NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Wilmington Regional Office
County: Columbus
NC Facility ID: 2400093
Inspector's Name: Linda Willis
Date of Last Inspection: 11/05/2019
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Bakelite Synthetics

Facility Address:
Bakelite Synthetics
333 Neils Eddy Road
Riegelwood, NC 28456

SIC: 2869 / Industrial Organic Chemicals, nec
NAICS: 325199 / All Other Basic Organic Chemical Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0503, .0515, .0516, .0521, .1111, .1806,
NSPS: Avoidance (for NSPS Dc)
NESHAP: MACT G, H, FFFF, DDDDD
PSD: NA
PSD Avoidance: for VOC, SO_2 (02D .0530)
NC Toxics: 02Q .0711
112(r): 02Q .0508(h)
Other: NA

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Ronald Bazinet Site Leader (910) 830-2757 333 Neils Eddy Road Riegelwood, NC 28456	Ronald Bazinet Site Leader (910) 830-2757 333 Neils Eddy Road Riegelwood, NC 28456	Emily Thompson Site Environmental Leader (502) 449-6223 333 Neils Eddy Road Riegelwood, NC 28456

Application Data

Application Number: 2400093.20A. 2400093.21A, 2400093.21B
Date Received: 03/06/2020, 05/04/2021, 06/09/2021
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 01394/T50
Existing Permit Issue Date: 06/29/2021
Existing Permit Expiration Date: 02/28/2022

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	0.0100	46.85	29.01	2.06	1.49	28.89	24.23 [Methanol (methyl alcohol)]
2018	0.0100	62.93	35.59	1.87	1.61	35.48	29.61 [Methanol (methyl alcohol)]
2017	0.0100	63.32	21.50	2.00	1.47	21.44	18.61 [Methanol (methyl alcohol)]
2016	0.0100	63.18	21.06	1.93	1.43	20.96	18.12 [Methanol (methyl alcohol)]
2015	0.0200	63.60	27.07	2.23	1.67	22.69	19.81 [Methanol (methyl alcohol)]

Review Engineer: Eric L. Crump, P.E.

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 01394/T51
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

Bakelite Synthetics (formerly known as Hexion VAD LLC - Acme Operations; hereinafter referred to as Bakelite) is a chemical manufacturing facility located in Riegelwood, Columbus County, North Carolina. The facility currently operates under Title V Permit No. 01394T50 with an expiration date of February 28, 2022. Bakelite has applied for renewal of their Title V air quality permit. Renewal application No. 2400093.21B was received on June 9, 2021, or at least nine months prior to the expiration date as required by General Condition 3.K of the current permit. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

Prior to the renewal application, Bakelite submitted a 502(b)(10) modification (Application No. 2400093.20A), which was received on March 6, 2020. This modification, which replaces an existing cooling tower (ES-003-06) with a new cooling tower (ES-003-08) having identical operating parameters, will be consolidated into this permit renewal.

On October 22, 2021, the Wilmington Regional Office (WiRO) of the Division of Air Quality (DAQ) received a notification of corporate and facility name change from Hexion VAD LLC, stating that as of that date Hexion VAD LLC - Acme Operations would legally change its name to Bakelite Synthetics. This change (Application No. 2400093.21A) will be reflected in this permit renewal.

2. Facility Description

Bakelite is a chemical manufacturing facility that produces formaldehyde and hexamethylene-tetramine (hexamine). The processes at the plant are divided into three distinct chemical manufacturing processes:

- Formaldehyde Chemical Manufacturing Process Unit (CMPU)[1] – This unit converts methanol into formaldehyde through a catalytic oxidation process. The CMPU includes three reactors and four adsorption columns for recovering the product, storage tanks, and a formaldehyde loading rack. Formaldehyde is a chemical listed in Table 1 of 40 CFR Part 63 Subpart F, making this CMPU subject to 40 CFR Part 63 Subpart G, "National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) for Process Vents, Storage Vessels, Transfer Operations, and Wastewater". Subparts F, G, and H of 40 CFR Part 63 are collectively referred to as the "Hazardous Organic NESHAP" or HON.

- Special Project Miscellaneous Organic Chemical Manufacturing Process Unit (MCPU)[1] – Various products, including ketone resins, can be manufactured in this process area using batch reactors. This MCPU is subject to the "NESHAP for Miscellaneous Organic Chemical Manufacturing, 40 CFR 63 Subpart FFFF, also referred to the "Miscellaneous Organic NESHAP" or MON. This area of the plant has not been operated in over five years, and portions of the unit have been systematically disassembled and sent for scrap recycling.

  Note: In this permit renewal, the Special Project MCPU and its associated permit requirements will be removed from the permit.

- Hexamine CMPU[1] – Hexamine is formed by reacting formaldehyde and ammonia. The CMPU includes a reactor, evaporator, crystallizers, and a centrifuge. Bakelite can sell the hexamine in slurry

[1] The term CMPU refers to chemical processes subject to HON, while MCPU refers to chemical processes subject to the MON.

form or can dry the product through a centrifugal process. Hexamine is another chemical listed in Table 1 of 40 CFR Part 63 Subpart F, making this CMPU also subject to the HON.

The plant also includes raw material handling and storage operations, utility operations (including steam production), and finished product loadout activities. As a chemical manufacturing facility, the existing major source threshold for the facility under the Prevention of Significant Deviation (PSD) permitting program is 100 tons per year (tpy). The facility has an enforceable limit on sulfur dioxide (SO_2) emissions, which enables it to be classified as an existing minor PSD source. Potential emissions of all other PSD-regulated pollutants, including greenhouse gases, are less than the PSD major source thresholds. Bakelite remains a Title V facility because potential hazardous air pollutants (HAP) emissions are greater than 10 tpy of individual HAPs and 25 tpy of total HAPs.

3. Application Chronology

March 23. 2017	Division of Air Quality (DAQ) issues Permit No. 01394T48 to Hexion as a Title V renewal.
August 8, 2017	Air Quality Analysis Branch (AQAB) issued memorandum documenting review of March 22, 2017 dispersion modeling analysis for Hexion (later revised May 5 and July 24, 2017). The analysis demonstrated facility-wide toxics emissions impacts following closure of the publicly-owned treatment works are below applicable standards on a source-by-source basis.
October 30. 2017	DAQ issues Permit No. 01394T49 to Hexion as a Title V minor modification. The following changes were made under this modification: • Removal of publicly owned wastewater treatment works (POTW) (ID ES-POTW). • Sending overheads water formerly sent to the POTW to the cooling towers (ES-003-03, ES-003-06, and ES-003-07). • Updated modeled permitting limits for the cooling towers to comply with the NC Air Toxics regulation. • Limiting emissions of volatile organic compounds (VOCs) to avoid applicability to 15A NCAC 02D .0530, Prevention of Significant Deterioration (PSD).
March 6, 2020	DAQ receives 502(b)(10) notification from Hexion (which was returned to Hexion due to lack of signature by responsible official. Hexion resubmitted the notification on March 12, 2020, at which point it was deemed complete). The notification proposed replacement of an existing cooling tower (ES-003-06) with a new cooling tower (ES-003-08) having identical operating parameters
March 25, 2020	DAQ acknowledges receipt of 502(b)(10) notification from Hexion, and instructs Hexion the change may be implemented if Hexion provides a seven business day notice per 02A ,0523(a)(2), and attaches a copy of the notification to the air permit.
May 4, 2021	DAQ acknowledges receipt of air permit application No. 2400093.21A from Hexion, requesting an ownership change.
June 9, 2021	DAQ acknowledges receipt of air permit application No. 2400093.21B from Hexion for renewal of their Title V permit.

June 29, 2021	DAQ issues Permit No. 01394T50 to Hexion, executing the ownership change for the facility
October 22, 2021	Wilmington Regional Office (WiRO) receives notification of corporate and facility name change from Hexion VAD LLC, stating that as of that date Hexion VAD LLC - Acme Operations would legally change its name to Bakelite Synthetics.
May 6, 2022	DAQ sends draft permit to Bakelite and WiRO for review and comment.
May 19, 2022	DAQ receives comments on draft permit from Bakelite.
May 20, 2022	DAQ receives comments on draft permit from WiRO.
xxx	Permit renewal notice published, 30-day public notice and comment period begins, and 45-day U.S. Environmental Protection Agency (EPA) comment period begins.
xxx	30-day public notice and comment period ends.
xxx	45-day EPA comment period ends.

