

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0873-AOP-R16 AFIN: 70-00037

1. PERMITTING AUTHORITY:

Division of Environmental Quality  
5301 Northshore Drive  
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

LANXESS Corporation - South Plant  
324 Southfield Cutoff  
El Dorado, Arkansas 71730

3. PERMIT WRITER:

Shawn Hutchings

4. NAICS DESCRIPTION AND CODE:

NAICS Description: All Other Miscellaneous Chemical Product and Preparation  
Manufacturing  
NAICS Code: 325998

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
12/15/2025	Modification	Show an increase in Arsenic, Chromium, Mercury, and Selenium emissions from the BRU, SN-2001, as result of revised emission calculations based on new test data.
2/13/2026	Modification	Add Sour gas shutdown flaring to permitted flaring as opposed to an upset condition.

6. REVIEWER'S NOTES:

LANXESS Corporation-South Plant (AFIN: 70-00037) operates a chemical manufacturing facility south of El Dorado. This permit is a modification to adjust the non-criteria pollutant emissions for the Bromine Recovery Unit, SN-2001 and another modification to incorporate Sour Gas flaring during shutdown into permitted emissions of the Sour Gas Flare, SN-102. Annual permitted emission rates increased 0.27 tpy of HAPs.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

There were no recent enforcement actions against the facility.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? **N**  
 If yes, were GHG emission increases significant? **N**

b) Is the facility categorized as a major source for PSD? **Y**

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes for 8(b), explain why this permit modification is not PSD. Only source changing method of operation has a total potential lower than PSD modification thresholds and therefore cannot exceed modification thresholds.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
Facility	N/A	40 CFR Part 61, Subpart M
Facility	Benzene	40 CFR Part 61, Subpart FF
SN-04	SO <sub>2</sub>	40 CFR Part 60, Subpart Dc
PHT-4 Unit, PHT-4 Production	HAPs	40 CFR Part 63, Subparts F, G, and H
DBS Unit	HAPs	40 CFR Part 63, Subpart FFFF
PDBS Unit	HAPs	40 CFR Part 63, Subpart FFFF
FF680 Unit	HAPs	40 CFR Part 63, Subpart FFFF
PHT-4 Unit, PHT-4 Diol Production	HAPs	40 CFR Part 63, Subpart FFFF
Boilers (SN-03, SN-04, SN- 615, SN-921)	HAPs	40 CFR Part 63, Subpart DDDDD

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
Emergency Fire Water Pump Engines (SN-203, 204)	HAPs	40 CFR Part 63, Subpart ZZZZ
Emergency Generator (SN-205)	HAPs	40 CFR Part 61, Subpart IIII

10. UNCONSTRUCTED SOURCES:

Unconstructed Source	Permit Approval Date	Extension Requested Date	Extension Approval Date	If Greater than 18 Months without Approval, List Reason for Continued Inclusion in Permit
N/A				

11. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application?

Bromine Production Process	40 C.F.R. 60 Subpart K, K <sub>a</sub> , and K <sub>b</sub>	TT-60-025 is a storage vessel greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing hydrogen bromide. TT-60-031 is a storage vessel greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing tail brine. Neither chemical is a volatile organic liquids (VOL) and therefore not subject under §60.110b(a).
	40 C.F.R. 60 Subpart VV and VV <sub>a</sub>	The Bromine Process does not produce as an intermediate or final product any listed chemicals within §60.489 and does not meet the definition of a “process unit” within §60.480(f). The Bromine Process is not an affected source per §60.480(a).
	40 C.F.R. 63 Subparts F, G, and H	The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The Bromine Process is not a CMPU as it does not meet the criteria in §63.100(b)(1) or (2). The primary product of the Bromine Process is bromine (CAS #7726-95-6), which is not listed in Table 1 of Subpart F and is not tetrahydrobenzaldehyde (CAS# 100-50-5) or crotonaldehyde (CAS# 123-73-9). The Bromine Process does not use any product or co-product that is one or more of the

		organic hazardous air pollutants listed in Table 2 of Subpart F.
	40 C.F.R. 63 Subpart YY	The Bromine Process does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 CFR 63 Subpart MMM	The PAI MACT applies to each Pesticide active ingredient manufacturing process unit (PAI process unit) at a Major Source of HAPs. The Bromine Process does not produce a pesticide active ingredient as a primary material or as an integral intermediate. Therefore, Bromine Process does not meet the definition of a PAI process unit and is not subject to the PAI MACT per §63.1360(a).
	40 CFR 63 Subpart FFFF	The MON MACT applies to each miscellaneous organic chemical manufacturing process unit (MCPU) at a Major Source of HAPs. The Bromine Process produces bromine (SIC Code 2819) as a product and hydrogen bromide (SIC Code 2819) as an isolated intermediate. The Bromine Process does not produce as a product or isolated intermediate any organic chemicals, quaternary ammonium compounds, ammonium sulfate, hydrazine or use a nondedicated solvent recovery operations for organic solvents. Therefore, the Bromine Process does not meet the requirements within §63.2435(b)(1) and is not a MON MACT subject MCPU.
	40 CFR 63 Subpart EEEE	The Organic Liquids Distribution (Non-Gasoline) (OLD MACT) applies to each OLD operation affected source. The Bromine Process does not storage any crude oils or organic liquids in Table 1 of the OLD MACT. The Bromine Process is not an affected source per §60.2330.
	40 CFR 63 Subpart Q	There are no cooling towers at the bromine unit that are subject to this subpart per §63.400(a) as they are not operated with chromium-based water treatment chemicals.

