

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

February 1, 2024

SUBJECT: Reasonable Available Control Technology (RACT III) Determination
Neville Chemical Company
2800 Neville Road
Pittsburgh, PA 15225-1496
Allegheny County

RACT III Technical Support (Installation Permit No. 0060-I010a)

TO: JoAnn Truchan, P.E.
Program Manager, Engineering

FROM: Helen O. Gurvich
Air Quality Engineer

I. Executive Summary

Neville Chemical Company is defined as a major source of VOC emissions and was subjected to a Reasonable Achievable Control Technology (RACT III) review by the Allegheny County Health Department (ACHD) required for the 2015 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that the facility has few technically feasible controls options for controlling VOC emissions from the processes, but they are deemed financially infeasible due to their high cost per ton of VOC removed.

Table 1 Technically and Financially Feasible Control Options Summary for VOC

Unit ID	Emissions Unit	Financially Feasible Control Option	Current VOC PTE	RACT Reduction	Revised VOC PTE	Annualized Control Cost (\$/yr)	Cost Effectiveness (\$/ton VOC removed)
There are no additional technically and financially feasible control options available for VOC reduction from RACT II to RACT III.							

These findings are based on the following documents:

- RACT analysis performed by Neville Chemical Company (2022-12-05 NevilleChemicalCo.Pittsburgh.PA.RACT3.Evaluation Report.pdf)
- RACT II permit No. 0060c, issued April 23, 2020 (EPA approval on October 21, 2021, 86 FR 58223)
- Installation Permit No. 0060-I010, issued August 3, 2016.

II. Regulatory Basis

On October 26, 2015, the US EPA revised the ozone NAAQS. To meet the new standards, ACHD requested all major sources of NO_x (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_x and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. ACHD has also incorporated by reference 25 Pa. Code, §§129.111-115 under Article XXI, §2105.08 ("RACT III").

The final-form rulemaking was adopted on August 9, 2022. The RACT III final-form regulation establishes §§ 129.111— 129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015

ozone NAAQS) to meet CAA requirements for the control of ground-level ozone. The final-form rulemaking provides for a petition process for an alternative compliance schedule, a facility-wide or system-wide NO_x emissions averaging plan, an alternative RACT proposal petition process, compliance demonstration, and notification and recordkeeping requirements. The final-form rulemaking also amends § 121.1 to revise or add terms to support interpretation of the RACT III final-form regulation.

On August 18, 2023, the Department submitted to the PA DEP a review memo evaluating those processes at Neville Chemical Company where RACT II was determined to be RACT III under §129.114(i). This document is the result of ACHD's determination of RACT for the remaining emissions units and processes submitted by the subject source and supplemented with additional information as needed by ACHD. The provisions of RACT III will replace those of the previous RACT I and RACT II.

III. Facility Description

Neville Chemical Company manufactures synthetic hydrocarbon resins, plasticizers, and plasticizing oils. The facility also operates a groundwater remediation system and wastewater treatment system. Also located at the facility are three (3) resin flaking and packaging centers and two natural gas-fired boilers. The facility is a major source of volatile organic compounds (VOCs) and a minor source of nitrogen oxides (NO_x) emissions. Therefore, this RACT evaluation pertains only to the control of VOC emissions.

The last full compliance evaluation (FCE) at Neville Chemical Company was conducted on September 28, 2022 and the facility was found to be in non-compliance. The following deviations were identified during this evaluation:

- The facility exceeded VOC and HAP emission limitations for the No. 2 Packaging Center during the 2-4 Resin Kettle incident in September 2021.

On November 10, 2020, RACT II was issued for this facility. Since then, the following changes have occurred to the facility:

1. No. 4 Still (P009) has been permanently shut down.
2. No. 4 Still Heater (B007) has been permanently shut down.
3. Unit 20 (P006) and Unit 21 (P007) were combined into a single process unit identified as Unit 20/21 (P006).
4. Changes to the Storage Tanks:
 - a. Category D002, Distillates, has been split into two categories: D002, and D003. Category D002 includes all tanks storing Low Vapor Pressure Distillates, and Category D003 includes all tanks storing Medium Vapor Pressure Distillates.
 - b. Category D004, formerly for LX-1144 Charge Stock tanks, now represents the Heat Poly Charge Stock tanks. The LX-1144 Charge Stock category has been eliminated.
 - c. Category D009, Resin Former, now includes Tanks 8502, 8504, 8505 and 8506 since these tanks are no longer controlled and do not need to be listed separately.
 - d. Tanks 8501 and 8503 are now used to store Low Vapor Pressure Distillates, so they are included in Category D002, Distillates Low VP.
 - e. Due to the above-mentioned combination of Units 20 and 21, any tank previously listed under Category D012, Unit 21 Feed Blend, are now included in Category D011, now designated as Unit 20/21 Feed Blend.
 - f. New Tank 341 has been added to Category D011, Unit 20/21 Feed Blend. New Tank 342 has been added to Category D002, Distillates Low VP.
 - g. New Distillate storage tank 2108 is included in Category D003, Distillates Medium VP.