4. Changes to Permit and Title V Equipment Editor (TVEE) Discussion

The following table summarizes changes made to the current Bakelite permit as a result of this permit renewal:

Page No.	Section	Description of Changes
Cover and throughout	---	• Updated all dates and permit revision numbers • Removed periods from the ends of permit section citations (e.g. "2.1 A.1.a." changed to "2.1 A.1.a") when necessary • Changed citations of 15A NCAC 2D to 15 NCAC 02D wherever they occur • Changed name of facility from Hexion VAD LLC - Acme Operations to Bakelite Synthetics
Insignificant Activities List	Attachment	Moved list to Section 3 of the permit
Cover page	---	• Added NAICS code for facility • Added due date for renewal of permit
2	Table of Contents	• Changed Section 3 from "General Conditions" to "Insignificant Activities per 15A NCAC 02Q .0503(8)" • Added Section 4, General Conditions
3	List of Acronyms	Inserted list after Table of Contents

Page No.	Section	Description of Changes
4	1	• Deleted Special Projects MCPU and associated sources • Deleted source ID Nos. ES-NH3, ES-NH3-Tanks, ES-T27 through ES-T32, ES-T53, and ES-007.1 • Added ES-NH3-Tank • Deleted "Case-by-Case MACT" designation from Boiler ES-001-01 • Moved source ID Nos. ES-007.2, ES-007.3, ES-007.5 through ES-007.10, ES-T27 through ES-T32, and ES-T53 from Section 1 to Section 3 • Deleted all footnotes
6	2.1 A 2.1 A.1.a, c 2.1 A.2.a, c	• Deleted 02D .1109 requirements from table • Deleted parenthetical text related to 02D .1111 "(These requirements are applicable until May 20, 2019)" from table Added source ID Number (ES-001-01) for boiler
7	2.1 A.3.c 2.1 A.4 2.1 A.4.h.i	Added source ID Number (ES-001-01) for boiler • Deleted 02D .1109, Case-by-Case MACT section, and renumbered subsequent sections and references in Section 2.1 A accordingly • Updated section to reflect the most current stipulations for 15A NCAC 02D .1111 and 40 CFR 63, Subpart DDDDD Changed annual tune-up requirement for boiler ES-001-01 to every five years
8	2.1 A.4.h.i.(F)	Added requirement for oxygen level setting on the oxygen trim system
9	2.1 A.4.k.i 2.1 B	Changed annual tune-up requirement for boiler ES-001-01 to every five years "LDAR" acronym in table defined as "Leak Detection and Repair"
10	2.1 B.1.c 2.1 B.2.b.ii 2.1 B.2.h	Inserted the phrase "for the formaldehyde process **(ID No. ES 002-01)**" "ppm" acronym defined as "parts per million" Definition of excursion from Section 2.1 B.2.q moved here to be consistent with 40 CFR 63.152(c)(2)(ii)
11	2.1 B.2.k 2.1 B.2.l.ii (C) 2.1 B.2.l.ii(D) 2.1 B.2.l.ii(E)	Added reference [40 CFR 63.114(d)(2)] Changed "permitted limit" to "range established in Section 2.1 B.2.f" Changed "temperature limit" to "range established in Section 2.1 B.2.f" Changed "limit" to "range established in Section 2.1 B.2.f"

Page No.	Section	Description of Changes
12	2.1 B.2.l.ii(F) 2.1 B.2.l.ii(G) 2.1 B.2.n.i 2.1 B.2.q	Changed "limit" to "range established in Section 2.1 B.2.f" • Inserted "paragraphs" before "(1) through (6)" • Changed "limit" to "range established" Changed "visual inspection" to "monthly visual inspection of the seal or closure mechanism" Definition of excursion here relocated to Section 2.1 B.2.h
15	2.1 F	• Deleted entire Special Projects MCPU section and re-lettered subsequent sections and references in Section 2.1 accordingly • Section 2.1 G is now Section 2.1 F • Included both PM emission limit equations for 02D .0515 in table
16	2.1 F.1	Updated section to reflect the most current stipulations for 15A NCAC 02D .0515
17	2.1 F.2.d, e	Updated section to reflect the most current stipulations for 15A NCAC 02D .0521
18	2.1 F.2.h	Updated section to reflect the most current stipulations for 15A NCAC 02D .0521
19	2.1 F.3.f 2.1 F.3.g 2.1 F.3.i	Changed citation from 40 CFR 63.114(c) to 40 CFR.114(a) Added citation 40 CFR 63.114(d) Added citation 40 CFR 63.118(a)
21	2.1 F.4.e.i	Changed "gal/hr" to gallons per hour
23	2.1 G	• Section 2.1 H is now Section 2.1 G • Included both PM emission limit equations for 02D .0515 in table
24	2.1 G.1 2.1 G.2	Updated section to reflect the most current stipulations for 15A NCAC 02D .0515 Updated section to reflect the most current stipulations for 15A NCAC 02D .0521
25	2.1 G.4 2.1 G.4.c 2.1 G.4.d.iii	Changed section title to "Avoidance Condition for 15A NCAC 02D .0530: Prevention of Significant Deterioration" Included specific formula for calculating VOC emissions from cooling tower Modified to reflect inclusion of specific formula for calculating VOC emissions from cooling towers in Section2.1 G.4.c
26	2.1 H 2.1 H.2.c	• Section 2.1 I is now Section 2.1 H • Changed "PSD Avoidance of 15A NCAC 02D .0530" in table to "PSD Avoidance" • Changed "TAP" to "Toxic Air Pollutants" in table Updated section to reflect the most current stipulations for 15A NCAC 02D .0516

Page No.	Section	Description of Changes
27	2.1 H.3.c	Added source ID Number (ES-001-01) for boiler
	2.1 H.4.a	• Changed "ng/J" to "nanograms per Joule", and "lb/MMBtu" to "pounds per million Btu" • Added noncompliance statement
	2.1 H.5.c.i	Deleted "and NO_X"; changed "equations" to "equation"
28	2.1 H.6.a	Updated section to reflect the most current stipulations for 15A NCAC 02D .0317
29	2.2 A	• Changed "Subpart H, F, and G" to "Subpart F, G, and H" in section title • Deleted the title "All MON Affected Fugitive Emission Sources, Closed Vent Systems, and Control Devices . . ." • Deleted all references to 40 CFR 63 Subpart FFFF from table
	2.2 A.1	Removed all mention and references to Subpart FFFF
	2.2.A.1.a.i.	Added reference to 40 CFR 63.162 to title (Standards – General)
	2.2 A.1.a.ii(A)	Added parentheses where needed to improve clarity
30	2.2 A.1.a.ix	Revised paragraph so it is more consistent with the text in 40 CFR 63.170
31	2.2 A.1.a.x(B)	Removed phrase "an exit concentration of", and defined "ppmv" as "parts per million by volume"
	2.2 A.1.a.x(C)	Inserted "on a dry basis, corrected to 3 percent oxygen" after "20 ppmv, and added a degree sign to "760 C"
	2.2 A.1.a.x(F)	Changed "40 CFR 63.182(b)" to "40 CFR 63.180(b)"
32	2.2 A.1.a.xii	Created numbered and lettered subparagraphs within this section, with no changes to content
33	2.2 A.1.d.vi, xiv	Deleted the words "of this subpart" following CFR citation
	2.2 A.2	Deleted "(Requirements also referenced by 40 CFR 63, Subpart FFFF)" from section title
34	2.2 A.2.a.ii(A)	Changed "using Method 21 in accordance with 30 CFR 63.148(c)(1)(6)" to "according to the procedures in 40 CFR 3.148(c)"
	2.2 A.2.c	Changed "either comply with the provisions of either." to "comply with either of the following:"
	2.2 A.2.g	Inserted "the Permittee shall" before the phrase "create and maintain"
	2.2 A.2.g.v	Changed "owner or operator" to "Permittee"
	2.2 A.2.h	Inserted "the Permittee shall" before the phrase "create and maintain"

Page No.	Section	Description of Changes
35	2.2 B 2.2 B.1.b	• Changed "described above" to "described herein" above table • Changed "Control of Toxic Air Pollutants" to "See Section 2.2 B.1" in table • Changed "Control and Prohibition of Odorous Emissions" to "Odorous emissions must be controlled" in table • Changed "PSD Avoidance of 15A NCAC 02D .0530" in table to "PSD Avoidance" Made corrections to dates for receipt and approval of dispersion modeling analyses received by DAQ
36	2.2 B.3.b	Added boiler ID numbers (ES-001-01 and ES-001-01T)
38	3	• Moved list of insignificant activities to Section 3. Changes to list include: o Addition of source ID Nos. IES-NH3, IES-NH4OH-Tanks, IES-T27 through IES-T32, IES-T53, and I-002-05b o Source ID No. IES-IT6 is now subject to MACT G instead of MACT FFFF o Removal of source ID Nos. IES-T44, IES-T45, IT1, IT4, IT9, IT10, IT14, IT39, IT42, IT47 • Moved General Conditions to new Section 4
40	4	Updated General Conditions to Version 6.0 dated January 7, 2022

The following changes have been made to the Title V Equipment Editor (TVEE):

Emission Sources Removed:

- ES-003-06, Cooling Tower
- ES-002-05a, Resin Catch Tank (5,000 gal capacity)
- ES-002-05c, Reactor (5,000 gal capacity)
- ES-002-05d, Resin product truck loading operation
- ES-T8, Aniline Storage Tank (5,000 gal capacity)
- ES-T17, Formaldehyde Nurse Tank (1,500 gal capacity)
- ES-T23, Resin Tank #1 (8,364 gal capacity)
- ES-T24, Resin Tank #2 (7,000 gal capacity)
- ES-T25, Resin Tank #3 (6,000 gal capacity)
- ES-T26, Resin Tank #4 (20,000 gal capacity)
- ES-T33, Process Water Tank (6,200 gal capacity)
- ES-T43, Groutwright Tank (4,000 gal capacity)
- ES-T51, Special Projects Storage Tank (22,000 gal capacity)
- ES-002-O5wwl, Wastewater Storage Tank; fixed-roof (5,000 gal capacity)
- ES-002-05ww2, Wastewater Steam Stripper
- ES-002-Fug02, Special Projects MCPU fugitive emissions
- ES-004-T6, Formaldehyde storage tank (12,000 gallon capacity)
- ES-007.1, Environmental Regeneration Tank #5 (26,000 gallon capacity)
- ES-007.7, Wastewater tank for the hexamine CMPU (22,000 gallon capacity)
- ES-007.8, Wastewater tank for the hexamine CMPU (22,000 gallon capacity)
- ES-007.9, Wastewater tank for the hexamine CMPU (22,000 gallon capacity)
- ES-007.10, Wastewater tanks for the hexamine CMPU (22,000 gallon capacity)
- IES-T44, Resin Distillate and Wastewater Feed Tank (10,150 gallon capacity)
- IES-T45, Resin Distillate and Wastewater Feed Tank (10,150 gallon capacity)

