

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

August 17, 2023

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

**RACT III Technical Support (Operating Permit No. 0060)
(For RACT II equal RACT III only)**

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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 several technically feasible controls options for controlling VOC emissions from the processes, but they are deemed financially infeasible due to their high cost per ton removed.

The Neville Chemical facility includes processes meeting RACT III exemption and presumptive requirements, processes meeting the control technology guidelines (CTG), processes subject to case-by-case RACT III, and processes where RACT II equals RACT III. This document includes only those processes subject to RACT II equals RACT III.

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)

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").

This document is the result of ACHD's determination of RACT 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.

As part of the RACT regulations codified in 25 Pa. Code §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) (RACT III), ACHD has adopted the Pennsylvania Department of Environmental Protection's established method under § 129.114(i) (relating to alternative RACT proposal and petition for alternative compliance schedule) for an applicant to demonstrate that the alternative RACT compliance requirements incorporated under § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) (RACT II) for a source that commenced operation on or before October 24, 2016, and which remain in force in the applicable operating permit continue to be RACT under RACT III as long as no modifications or changes were made to the source after October 24, 2016. The date of October 24, 2016 is the date specified in § 129.99(i)(1) by which written RACT proposals to address the 1997 and 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) were due to the Department from the owner or operator of an air contamination source located at a major NO_x emitting facility or a major VOC emitting facility subject to § 129.96(a) or (b) (relating to applicability).

The procedures to demonstrate that RACT II is RACT III are specified in § 129.114(i)(1)(i), 129.114(i)(1)(ii) and 129.114(i)(2), that is, subsection (i), paragraphs (1) and (2). An applicant may submit an analysis, certified by the responsible official, that the RACT II permit requirements remain RACT for RACT III by following the procedures established under subsection (i), paragraphs (1) and (2).

Paragraph (1) establishes cost effectiveness thresholds of \$7,500 per ton of NO_x emissions reduced and \$12,000 per ton of VOC emissions reduced as "screening level values" to determine the amount of analysis and due diligence that the applicant shall perform if there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis. Paragraph (1) has two subparagraphs.

Subparagraph (i) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

Subparagraph (ii) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or

appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.
- A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique.

Paragraph (2) establishes the procedures that the applicant that evaluates and determines that there is a new or upgraded pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis shall follow.

- Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b) (relating to RACT proposal requirements).
- Submit that analysis to the Department (or appropriate approved local air pollution control agency) for review and approval.

The applicant shall also provide additional information requested by the Department (or appropriate approved local air pollution control agency) that may be necessary for the evaluation of the analysis submitted under § 129.114(i).

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 boiler. 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 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. Changes that have occurred after that are described below:

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 one process unit now designated as Unit 20/21 (P006).
4. Changes to Storage Tanks:

- a. Category D002, Distillates, has been split into two categories. 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 tanks 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)	Case-by-Case Limit (RACT II)	VOC Case-by-Case Limit (RACT III)	RACT II as RACT III
P011	No. 2 Packaging Center: seven drain kettles - Uncontrolled	87.6 MM lb/yr	15.56	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
	No. 2 Packaging Center: flaking belt, packaging station - Uncontrolled		8.14	Limit VOC to 0.338 lbs/ton of resin; Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
P012	No. 3 Packaging Center: seven drain kettles - Uncontrolled	122.6 MM lb/yr	21.78	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
	No. 3 Packaging Center: pastillating belt - Uncontrolled		6.69	Limit VOC to 0.51 lbs/ton of resin; Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
P013	No. 5 Packaging Center: three drain kettles - Uncontrolled	78.8 MM lb/yr	14.00	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
	No. 5 Packaging Center: flaking belt, packaging station - Uncontrolled		7.33	Limit VOC to 0.338 lbs/ton of resin; Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y

Source ID	Description	Rating	VOC PTE (TPY)	Case-by-Case Limit (RACT II)	VOC Case-by-Case Limit (RACT III)	RACT II as RACT III
P014	Wastewater Conveyance System – Uncontrolled	105 MM gal/yr	3.36	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
	Wastewater Treatment System: 3 batch tanks - Uncontrolled		10.28	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
P016	Final Product Loading: Final Product Tankcar & Tankwagon Loading	24.3 MM gal/yr	18.24	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
G004	Tank Cleaning and Painting	2,000 gal/yr	3.74	Good operating practices	No change from RACT II, §129.114(i)(1)(i)	Y
	Fugitive Emissions from Equipment Leaks (valves, pumps, pipe connectors, etc.)	N/A	3.75	LDAR program	No change from RACT II, §129.114(i)(1)(i)	Y