FF680 Unit	40 C.F.R. 60 Subpart K, K <sub>a</sub> , and K <sub>b</sub>	TT-62-029 is a storage vessel greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing hydrogen bromide. Hydrogen bromide is not a volatile organic liquids (VOL) and therefore not subject under §60.110b(a).
	40 C.F.R. 60 Subpart VV and VVa	The FF-680 Unit produces TBP (tribromophenol, CAS# 118-79-6) as a final product and hydrogen bromide (CAS #10035-10-6) as an intermediate product. Neither chemical is listed chemicals within §60.489 and the FF-680 Unit does not meet the definition of a “process unit” within §60.480(f). The unit is not an affected source per §60.480(a).
	40 C.F.R. 63 Subparts F, G, and H	The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The FF-680 Unit has one CMPU potentially subject to the HON MACT. The TBP CMPU does meet the criteria in in §63.100(b)(2) and (3) as it uses Phenol (CAS# 108-95-2) as a reactant and is at a major source of HAP. However, it does not meet the criteria of §63.100(b)(1). The primary product of the TBP CMPU is TBP (CAS #118-79-6), which is not listed in Table 1 of Subpart F and is not tetrahydrobenzaldehyde (CAS# 100-50-5) or crotonaldehyde (CAS# 123-73-9).
	40 C.F.R. 63 Subpart YY	The production of TBP (tribromophenol CAS# 118-79-6) does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 CFR 63 Subpart MMM	The PAI MACT applies to each pesticide active ingredient manufacturing process unit (PAI process unit) at a Major Source of HAPs. The FF-680 Unit produces TBP (tribromophenol CAS# 118-79-6) as a final product and hydrogen bromide (CAS #10035-10-6) as an intermediate. Neither is a pesticide active ingredient. Therefore,

		<p>the process does not meet the definition of a PAI process unit and is not subject to the PAI MACT per §63.1360(a).</p>
	<p>40 CFR 63 Subpart EEEE</p>	<p>The Organic Liquids Distribution (Non-Gasoline) (OLD MACT) applies to each OLD operation affected source. The TBP Unit does store phenol, which is potentially subject to the OLD MACT as an organic liquid in Table 1. However, all storage tanks, transfer racks, transport vehicles, containers, and equipment leak components that are part of the TBP MCPU MON MACT affected source are not considered part of an OLD MACT affected source per §63.2338(c)(1). All storage tanks, containers, and equipment leak components in phenol services are assigned sources with applicable requirements under the MON MACT. They are part of the MON affected source and are exempt from the OLD MACT per §63.2338(c)(1).</p> <p>The transfer racks used for unloading of phenol at the TBP Unit meet the definition of transfer racks under OLD MACT, but do not under the MON MACT and therefore do not have applicable requirements under the MON MACT. Per §63.2240 the MON MACT affected source is the “facilitywide collection of MCPU and heat exchange systems, wastewater, and waste management units that are associated with manufacturing materials”. Per §63.2435 a MCPU includes equipment necessary to operate a miscellaneous organic chemical manufacturing process. Phenol is a raw material for the TBP MCPU process, and the phenol transfer racks are necessary equipment to operate it. Therefore, GLCC believes the phenol transfer racks are part of the MON affected source. EPA has come to a similar determination that transfer racks were part of the 40 CFR</p>

		Subpart GGGG affected source even though it was not explicitly stated. The phenol transfer racks are part of the MON affected source and are exempt from the OLD MACT per §63.2338(c)(1).
	40 CFR 63 Subpart Q	There are no cooling towers at the FF-680 process unit that are subject to this subpart per §63.400(a) as they are not operated with chromium-based water treatment chemicals.
PHT-4 Unit	40 C.F.R. 60 Subparts K, Ka, and Kb	TK-64-901 is a storage vessel greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing a liquid with a maximum true vapor pressure less than 15.0 kPa and therefore is subject per §60.110b(b) TK-64-911 is a storage vessel greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing sulfur trioxide. TT-64-931 and TT-64- 932 are storage vessels that are greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> that store sulfuric acid. Neither chemical is a volatile organic liquid (VOL) and therefore not subject under §60.110b(a).
	40 C.F.R. 60 Subpart Dc	SN-621 is a 3 MMBtu/hr natural gas heater, which is less than the 10 MMBtu/hr thresholds for affected sources under §60.40c
	40 C.F.R. 60 Subparts VV and VVa	The PHT4 Unit does not produce an intermediate or final product under any listed chemicals within §60.489 and does not meet the definition of a “process unit” within §60.480(f). The PHT4 Unit is not an affected source per §60.480(a).
	40 C.F.R. 63 Subparts F, G, and H	The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The PHT4 Unit is not a CMPU as it does not meet the criteria in §63.100(b)(1) or (2).
	40 C.F.R. 63 Subpart YY	The PHT4 Unit does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 CFR 63 Subpart MMM	The PAI MACT applies to each Pesticide active ingredient manufacturing process unit (PAI process unit) at a Major Source

		<p>of HAPs. The PHT4 Unit does not produce a pesticide active ingredient as a primary material or as an integral intermediate. Therefore, PHT4 Unit does not meet the definition of a PAI process unit and is not subject to the PAI MACT per §63.1360(a).</p>
	<p>40 CFR 63 Subpart FFFF</p>	<p>The MON MACT applies to each miscellaneous organic chemical manufacturing process unit (MCPU) at a Major Source of HAPs. The PHT4 Unit produces PHT4 (tetrabromophthalic anhydride) as a product or as an isolated intermediate for further processing at the PHT4-Diol MCPU, and the PHT4-Diol MCPU produces PHT4-Diol (tetrabromophthalate diol as a product. Since the PHT4 MCPU is an affected source under 40 C.F.R. Part 63 Subpart F, only the process vents from batch operations as identified in 63.100(j)(4) within the PHT4 MCPU are potentially subject to MON MACT per 63.2435(b)(3). Due to physical and chemical reactive characters of PHT4, all batch process vents at the PHT4 MCPU have gas stream concentrations below 50 ppmv or 200 lb/yr. Therefore, there are no batch process vents as defined [§63.2550 and §63.2455(c)]</p> <p>The PHT4-Diol MCPU is an existing affected source subject to MON MACT per 63.2435(a). PHT4-Diol is an organic chemical meeting the criteria of 63.2435(b)(1), uses toluene and propylene oxide, is not an affected source or part of one under another 40 CFR Part 63 Subpart [§63.2440(b)], started construction prior to April 4, 2002 [§63.2440(c)(1)], and has not been reconstructed [§63.2440(d)]. The PHT4-Diol MCPU consists of batch process vents only, designated as Group 2 [§63.2460(a)].</p>

