ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

May 19, 2010

SUBJECT: **PPG Industries, Inc. – Springdale Plant**
125 Colfax Street
Springdale Boro, PA 15144-1506
Allegheny County

Title V Operating Permit No. 0057

TO: Sandra L. Etzel
Chief Engineer

FROM: JoAnn Truchan
Air Quality Engineer

FACILITY DESCRIPTION:

PPG Industries, Inc. – Springdale Facility is a paint manufacturing plant, resin development center, 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 resin development center and the research and development facility manufacture resins, provide scale-up support for resin and coating manufacture, and test new materials used in coatings. The Springdale Facility is a major source of volatile organic compounds (VOC's) and hazardous air pollutants (HAP's). It is a minor source of particulate matter (PM), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), nitrogen oxides (NO_X), sulfur oxides (SO_X), and carbon monoxide (CO).

PERMIT APPLICATION COMPONENTS:

1. Title V Operating Permit application, dated December 14, 2009
2. Installation Permit #0057-I001, issued May 8, 1998 (R2000 Reactor)
3. Installation Permit #0057-I002, issued April 9, 1999 (K6-9 Reactors – *no longer at the facility*)
4. Installation Permit #0057-I003, issued June 5, 2000 (Environ, TRIX Clears, Ohio Blowpipe, and Environ Baghouse)
   Note: Conditions for the REECO Thermal Oxidizer have been incorporated into the conditions for the Paint Plant and Development Center RTOs. The respective installation permit conditions were cited in the TVOP, where appropriate.
5. Installation Permit #0057-I004, issued September 16, 2005 (Spray Booth)
6. Installation Permit #0057-I005, issued May 24, 2007 (Paint Plant and Development Center RTOs)
7. RACT Plan Approval and Agreement #254, dated December 19, 1996
   Note: Where the MACT standard is more restrictive than the RACT, the RACT has been streamlined into the MACT condition. See RACT/MACT comparison under "Regulatory Applicability".
8. Stack test report, dated October 23, 2007 (Paint Plant and Development Center RTOs, performed on September 26, 2007)
9. Stack test report, dated October 23, 2007 (Development Center RTO, MON MACT compliance)
10. Stack test report, dated May 24, 2001 (REECO thermal oxidizer)
11. Correspondence, dated January 28, 2009 (Notification of Compliance Status – Paint Plant)
12. Correspondence, dated August 26, 2009 (Notification of Compliance Status – Development Center)
13. Meeting Minutes, dated from April 30, 2009 through December 4, 2009
14. Permits issued prior to 1995 (See Table 1 below)

Determinations Requiring No Permit

1. August 16, 1999: Eight (8) new raw material tanks
   - Tanks are part of the Environ Process and are included in the equipment list.
2. March 9, 2005: Two (2) 800-Gallon Plastisol Tanks
   - Replaced by determination on June 17, 2005.
3. June 17, 2005: Two (2) 1,200-Gallon Plastisol Tanks
   - Tanks were never installed.
4. September 20, 2005: 20-Gallon Polymerization Process
   - Short-term project that is no longer in use.
5. July 26, 2006: Mix Tanks to REECO Thermal Oxidizer
   - Tanks are included in the equipment list.
6. January 8, 2008: Spray Booth
   - Powder coating spray booth in the Development Center that is considered insignificant.

Older Permits

Table 1 contains a list of permits issued prior to 1995, and if applicable, any reasons the permit was not referenced in the Title V Operating Permit.

Table 1: Permits Issued Prior to 1995

Permit Number	Issue Date	Description	Plant	Reason for Exclusion from TVOP
76-I-0041-P	05/27/76	Alkyd & Polyester Resin Manufacturing	Paint Plant	Resin Manufacture is no longer done at the Paint Plant.
76-I-0100-P	11/17/76	Trash Disposal	Paint Plant	System no longer exists at the facility.
5049006-001-38900	07/31/78	Inert Gas Generator	Development Center	Current Inert Gas Generator is not a combustion unit.
5049006-001-76201	7/31/78	Resin Manufacture Hot Oil Heater	Development Center	The only hot oil heater at the facility is electric; this one no longer exists.