IV. RACT Determination

An economic analysis of all technically feasible control options for the case-by-case sources was conducted by the facility. Attachment 2 provides a detailed RACT III cost analysis performed by Neville Chemical Company. All control cost analyses were conducted pursuant to procedures provided in the USEPA’s Air Pollution Control Cost Manual, 7th Edition.

Every technically feasible control option for every source exceeds the RACT III “screening threshold” value of \$12,000 per ton of VOC removed. Control options with costs above this threshold are automatically considered to be economically infeasible. It is not economically feasible to install additional controls on any of the Case-by-Case VOC sources.

The Technically Feasible Control Options for Neville Chemical are detailed in Tables 3a and 3b. (NA - the control type is not technically feasible for this process)

Table 3a – Technically Feasible VOC Control Cost Comparisons¹

Control Option		P011 (resin kettles)	P011 (belt, packaging)	P012 (resin kettles)	P012 (pastillating belt)	P013 (resin kettles)
Recuperative Thermal Oxidation (98%)	tpy VOC Removed		7.82		6.43	
	Cost		\$430,406		\$687,412	
	\$/ton	NA	\$55,056	NA	\$106,989	NA
Regenerative Thermal Oxidation (98%)	tpy VOC Removed		7.82		6.43	
	Cost		\$318,638		\$436,938	
	\$/ton	NA	\$40,759	NA	\$68,005	NA
Catalytic Oxidation	tpy VOC Removed		7.82		6.43	

Control Option		P011 (resin kettles)	P011 (belt, packaging)	P012 (resin kettles)	P012 (pastillating belt)	P013 (resin kettles)
(98%)	Cost		\$283,493		\$409,670	
	\$/ton	NA	\$36,263	NA	\$63,761	NA
Carbon Adsorption (98%)	tpy VOC Removed	14.77	7.74	20.68	6.37	13.32
	Cost	\$327,190	\$197,490	\$377,512	\$187,426	\$302,791
	\$/ton	\$22,150	\$25,517	\$18,255	\$29,440	\$22,740
Concentrator/Oxidation (98%)	tpy VOC Removed					
	Cost					
	\$/ton	NA	NA	NA	NA	NA
Condensation (90%)	tpy VOC Removed	13.90		19.30		12.70
	Cost	\$244,588		\$238,858		\$189,941
	\$/ton	\$17,355	NA	\$12,185	NA	\$15,206

¹Each of the units being evaluated for case by case RACT have separate stacks.

Table 3b – Technically Feasible VOC Control Cost Comparisons (continued)¹

Control Option		P013 (belt, packaging)	P014 (batch tanks)	P016 (product loading)
Recuperative Thermal Oxidation (98%)	tpy VOC Removed	7.03	9.9	17.5
	Cost	\$430,406	\$195,078	\$240,097
	\$/ton	\$61,223	\$19,759	\$13,706
Regenerative Thermal Oxidation (98%)	tpy VOC Removed	7.03		
	Cost	\$318,638		
	\$/ton	\$45,325	NA	NA
Catalytic Oxidation (98%)	tpy VOC Removed	7.03		
	Cost	\$283,493		
	\$/ton	\$40,325	NA	NA
Carbon Adsorption (98%)	tpy VOC Removed	6.95	9.78	16.64
	Cost	\$197,490	\$217,619	\$288,069
	\$/ton	\$28,420	\$22,255	\$17,308
Concentrator/Oxidation (98%)	tpy VOC Removed			
	Cost			
	\$/ton	NA	NA	NA
Condensation (90%)	tpy VOC Removed		9.00	16.00
	Cost		\$174,553	\$303,291
	\$/ton	NA	\$19,325	\$18,938

¹Each of the units being evaluated for case by case RACT have separate stacks.

ACHD has determined that thermal oxidation, catalytic oxidation, carbon adsorption, and condensation are technically feasible control options for controlling VOC emissions from the processes at the Neville Chemical facility, but they are deemed financially infeasible due to their high cost per ton removed. For all of these processes, RACT was determined to be proper operation & maintenance, and good engineering practices.