		<p>The process vents do not have hydrogen halide or halogen HAP, so the MON requirements for those chemicals are not applicable [§63.2445(e)].</p>
<p>DBS Unit</p>	<p>40 C.F.R. 60 Subparts K, Ka, and Kb</p>	<p>TT-66-631 and TT-66-632 are storage vessel greater than 75 m<sup>3</sup> but less than 151 m<sup>3</sup> storing hydrogen chloride. TT-66-028 is a storage vessel greater than 75 m<sup>3</sup> but less than 151 m<sup>3</sup> storing sodium hydroxide. Hydrogen chloride and sodium hydroxide are not volatile organic liquids (VOL) and therefore not subject under §60.110b(a). TT-66-024 is a storage vessel greater than 75 m<sup>3</sup> but less than 151 m<sup>3</sup> storing styrene. As the true vapor pressure of styrene is below 15 kPa<sub>1</sub>, it is not subject under §60.110b(b).</p>
	<p>40 C.F.R. 60 Subparts VV and VVa</p>	<p>The DBS Unit produces DBS (CAS# 125904-11-2) and HBr (CAS# 10035-10-</p>

		6) as a final product and 2-Bromoethylbenzene (CAS# 103-63-9) as an intermediate product. None of the chemicals are listed chemicals within §60.489 and the DBS Unit does not meet the definition of a “process unit” within §60.480(f). The unit is not an affected source per §60.480(a).
	40 C.F.R. 63 Subparts F, G, and H	The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The DBS Unit has one CMPU potentially subject to the HON MACT. The DBS CMPU does meet the criteria in §63.100(b)(1) or (2) as it uses Styrene (CAS# 100-42-5) as a reactant and is at a major source of HAP. However, it does not meet the criteria of §63.100(b)(1). The primary products of the DBS CMPU are DBS (CAS# 125904-11-2) and HBr (CAS# 10035-10-6), which are not listed in Table 1 of Subpart F and is not tetrahydrobenzaldehyde (CAS# 100-50-5) or crotonaldehyde (CAS# 123-73-9).
	40 C.F.R. 63 Subpart YY	The production of DBS (CAS# 125904-11-2) and HBr (CAS# 10035-10-6) do not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 CFR 63 Subpart MMM	The PAI MACT applies to each Pesticide active ingredient manufacturing process unit (PAI process unit) at a Major Source of HAPs. The DBS Unit produces DBS (CAS# 125904-11-2) and HBr (CAS# 10035-10-6) as a final product and 2-Bromoethylbenzene (CAS# 103-63-9) as an intermediate. None of these are pesticide active ingredients. Therefore, the process does not meet the definition of a PAI process unit and is not subject to the PAI MACT per §63.1360(a).
	40 CFR 63 Subpart EEEE	The Organic Liquids Distribution (Non-Gasoline) (OLD MACT) applies to each OLD operation affected source. The DBS Unit does store styrene (CAS# 100-42-5),

		<p>which is potentially subject to the OLD MACT as an organic liquid in Table 1. However, all storage tanks, transfer racks, transport vehicles, containers, and equipment leak components that are part of the DBS MCPU MON MACT affected source are not considered part of an OLD MACT affected source per §63.2338(c)(1). All storage tanks, containers, and equipment leak components in styrene services are assigned sources with applicable requirements under the MON MACT. They are part of the MON affected source and are exempt from the OLD MACT per §63.2338(c)(1).</p> <p>The transfer racks used for unloading of styrene at the DBS Unit meet the definition of transfer racks under OLD MACT, but do not under the MON MACT and therefore do not have applicable requirements under the MON MACT. Per §63.2240 the MON MACT affected source is the “facilitywide collection of MCPU and heat exchange systems, wastewater, and waste management units that are associated with manufacturing materials”. Per §63.2435 a MCPU includes equipment necessary to operate a miscellaneous organic chemical manufacturing process. Styrene is a raw material for the DBS MCPU process, and the styrene transfer racks are necessary equipment to operate it. Therefore, GLCC believes the styrene transfer racks are part of the MON affected source. EPA has come to a similar determination that transfer racks were part of the 40 CFR Subpart GGGG affected source even though it was not explicitly stated. The styrene transfer racks are part of the MON affected source and are exempt from the OLD MACT per §63.2338(c)(1).</p>
--	--	--

	40 CFR 63 Subpart Q	There are no cooling towers at the DBS process unit that are subject to this subpart per §63.400(a) as they are not operated with chromium-based water treatment chemicals.
Bromine Recovery Unit	40 C.F.R. 60 Subparts VV and VVa	The BRU produces HBr (CAS# 10035-10-6) as final product and produces no intermediate products. The HBr is not a listed chemicals within §60.489 and the BRU does not meet the definition of a “process unit” within §60.480(f). The unit is not an affected source per §60.480(a).
	40 C.F.R. 63 Subparts F, G, and H	<p>The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The BRU has one CMPU potentially subject to the HON MACT. The HBr CPMU does not meet the criteria in §63.100(b)(2) and (3) as it use Methyl Chloride (CAS# 74- 87-3), Methylene Chloride (CAS# 75-09-2), and Bromoform (CAS# 75-25-2) as reactants and is at a major source of HAP.</p> <p>However, it does not meet the criteria of §63.100(b)(1). The primary product of the HBr CPMU is hydrogen bromide (CAS #10035-10-6), which is not listed in Table 1 of Subpart F and are not Tetrahydrobenzaldehyde (CAS# 100-50-5) or Crotonaldehyde (CAS# 123-73-9).</p>
	40 C.F.R. 63 Subpart YY	The bromine recovery unit does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 CFR 63 Subpart MMM	The PAI MACT applies to each pesticide active ingredient manufacturing process unit (PAI process unit) at a Major Source of HAPs. The BRU produces hydrogen bromide (CAS #10035-10-6) as a final product and no intermediates. The hydrogen bromide is not a pesticide active ingredient. Therefore, the BRU does not meet the definition of a PAI process unit and is not subject to the PAI MACT per §63.1360(a).