- IT1, 100,000 gallon Wastewater Storage Tank
- IT4, 12,000 gallon Acetone Tank
- IT9, 1,000 gallon Diesel fuel tank
- IT10, 1,000 gallon Gasoline fuel tank
- IT14, 8,900 gallon Washing Solution
- IT39, 4,000 gallon B Liquor Tank
- IT42, 8,364 gallon TEA tank
- IT47, 8,000 gallon Sulfuric Acid tank

Control Devices Removed:

- CD-002-05a, One condenser
- CD-002-05b, One condenser
- CD-002-05c, One condenser

Emission Sources Added:

- ES-003-08, Cooling Tower
- ES-NH4OH-Tank, Aqua Ammonia Tank

Revisions to Emission Sources:

- ES-002-05b, Reactor (6,000 gal capacity) is changed to I-002-05b, Hexamine Re-run Tank (6,000 gallon capacity)
- For each of the sources listed below, the abbreviation "gal" in its former description is changed to the word "gallon", as shown below:
  - ES-004-T9, Formaldehyde storage tank (30,000 gallon capacity)
  - ES-004-T10, Formaldehyde storage tank (100,000 gallon capacity)
  - ES-004-T11, Formaldehyde storage tank (30,000 gallon capacity)
  - ES-004-T12, Formaldehyde storage tank (30,000 gallon capacity)
  - The descriptions to the following sources have been changed
- ES-007.2, Hexamine Process Water and Boiler Blowdown Tank #1 (19,100 gallon capacity) – formerly known as Environmental Regeneration Tank #1 (19,100 gallon capacity)
- ES-007.3, Hexamine Process Water and Boiler Blowdown Tank #2 (30,000 gallon capacity) – formerly known as Environmental Regeneration Tank #2 (30,000 gallon capacity)
- ES-007.5, Hexamine Process Water and Boiler Blowdown #6 (20,000 gallon capacity) – formerly known as Environmental Intermediate Tank #6 (20,000 gallon capacity)
- ES-007.6, Hexamine Process Water and Boiler Blowdown #5 (20,000 gallon capacity) – formerly known as Environmental Intermediate Tank #5 (20,000 gallon capacity)
- ES-T27, Hexamine Process Water and Boiler Blowdown Tank #1 (18,500 gallon capacity) – formerly Environmental Feed Tank #1 (18,500 gallon capacity)
- ES-T28, Hexamine Process Water and Boiler Blowdown Tank #2 (18,500 gallon capacity) – formerly Environmental Feed Tank #2 (18,500 gallon capacity)
- ES-T29, Hexamine Process Water and Boiler Blowdown Tank #3 (20,000 gallon capacity) – formerly Environmental Feed Tank #3 (20,000 gallon capacity)
- ES-T30, Hexamine Process Water and Boiler Blowdown Tank #4 (20,000 gallon capacity) – formerly Environmental Intermediate Tank #1 (20,000 gallon capacity)
- ES-T31, Hexamine Process Water and Boiler Blowdown Tank #5 (20,000 gallon capacity) – formerly Environmental Intermediate Tank #2 (20,000 gallon capacity)
- ES-T32, Hexamine Process Water and Boiler Blowdown Tank #6 (20,000 gallon capacity) – formerly Environmental Intermediate Tank #3 (20,000 gallon capacity)
- ES-T53, Green Hexamine Process Water Tank (10,000 gallon capacity) – formerly Overheads Wastewater Tank (10,000 gallon capacity)

5. Description of Changes and Estimated Emissions

A. Replacement of Cooling Tower. As mentioned in Section 1 of this review, Bakelite submitted a 502(b)(10) modification (Application No. 2400093.20A) to replace one of the existing cooling towers (ES-003-06) with a new cooling tower (ES-003-08). This is a replacement in kind, with the new tower having the same operating parameters as the existing tower. Therefore, this replacement should not increase or reduce overall emissions at the facility. No change to any regulatory language is necessary as part of this permit modification (i.e., no new provisions are initiated as part of this replacement). Continued compliance is expected.

B. Removal of Special Project CMPU Equipment. Bakelite has not operated the Special Project CMPU for several years, and has been gradually dismantling the CMPU. Bakelite has requested that the permitted equipment associated with the Special Project CMPU and all corresponding permit conditions be removed from the permit. The equipment to be removed is listed in the following table.

Source ID No	Emission Source Description	Control Device ID No.	Control Device Description
ES-002-0.5a	Resin Catch Tank (5,000 gal capacity)	CD-002-05a	One condenser
ES-002-05b[a]	**Reactor (6,000 gal capacity)**	CD-002-05b	One condenser
ES-002-05c	Reactor (5,000 gal capacity)	CD-002-05C	One condenser
ES-002-05d	Resin product truck loading operation	NA	NA
ES-T8	Aniline Storage Tank (5,000 gal capacity)	NA	NA
ES-T17	Formaldehyde Nurse Tank (1,500 gal capacity)	NA	NA
ES-T23	Resin Tank #1 (8,364 gal capacity)	NA	NA
ES-T24	Resin Tank #2 (7,000 gal capacity)	NA	NA
ES-T25	Resin Tank #3 (6,000 gal capacity)	NA	NA
ES-T26	Resin Tank #4 (20,000 gal capacity)	NA	NA
ES-T33	Process Water Tank (6,200 gal capacity)	NA	NA
ES-T43	Groutwright Tank (4,000 gal capacity)	NA	NA
ES-T51	Special Projects Storage Tank (22,000 gal capacity)		
ES-002-O5wwl	Wastewater Storage Tank; fixed-roof (5,000 gal capacity)	NA	NA
ES-002-05ww2	Wastewater Steam Stripper	**CD-002-O1a[b]**	**One electrically-heated catalytic oxidizer**
ES-002-Fug02	Special Projects MCPU fugitive emissions	NA	NA

Notes (for source and control device in **bold type** above):
a. Source **ES-002-O5b** is being repurposed for use as a hexamine re-run tank.
b. While control device **CD-002-O1a** no longer controls emissions from the Special Projects CMPU, it remains in service as the control device for the CMPU (formaldehyde production process).

C. Change in Usage for Reactor (ES-002-05b). This vessel, which formerly served as a reactor within the Special Project CMPU, is now occasionally used to re-work hexamine from a granular form into a liquid, in a fashion similar to the hexamine rerun tank (ES-001-02.8-5). The only emissions from this unit occur from the manual addition of bagfuls of hexamine through the manway at the top of the unit. Uncontrolled potential emissions are less than 5 tpy and there are no HAP or toxic air pollutants (TAP) emitted from this equipment. Bakelite has requested that this vessel be added to the insignificant activity list as I-002-05b.

This repurposed source will be classified as an insignificant activity under 15A NCAC 02Q .0503(8) because its emissions would not violate any applicable emissions standard, its potential uncontrolled criteria pollutant emissions are no more than five tons per year and its potential uncontrolled HAP emissions are below 1000 pounds per year. For this reason, no conditions are included in the permit for this source. The hexamine re-run tank (I-002-05b) is not subject to any permit conditions.

It should be noted that classifying an emission source or activity as insignificant does not mean it is exempted from any applicable requirement, or that the Permittee is exempted from demonstrating compliance with any applicable requirement. The Permittee is required to have documentation— including calculations, if necessary—available at the facility at all times that demonstrates that an emission source or activity is insignificant.

D. Boiler MACT Compliance Update. The Bakelite facility complies with the Boiler MACT requirements for boiler ES-001-01 as outlined in Section 2.1 A.5 of the facility's Title V permit. Currently, Bakelite conducts boiler tune-ups annually. However, Bakelite added an automatic oxygen trim system to ES-001-01 in 2020 and requested that DAQ change the required schedule for the tune-up of boiler ES-001-01 from annually to every five years as allowed by 40 CFR 63.7540(a)(12). This change has been made in the permit, along with the addition of a corresponding requirement to set the oxygen level on the oxygen trim system no lower than the oxygen concentration measured during the most recent tune-up.

E. Ammonia Tank Updates. Currently the permit lists the aqueous ammonia (NH_4OH) and anhydrous ammonia (NH_3) tanks together as a single source (ES-NH3-Tanks). Each of these two tanks has a different function and vents to a different place. For this reason, Bakelite is requesting that these two tanks be separated into two sources: Anhydrous Ammonia Tank (ES-NH3-Tank), which only vents during a malfunction (directly to atmosphere), and Aqua Ammonia Tank (ES-NH4OH-Tank), which vents breathing losses to the hexamine oxidizer (CD-001-02b). No physical or functional changes will be made to either tank, and overall emissions from these sources will not be affected by this change.

F. Removal of Decommissioned Tanks: In an email dated May 19, 2022, Bakelite informed DAQ that several tanks had either been removed from the facility, or were no longer in use and would not be returned to service. The majority of these tanks were classified as insignificant activities, and contributed very little to overall emissions at the facility.

