

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

December 19, 2019

SUBJECT: Reasonable Available Control Technology (RACT II) Determination
PPG Industries, Inc. – Springdale Facility
125 Colfax Street
Springdale, PA 15144-1506
Allegheny County

Title V Operating Permit No. 0057

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I. Executive Summary

The PPG Industries – Springdale facility is defined as a major source of VOC emissions and was subjected to a Reasonable Achievable Control Technology II (RACT II) review by the Allegheny County Health Department (ACHD) required for the 1997 and 2008 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that technically and financially feasible RACT would result in the following emissions changes, summarized below.

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)
P001	Paint Plant – Controlled	Increase the efficiency from 95% to 98%	26.04	15.62	10.42	\$0	\$0
Total			26.04	15.62	10.42	\$0	\$0

These findings are based on the following documents:

- RACT analysis performed by ERG (RACT_2018-05-07 with track changes a.docx)
- RACT analysis performed by PPG Industries, Inc. – Springdale Facility (0057c2014-01-20ract.pdf)
- BACT analysis performed by PPG Industries, Inc. – Springdale Facility (0057ip005c2006-10-31bact.pdf)
- BACT analysis performed by PPG Industries, Inc. – Springdale Facility (see Application for Permit No. 0057-I004 dated 10/18/2004 and Correspondence dated 02/09/2005)
- BACT analysis performed by PPG Industries, Inc. – Springdale Facility (see Application for Permit No. 0057-I009 dated 10/07/2015 and Correspondence dated 07/12/2016)

II. Regulatory Basis

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. This document is the result of ACHD's determination of RACT for PPG Industries – Springdale based on the materials submitted by the subject source and other relevant information.

III. Facility Description

PPG Industries, Inc. – Springdale Plant is a paint manufacturing plant and research & development facility. The paint plant produces coatings for aluminum extrusions, general industrial, and coil coating. Within the main paint manufacturing buildings is housed a series of technical laboratories providing testing and customer support for PPG Coatings. The paint manufacturing building also houses manufacturing support laboratories, which oversee the quality and other parameters of products, manufactured. The research and development plant provides scale-up support for resin manufacture and tests new resins used in coatings. PPG Industries is a major source of VOC emissions.

Table 2 Facility Sources Subject to Case-by-Case RACT II and Their Existing RACT I Limits

Source ID	Description	Rating	VOC PTE (TPY)	VOC Presumptive Limit (RACT II)	VOC Limit (RACT I)
P001	Paint Plant – Controlled	1.6 MMBtu/hr	10.42	NA	Increase the efficiency from 95% to 98%
P002	Paint Plant – Uncontrolled (incl. fugitives)	17,868,000 lb solvent/yr	238	NA	Overspray Filters; LDAR
P003	Paint Plant Freightliner Spray Booth	39,420 lb coating /yr	8.27	NA	Good Engineering Practice; HVLP Spray Guns
P004	Development Center – Controlled	1.6 MMBtu/hr	3.70	NA	Good Engineering Practice
P005	Development Center – Uncontrolled (Connectors-gas)	NA	3.63	NA	Overspray Filters; LDAR
P006	Development Center Automated Spray Booth	5,000 gal/yr	14.92	NA	Good Engineering Practice; Air Assisted Spray Guns

Table 3 Facility Sources Exempt from RACT II per PA Code 129.96(c) {< 1 TPY VOC}

Source ID	Description	Rating	VOC PTE (TPY)
B001	Paint Plant Boiler 1a	25.1 MMBtu/hr	0.44
B002	Paint Plant Boiler 2	25.1 MMBtu/hr	0.44
B003	Paint Plant Warehouse Boiler	8.4 MMBtu/hr	0.15
	Paint Plant Storage Tanks	2,645,400 gal/yr	2.14*
	Paint Plant Environ, Trix cleaners, and Large Batch Ctr.	84,400 gallons (0.78 lb/hr)	0.26
	Paint Plant Small Order Department	N/A (potable tanks)	0.38
	Development Center Storage Tanks	584,000 gal/yr	0.69
	Development Center Uncontrolled (Valves)	n/a	0.498
	Development Center Uncontrolled (Pump Seals)	n/a	0.109
	Development Center Uncontrolled (PRV)	n/a	0.012
	Development Center Uncontrolled (Connectors-liq.)	n/a	0.330
	Development Center Uncontrolled (Agitator Seals)	n/a	0.396
	Development Center Uncontrolled (Small Side Reactor)	n/a	0.690
	Miscellaneous Spray Booths	n/a	Negligible

* Individual units are < 1 TPY

IV. RACT Determination

Paint Plant RTO (P001)

P001 is currently controlled using a capture and control system with an RTO that is required to meet 95% reduction or better. In the previous permit issuance, the Paint Plant RTO (P001) was considered RACT at 95% destruction efficiency. However, subsequent testing revealed that it is achieving a 98% destruction efficiency at no additional cost shown by the summary of stack tests in the table below.