	<p>40 CFR 63 Subpart EEEE</p>	<p>The OLD MACT applies to each organic liquids distribution (OLD) operation at a Major Source of HAPs. The BRU produces and distributes hydrogen bromide (CAS #10035-10-6) as a final product. The hydrogen bromide is not an organic liquid. Therefore, the BRU does not meet the definition of an OLD operation and is not subject to the OLD MACT per §63.2334(a).</p>
	<p>40 CFR 63 Subpart FFFF</p>	<p>The MON MACT applies to each miscellaneous organic chemical manufacturing process unit (MCPU) at a Major Source of HAPs. The bromine recovery unit produces hydrogen bromide (SIC Code 2819) as a product and produces no isolated intermediates. The BRU does not produce as a product or isolated intermediate any organic chemicals, quaternary ammonium compounds, ammonium sulfate, hydrazine or use a nondedicated solvent recovery operations for organic solvents. Therefore, the BRU does not meet the requirements within §63.2435(b)(1) and is not a MON MACT subject MCPU.</p>
	<p>40 CFR 63 Subpart DDDDD</p>	<p>The definition of a boiler under §63.7575 specifically excludes waste heat boilers; therefore, the bromine recovery unit is not subject per §63.7490(a)(2).</p>
<p>PDBS Unit</p>	<p>40 C.F.R. 60 Subparts VV and VVa</p>	<p>The PDBS Unit produces PDBS (polydibromostyrene CAS# 62354- 98-7) as a final product and produces no intermediate products. The PDBS is not a listed chemical within §60.489 and the PDBS Unit does not meet the definition of a “process unit” within §60.480(f). The PDBS Unit is not an affected source per §60.480(a).</p>
	<p>40 C.F.R. 63 Subparts F, G, and H</p>	<p>The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The PDBS Unit has one CMPU potentially subject to the HON MACT. The PDBS CMPU does meet the criteria</p>

		<p>in §63.100(b)(2) and (3) as it uses toluene (CAS# 108-88-3) as a reactant and is at a major source of HAP. However, it does not meet the criteria of §63.100(b)(1). The primary product of the PDBS CMPU is PDBS (CAS# 62354-98-7), which is not listed in Table 1 of Subpart F and is not Tetrahydrobenzaldehyde (CAS# 100-50-5) or Crotonaldehyde (CAS# 123-73-9).</p>
	<p>40 C.F.R. 63 Subpart YY</p>	<p>The production of PDBS (polydibromostyrene CAS# 62354-98-7) does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.</p>
	<p>40 CFR 63 Subpart MMM</p>	<p>The PAI MACT applies to each Pesticide active ingredient manufacturing process unit (PAI process unit) at a Major Source of HAPs. The PDBS Unit produces PDBS (polydibromostyrene CAS# 62354-98-7) as a final product and produces no intermediates. The PDBS is not a pesticide active ingredient. Therefore, the PDBS Unit does not meet the definition of a PAI process unit and is not subject to the PAI MACT per §63.1360(a).</p>
	<p>40 CFR 63 Subpart EEEE</p>	<p>The Organic Liquids Distribution (Non-Gasoline) (OLD MACT) applies to each OLD operation affected source. The DBS Unit does store toluene (CAS# 108-88-3), which is potently subject to the OLD MACT as an organic liquid in Table 1. However, all storage tanks, transfer racks, transport vehicles, containers, and equipment leak components that are part of the PBDS MCPU MON MACT affected source are not considered part of an OLD MACT affected source per §63.2338(c)(1). All storage tanks, containers, and equipment leak components in toluene service are assigned sources with applicable requirements under the MON MACT. They are part of the MON affected source and are exempt from the OLD MACT per §63.2338(c)(1).</p>

		<p>The transfer racks used for unloading of toluene at the DBS Unit meet the definition of transfer racks under OLD MACT, but do not under the MON MACT and therefore do not have applicable requirements under the MON MACT. Per §63.2240 the MON MACT affected source is the “facilitywide” collection of MCPU and heat exchange systems, wastewater, and waste management units that are associated with manufacturing materials”. Per §63.2435 a MCPU includes equipment necessary to operate a miscellaneous organic chemical manufacturing process. Toluene is a raw material for the PBDS MCPU process, and the transfer racks are necessary equipment to operated it. Therefore, GLCC believes the toluene transfer racks are part of the MON affected source. EPA has come to a similar determination that transfer racks were part of the 40 CFR Subpart GGGG affected source even though it was not explicitly stated. The toluene transfer racks are part of the MON affected source and are exempt from the OLD MACT per §63.2338(c)(1).</p>
<p>Sour Gas Flare (SN-902)</p>	<p>40 C.F.R. 60 Subparts J and Ja</p>	<p>The Sour Gas Flare is not located at a petroleum refinery as defined in §60.101; therefore, the regulation is not applicable per §60.100(a)</p>
	<p>40 C.F.R. 63 Subparts F, G, and H</p>	<p>No vent gases from HON MACT regulated equipment are vented to the Sour Gas Flare (SN-902).</p>
	<p>40 C.F.R. 63 Subpart FFFF</p>	<p>No, vent gases from MON MACT regulated equipment are vented to the Sour Gas Flare (SN-902)</p>
	<p>40 C.F.R. 60 Subparts KKK</p>	<p>The Sour Gas Flare is not a natural gas processing plant as defined in §60.631; therefore, the regulation is not applicable per §60.630(a)(1)</p>
	<p>40 C.F.R. 60 Subpart LLL</p>	<p>The Sour Gas Flare is not located at a facility that processes natural gas;</p>

		therefore, the regulation is not applicable per §60.340(a)
	40 C.F.R. 60 Subparts OOOO and OOOOa	The Sour Gas Flare is not an onshore affected facility listed in §60.5365(a) through (g); therefore, the regulation is not applicable
	40 C.F.R. 63 Subpart HH	The Sour Gas Flare is not located at a natural gas production facility; therefore, the regulation is not applicable per §63.760(a)
	40 C.F.R. 63 Subpart YY	The Sour Gas Flare does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 C.F.R. 63 Subpart HHH	The Sour Gas Flare is not located at a natural gas transmission or storage facility; therefore, the regulation is not applicable per §63.1270(a)
Process Water Treatment Plant	40 C.F.R. 60 Subparts K, Ka, and Kb	TT-76-007 is storage vessels greater than 40,000 gallons storing wastewater. Wastewater is not a petroleum liquid and therefore not subject under §60.110(a) or §60.110a(a).  TT-76-001, TT-76-002, TT-76-003, TT-76-006 and TT-76-007 are storage vessel greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing wastewater. As the true vapor pressure of wastewater is below 15 kPa, it is not subject under §60.110b(b).
	40 C.F.R. 60 Subpart QQQ	The PWTP is not located at a petroleum refinery as defined in §60.691; therefore, it is not subject to the regulation per §63.690(a)(1).
	40 C.F.R. 61 Subpart FF	As a chemical manufacturing plant, LANXESS is subject to Subpart FF per 63.340(a). However, the Process Water Treatment Plant (PWTP) is not a treatment process used to comply with this MACT as there are no applicable benzene waste streams > 10 ppm that require treatment. The PWTP is a treatment process, but not a wastewater treatment system as defined in 61.341 since the wastewater releases are permitted through 40 C.F.R. Part 144,