Removed from the facility:
ES-004-T6, Formaldehyde storage tank (12,000-gallon capacity)
IT9, 1,000 gallon Diesel fuel tank
IT10, 1,000 gallon Gasoline fuel tank
IT14, 8,900 gallon Washing Solution
IT39, 4,000 gallon B Liquor Tank
IT42, 8,364 gallon TEA tank

Taken out of service:
ES-007.1, Environmental regeneration tank #5 (26,000-gallon capacity)
IES-T44, Resin Distillate and Wastewater Feed Tank (10,150-gallon capacity)
IES-T45, Resin Distillate and Wastewater Feed Tank (10,150-gallon capacity)
IT1, 100,000 gallon Wastewater Storage Tank
IT4, 12,000 gallon Acetone Tank
IT47, 8,000 gallon Sulfuric Acid tank

G. Repurposing of Existing Tanks: In an email dated May 19, 2022, Bakelite informed DAQ that Environmental Feed Tanks #1 through 6 (IES-T27 through IES-T32) and the Overheads Wastewater Tank (IES-T-53) are currently being used for new purposes, and should therefore be redesignated as follows, indicating their current use:

IES-T27, Hexamine Process Water and Boiler Blowdown Tank #1 (18,500 gallon capacity)
IES-T28, Hexamine Process Water and Boiler Blowdown Tank #2 (18,500 gallon capacity)
IES-T29, Hexamine Process Water and Boiler Blowdown Tank #3 (20,000 gallon capacity)
IES-T30, Hexamine Process Water and Boiler Blowdown Tank #4 (20,000 gallon capacity)
IES-T31, Hexamine Process Water and Boiler Blowdown Tank #5 (20,000 gallon capacity)
IES-T32, Hexamine Process Water and Boiler Blowdown Tank #6 (20,000 gallon capacity)
IES-T53, Green Hexamine Process Water Tank (10,000 gallon capacity)

Bakelite submitted a previous emissions estimate of potential emissions from four previously converted hexamine process water and boiler blowdown tanks at the facility (ES-007.2, ES-007.3, ES-007.5, and ES-007.6). The estimated total potential emissions from these four tanks are shown below.

Formaldehyde (HCHO)		**Methanol (CH_3OH)**		**Total VOC**		**Ammonia (NH_3)**	
lb/hr	**lb/yr**	**lb/hr**	**lb/yr**	**lb/hr**	**lb/yr**	**lb/hr**	**lb/yr**
8.88 E-06	0.08	0.00224	19.62	0.00225	19.69	0.107	940.22

As shown, the four tanks combined would meet the criteria for an insignificant activity under 15A NCAC 02Q .0503(8) discussed earlier. It is therefore reasonable to assume that each tank on its own would be an insignificant activity. And since the six hexamine process water and boiler blowdown tanks (IES-T27 through IES-T32) and the green hexamine process water tank (IES-T-53) are equal to or smaller in volume than any of the four previously converted tanks (ES-007.2, ES-007.3, ES-007.5, and ES-007.6), it is reasonable to assume each of these tanks would meet the criteria for being an insignificant activity.

As stated earlier, classifying an emission source or activity as insignificant does not mean it is exempted from any applicable requirement, or that the Permittee is exempted from demonstrating compliance with any applicable requirement. Bakelite must be able to demonstrate that these tanks are insignificant sources. Compliance with these requirements is expected.

6. Regulatory Review

The Bakelite facility is subject to the following state regulations, in addition to the requirements in the General Conditions:

15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers: This rule applies to particulate matter emissions from the combustion of fuel in indirect heat exchangers, such as boilers, that are discharged from any stack or chimney into the atmosphere. The regulation provides the following equation for determining the allowable emissions limit as a function of maximum heat input:

$$E = 1.090 \times Q^{-0.2594}$$

Where:

E = allowable emissions limit for particulate matter in pounds per million Btu

(lb/MMBtu); and

Q = maximum heat input in million Btu per hour (MMBtu/hr). The maximum heat input is the total heat content of all fuels and is the sum of maximum heat input of all fuel burning indirect heat exchangers at a plant site which are in operation, under construction, or permitted when determining the allowable emission limit for each fuel burning indirect heat exchanger.

Bakelite is currently permitted for one boiler permanently onsite: Natural Gas/No. 2 Fuel Oil-fired Boiler (ES-001-01, 24 MMBtu/hr heat input). The facility is also permitted for a temporary boiler—Back-up boiler; Natural Gas/No. 2 fuel oil-fired (ES-001-01T, 30 MMBtu/hr heat input))—which is limited to no more than 180 days onsite (see avoidance condition discussion in Section 8). Both boilers are subject to this regulation. Particulate emissions from Boiler ES-001-01 are limited to 0.48 pounds per million British thermal unit (lb/MMBtu) heat input. Back-up boiler ES-001-01T is limited to 0.39 lb/MMBtu heat input. Neither boiler requires monitoring, recordkeeping, or reporting as particulate emissions are expected to be minimal when burning natural gas or No. 2 fuel oil. Continued compliance is expected.

15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes: This regulation applies to any industrial process for which no other particulate emission control standards are applicable. Under this rule, the allowable emission rates for particulate matter from any stack, vent, or outlet are a function of the process rate, *P*.—the amount of product throughput for the industrial process being regulated. The maximum allowable emission rate, *E*, shall not exceed the level calculated using the following equations:

For process rates less than or equal to 30 tons per hour (ton/hr): $E = 4.10(P)^{0.67}$

For process rates greater than 30 ton/hr : $E = 55.0(P)^{0.11} - 40$

Where

E = maximum allowable emission rate for particulate matter in pounds per hour (lb/hr), calculated to three significant figures

P = process rate in ton/hr

The three cooling towers (ES-003-03, ES-003-07, and ES-003-08) are subject to this regulation, along with the following components of the hexamine CMPU:

- Hexamine dryer (ES-001-04), controlled by bagfilter (CD-001-02d),
- granular Hexamine pneumatic transfer system (ES-001-05), controlled by bagfilter (CD-001-02d),
- pneumatic free-flow product transfer system (ES-001-06), controlled by cartridge filter (CD-001-02c), and
- free-flow (pulverized) Hexamine bagging operation (ES-001-07), controlled by cartridge filter (CD-001-02e).

Bakelite is required to inspect and maintain the hexamine CMPU components according to manufacturers' recommendations. The regulation also requires monthly visual inspections of the ductwork and material collection units for leaks, and annual internal inspection of the bagfilters/cartridge filters for structural integrity. Inspection and maintenance results are to be maintained in a logbook onsite and semi-annual reporting is required. For the cooling towers, Bakelite is required to maintain records such that the process rate P can be calculated; no reporting is required. Continued compliance is expected.

15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources: Boiler ES-001-01—as well as Back-up Boiler ES-001-01T when in use—are subject to this regulation. For both boilers, SO_2 emissions shall not exceed 2.3 lb/MMBtu heat input. No monitoring, recordkeeping, or reporting is required when natural gas or No. 2 fuel oil for these sources. The current permit as written did not include

No. 2 fuel oil as a fuel for the back-up boiler with regard to this regulation. This will be corrected in this renewal. Continued compliance is expected.

15A NCAC 02D .0521, Control of Visible Emissions: The intent of this regulation is to prevent, abate, and control emissions generated from fuel burning operations and industrial processes where an emission can be expected to occur, except during startups, shutdowns, and malfunctions approved according to procedures in 15A NCAC 02D .0535. The regulation establishes opacity limits for visible emissions (VE) from sources based on the date the sources were manufactured. The following table lists sources subject to this regulation and their associated visible emission limitations.

Source Manufacture Date	Sources Subject to 02D .0521 Installed in This Timeframe	Emissions Limit	Additional Limitations
After July 1, 1971	• Boiler (ES-001-01) • Back-up Boiler (ES-001-01T) • Hexamine dryer (ES-001-04) • Granular hexamine pneumatic transfer system (ES-001-05) • Pneumatic free-flow product transfer system (ES-001-06) • Three cooling towers (ES-003-03, ES-003-07, and ES-003-08)	20 percent opacity when averaged over a six-minute period	Six-minute averaging periods may exceed 20 percent not more than: • once in any hour, and • four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.
Prior to and including July 1, 1971	• Formaldehyde process (ES 002-01) controlled by the catalytic oxidizer (CD-002-01a) • Hexamine production facility (ES-001-02) • Free-flow (pulverized) hexamine bagging operation (ES-001-07)	40 percent opacity when averaged over a six-minute period	Six-minute averaging periods may exceed 40 percent not more than: • once in any hour, and • four times in any 24-hour period. In no event shall the six-minute average exceed 90 percent opacity.

To ensure compliance, this rule requires weekly observations of the hexamine production facility (ES-001-02) for visible emissions above normal. Monthly observations are required for the hexamine dryer, granular Hexamine pneumatic transfer system (ES-001-05), pneumatic free-flow product transfer system (ES-001-06), and the free-flow (pulverized) Hexamine bagging operation (ES-001-07). Bakelite must act as necessary to correct emissions above normal from these sources as soon as practicable, and demonstrate using Method 9 that the percent opacity from the emission points of the hexamine production facility is below the required limit. Monitoring results must be kept in a logbook, and a summary report of the observations must be submitted twice a year. Because of the water flow rates and anticipated low emission rates (see M.Cuilla, review for permit No. 01394T43, M. Cuilla, June 5, 2012), no monitoring, recordkeeping or reporting is required for the boilers (ES-001-01 and ES-001-01) when fired with natural gas or No. 2 fuel oil, the formaldehyde process (ES-002-01), or the cooling towers (ES-003-03, ES-003-07, and ES-003-08).

In addition, while a NOx plume is excluded from the VE monitoring requirements in this permit, Bakelite is required to document any observation of a NOx plume in the logbook. The addition of the NOx plume requirement (see permit review by J. Lee, July 30, 2004, Permit No. 01394T30) occurred when Bakelite requested "permit adjudication" partly based on their concern regarding VE monitoring requirements for the hexamine CMPU catalytic oxidizer. This issue was brought to the Director's attention, and the decision was made to exclude a visible NOx plume (brownish color) from the VE requirements. Testing results from a NOx pollution control project for NOx, showed they were below NOx ambient levels, so

we added a requirement that the facility note in a logbook the presence of an observed NOx plume--but the presence of a NOx plume would not be an indication of a VE violation.

Continued compliance is expected.