	Inlet (lb/hr)	Outlet (lb/hr)	Efficiency
<u>9/26/07</u>			
Run #1	3.78	0.04	99.0%
Run #2	5.64	0.05	99.1%
Run #3	3.08	0.02	99.2%
Average	4.17	0.04	99.1%
<u>4/14/10</u>			
Run #1	3.982	0.096	97.6%
Run #2	3.617	0.094	97.4%
Run #3	3.391	0.067	98.0%
Average	3.663	0.086	97.7%
<u>10/8/13</u>			
Run #1	9.729	0.302	96.9%
Run #2	6.517	0.070	98.9%
Run #3	3.251	0.043	98.7%
Average	6.499	0.138	98.2%
<u>10/3/18</u>			
Run #1	2.22	0.0245	99.69%
Run #2	1.30	0.0164	99.68%
Run #3	1.37	0.0168	99.65%
Average	1.63	0.0192	99.67%

ACHD has determined that RACT for the controlled emissions from the Paint Plant is continued control with the existing RTO meeting a destruction efficiency of 98% instead of 95%. This limits VOC emissions to 10.4 tpy.

Uncontrolled VOC emissions from the Paint Plant (P002)

Uncontrolled VOC emissions from the Paint Plant (P002) occur during material additions from loose-fitting lids and equipment leaks, product sampling, product filling/packaging, and during equipment cleaning. Uncontrolled VOC emissions from the Paint Plant (P002) are limited to 54.3 lbs/hr and 238.0 tons per year.

According to information available in EPA's *Control of VOC Emissions from Ink and Paint Manufacturing Processes*¹, and *Control Techniques for Volatile Compound Emissions from Stationary Sources*², VOC emissions from the Paint Plant (P001) can be controlled with:

- (a) Equipment or Process Modifications
 1. Tank Lids
 2. Modified Milling Equipment
 3. Storage Tank Conservation Vents
- (b) Equipment Cleaning

¹ US EPA, "Control of VOC Emissions from Ink and Paint Manufacturing Processes", EPA-450/3-92-013, April 1992. Available at: http://www.epa.gov/ttn/catc/dir1/ink_paint.pdf

² US EPA, "EPA's Control Techniques for Volatile Compound Emissions from Stationary Sources", EPA 453/R-92-018, December 1992. Available at: <http://www.epa.gov/ozonpollution/SIPToolkit/ctgs.html>

1. Rubber Wipers
 2. High Pressure Spray Heads
 3. Teflon-lined Tanks
 4. Plastic Pigs
 5. Automatic Tub Washers
- (c) Improved Operating Practices
1. Dedicated Process Lines/Equipment
 2. Use of Covers During Tank Operation
 3. Splash/Spill Prevention
 4. Closed Container Storage of Wastes
 5. Employee Awareness
- (d) Recycling Techniques
1. Re-use Solvent in Subsequent Batches
 2. Countercurrent Rinsing
- (e) Product Reformulation
1. Low VOC Coatings
 2. Powder Coatings
 3. Waterborne Paints
 4. Radiation-Curable Paints
 5. High-Solids Paint
- (f) Leak Detection and Repair Program

Product reformulation to produce low-VOC or water-based coatings is technologically feasible, but the mandated production or phase-in of reformulated products is technologically infeasible. The coatings manufactured at PPG are largely dictated by the customers' needs.

All of these technologies except for product reformulation, are technically feasible options for controlling fugitive VOC from the Paint Plant. However, essentially all of these are required by the current Title V operating permit either from the previous RACT Order #254 or as work practice standards of Subpart HHHHH.

The RACT for control of VOC emissions from the Paint Plant (P002) shall be to continued compliance with the current permit requirements contained in RACT Order 254 and in Subpart HHHHH requirements.

The Freightliner Spray Booth (P003)

The Freightliner Spray Booth (P003) consists of surface coating and clean-up operations. Coatings are applied to metal and plastic panels with electrostatic guns in a spray booth. Solvent is used for clean-up. VOC emissions from the spray booth are limited in the Title V operating permit to 1.89 lb/hr and 8.27 tons per year. VOC emissions are uncontrolled.

According to information available in EPA's *Control Techniques for Volatile Compound Emissions from Stationary Sources*³, VOC emissions from the Paint Plant Freightliner Spray Booth could be controlled by:

- (a) Converting to low-VOC coatings
- (b) Improving transfer efficiency
- (c) Incineration

Product reformulation to produce low-VOC or water-based coatings is technologically feasible, but the mandated use or phase-in of reformulated products is technologically infeasible. The Freightliner Paint Booth is used with coatings made at PPG; therefore, the formulations used are ones that meet the customers' needs.