		under the ADEQ underground injection permit #0010-UR-4. Total annual benzene quantity from facility waste is less than 1 ton/yr.
SN-03 SN-04	40 C.F.R. 60 Subparts D and Db	There are no applicable requirements within 40 CFR 60 Subparts D or Db for SN-03 or SN-04, as both boilers have heat capacities less than 100 MMBtu/hr.
SN-03	40 C.F.R. 60 Subpart Dc	There are no applicable requirements within 40 CFR 63 Subpart Dc for SN-03, as the boiler was constructed prior to June 9, 1989.
SN-05	40 C.F.R. 63 Subpart Q	SN-05 is not subject to this subpart per §63.400(a) as they are not operated with chromium-based water treatment chemicals
Sodium Bromide Production	40 C.F.R. 60 Subparts K, Ka, and Kb	These storage vessels are greater than 75 m <sup>3</sup> but less than 151 m <sup>3</sup> storing hydrogen bromide. Hydrogen bromide is not a volatile organic liquids (VOL) and therefore not subject under §60.110b(a).
	40 C.F.R. 60 Subparts VV and VVa	The sodium bromide production does not produce as an intermediate or final product any listed chemicals within §60.489 and does not meet the definition of a “process unit” within §60.480a(f)(2)(i). The bromine production unit is not an affected source per §60.480(a).
	40 C.F.R. 63 Subparts F, G, and H	<p>The HON MACT applies to Chemical Manufacturing Process Units (CMPU) that meet all the criteria in §63.100(b)(1) – (3). The sodium bromide process is not a CMPU as it does not meet the criteria in §63.100(b)(1) or (2).</p> <p>The primary product of the process is sodium bromine (CAS #7647-15-6), which is not listed in Table 1 of Subpart F and is not tetrahydrobenzaldehyde (CAS# 100-50-5) or crotonaldehyde (CAS# 123-73-9). The sodium bromide production process does not use any product or co-product that is one or more of the organic</p>

		hazardous air pollutants listed in Table 2 of Subpart F.
	40 C.F.R. 63 Subpart YY	The sodium bromide production does not meet any of the eight subject source categories within Subpart YY Table 1 as defined within §63.1103.
	40 C.F.R. 63 Subpart FFFF	The MON MACT applies to each miscellaneous organic chemical manufacturing process unit (MCPU) at a Major Source of HAPs. The sodium bromide process produces sodium bromide (SIC Code 2819) as a product. The sodium bromide process does not produce as a product or isolated intermediate any organic chemicals, quaternary ammonium compounds, ammonium sulfate, hydrazine or use a nondedicated solvent recovery operations for organic solvents. Therefore, the process does not meet the requirements within §63.2435(b)(1) and is not a MON MACT subject MCPU.

N

(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any 8 CAR pt. 40 requirement.)

If yes, are applicable requirements included and specifically identified in the permit? Y/N  
If not, explain why.

For any requested inapplicable regulation in the permit shield, explain the reason why it is not applicable in the table below.

Source	Inapplicable Regulation	Reason

12. COMPLIANCE ASSURANCE MONITORING (CAM) – TITLE V PERMITS ONLY:

List sources potentially subject to CAM because they use a control device to achieve compliance and have pre-control emissions of at least 100 percent of the major source level. List the pollutant of concern and a brief summary of the CAM plan (temperature monitoring, CEMs, opacity monitoring, etc.) and frequency requirements of § 64.

Source	Pollutant Controlled	Cite Exemption or CAM Plan Monitoring and Frequency
611	SO <sub>2</sub>	Daily scrubber liquid flow rate
1104	PM <sub>10</sub>	Weekly fabric filter check Daily pressure drop

13. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

14. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the DEQ Air Permit Screening Modeling Instructions.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated. Based on Division of Environmental Quality procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1<sup>st</sup> Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Division of Environmental Quality has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m<sup>3</sup>), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m <sup>3</sup> )	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Benzene	0.064	0.007	6.04	No
Hexane	176.237	19.3861	6.41	Yes
Toluene	75.4	8.29	11.46	No
Dichlorobenzene	150.317	16.5349	6.04	Yes

Arsenic	0.01	0.0011	0.00041	Yes
Cadmium	0.01	0.0011	0.00026	Yes
Chromium	0.5	0.055	0.0500268	Yes
Cobalt	0.02	0.0022	0.00002	Yes
Manganese	0.02	0.0022	0.00008	Yes
Mercury	0.1	0.011	0.00006	Yes
POM	0.2	0.022	0.00016	Yes
Selenium	0.2	0.022	0.01	YES

## 2<sup>nd</sup> Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Division of Environmental Quality to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ( $\mu\text{g}/\text{m}^3$ ) = 1/100 of Threshold Limit Value	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Pass?
Toluene	754	50	YES
Benzene	0.64	54	NO

The non-criteria pollutants listed below were evaluated. Based on Division of Environmental Quality procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

## Further Analysis

Benzene emission were compared to the EPA Acute Exposure Guideline Levels (AEGL). As AERMOD models concentrations with a minimum time frame of 1-hr any lower time frame is calculated based on the 1-hr emission rate. It is therefore mathematically impossible to exceed the 10 minute and 30 minute AEGL's if the 1 hour AEGL is not exceeded. Therefore, only the 1, 4, and 8 hour AEGL's were evaluated.

Pollutant	Averaging Time	AEGL 1	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Pass?
Benzene	1hr	1.66E5	195	Yes
	4 hr	5.74E4	146	Yes

Pollutant	Averaging Time	AEGL 1	Modeled Concentration (µg/m <sup>3</sup> )	Pass?
	8 hr	2.87E4	130	Yes

c) H<sub>2</sub>S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H<sub>2</sub>S Standards

Y

If exempt, explain: The facility is subject to multiple Federal rules which would exempt it.

