, § 64.1.2 (requiring compliance with NFPA 400 for corrosives). NACE RP0294, § 6.3; NACE RP0391, § 3.1.4; NorFalco, LLC, *Sulfuric Acid Handbook* at 24 (2007).

Alleged Hazards/Dangerous Condition	How Condition Could Lead to or Exacerbate the Consequences of a Release, Causing Harm	Examples of Industry Standards of Care
Corroded sulfuric acid tanks and racks containing sulfuric acid.	Corroded tanks and other equipment can lead to their failure and the release of sulfuric acid. Additionally, when carbon steel tanks corrode, hydrogen gas, which is potentially explosive, can form.	NFPA 400-2016, § 6.1.16.1 (equipment associated with hazardous materials should be maintained in operable condition). NorFalco, LLC, *Sulfuric Acid Handbook* at 24 ("A program of routine internal inspection should be established to ensure early detection of excessive corrosion.").
Incomplete tank testing documentation.	The failure to inspect sulfuric acid tanks at regular intervals risks not knowing the corrosion rate or the remaining useful life of the tank, increasing the chance that the tank will fail and lead to a potentially catastrophic release.	STI/SPFA SP001-2018, §§ 5, 6 (requiring tank owner to establish a tank's initial service date and develop an inspection schedule and conduct periodic, formal external, formal internal, and leak test inspections); NorFalco, LLC, *Sulfuric Acid Handbook* at 24 (recommending internal tank inspections every 5 years); NACE SP0294-2006, § 5 (outlining minimum requirements and intervals for 4 types of sulfuric acid tank inspections: routine in-service, external visual, external ultrasonic thickness, and internal).
No emergency stop system between the rail car and the sulfuric acid piping system to reduce the amount of acid released during an unloading incident.	The lack of an emergency stop system would likely prolong a release, resulting in a greater quantity of sulfuric acid being released.	NFPA 400-2016, §§ 6.1.6.2(3) & (4) (manual or remote shut-off valves shall be installed on supply piping at point of use and tank/bulk source and shall be identified by signage with location shall be visible and accessible).
A manual valve at the top of the sulfuric acid unloading station while an emergency stop button is adjacent to the platform where releasing sulfuric acid could potentially fall.	The lack of an emergency stop button near the operator risks the prolonging of a release or other problem with the transfer, exacerbating the impacts of such a release. An emergency button located beneath the platform would expose personnel trying to utilize it to direct contact with fall sulfuric acid.	NFPA 400-2016, §§ 6.1.6.2(3) & (4) (manual or remote shut-off valves shall be installed on supply piping at point of use and tank/bulk source and shall be identified by signage with location shall be visible and accessible).