- h. Tanks removed from the permit (removed tanks and tanks out of service with no plans to reactivate): tanks 1005, 1016, 2101, 2102, 11, 172, 179, 211, 212, 310, 311, 1018, 1019, 2107, 147, 175, 201, 301, 1013, 93, 94, TA-14, TA-15.
- i. Neville has not operated the Resin Rework Tanks (P015) over the past couple of years and has decided to permanently shut down this source.

Neville Chemical Company is a major source of VOC emissions. Neville Chemical Company does not emit 100 tons per year or greater of NO_x and is thus not a major source for NO_x emissions.

Table 2 Facility Sources Subject to Case-by-Case RACT III per 25 PA Code §129.114

Source ID	Description	Rating	VOC PTE (TPY)	Technically Feasible Controls	VOC Case-by-Case Limit (RACT III)
P006	Unit 20/21: four different scenarios (reactor with scrubber for each scenario)	66.6 MM lb/yr	9.71	Condensation; Adsorption	Limit VOC in lb/product change for each scenario; Good operating practices

Table 3 Facility Sources Subject to Presumptive RACT III per 25 PA Code §129.112(c)(2)

Source ID	Description	Rating	VOC PTE (TPY)	Basis for Presumptive	Presumptive RACT Requirement
P008	Still #3: tray tower, distillate condenser, decanter, batch/flush tank, and sidestream oil tank (T-85)	67.2 MM lb/yr	2.56	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P012	No.3 Packaging Center: pouring station	122.6 MM lb/yr	1.88	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P014	Wastewater Treatment System: equalization tank	105 MM gal/yr	1.79	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
	Wastewater Treatment System: 2 biological treatment aeration tanks		1.37	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
	Wastewater Treatment System: Surge Tank		1.89	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
P017	Groundwater Remediation System: 7 groundwater wells, 7 oil recovery wells, a number 2 drywell pump and treat system, and an old number 8 water well pump and treat system	165,000 gal/yr	1.51	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
B013	Boiler #6	49.4 MM Btu/hr	1.34	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
G002	Parts Washing	2,500 gal/yr	2.00	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices
G003	R&D Laboratory Hoods	NA	2.00	< 2.7 TPY VOC	Install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices

Table 4 Facility Sources Exempt from RACT III per 25 PA Code 129.111(c) [< 1 TPY VOC]

Source ID	Description	Rating	VOC PTE (TPY)
P001	Heat Polymerization Still #15: reactor, two distillate receivers, two ejector vents, and a decanter (Thermal Oxidizer)	18 MM lb/yr	0.58
P001	Heat Polymerization Still #16: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	21 MM lb/yr	0.80
P001	Heat Polymerization Still #18: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	26.28 MM lb/yr	0.85
P001	Heat Polymerization Still #19: a reactor, two distillate receivers, a vacuum pump, and a decanter (Thermal Oxidizer)	25 MM lb/yr	0.80
P001	Heat Polymerization Still #43: a reactor, two distillate receivers, two ejector vents, and a decanter (Thermal Oxidizer)	25 MM lb/yr	0.80
P001	Thermal Oxidizer Fuel Consumption	18.9 MM Btu/hr	0.51
P016	Final Product Loading: LX-830 Fuel Oil Barge Loading	6 MM gal/yr	0.79
B001	No.15 Still process heater	7.5 MM Btu/hr	0.22
B002	No.16 Still process heater	6.1 MM Btu/hr	0.18
B003	No.18 Still process heater	8.0 MM Btu/hr	0.23
B004	No.19 Still process heater	7.5 MM Btu/hr	0.22
B006	No. 3 Continuous Still Process Heater	5.25 MM Btu/hr	0.14
B009	No. 2 Packaging Center Heater	5.0 MM Btu/hr	0.15
B010	No. 3 Packaging Center Heater	3.91 MM Btu/hr	0.12
B011	No. 5 Packaging Center Heater	3.0 MM Btu/hr	0.09
B012	Boiler #8	29.5 MM Btu/hr	0.80
B015	Heat Polymerization Still #43: Process Heater	7.5 MM Btu/hr	0.22
NA	Eight (8) Emergency Generators	0.03 to 1.76 MM Btu/hr	0.15
D005	9 Agitator	1,980 gal	< 1
D006	Tank 145	1,763 gal.	< 1