15A NCAC 02D .1109, 112(j) Case-by-Case Maximum Achievable Control Technology (MACT): The Case-by-Case MACT requirements for Natural Gas No. 2 Fuel Oil-Fired Boiler (ES-001-01) were added to the permit under Permit No. 01394T42 issued December 16, 2010. At that time, the EPA had not issued a MACT standard for industrial boilers, so DAQ developed requirements to address boiler emissions under 02D .1109 until EPA was able to promulgate a MACT standard. Under the Case-by-Case MACT, Bakelite was required to conduct an annual boiler inspection, an annual tune-up, and required boiler maintenance. These requirements under 02D .1109 were in effect until May 19, 2019. On May 20, 2019, boiler ES-001-01 became subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD. Boiler ES-001-01 is no longer subject to the Case-by-Case MACT, so the requirements for the boiler under 02D .1109 will be removed from the permit in this renewal. Similarly, the backup boiler (ES-001-01T) is no longer subject to Case-by-Case MACT, so the 02D .1109 avoidance conditions for the backup boiler will also be removed from the permit in this renewal.

15A NCAC 02D .1111, Maximum Achievable Control Technology: Bakelite is subject to several MACT standards, including the HON and MON, as discussed in Section 2, and the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD. These are discussed in detail in Section 7 of this review.

15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions: This regulation provides for the control and prohibition of objectionable odorous emissions, applies facility-wide, and is state-enforceable only. The rule requires Bakelite to implement management practices or install and operate odor control equipment sufficient to prevent odorous emissions from causing or contributing to objectionable odors beyond the facility's boundary.

15A NCAC 02Q .0711, Emission Rates Requiring a Permit: This is discussed in further detail in Section 11 of this review.

15A NCAC 02Q .0317, Avoidance Conditions: Under the conditions of this regulation, the following regulations are not applicable to the backup boiler (ES-001-01T) at the Bakelite facility:

- 02D .1109, Case-by-Case MACT. This is discussed in further detail in Section 7 of this review.
- 02D .0524, New Source Performance Standards. This is discussed in further detail in Section 8 of this review.
- 02D .0530: Prevention of Significant Deterioration. This is discussed in further detail in Section 9 of this review.

7. National Emission Standards for Hazardous Air Pollutants (NESHAP): Maximum and/or Generally Achievable Control Technology (MACT/GACT)

Bakelite is subject to the following MACT standards:

40 CFR 63 Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters: As explained earlier in Section 5 of this review, boiler ES-001-01 became subject to Subpart DDDDD on May 20, 2019. Under

this regulation, Bakelite shall only burn liquid fuel for periodic testing, maintenance, or operator training, and shall do so not to exceed a combined total of 48 hours per year, and during periods when natural gas is not available. An initial tune-up and one-time energy assessment were completed April 30, 2019, and a Notification of Compliance Status was submitted May 29, 2019, meeting the deadlines specified in Subpart DDDDD. The boiler is required to have an annual tune-up, and maintain on site and submit an annual report containing the concentrations of carbon monoxide in the effluent stream and oxygen, measured before and after the adjustments of the source; types and amounts of fuels used over the past year; testing, maintenance, and operator training records; and the dates for periods of gas curtailment and supply interruption. Bakelite must submit compliance reports annually to DAQ, and electronically using the Compliance and Emissions Data Reporting Interface (CEDRI). This permit renewal does not affect this status. Continued compliance is expected.

Boiler ES-001-01T is a temporary boiler as defined in 40 CFR 63.7575; by definition, none of the following conditions apply to it:

- The equipment is attached to a foundation.
- The boiler remains at a location within the facility and performs the same or similar function for more than 12 consecutive months (unless the regulatory agency approves an extension). A temporary boiler that replaces a temporary boiler at a location and performs the same or similar function will be included in calculating the consecutive time period.
- The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year.
- The equipment is moved from one location to another within the facility but continues to perform the same or similar function and serve the same electricity, process heat, steam, and/or hot water system in an attempt to circumvent the residence time requirements of this definition.

Therefore, boiler ES-001-01T is exempt from Subpart DDDDD in accordance with 40 CFR 63.7491(j).

<u>40 CFR 63 Subpart G, National Emission Standards for Organic Hazardous Air Pollutants from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater</u>: As mentioned in Section 2 of this review, the formaldehyde CMPU is subject to Subpart G. Sources within the CMPU regulated under Subpart G include:

- *HON for Group 1 Process Vents* - Total organic hazardous air pollutant (HAP) emissions from Group 1 process vents in the formaldehyde process (ES-002-01.1 through ES-002-01.8) must be controlled by the catalytic oxidizer (CD-002-01a), and shall be reduced by at least 98% or to an exhaust concentration of 20 parts per million (ppm), whichever is less stringent. The oxidizer shall control emissions from the vent headers at all times except as provided in the startup, shutdown, and malfunction plan. Bakelite is required to maintain the daily average inlet temperature of the gas stream entering the catalytic oxidizer at 505°F or greater, and is allowed only one excursion (failure to comply with the temperature requirement or collect monitoring data) per semiannual reporting period. Temperature monitoring devices with continuous recorders must be installed, calibrated, maintained, and operated according to manufacturer's specifications or other written procedures to assure accurate monitoring. Bakelite must inspect the catalyst bed in the oxidizer annually, and correct any problems consistent with manufacturer recommendations. Semiannual reporting is also required. This permit renewal does not affect this status. Continued compliance is expected.

- *HON for Group 1 Storage Vessels* – Organic HAP emissions from the methanol storage tanks (S4 and S5) must be routed to the catalytic oxidizer (CD-002-01a), which shall reduce inlet organic HAP emissions by at least 95% by weight. The oxidizer may be bypassed during startup,

shutdown, or malfunction periods, or when the liquid level in the tanks is not increased. However, the total amount of time during which the oxidizer is bypassed shall not exceed 240 hours per calendar year. Bakelite is required to maintain records of when, why, and for how long the oxidizer is bypassed, and to submit semiannual reports. This permit renewal does not affect this status. Continued compliance is expected.

- *HON for Group 2 Storage Vessels* –the five formaldehyde storage tanks (ES-004-T6, ES-004-T9, ES-004-T10, ES-004-T11, and ES-004-T12) are defined as Group 2 storage vessels under Subpart G. Under Subpart G, Bakelite is required to maintain readily accessible records that show the dimensions of each tank, and analyses showing the capacity for each tank. This permit renewal does not affect this status. Continued compliance is expected.

- *HON for Group 2 Transfer Operations* – For the formaldehyde transfer rack (ES-002-02), and the hexamine loading rack (ES-001-08), Bakelite is required to maintain the following analyses onsite, in a logbook, updating them annually at a minimum:
    - design and actual annual throughput of each rack,
    - weight-percent organic HAP in the liquid loaded in each rack, and
    - annual rack weighted average HAP partial pressure of each rack (Since the hexamine loading rack is only permitted to load liquid hexamine, Bakelite only needs to maintain documentation of the organic HAP it transfers).

  This permit renewal does not affect this status. Continued compliance is expected.

- *HON for Group 1 Process Vents* – HAP emissions from the Group 1 process vents in the Hexamine production facility (ES-001-02.1 through ES-001-02.4, ES-001-02.6, and ES-001-02.8-1 through ES-001-02.8-4) are to be controlled by the catalytic oxidizer (CD-001-02b), reduced by at least 98% or to an exhaust concentration of 20 ppm, whichever is less stringent. The oxidizer shall control emissions from the vent headers at all times except as provided in the startup, shutdown, and malfunction plan. Bakelite is required to maintain the daily average inlet temperature of the gas stream entering the catalytic oxidizer at 798°F or greater, and is allowed only one excursion (failure to comply with the temperature requirement or collect monitoring data) per semiannual reporting period. Temperature monitoring devices with continuous recorders must be installed, calibrated, maintained, and operated according to manufacturer's specifications or other written procedures to assure accurate monitoring. Bakelite must inspect the catalyst bed in the oxidizer annually, and correct any problems consistent with manufacturer recommendations. Semiannual reporting is also required. This permit renewal does not affect this status. Continued compliance is expected.

- *HON for Group 1 Wastewater Streams* – Bakelite is required to use the hexamine by-product water air stripper (ES-001-02f) to reduce the mass flow rate of methanol by at least 31% by weight, and to control emissions of total organic HAP from the air stripper by at least 95 weight percent or greater using the catalytic oxidizer (CD-001-02b). The following parameters for the air stripper must be maintained:
    - Wastewater feed flow rate: shall not exceed 3,180 gallons per hour (daily average);
    - Wastewater feed temperature: shall be greater than 180°F (daily average); and,
    - Air flow rate: greater than 2,200 cubic feet per minute (daily average).

  These three parameters must be continuously monitored and recorded. Bakelite is required to submit semiannual periodic reports with the monitoring results. This permit renewal does not affect this status. Continued compliance is expected.

- *Group 2 Wastewater Requirements* – for five of the wastewater storage vessels (ES-007.1, ES-007.2, ES-007.3, ES-007.5, and ES-007.6) associated with the cooling towers, Bakelite must maintain the following records onsite and make them available to DAQ upon request:
    - Each process unit identification and description.
    - Each stream identification code.
    - The concentration of 40 CFR 63 Subpart G - Table 9 compound(s) in ppm, by weight and documentation of the methodology used to determine concentration.
    - Each flow rate in liter per minute.

  This permit renewal does not affect this status. Continued compliance is expected.