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H <sub>2</sub> S	20 parts per million (5-minute average*)		
	80 parts per billion (8-hour average) residential area		
	100 parts per billion (8-hour average) nonresidential area		

\*To determine the 5-minute average use the following equation

$$C_p = C_m (t_m/t_p)^{0.2} \text{ where}$$

C<sub>p</sub> = 5-minute average concentration

C<sub>m</sub> = 1-hour average concentration

t<sub>m</sub> = 60 minutes

t<sub>p</sub> = 5 minutes

## 15. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
03	AP-42	7.6 lbs PM/PM <sub>10</sub> /10 <sup>6</sup> scf 0.6 lbs SO <sub>2</sub> /10 <sup>6</sup> scf 5.5 lbs VOC/10 <sup>6</sup> scf 84 lbs CO/10 <sup>6</sup> scf 100 lbs NO <sub>x</sub> /10 <sup>6</sup> scf			95.0 MMBtu/hr
04	AP-42 <sup>1</sup> Vendor Supplied <sup>2</sup>	7.6 lbs PM/PM <sub>10</sub> /10 <sup>6</sup> scf <sup>1</sup> 0.6 lbs SO <sub>2</sub> /10 <sup>6</sup> scf <sup>1</sup> 5.5 lbs VOC/10 <sup>6</sup> scf <sup>1</sup> 188 lbs CO/10 <sup>6</sup> scf <sup>2</sup> 100 lbs NO <sub>x</sub> /10 <sup>6</sup> scf <sup>2</sup>			96.7 MMBtu/hr
102 (Flare Pilot)	AP-42 Table	7.6 lb PM/PM <sub>10</sub> /MMft <sup>3</sup>			
	Ap-42 Table	0.6 lb SO <sub>2</sub> /MMft <sup>3</sup>			
	AP-42 Table 1.4-1, Residential Furnace	5.5 lb VOC/MMft <sup>3</sup>			
	AP-42 Table	84 lb CO/MMft <sup>3</sup>			
	AP-42 Table 1.4-1, Residential Furnace	100 lb NO <sub>x</sub> /MMft <sup>3</sup>			
102 (Flare Flaring)	AP-42 Table 1.4-2 with safety factor	11.05 lb PM/PM <sub>10</sub> /MMscf			
	Sulfur content of Sour Gas	6108 lb/hr SO <sub>2</sub>			
	AP-42, Table 13.5-1, Total Hydrocarbon	0.8 lb VOC/MMBtu			
	AP-42, Table 13.5-1	0.31 lb CO/MMBtu			
	AP-42, Table 13.5-1	0.068 lb NO <sub>x</sub> /MMBtu			
	Testing	66.4 lb/hr			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	AP-42 natural gas HAPS	Varied see Table 1.3-4			
138	Testing	0.24 lb/hr Br <sub>2</sub>  HBr, Cl, and HCl - 5.67% of Br <sub>2</sub>	Scrubber	95%	HBr, Cl and HCl emissions based on highest HBr to Br <sub>2</sub> ratio from testing
180, 181, 182, 183,	AP-42, Section 13.4	Calculated from drift rate 1.7 lbs/10 <sup>3</sup> gal			Cooling Towers
199	EPA Protocol for Equipment Leak Emission Estimates	Various Chlorine liquid: 0.000165 kg/hr/source, Chlorine (all): 0.0000081 kg/hr/source Chlorine (gas): 0.0447 kg/hr/source  Bromine/HBr/H <sub>2</sub> S: light liquid 0.000165 kg/hr/source, heavy liquid 0.00023 kg/hr/source, and all 0.0000081 kg/hr/source		97%	Chlorine: 25 valves, 112 connectors, and 9 pressure relief valves  Bromine: 26 Valves (light), 565 valves (heavy), 3112 connectors (all), 18 pump seals (heavy), and 4 pressure relief valves (gas)
201	Facility process knowledge	0.19 lb HCl/hr	Scrubber	95%	
202	AP-42 Section 4.3, Equation 12	9.4 lb VOC/hr			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
205	AP-42, section 3.3, Table 3.3-1,	PM/PM10: 0.20 g/kW-hr SO <sub>2</sub> : 0.29 lb/MMBtu VOC: 0.36 lb/MMBtu CO: 3.5 g/kW-hr NO <sub>x</sub> : 4.0 g/kW-hr			Max Engine Output: 290 bkW  Heat Input: 2.62 MMBtu/hr  Max Use: 500 hr/yr
401	Tanks 4.0	0.1 tpy VOC	Scrubber	90%	
412	Tanks 4.0	0.6 tpy VOC			
439	Tanks 4.0	0.6 tpy VOC			
413	Testing	Bromine – 0.01 lb/hr Acetaldehyde – 0.01 lb/hr Acetophenone – 0.01 lb/hr Phenol – 0.01 lb/hr Hydrazine – 0.01 lb/hr HCl – 0.01 lb/hr Chlorine – 0.01 lb/hr Bromoform – 0.01 lb/hr Chloroform – 0.01 lb/hr Methyl Bromide – 0.01 lb/hr VOC – 0.70 lb/hr	Scrubber	95%	
436	Grain loading	0.02 grains/ft <sup>3</sup>	Baghouse	99%	
441, 442	Grain loading	0.03 grains/ft <sup>3</sup>	Baghouse	99%	
427	Facility calculation	14 lbs PM/PM10 generated per Lot produced and scrubber efficiency		95%	
428	AP-42 Section 1.4	0.6 lb SO <sub>2</sub> /10 <sup>6</sup> scf			A 20% safety factor