Table 5 Facility Storage Tanks “Not Applicable” to RACT III*

Tank ID	Category ID	Material	Capacity (gal)
174	D001	Catalytic & Miscellaneous Poly Oil	20,350
1001	D001	Catalytic & Miscellaneous Poly Oil	100,980
1002	D001	Catalytic & Miscellaneous Poly Oil	100,980
1017	D001	Catalytic & Miscellaneous Poly Oil	100,980
9	D002	Distillates, Low VP	2,256
12	D002	Distillates, Low VP	19,320
13	D002	Distillates, Low VP	20,305
14	D002	Distillates, Low VP	20,305
3 Still Wash	D002	Distillates, Low VP	3,900
69	D002	Distillates, Low VP	9,568
80	D002	Distillates, Low VP	15,100
85	D002	Distillates, Low VP	3,900
178	D002	Distillates, Low VP	16,120
273	D002	Distillates, Low VP	26,004
274	D002	Distillates, Low VP	26,004
275	D002	Distillates, Low VP	26,004
276	D002	Distillates, Low VP	26,004
277	D002	Distillates, Low VP	26,004
278	D002	Distillates, Low VP	26,004
307	D002	Distillates, Low VP	30,050
308	D002	Distillates, Low VP	30,050
309	D002	Distillates, Low VP	30,050

Tank ID	Category ID	Material	Capacity (gal)
314	D002	Distillates, Low VP	30,050
315	D002	Distillates, Low VP	30,050
342	D002	Distillates, Low VP	34,000
8501	D002	Distillates, Low VP	845,968
8503	D002	Distillates, Low VP	845,968
601	D003	Distillates, Mid VP	60,914
2108	D003	Distillates, Mid VP	217,336
176	D004	Heat Poly Charge Stock	16,120
177	D004	Heat Poly Charge Stock	16,120
205	D004	Heat Poly Charge Stock	20,305
206	D004	Heat Poly Charge Stock	20,305
1014	D004	Heat Poly Charge Stock	100,651
2104	D004	Heat Poly Charge Stock	217,336
2109	D004	Heat Poly Charge Stock	217,336
76	D005	Miscellaneous	7,614
252	D005	Miscellaneous	24,052
60SC	D005	Miscellaneous	6,016
1	D006	Napthenic/Ink/Veg Oil	19,320
2	D006	Napthenic/Ink/Veg Oil	19,320
4	D006	Napthenic/Ink/Veg Oil	17,626
10	D006	Napthenic/Ink/Veg Oil	20,850
68	D006	Napthenic/Ink/Veg Oil	9,568
81	D006	Napthenic/Ink/Veg Oil	10,000
100	D006	Napthenic/Ink/Veg Oil	10,450
102	D006	Napthenic/Ink/Veg Oil	10,000
108	D006	Napthenic/Ink/Veg Oil	10,450
112	D006	Napthenic/Ink/Veg Oil	9,107
202	D006	Napthenic/Ink/Veg Oil	20,082
203	D006	Napthenic/Ink/Veg Oil	20,082
204	D006	Napthenic/Ink/Veg Oil	20,082
302	D006	Napthenic/Ink/Veg Oil	30,050
303	D006	Napthenic/Ink/Veg Oil	30,050
82	D007	NEVCHEM LR	10,000
83	D007	NEVCHEM LR	10,000
1008	D008	Recovered Oil	100,980
1012	D009	Resin Former	100,651
1015	D009	Resin Former	100,980
5003	D009	Resin Former	497,277
6301	D009	Resin Former	630,000
6302	D009	Resin Former	630,000
8502	D009	Resin Former	845,968
8504	D009	Resin Former	845,968
8505	D009	Resin Former	845,968
8506	D009	Resin Former	845,968
135	D010	Resin Solution	2,010
304	D010	Resin Solution	30,050
305	D010	Resin Solution	30,050
312	D010	Resin Solution	30,050
313	D010	Resin Solution	30,050
316	D010	Resin Solution	30,050
317	D010	Resin Solution	30,050
320	D010	Resin Solution	22,438
330	D010	Resin Solution	30,913