With the removal of the Special Projects MCPU from the facility, the following permit requirements that applied to the MCPU under the MON (40 CFR 63 Subpart FFFF) will be deleted from the permit in this renewal:

- MON for Group 2 Batch Process Vents – for the resin catch tank and reactors at the Special Projects MCPU (ES-002-05a, ES-002-05b, and ES-002-05c)

- MON for Group 2 Storage Vessels – storage vessels at the Special Projects MCPU (ES-T8, ES-T17, ES-T23, ES-T24, ES-T25, ES-T26, ES-T43, ES-T51, and ES-T33)

- MON for Group 2 Transfer Racks – for the resin product truck loading operation at the Special Projects MCPU (ES-002-05d)

- MON for Group 1 Wastewater Streams – for the wastewater system at the Special Projects MCPU (ES-002-05ww1 and ES-002-05ww2)

In addition, the following three insignificant sources listed in the permit will no longer be subject to Subpart FFFF:

Source ID No.	Source Description	Current Status*
IES-IT6	Hexamine Process Water Tank No. 7 (12,000 gallon capacity)	In service for hexamine distillate **(Note: now subject to HON/MACT G)**
IES-T44 and IES-T45	Two Resin Distillate and Wastewater Feed Tanks (10,150 gallon capacity each)	Still on site but out of service at this time

* - per May 2, 2022 email from E. Thompson, Bakelite Synthetics

8. New Source Performance Standards (NSPS)

The second boiler at the Bakelite facility (ES-001-01T) would be subject to 40 CFR Part 60 Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, being a steam generating unit built after June 9, 1989 with a maximum design heat input capacity between 10 and 100 million British thermal units per hour. To avoid the applicability of this NSPS, Bakelite operates boiler ES-001-01T as a temporary boiler, thus exempting it from Subpart Dc. 40 CFR 60.41c defines "temporary boiler" as "a steam generating unit that combusts natural gas or distillate oil with a potential SO_2 emissions rate no greater than 26 nanograms per joule (0.060 lb/MMBtu), and the unit is designed to, and is capable of, being carried or moved from one location to another by means of, for example, wheels, skids, carrying handles, dollies, trailers, or platforms."

This permit renewal does not affect this status. Continued compliance is expected.

9. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)

Chemical processing plants (such as Bakelite) are one of the 28 source categories listed in 40 CFR 51.166(b)(1) that are considered major sources under PSD if they have the potential to emit 100 tons or more per year of any regulated NSR pollutants. The Bakelite facility's potential emissions are below the major source thresholds for all regulated NSR pollutants except for SO_2 and VOC.

Prior to accepting the facility-wide avoidance limit for SO_2, DAQ received a permit application from Bakelite on March 18, 2008, requesting authorization to install and operate a 30 MMBtu/hr temporary back-up boiler (ES-001-01T). The temporary back-up boiler would be used only when the existing, permanent boiler (ES-001-01) is out of service for maintenance or repairs. At that time, the Bakelite facility was considered major for PSD. Although use of the back-up boiler was not expected to increase actual emissions at the facility, when evaluating the applicability of the PSD requirements under 15A NCAC 02D .0530, DAQ determined that Bakelite could not "net out" emissions associated with the temporary shutdown of the permanent boiler because the unit would be brought back into service upon repair.

Using AP-42 emission factors, the estimated potential emissions from the temporary backup boiler when firing No. 2, No. 5, and/or No. 6 fuel oil exceed both sulfur dioxide (SO_2) and nitrogen oxides (NO_x) significant emission rates. As a result, the facility accepted 40 tpy limits on emissions of both NO_x and SO_2 from the temporary back-up boiler (ES-001-01T), when it was added under Air Permit No. 01394T39 issued on May 9, 2008. To demonstrate compliance, Bakelite was required to calculate emissions of NO_x and SO_2 from fuel combustion each month for the previous month and previous 12-month period and record calculated emissions in a logbook, along with keeping monthly records of total fuel usage. Calculations were to be made using the following formulas:

$$E_{SO_2} = 0.6(Q_{ng}) + 142(S_{fo2})(Q_{fo2}) + 157(S_{fo5})(Q_{fo5}) + 157(S_{fo6})(Q_{fo6})$$

$$E_{NO_x} = 100(Q_{ng}) + 20(Q_{fo2}) + 55(Q_{fo5}) + 55(Q_{fo6})$$

Where:

E_{SO2}	=	SO_2 emissions (in lbs) during the previous calendar month;
E_{NOx}	=	NO_x emissions (in lbs) during the previous calendar month;
$S_{fo2, fo5, fo6}$	=	Sulfur content in the No. 2, No. 5, or No. 6 fuel oil (in percent by weight); and,
Q_{ng}	=	Quantity of natural gas fired at a back-up boiler during the previous calendar month (in mmscf).
$Q_{fo2, fo5, fo6}$	=	Quantity of No. 2, No. 5, or No. 6 fuel oil fired at a back-up boiler during the previous calendar month (in 1,000 gal).

On October 11, 2010, a permit modification (Permit No. 01394T41) allowed Bakelite to fire the back-up boiler with natural gas, in addition to No. 2/No. 5/No. 6 fuel oil. On June 5, 2012, Bakelite accepted a facility wide- SO_2 emissions limit of 100 tons per consecutive 12-month period under Air Permit No. 01394T43 (TV renewal process) to maintain minor source status under the PSD permitting program. Under that permit renewal, the requirement to calculate NO_X emissions was removed from the permit. Bakelite was still required to calculate and record monthly SO_2 emissions from fuel combustion and SO_2 emissions for the previous 12-month period. With the March 23, 2017 permit renewal (Permit No. 01394T48), the permit was revised to exclude use of No. 5 and No. 6 fuel oil in the temporary back-up boiler. As a result, the back-up boiler no longer had the potential to exceed the PSD significant emission rate for NO_X. Under that permit renewal, most references to NO_X emissions related to PSD avoidance for

the temporary back up boiler were also removed, as well as related references to No. 5 and No. 6 fuel oil. The formula for calculating SO_2 emissions was reduced to the following:

$$E_{SO_2} = 0.6(Q_{ng}) + 142(S_{fo2})(Q_{fo2})$$

Where:

E_{SO2} = SO_2 emissions (in lbs) during the previous calendar month;
S_{fo2} = Sulfur content in the No. 2 fuel oil (in percent by weight); and,
Q_{ng} = Quantity of natural gas fired during the previous calendar month (in mmscf).
Q_{fo2} = Quantity of No. 2 fuel oil fired during the previous calendar month (in 1,000 gallons).

During the permit review for this permit renewal, a single remaining reference to NO_X emissions that should have been deleted during the 2017 permit renewal was discovered. That reference will be removed. The requirements for demonstrating compliance remain unchanged. Because the back-up boiler is only used when the primary boiler is out of service, and is fired by relatively low-sulfur fuels (natural gas or No.2 fuel oil), SO_2 emissions are not expected to approach the 100-tpy limit. Continued compliance is expected.

As discussed in an earlier application review (B. Gatano, #2400093.17A, October 30, 2017), Bakelite requested that VOC emissions from all non-cooling tower sources at the facility be projected at a total of 12 tons per year – a conservative value that exceeds the potential emissions for these sources. Using this projected value, this allows Bakelite to accept a facility-wide avoidance limit of less than 88 tons of VOCs per consecutive 12-month period for the three cooling towers on site (ES-003-03, ES-003-07, and ES-003-08) to ensure compliance with PSD. The PSD avoidance condition requires tracking of only emissions from the cooling towers.

The permit previously stipulated in Section 2.1 H.4.c that Bakelite shall calculate VOC emissions from these cooling towers "based on production and emission factors contained in the Title V permit application (Application No. 2400093.17A)" without specifying the calculation method. The specific method for calculating the VOC emissions will now be included in the permit in Section 2.1 G.4.c, as follows:

> The Permittee shall calculate VOC emissions from the cooling towers **(ID Nos. ES-003-03, ES-003-07, and ES-003-08)** based on production and overheads water VOC concentration data contained in the Title V permit application (Application No. 2400093.21B), using the following equation:
>
> $$E_{VOC} = \frac{(TP_{03} + TP_{06} + TP_{07})\left(8.34\frac{lb}{gal}\right)(C_M + C_A + C_F)}{2{,}000\frac{lb}{ton}(10^6)}$$
>
> Where:
> E_{VOC} = VOC emissions, tons per month
> TP_{03}, TP_{06}, TP_{07} = Monthly overheads water evaporated from cooling towers ES-003-03, ES-003-07, and ES-003-08, respectively (gallons per month)
> C_M = Monthly average methanol concentration in overheads water (1,454 ppm)
> C_A = Monthly average ammonia concentration in overheads water (1, 275 ppm)
> C_F = Monthly average formaldehyde concentration in overheads water (100 ppm)

The permit previously required Bakelite to notify DAQ in semi-annual summary reports of any changes in the emission factors used from those contained in Title V permit application No. 2400093.17A. As a

result of the inclusion of the above VOC emission calculation, the PSD avoidance reporting requirement is being revised to require reporting of any changes to the overheads water VOC concentrations or VOC emission factors used from those contained in Title V permit application No. 2400093.21B.

10. Risk Management Plan (RMP) Requirements

40 CFR Part 68 requires stationary sources storing more than threshold quantities of regulated substances to develop a RMP in accordance with Section 112(r) of the Clean Air Act. The RMP lists the potential effects of a chemical accident at the facility, steps the facility is taking to prevent an accident, and emergency response procedures to be followed if an accident should occur.

Bakelite is subject to Section 112(r) of the Clean Air Act because it stores the following regulated substances in quantities above the thresholds in the Rule.

Process Description	Process Level (1, 2, or 3)	Hazardous Chemical	Maximum Intended Inventory (lbs)
Formaldehyde CMPU	3	Formaldehyde	1,920,000
Hexamine CMPU	3	Ammonia	505,000
Hexamine CMPU	3	Aqueous Ammonia (29%)	315,000

The most recent compliance inspection for 112(r) was conducted on April 27, 2022 by Linda Willis of the WiRO. Bakelite was found to be in compliance with 112(r) at the time of inspection.