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
					was applied to the AP-42 emission factors to be conservative.
	AP-42 Section 1.4	5.5 lb VOC/10 <sup>6</sup> scf			
	Vendor Data	NO <sub>x</sub> – Not Applicable			
	Vendor Data	CO – Not Applicable			
499	EPA Protocol for Equipment Leak Emission Estimates	Various			
503	Facility process knowledge; Stack test data; and AP-42 Emission Factors (for natural gas combustion in the thermal oxidizer)	7.6 lb PM/PM <sub>10</sub> /MMscf/0.6 lb SO <sub>2</sub> /5.5 lb VOC/100 lb NO <sub>x</sub> / 84 lb CO/hr 2.0E-4 lb Arsenic/hr 1.1E-3 lb Cadmium/hr 8.4E-5 lb Cobalt/hr 3.8E-4 lb Manganese/hr 2.6E-4 lb Mercury/hr 2.1E-3 lb Nickel/hr 6.98E-4 lb POM/hr Chlorine 0.1 lb/hr	Thermal oxidizer	98%	Safety Factor of 1.2 for CP, 1.0 for HAP
519	Manufacturer design data	Outlet grain loading 0.01 gr/cf Maximum airflow: 2500 cf/min			60 min/hr 1 lb/7000 gr 8760 hr/yr
604	Facility process knowledge	4.4 lb VOC/hr 1.3 lb Phthalic anhydride/hr			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
606	In-house sampling	0.31 lb Propylene oxide/lot 0.02 lb Toluene/lot 0.03 methyl chloride/lot 1.66E-03 lb HF1/Cl/HCl/lot	Two condensers in series	90%	22 lots per day 8030 lots / yr
608	Grain loading	0.02 grains/ft <sup>3</sup>	Baghouse	99%	Maximum air flow: 230 cf/min  60 min/hr  1 lb/7000 gr
609	Tanks 4.0	1.3 lb VOC/hr 0.50 lb Toluene/hr			
610	Facility process knowledge	4.19 lb/PHT4-lot	Condenser	90%	44 PHT4 lots/day, 16,060 lots/yr 8760 hr/yr
611	Facility process knowledge; Stack testing	0.43 lb SO <sub>2</sub> /hr 0.1 lb PM/PM <sub>10</sub> /hr 0.1 lb VOC/hr	Scrubber	95%	
	Stack testing	0.1 lb Bromine/hr			
615	AP-42 Section 1.4	Varies			
680/681/684	AP-42, Section 13.4	Calculated from drift rate 1.7 lbs/10 <sup>3</sup> gal			Cooling Towers Hourly TDS value 18,000 μs
699	EPA Protocol for Equipment Leak	Various			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	Emission Estimates				
901	Stack testing	0.3 lb VOC/lot 0.1 lb HBr/lot HCl lb HCl/lot	Scrubber	95%	
902	Tanks 4.0	0.4 lb VOC/hr			
920	Facility process knowledge	0.37 lb HCl/hr	Scrubber	95%	
921	AP-42, Section 1.4	Varies			
924, 925	AP-42, Section 13.4	Calculated from drift rate 1.7 lbs/10 <sup>3</sup> gal			Cooling Tower
999	EPA Protocol for Equipment Leak Emission Estimates	Various			
1101	Stack testing	1.6 lb VOC/hr			
1104, 1106	Grain loading	0.01 gr/scf			SN-1104 Flow: 7600 scf/min  SN-1106 Flow: 1800 scf/min
1107	Stack testing	0.3 lb VOC/hr			
1108	Manufacturer design data	0.02 gr/scf 250 cf/min			1 lb/7000 gr 60 min/hr 8760 hr/yr
1199	EPA Protocol for Equipment Leak Emission Estimates	Various			
2001	Stack testing	3.4 lb PM/PM <sub>10</sub> /hr			
	AP-42	0.6 lb SO <sub>2</sub> /10 <sup>6</sup> scf			
	AP-42	5.5 lb VOC/10 <sup>6</sup> scf			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	Stack testing	2.1 lb CO/hr			
	Stack testing	2.6 lb NO <sub>x</sub> /hr			
	Stack testing	6.7 lb HBr/hr			
	Stack testing	1.6 lb HCl/hr			
	Arsenic, Chromium, Mercury, and Selenium Sampling of streams	Varied see permit application			
	Natural gas HAPs AP-42	See Table 1.4-1 of AP-42			
2099	EPA Protocol for Equipment Leak Emission Estimates	Various HBr, VOC: 0.000165 kg/hr/source (valve) 0.000081 kg/hr/source (connector) 0.00187 kg/hr/source (pump seals)			535 valves, 1889 connectors, and 23 pump seals
3001	AP-42 Tables 1.4-3 and 1.4-4	Varies per pollutant	Scrubber		Pilot Plant
3002	Facility process knowledge	Calculated from drift rate			Cooling Tower

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
138	Br	An approved method	Every 5 years	Compliance demonstration
413	Br	An approved method	Every 5 years	Compliance demonstration
	Caustic Concentration	An approved method	Daily	Scrubber compliance

SN	Pollutants	Test Method	Test Interval	Justification
401	Water Flow rate	An approved method	Daily	Scrubber compliance
427	Caustic Concentration	An approved method	Daily	Scrubber compliance
610	PM/PM <sub>10</sub>	5	Every 5 years	Compliance demonstration
611	Br	An approved method	Every 5 years	Compliance demonstration
	Caustic Concentration	An approved method	Daily	Scrubber compliance
901 (during production of DBS, PBr <sub>3</sub> , BCP during heavy removals, PBr <sub>3</sub> and BCP simultaneous production)	VOC DBS, PBr <sub>3</sub> , BCP	25A An approved method	Every 5 years	Compliance demonstration
	Caustic Concentration	An approved method	Daily	Scrubber compliance
2001	PM/PM <sub>10</sub> NO <sub>x</sub> HCl HBr CO	5 and 202 7E 26A 26A 10B	Every 5 years	Compliance demonstration
1101	PM/PM <sub>10</sub> VOC Toluene, DBS	5 25A An approved method	Every 5 years	Compliance demonstration
3001	Organic HAPs Non-VOC Organic HAPs	18	One-time	Compliance Demonstration

17. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
03, 04	Fuel flow to boilers	Flow meter	Continuous	Yes
102	Sour gas to Flare	Volume	Continuous	Yes

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
401, 413, 427,	Flow Rate Scrubbing Liquor	Flow Meter	Daily	No
428, 429, 441, 442 608, 1104*, 1106, 1108	Pressure drop across baghouse	Pressure meter	Daily	No Yes*
180, 181	Total Dissolved Solids	Facility sampling	Monthly	No
182, 183, 184, 185	Conductivity	Facility Sampling	Monthly	No
680\681\684	Conductivity	Facility Sampling	Monthly	No
611*, 901	Scrubbing Liquor	Flow Meter	Daily	No Yes*