Tank ID	Category ID	Material	Capacity (gal)
331	D010	Resin Solution	30,913
332	D010	Resin Solution	30,913
333	D010	Resin Solution	30,913
334	D010	Resin Solution	30,913
271	D011	Unit 20/21 Feed Blend	26,004
272	D011	Unit 20/21 Feed Blend	26,004
341	D011	Unit 20/21 Feed Blend	34,000
2105	D011	Unit 20/21 Feed Blend	217,336
2106	D011	Unit 20/21 Feed Blend	217,336

* Storage tanks with capacity of 2000 gallons or more are “not applicable” to RACT III due to being subject to ACHD storage tank regulations at §2105.12

IV. RACT Determination

An economic analysis of all technically feasible control options for this case-by-case source was conducted. The detailed cost analysis tables are provided in the RACT III analysis performed by Neville Chemical Company. All control cost analyses were conducted pursuant to procedures provided in US EPA’s Air Pollution Control Cost Manual, 7th Edition (the most recent edition).

The cost effectiveness for all the technically feasible control options for this source exceeds the RACT III “screening threshold” value of \$12,000 per ton of VOC removed. All the control options with cost effectiveness above this threshold are automatically considered to be economically infeasible. Based on this case-by-case analysis, the Department has determined that no additional control option is economically feasible for this process.

All the available Control Options for this process (P006) are detailed in Table 6.

Table 6: Summary of VOC Reduction Technologies and Control Costs for Technically Feasible Options

Control Option	Cost Analysis Summary	P006 (Unit 20/21)
Recuperative Thermal Oxidation (Control Efficiency 98%)	tpy VOC Removed	NA*
	Cost	
	\$/ton	
Regenerative Thermal Oxidation (Control Efficiency 98%)	tpy VOC Removed	NA*
	Cost	
	\$/ton	
Catalytic Oxidation (Control Efficiency 98%)	tpy VOC Removed	NA*
	Cost	
	\$/ton	
Carbon Adsorption (Control Efficiency 95%)	tpy VOC Removed	9.24
	Cost	\$217,619
	\$/ton	\$23,558
Concentrator/ Oxidation (Control Efficiency 98%)	tpy VOC Removed	NA*
	Cost	
	\$/ton	
Condensation (Control Efficiency 90%)	tpy VOC Removed	8.70
	Cost	\$155,687
	\$/ton	\$17,870

* The control type is not technically feasible for this process.

ACHD has determined that carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from this process, but they are deemed financially infeasible due to their high cost per ton VOC removed.

RACT III Summary and Revised RACT III Permit Conditions

The Department has analyzed the facility’s proposal for the RACT III requirements and also performed an independent analysis. Based on the information provided by the facility and independently verified by the Department, ACHD has determined that RACT III for P006 emission unit is determined to be limiting the VOC emissions per product change (Scenario #1 – 70.053 lb VOC/product change; Scenario #2 – 52.797 lb VOC/product change; Scenario #3 – 76.463 lb VOC/product change; Scenario #4 – 75.261 lb VOC/product change) and proper operation & maintenance, and good engineering practices. The Installation permit No. 0060-IP10, issued on August 3, 2016, is being revised to add the appropriate PA RACT III regulation citations. These changes, along with the RACT III citations for all presumptive and exempted sources will be incorporated into the Title V Operating Permit renewal.

Table 7 RACT I, RACT II, and RACT III Summary

Unit ID	Permit Condition No. (IP #0060-I010a)	RACT I Requirement	RACT II Requirement	RACT III Requirement (IP #0060-I010a)
P006 – Unit 20/21	Condition V.A.1.a			§129.114(c)
	Condition V.A.1.b		§129.97(c)(2)	§129.114(c)
	Condition V.A.1.e		§129.97(c)(2)	§129.114(c)
	Condition V.A.1.f		§129.97(c)(2)	§129.114(c)
	Condition V.A.4.a	Order #230, 1.9		§129.115(f)
	Condition V.A.4.b	Order #230, 1.9		§129.115(f)
	Condition V.A.4.c	Order #230, 1.9		§129.115(f)
	Condition V.A.4.f	Order #230, 1.5		§129.115(k)
	Condition V.A.5.a			§129.115(f)
	Condition V.A.6.b	Order #230, 1.1		§129.114(c)