³ US EPA, EPA 453/R-92-018, op. cit.

Improving transfer efficiency is technically feasible. However, the spray booths are already required to use electrostatic spray guns. This application method represents the best available application technology for the types of coatings that PPG Industries is testing in this spray booth. Therefore, no additional VOC control can be gained by requiring improved transfer efficiency.

Thermal incineration is technically feasible with an estimated control efficiency of 95%.

ACHD has determined that requiring the installation of a thermal incinerator to control VOC emissions from the Freightliner Spray Booth is not cost-effective (See Table 4 below).

The RACT for control of VOC emissions from the Freightliner Spray Booth shall be to continue to comply with the current permit requirements.

Developmental Center RTO (P004)

A VOC RACT evaluation has not been conducted for the equipment being controlled by the Developmental Center RTO. The VOC emissions from the Developmental Center RTO are limited in the current Title V operating permit to 0.846 pound per hour and 3.703 tons per year. The Development Center RTO is subject to 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing, which requires the RTO to achieve 98% destruction of VOC. The operating permit also requires the RTO to achieve 98% destruction of VOC. A stack test of the Development Center RTO conducted on November 26, 2013 indicates that the VOC destruction efficiency of this control device is 98.8%. ACHD considers it unlikely that additional controls would be technically and economically feasible that would achieve a better emissions reduction. Therefore, the RACT for those units that are controlled with the RTO is continued control and compliance with 40 CFR Part 63, Subpart FFFF and permit conditions.

Uncontrolled emissions from the Development Center (P005)

A VOC RACT has not been conducted for fugitive emissions from the Development Center (P005). These emissions are subject to the requirements of 40 CFR Part 63, Subpart UU – National Emission Standards for Equipment Leaks – Control Level 2 for equipment leaks in all equipment in organic HAP service. Subpart UU requires that source use a Leak Detection and Repair (LDAR) program to identify and repair leaks from this equipment. The requirements of this rule are some of the most stringent and ACHD considers it unlikely that changes in the LDAR methodology would reduce emissions by a measurable amount. RACT for these fugitive emissions is continued compliance with Subpart UU.

Wastewater Handling System (P004 & P005)

Similarly, a VOC RACT evaluation has not been conducted for emissions from the Wastewater Handling System that processes the process and maintenance wastewater generated from all Development Center units. VOC emissions from the Development Center Wastewater Handling System are controlled via treatment according to the requirements of 40 CFR 63, Subpart G - National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater and 40 CFR 63, Subpart FFFF - National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing. These rules contain stringent requirements for controlling HAP emissions from wastewater and changes to these requirements are not expected to yield significant additional emissions reductions. RACT for the wastewater emissions is continued compliance with Subparts G and FFFF.

Developmental Center Automated Spray Booth (P006)

Please refer to the BACT analysis in the application for Permit No. 0057-I009 dated 10/07/2015 and to the Correspondence dated 07/12/2016.

The Technically Feasible Control Options for PPG are detailed in Table 4 (VOC).

Table 4 Technically Feasible VOC Control Cost Comparisons

Control Option		P003
Thermal Oxidation	tpy VOC Removed	7.9
	Cost	\$228,500
	\$/ton	\$28,900

V. RACT Summary

Based on the findings in this RACT analysis, the PPG Industries – Springdale facility emissions can be summarized as follows:

Table 5 RACT II Emission Reduction Summary

VOC Potential Emissions (tpy)		
Current PTE	RACT Reduction	Revised PTE
280.31	15.62	280.31

As shown in Table 5, the new RACT II conditions reduce 15.62 tpy of VOC emissions from the PPG Industries – Springdale facility.

VI. New and Revised RACT II Permit Conditions

The following conditions were cited for case-by-case RACT (25 Pa. Code, §129.99):

IP #0057-I005c	
V.A.1.b	V.B.1.b
V.A.6	V.B.6
TVOP #0057-OP18a	
V.A.1.b-d, h, n	V.D.1.c
V.A.6.a-c	V.D.6.a-c
V.B.1.b-e	V.E.1.a-d
V.B.3.a	V.E.3.a-c
V.B.6.a-b	V.E.6.a-g
V.C.1.b-c	V.F.1.d-e
V.C.6.a-f	V.F.6.a-f

The following conditions were cited for compliance with case-by-case RACT (25 Pa. Code, §129.100):

IP #0057-I005c	
V.A.2.a-b	V.B.2.a-b
V.A.3.c	V.B.3.b
V.A.4.a	V.B.4.a, c
TVOP #0057-OP18a	
V.A.2.a-d	V.D.2.a-b
V.A.3.b	V.D.3.b
V.A.4.c	V.D.4.a
V.B.4.b	V.E.4.a-d
V.B.5.b	V.E.5.b

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