#### 18. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
03, 04	Use of natural gas	None	Monthly	No
138	Bromine Tower Start-ups	None	Each event	No
	Scrubber Flow rate	24 gal/min	Daily	
	Caustic Concentration	2.5%	Daily	
102	Reason, duration, volume, emissions in lb/hr and tpy	None	Each event	Yes
181, 182	TDS	33,000 ppm	Monthly	No
180, 183, 184	Conductivity	5,000 $\mu$ S	Monthly	No
185	Conductivity	5,000 $\mu$ S	Monthly	No
199	Chlorine leak (Audio/Visual/Olfactory) detection	None	Weekly	No
401, 201	Water flow rate	5 gal/min	Monthly	No
205	Hours of Operation	500 hr/yr for emissions, 100 hr/yr for maintenance	Monthly	N
413	Scrubber flow rate	12 gal/min	Daily	No
	Caustic concentration	2.5%		
427	Scrubber flow rate	10 gal/min	Daily	No
	Caustic concentration	2.5%		
611*	Scrubber flow rate	40 gal/min	Daily	Yes*
	Caustic concentration	2.5%		

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
680/681/684	Conductivity	5,500 µS	Monthly	No
901	Scrubber flow rate	0.8 gal/min	Daily	N
	Caustic concentration	2.5%		
2001	Venturi differential pressure	40" of water	Continuous	No
	Thermal oxidizer temperature	1600°F		
3001	Process evaluated, raw materials used, estimated maximum emissions, control device parameters	Varies per pollutant	Daily, monthly, and twelve month rolling total	N

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
03, 04, 102	5%	Natural gas fired	Use of natural gas
138	5%	Rule 18.501	Inspector observations
427, 428, 441, 442	5%	Rule 18.501	Inspector observations
680/681/684, 610, 611	5%	Rule 18.501	Inspector observations
2001	5%	Rule 18.501	Inspector observations
1104, 1106, 1108	5%	Rule 18.501	Inspector observations
3001, 503, 205	20%	Rule 18.501	Inspector observations

20. DELETED CONDITIONS:

Former SC	Justification for removal
	None



<p>Tank; One Spent Caustic/Anhydrous Ammonia Tank DBS Production: Caustic Storage Tank (Sodium Hydroxide) FF-680: Two Caustic Storage Tanks PHT -4: Two Caustic Storage Tanks; One Caustic Storage Tank (Sodium Hydroxide)</p>							
<p>Bromine Production: One HBr Tank FF-680 Production: One HBr Tank PHT Production: One Diethylene Glycol Tank, Three PHT-4 Diol/Blends Tanks; Sodium Bisulfite Tank; Sodium Bisulfite Loading; Filter Belt; Product Blender; Bag Loading; Steam – Water Separator Pot DBS Production: One DEHA Tank; Two DBS Tanks; Vacuum Jet Condenser; Step III Process Vent; BEB Tanks Carbon Drum Filter</p>	<p>A-13</p>	<p>0.37</p>		<p>0.398</p>		<p>0.354</p>	<p>0.354</p>

Permit #: 0873-AOP-R16

AFIN: 70-00037

Page 34 of 34

BRU: Two HBr Tanks PDBS: Carbon Filter (SN-1103); Side Feeder; Super Sack Loader; Dry Fines Surge Bin NaBr: Sodium Bromide Tanks								
--	--	--	--	--	--	--	--	--

22. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0873-AOP-R15

## APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

## Fee Calculation for Major Source

Revised 03-11-16

LANXESS Corporation - South Plant  
 Permit #: 0873-AOP-R16  
 AFIN: 70-00037

\$/ton factor	28.14	Annual Chargeable Emissions (tpy)	<u>601.35002</u>
Permit Type	Modification	Permit Fee \$	<u>1000</u>

Minor Modification Fee \$	500
Minimum Modification Fee \$	1000
Renewal with Minor Modification \$	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	<input type="checkbox"/>
If Hold Active Permit, Amt of Last Annual Air Permit Invoice \$	0
Total Permit Fee Chargeable Emissions (tpy)	10.7
Initial Title V Permit Fee Chargeable Emissions (tpy)	

*HAPs not included in VOC or PM: Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

*Air Contaminants: All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensable PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		190.8	190.8	0	0	190.8
PM <sub>10</sub>		190.6	190.6	0		
PM <sub>2.5</sub>		0	0	0		
SO <sub>2</sub>		66	66	0	0	66
VOC		131.6	131.6	0	0	131.6
CO		143.3	143.3	0		
NO <sub>x</sub>		111.9	111.9	0	0	111.9
Lead	<input type="checkbox"/>	0.400004	0.41	0.009996		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Acetaldehyde	<input type="checkbox"/>	5.05	5.05	0		
Acetophenone	<input type="checkbox"/>	5.05	5.05	0		
Allyl Chloride	<input type="checkbox"/>	5	5	0		
Acrolein	<input type="checkbox"/>	0.09	0.09	0		
Bromoform	<input type="checkbox"/>	5.07	5.07	0		
Chlorine	<input checked="" type="checkbox"/>	0.64	0.64	0	0	0.64
Chloroform	<input type="checkbox"/>	5.05	5.05	0		
Ethyl Chloride	<input type="checkbox"/>	5	5	0		
Ethylene Dibromide	<input type="checkbox"/>	5	5	0		
Ethylene Dichloride	<input type="checkbox"/>	5	5	0		
Hexane	<input type="checkbox"/>	6.5	6.5	0		
Hydrogen Chloride	<input checked="" type="checkbox"/>	12.7	12.7	0	0	12.7
Hydrazine	<input type="checkbox"/>	0.74	0.74	0		
Methyl Bromide	<input type="checkbox"/>	5.05	5.05	0		
Phenol	<input type="checkbox"/>	6.83	6.83	0		
Phthalic Anhydride	<input type="checkbox"/>	5.62	5.62	0		
Styrene	<input type="checkbox"/>	23.97	23.97	0		
Toluene	<input type="checkbox"/>	25.57	25.51	-0.06		
Vinyl Bromide	<input type="checkbox"/>	5	5	0		
Propylene Oxide	<input type="checkbox"/>	9.37	9.37	0		
Other HAPs	<input type="checkbox"/>	0.13	0.08	-0.05		
Dichlorobenzene	<input type="checkbox"/>	5.03	5.03	0		
Formaldehyde	<input type="checkbox"/>	5.09	5.09	0		
Naphthalene	<input type="checkbox"/>	5.03	5.03	0		
Nickel	<input type="checkbox"/>	5.03	5.03	0		
Methanol	<input type="checkbox"/>	5.03	5.03	0		
Dichloromethane	<input type="checkbox"/>	5	0	-5		
Arsenic	<input type="checkbox"/>	0.0300167	0.0300167	0		