For the No. 2, No. 3, and No. 5 Packaging Center Flaker Belts, RACT was also determined to be limiting the VOC emissions per ton of resin produced (0.338, 0.51, and 0.338 lbs VOC/ton resin, respectively).

For the Rotary Vacuum Filter (part of the Wastewater Collection, Conveyance, & Treatment process), emissions are controlled through Boiler #6. RACT for Boiler #6 was determined to be in operation in order to use the Rotary Vacuum Filter.

ACHD has determined that it is unnecessary to conduct RACT evaluations on the equipment leak emissions. The source is required to have a Leak Detection and Repair (LDAR) program. These requirements are relatively stringent, and ACHD does not believe more stringent requirements would be considered cost-effective. The LDAR requirements are considered RACT for the emissions from equipment leaks.

V. RACT III Summary

The Department has analyzed the facility’s proposal for considering RACT II requirements as RACT III and also performed an independent analysis. Based on the information provided by the facility and independently verified by the Department, ACHD has determined that the RACT II requirements satisfy the RACT III requirements. The RACT III requirements are identical to the RACT II requirements and are as stringent as RACT II.

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

Unit ID	Permit Condition No.	RACT I Requirement	RACT II Requirement	RACT III Requirement
P011 - No. 2 Packaging Center	Condition V.D.1.a	Order #230, 1.5	§129.99	§129.114
	Condition V.D.1.b		§129.99	§129.114
	Condition V.D.1.b			§129.114
	Condition V.D.2.a	Order #230, 1.1	§129.100	§129.115
	Condition V.D.4.a		§129.100	§129.115
	Condition V.D.4.d		§129.100	§129.115
	Condition V.D.6.a			§129.114
P012 - No. 3 Packaging Center	Condition V.D.6.b	Order #230, 1.5	§129.99	§129.114
	Condition V.E.1.a	Order #230, 1.5	§129.97(c)(2)	§129.112(c)(2)
	Condition V.E.1.b		§129.99	§129.114
	Condition V.E.1.e		§129.99	§129.114
	Condition V.E.1.f		§129.97(c)(2)	§129.112(c)(2)
	Condition V.E.2.a		§129.100	§129.115
	Condition V.E.4.a		§129.100	§129.115
	Condition V.E.4.c		§129.100	§129.115
	Condition V.E.6.a		§129.97(c)(2)	§129.112(c)(2)
Condition V.E.6.b		§129.99	§129.114	
P013 - No. 5 Packaging Center	Condition V.E.6.c	Order #230, 1.1	§129.99	§129.114
	Condition V.F.1.a	Order #230, 1.5	§129.99	§129.114
	Condition V.F.1.b		§129.99	§129.114
	Condition V.F.1.e		§129.99	§129.114
	Condition V.F.2.a		§129.100	§129.115
	Condition V.F.4.a		§129.100	§129.115
	Condition V.F.4.c		§129.100	§129.115
	Condition V.F.6.a		§129.99	§129.114
Condition V.F.6.b		§129.99	§129.114	

Unit ID	Permit Condition No.	RACT I Requirement	RACT II Requirement	RACT III Requirement
P014 – Wastewater Collection, Conveyance, and Treatment System	Condition V.G.1.c		§129.97(c)(2)	§129.112(c)(2)
	Condition V.G.1.d		§129.99	§129.114
	Condition V.G.4.d		§129.100	§129.115
	Condition V.G.6.a		§129.99	§129.114
	Condition V.G.6.b		§129.99	§129.114
P016 - Final Product Loading	Condition V.H.1.b		§129.99	§129.114
	Condition V.H.4.a		§129.100	§129.115
	Condition V.H.6.a		§129.99	§129.114
	Condition V.H.6.c		§129.99	§129.114
G004 – Tank Cleaning and Painting	Condition VI.C.1.f		§129.100	§129.115
Fugitive Emissions from Equipment Leaks (LDR)	Condition IV.31.a	Order #230, 1.8	§129.99	§129.114
	Condition IV.31.b	Order #230, 1.9	§129.100	§129.115
	Condition IV.31.c	Order #230, 1.10	§129.100	§129.115