The permit currently includes specific permit conditions for 112(r) under the authority of 15A NCAC 02Q .0508(h), Prevention of Accidental Releases – Section 112(r) of the Clean Air Act. In addition to complying with all applicable requirements in accordance with 40 CFR Part 68, Bakelite is required to submit an update of their RMP to EPA no later than October 12, 2022, and at least once every five years after that date or the most recent update, whichever is later. Continued compliance is expected.

10. Compliance Assurance Monitoring (CAM)

The CAM rule (40 CFR 64) applies to each pollutant specific emissions unit located at a major source that is required to obtain a Title V, Part 70 or 71 permit, if all of the following three conditions are met:

- It is subject to an emission limitation or standard, and
- It uses a control device to achieve compliance with said standard, and
- It has potential pre-control emissions that equal or exceed the major source threshold (i.e., 100 tpy for criteria pollutants, 10 tpy of any individual HAP, or 25 tpy of any combination of HAP).

The following emission limitations or standards are exempted from the CAM rule:

- NSPS or NESHAP standards proposed after November 15, 1990.
- Stratospheric ozone protection requirements under Title VI of the Clean Air Act (CAA).
- Acid rain program requirements under Sections 404, 405, 406, 407(a), 407(b), or 410 of the CAA.
- Emission limitations or standards, or other applicable requirements that apply solely under an approved emissions trading program.
- An emissions cap that meets the requirements specified in 40 CFR 70.4(b)(12) or 71.6(a)(13)(iii).
- Emission limitations or standards for which Title V permit contains a continuous compliance determination method (CCDM), as defined in 40 CFR 64.1, unless the applicable compliance

method includes an assumed control device emission reduction factor that could be affected by the actual operation and maintenance of the control device (e.g., a surface coating line controlled by an incinerator for which continuous compliance is determined by calculating emissions on the basis of coating records and an assumed control device efficiency factor based on an initial performance test; in this example, this part would apply to the control device and capture system, but not to the remaining elements of the coating line, such as raw material usage).

- Certain municipally-owned utility units, as defined in 40 CFR 72.2.

The following table is a summary of the current permitted emission sources at the Bakelite facility and the criteria used to determine whether the CAM rule applies to those sources. As shown, most sources are exempt due to being subject to NESHAP standards proposed after November 15, 1990. Those sources not subject to NESHAP (or other standards exempt from the CAM rule) either do not require a control device to meet emission standards, or have potential pre-control emissions that do not equal or exceed any major source thresholds.

Source ID No.	Source Description	CAM Applicability Criteria			
		#1: Is the source subject to an exempt standard?	#2: Does it use a control device to comply?	#3: Does it have potential to meet/exceed major source threshold?	CONCLUSION: Does CAM apply?
ES-002-01 ES-002-01.1 through ES-002-01.4 ES-002-01.6 ES-002-01.8 **MACT G, pv1**	Formaldehyde process: Three reactors, ambient air blowers, product recovery absorption column & product recovery absorption column	Yes (subject to post 11/15/90 NESHAP only)	---	--	**No**
S4 and S5 **MACT G, sv1**	Two methanol storage tanks (40,300 gallon capacity each)	Yes (subject to post 11/15/90 NESHAP only)	---		**No**
ES-004-T9 through ES-004-T12 **MACT G, sv2**	Four formaldehyde storage tanks (varying capacities)	Yes (subject to post 11/15/90 NESHAP only)	---		**No**
ES-002-02 **MACT G, to2**	Formaldehyde transfer racks for truck loading/unloading w/ vacuum vapor collection system	Yes (subject to post 11/15/90 NESHAP only)	---		**No**
ES-002-Fug01 **MACT H**	Formaldehyde CMPU fugitive emissions	Yes (subject to post 11/15/90 NESHAP only)	---		**No**
ES-001-02.1 through ES-001-02.4 ES-001-02.6 **MACT G, pv1**	Hexamine process reactor Hexamine process evaporator Two Hexamine process crystallizers Hexamine process centrifuge	Yes (subject to post 11/15/90 NESHAP only)	---		**No**
ES-001-02.8-1 through ES-001-02.8-4 **MACT G, pv1**	Hexamine age tank, hold tank, surge tank, and feed tank (various capacities	Yes (subject to post 11/15/90 NESHAP only)	---		**No**
ES-001-02f **MACT G, ww1**	Air stripper for hexamine byproduct water	Yes (subject to post 11/15/90 NESHAP only)	---		**No**

Source ID No.	Source Description	CAM Applicability Criteria			
		#1: Is the source subject to an exempt standard?	#2: Does it use a control device to comply?	#3: Does it have potential to meet/exceed major source threshold?	CONCLUSION: Does CAM apply?
ES-NH3	Aqua Ammonia Unloading Operations	Yes (subject to post 11/15/90 NESHAP only)	CD-001-02b Catalytic oxidizer	Yes	
ES-NH3-Tanks	Aqueous Ammonia Tanks	Yes (subject to post 11/15/90 NESHAP only)	CD-001-02b Catalytic oxidizer	Yes	
ES-001-04	Hexamine dryer	No - 02D .0515	CD-001-02d Bagfilter	No	
ES-001-05	Granular Hexamine pneumatic transfer system for transport of granular Hexamine from the Hexamine CMPU dryer and screen to the granular bagging operation	No - 02D .0515	CD-001-02d Bagfilter	No	
ES-001-06	Pneumatic free-flow product transfer system	No - 02D .0515	Cartridge filter	No	
ES-001-07	Free-flow (pulverized) Hexamine bagging operation	No - 02D .0515	CD-001-02e Cartridge filter	No	
ES-001-02.8-5 **MACT H**	Hexamine rerun tank	Yes (subject to post 11/15/90 NESHAP only)	---	---	**No**
ES-001-02.8-6 **MACT H**	Hexamine distillation feed tank (5,000 gallon)	Yes (subject to post 11/15/90 NESHAP only)	---	---	**No**
ES-001-08 **MACT G, tr2**	Hexamine loading rack	Yes (subject to post 11/15/90 NESHAP only)	---	---	**No**
ES-001-Fug03 **MACT H**	Hexamine fugitive emissions	Yes (subject to post 11/15/90 NESHAP only)	---	---	**No**
ES-001-01 **MACT DDDDD**[2]	Natural Gas/No. 2 fuel oil-fired Boiler	Yes (subject to post 11/15/90 NESHAP only)	---	---	**No**
ES-001-01T	Back-up boiler; Natural Gas/No. 2 fuel oil-fired	No – subject to multiple 15A NCAC .02D rules	No	---	**No**
ES-003-03 ES-003-07 ES-003-08	Three cooling towers	No – 02D .0515	No	---	**No**
ES-007.2	Hexamine Process Water and Boiler Blowdown Tank #1	Yes (subject to post 11/15/90 NESHAP only)	---	No – repurposed & reclassified as insignificant activity	**No**

Source ID No.	Source Description	CAM Applicability Criteria			
		#1: Is the source subject to an exempt standard?	#2: Does it use a control device to comply?	#3: Does it have potential to meet/exceed major source threshold?	CONCLUSION: Does CAM apply?
ES-007.3	Hexamine Process Water and Boiler Blowdown Tank #2	Yes (subject to post 11/15/90 NESHAP only)	---	No – repurposed & reclassified as insignificant activity	**No**
ES-007.5	Hexamine Process Water and Boiler Blowdown Tank #6	Yes (subject to post 11/15/90 NESHAP only)	---	No – repurposed & reclassified as insignificant activity	**No**
ES-007.6	Hexamine Process Water and Boiler Blowdown Tank #5	Yes (subject to post 11/15/90 NESHAP only)	---	No – repurposed & reclassified as insignificant activity	**No**
IES-T27	Hexamine Process Water and Boiler Blowdown Tank #1	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**
IES-T28	Hexamine Process Water and Boiler Blowdown Tank #2	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**
IES-T29	Hexamine Process Water and Boiler Blowdown Tank #3	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**
IES-T30	Hexamine Process Water and Boiler Blowdown Tank #4	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**
IES-T31	Hexamine Process Water and Boiler Blowdown Tank #5	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**
IES-T32	Hexamine Process Water and Boiler Blowdown Tank #6	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**
IES-T53	Green Hexamine Process Water Tank	No – 02D .1100	No	No – repurposed & reclassified as insignificant activity	**No**

Of the sources listed in the table above, only four are subject to emission standards that are not exempt from CAM requirements, and use control devices to meet those emission standards:

- the hexamine dryer (ES-001-04),
- the corresponding hexamine transfer systems (ES-001-05 and ES-001-06), and
- the hexamine bagging operation (ES-001-07).

As discussed in the CAM analysis for permit No. 01394T43 (M. Cuilla, June 15, 2012), the PM emissions from each of these four sources is less than the major source threshold of 100 tpy—the third criterion necessitating CAM. Therefore, none of the sources at the Bakelite facility were subject to CAM. This status was confirmed in the permit review for permit No. 01394T48 (B. Gatano, March 23, 2017). This permit renewal does not affect this status. No emission sources at the Bakelite facility are subject to CAM at this time.

11. Facility-wide Air Toxics Review

The Bakelite permit includes state-enforceable only permit limits for ammonia and formaldehyde in accordance with 15A NCAC 02D .1100, "Control of Toxic Air Pollutants". The established emission limit of formaldehyde from the formaldehyde production process and methanol tanks routed to the catalytic oxidizer (CD-002-01A) had been 0.006 lb/hr. This emission rate was based on a source test conducted in 1998. Air modeling conducted in September 2013 demonstrated compliance with the acceptable ambient level (AAL), and revised formaldehyde limits were incorporated into Air Permit No. 01394T44 issued on November 15, 2013.

Source testing in January 2014 resulted in a measured formaldehyde emission rate of 0.228 pounds per hour from the outlet of the oxidizer, which exceeded the permit limit. Bakelite followed up with facility-wide modeling using the increased formaldehyde rate, which demonstrated the increase in formaldehyde emissions did not exceed the AAL. The air dispersion modeling was reviewed and approved by AQAB as described in a Steve Lund memorandum dated October 30, 2014. The modeling results using the increased emission rate showed the maximum impact for formaldehyde was 76% of the AAL.

In permit application/modification No. 2400093.14A, Bakelite requested removal of the formaldehyde and ammonia emission limits under 02D .1100 for emission sources subject to a MACT, as allowed by the exemption in 15A NCAC 02Q .0702(a)(27). Because the revised air modeling demonstrated that formaldehyde emissions would not exceed the AAL, the formaldehyde limits could be removed for any MACT sources at the facility. The DAQ conducted a facility-wide evaluation for ammonia as part of permit modification No. 2400093.14A (Permit No. 01394T45, March 3, 2016) to ensure removal of the emission limits would not present "an unacceptable risk to human health," in accordance with G.S. 143-215.107(b) as codified on May 1, 2014. The DAQ compared the highest actual emissions of ammonia over a five-year period (2009-2013) with the modeled emission limit, as shown in the table below. The boiler (ES-001-01) and the hexamine process (ES-001-02) were the only sources considered in the evaluation, since they were the only sources subject to a MACT that emitted ammonia. For both sources, actual ammonia emissions were below the permitted limits, demonstrating that removing the ammonia emission limits for the MACT sources would not "present an unacceptable risk to human health.

Emission Sources	Actual Emissions of Ammonia (lb/yr)					Highest Emission Rate (lb/hr)	Permitted Limit (lb/hr)
	2009	2010	2011	2012	2013		
Boiler (ES-001-01)	--	--	--	**274.4**	174.6	0.031	0.14
Hexamine Production Process, controlled by catalytic oxidizer (CD-001-02b)	47.9	59.6	59.2	**65.1**	65.1	0.0075	0.01
Notes: • The facility was assumed to operate 8736 hours per year as reported in emission inventory. • Actual emissions are from the DAQ emission inventory.							

Emission limits for the following non-MACT sources remain in the Bakelite permit.

Emissions Source	Allowable Emission Rate	
	Ammonia	Formaldehyde
Boiler **(ES-001-01T)**	0.14 lb/hr	8.23e-03 lb/hr
Cooling Tower No. 3 **(ES-003-03)**	33.8 lb/hr	2.65 lb/hr
Cooling Tower No. 7 **(ES-003-07)**	16.9 lb/hr	1.33 lb/hr
Cooling Tower No. 8 **(ES-003-08)**	16.9 lb/hr	1.33 lb/hr

The Bakelite permit also includes modeled emission limits under 02D .1100 for arsenic, beryllium, chromium VI equivalents, and nickel from the boilers (ES-001-01 and ES-001-01T). The DAQ received an updated compliance demonstration for these TAPs on December 28, 2011. The air dispersion modeling was reviewed and approved by AQAB (see Jerry Freeman memorandum dated January 9, 2012). These limits were added to the permit under Air Permit No. 01394T43 issued on June 5, 2012.

The DAQ conducted a facility-wide evaluation for these metals during the March 3, 2016 permit modification (Air Permit No. 01394T46) to determine if removal of the emission limits would present "an unacceptable risk to human health." The DAQ compared the highest actual emissions of these metals over the past five years with the modeled emission limits. As shown in the table below, actual emissions were below the permitted limits, and removing emission limits on the boilers for these TAPs does not "present an unacceptable risk to human health." However, the limits could only be removed for boiler (ES-001-01)—the limits cannot be removed for the temporary boiler (ES-001-01T), because it is not subject to a MACT.[2]

TAP	Actual Emissions (lb/yr)					Highest Emission Rate	Permitted Limit
	2009	2010	2011	2012	2013		
Arsenic	0.53	0.38	0.02	0.01	0.01	0.53 lb/yr	0.80 lb/yr
Beryllium	0.01	0.02	0	0	0.0007	0.02 lb/yr	0.28 lb/yr
Chromium	0.1	0.07	0	0	0	0.00028 lb/day	.000413 lb/day
Nickel	33.71	23.87	0.16	0.18	0.11	0.093 lb/day	0.32 lb/day
Notes: • The facility was assumed to operate 8736 hours per year as reported in emission inventory. • Actual emissions are from the DAQ emission inventory.							

[2] Hexion has accepted an avoidance condition for the Case-by-Case MACT for the natural gas/No. 2/ No. 5/ No. 6 fuel oil-fired back-up boiler (ES-001-01T).

To ensure compliance with these limits, Bakelite is required to:

- Fire only one boiler at a time—either back-up boiler (ES-001-01T), or natural gas/No. 2-fuel oil-fired boiler (ES-001-01), but never both.
- Retain records of toxic air pollutant emissions from each of the affected sources listed above (including calculations and supporting data) in a logbook, which shall be kept on-site and made available to DAQ personnel upon request.
- Submit a semiannual summary report of monitoring and recordkeeping activities for the six-month period between July and December and the six-month period between January and June. The report shall identify any deviations with 15A NCAC 02D .1100, or if no deviations occurred, the report shall include a statement as such.

Continued compliance is expected.

12. Facility Emissions Review

The most significant change in this permit revision—removal of the Special Project MCPU—will reduce the potential to emit for the Bakelite facility. The table in the header page of this review summarizes the emissions Bakelite has reported in the annual emissions inventories after application of required emission controls.

13. Compliance History and Status

The following compliance chronology dates from when the Bakelite permit was last renewed on March 23, 2017 to the present.

June 8, 2017	Mark Hedrick, Wilmington Regional Office (WiRO), conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
August 17, 2017	Mark Hedrick, WiRO, conducts partial facility compliance inspection focused on equipment. Facility appeared to be operating in compliance with all permit requirements with regard to equipment.
August 25, 2017	Mark Hedrick, WiRO, conducts full facility compliance inspection concerning recordkeeping and reporting requirements, following up on the partial inspection conducted on August 17, 2017. Facility appeared to be operating in compliance with all permit requirements.
September 19, 2017	Mark Hedrick, WiRO, conducts inspection at the Bakelite facility to assess compliance with provisions established under Title I Part A Section 112(r) of the 1990 Clean Air Act (CAA) to prevent and mitigate accidental chemical releases. Facility appeared to be operating in compliance with the 112(r) program at this time.
November 29, 2017	Mark Hedrick, WiRO, conducts partial facility compliance inspection focused on leak detection and repair (LDAR) requirements of the HON (40 CFR 63 Subpart H) and MON (40 CFR 63 Subpart FFFF) for components of the formaldehyde storage tanks area (including associated valves and flanges, particularly elevated LDAR points which are hard to monitor. Facility appeared to be operating in compliance with the LDAR requirements.

March 15, 2018	Mark Hedrick, WiRO, conducts partial facility compliance inspection focused on equipment. Facility appeared to be operating in compliance with all permit requirements with regard to equipment.
October 30, 2018	Mark Hedrick, WiRO, conducts partial facility compliance inspection focused on the facility's recordkeeping and reporting requirements. The facility was missing records of required visual observations for visible emissions for the months of August and September 2018. A Notice of Deficiency (NOD) was sent for these monitoring/recordkeeping deficiencies.
November 27, 2018	Mark Hedrick, WiRO, conducts full facility compliance inspection for permitted equipment and operating/monitoring requirements, following up on the partial inspection for recordkeeping and reporting requirements conducted October 30, 2018. Facility appeared to be operating in compliance with regard to equipment.
December 10, 2018	DAQ issues NOD to Bakelite for missing records of required visual observations for visible emissions for the months of August and September 2018. Bakelite was given 15 days to explain in writing how they will ensure future monitoring and recordkeeping will meet permit requirements.
November 5, 2019	Linda Willis, WiRO, conducted facility compliance inspection. Facility appeared to be operating in compliance with permit requirements. Areas requiring more detailed inspection during the next semi-annual compliance inspection were identified for the facility's and the inspector's future reference.
September 28, 2021	Linda Willis, WiRO, conducted facility compliance inspection. Facility appeared to be operating in compliance with permit requirements.
February 3, 2022	Linda Willis, WiRO, conducted facility compliance inspection. Facility appeared to be operating in compliance with permit requirements.

No other violations or deficiencies beyond the NOD issued in December 2018 have been issued.

14. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above.

South Carolina is an affected state within 50 miles of the facility. There are no affected local programs within 50 miles of the facility.

Notice of the DRAFT Title V Permit to Affected States ran from XXXX YY, 2022, to XXXX YY, 2022. ***Discuss whether comments from Affected States or Local Programs were received.***

Public Notice of the DRAFT Title V Permit ran from XXXX YY, 2022, to XXXX YY, 2022. ***Discuss whether public comments were received.***

EPA's 45-day review period ran concurrently with the 30-day Public Notice, from XXXX YY, 2022, to XXXX YY, 2022. ***Discuss whether comments from EPA and U.S. EPA Region 4 were received regarding the DRAFT Title V Permit.***

15. Other Regulatory Considerations

The following items were not required in Permit Application No. 2400093.21B:

- Professional Engineer's seal
- Zoning consistency determination
- Permit fee.

16. Recommendations

DAQ has reviewed the permit application(s) for Bakelite Synthetics located in Riegelwood, Columbus County to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ recommends the issuance of Air Permit No. 01394T51.