Permit Number	Issue Date	Description	Plant	Reason for Exclusion from TVOP
5048898-000-24100	7/31/78	Resin Manufacture Hot Oil Heater	Development Center	The only hot oil heater at the facility is electric; this one no longer exists.
5049006-001-6200	11/03/78	Therminol Furnace	Development Center	System no longer exists at the facility.
5049006-001-76202	11/03/78	Therminol Furnace	Development Center	System no longer exists at the facility.
78-I-0074-P	01/22/79	Resin Process Development System	Development Center	Incorporated under IP #0057-I005.
79-I-0014-P	05/16/79	Portable Tank Cleaning	Paint Plant	Equipment is onsite but no longer used. Facility must request a permit to start-up.
79-I-0035-C	08/08/79	#2 Boiler	Paint Plant	Included in TVOP under Section VI.A.
5049006-001-00900	03/08/80	#2 Boiler	Paint Plant	Included in TVOP under Section VI.A.
5048898-001-00900	03/08/80	#2 Boiler	Paint Plant	Included in TVOP under Section VI.A.
80-I-0007-P	05/19/80	Aqueous Waste Incineration	Paint Plant	System no longer exists at the facility.
80-I-0043-P	09/23/80	Evaporator Stripper	Development Center	Incorporated under IP's #0057-I001 & I005.
5049006-001-00901	01/05/82	#1 Boiler	Paint Plant	Replaced by #1A Boiler
5048898-001-00902	09/27/82	Warehouse Boiler	Paint Plant	Included in TVOP under Section VI.B.
82-I-0038-P	11/18/82	Buflovac Resin Stripper	Development Center	System no longer exists at the facility.
5049006-001-76203	07/11/83	Buflovac Resin Stripper	Development Center	System no longer exists at the facility.
85-I0063-C	08/19/85	#1A Boiler	Paint Plant	Included in TVOP under Section VI.A.
5048898-000-76200	01/07/86	#1A Boiler	Paint Plant	Included in TVOP under Section VI.A.
5048898-00076100	06/10/88	Paint Manufacture	Paint Plant	Incorporated under IP's #0057-I003 through I005.
5048898-000-76201	06/10/88	Resin Manufacture	Paint Plant	Resin Manufacture is no longer done in the Paint Plant.
5048898-000-76201	04/08/93	Resin Manufacture – amended	Paint Plant	Resin Manufacture is no longer done in the Paint Plant.
5049196-000-62000	06/10/88	Make-Up Air Heater	Development Center	System no longer exists at the facility.
85-I-0068-P	12/20/85	LUWA Filmtruder	Development Center	Incorporated under IP #0057-I005.
5049196-000-76200	06/10/88	LUWA Filmtruder	Development Center	Incorporated under IP #0057-I005.
5049196-000-76201	06/10/88	K13/K15 Resin Process	Development Center	Incorporated under IP #0057-I005.
5049196-000-76202	06/10/88	Large & Small Side Resin Process	Development Center	Large Side process is incorporated under IP #0057-I005; Small Side process is incorporated under TVOP Section V.E.
91-I-0018-P	08/14/91	Ohio Blowpipe Dust Collector	Paint Plant	Incorporated under IP #0057-I003
5048898-000-76201		Ohio Blowpipe Dust Collector	Paint Plant	Incorporated under IP #0057-I003
92-I-0044-P	08/11/92	Resin Tanks M4 & M5	Development Center	Resin Manufacture is no longer done in the Paint Plant.
94-I-0031-P	10/25/94	REECO Thermal Oxidizer	PP & DC	System no longer exists at the facility; replaced by IP #0057-I005
5048898-000-48900		REECO Thermal Oxidizer	PP & DC	System no longer exists at the facility; replaced by IP #0057-I005

EMISSION SOURCES:

Table 2: Emissions Sources

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
Paint Plant					
P001 P002	**CP Cell Work Center**				
	Coaxial/Mill – PM-205	Paint Plant RTO / Ohio Blowpipe	2,000 gallons	pigment, resin, solvent	S001 S002
	Coaxial/Mill – PM-206	Paint Plant RTO / Ohio Blowpipe	2,000 gallons	pigment, resin, solvent	S001 S002
	3 Mills – PM-1, 2, & 5	Paint Plant RTO / Ohio Blowpipe	45 liters ea. & portable tanks	pigment, resin, solvent	S001 S002
	Mill – PM-8	Paint Plant RTO / Ohio Blowpipe	45 liters ea.	pigment, resin, solvent	S001 S002
	Tanks 1102-1104	Paint Plant RTO / Ohio Blowpipe	1,100 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 2003-2004	Paint Plant RTO / Ohio Blowpipe	2,000 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 2301-2304	Paint Plant RTO / Ohio Blowpipe	2,300 gallons ea.	pigment, resin, solvent	S001 S002
	Tank 4001	Paint Plant RTO / Ohio Blowpipe	4,000 gallons	pigment, resin, solvent	S001 S002
	CP Tank 109	Paint Plant RTO / Ohio Blowpipe	17,200 gallons	pigment, resin, solvent	S001 S002
P001 P002	**Light Cell Work Center**				
	Coaxial/Mill – PM-207	Paint Plant RTO / Ohio Blowpipe	2,000 gallons	pigment, resin, solvent	S001 S002
	Tanks 2008-2013	Paint Plant RTO / Ohio Blowpipe	2,000 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 4002-4004	Paint Plant RTO / Ohio Blowpipe	4,000 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 4006-4007	Paint Plant RTO / Ohio Blowpipe	4,000 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 4009-4010	Paint Plant RTO / Ohio Blowpipe	4,000 gallons ea.	pigment, resin, solvent	S001 S002
	Coaxial – T-900	Paint Plant RTO / Ohio Blowpipe	900 gallons	pigment, resin, solvent	S001 S002
	Coaxial – T-1650	Paint Plant RTO / Ohio Blowpipe	1,650 gallons	pigment, resin, solvent	S001 S002
	50 hp Cowles	Ohio Blowpipe	n/a (portable tanks)	pigment, resin, solvent	S002
P001 P002	**Dark Cell Work Center**				
	Coaxial/Mill – PM-208	Paint Plant RTO / Ohio Blowpipe	2,000 gallons	pigment, resin, solvent	S001 S002
	3 Mills – PM-4, 7, & 9	Paint Plant RTO / Ohio Blowpipe	45 liters ea. & portable tanks	pigment, resin, solvent	S001 S002
	Tank 1101	Paint Plant RTO / Ohio Blowpipe	1,100 gallons	pigment, resin, solvent	S001 S002

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Tanks 1501-1507	Paint Plant RTO / Ohio Blowpipe	1,500 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 2001-2002	Paint Plant RTO / Ohio Blowpipe	2,000 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 2005-2007	Paint Plant RTO / Ohio Blowpipe	2,000 gallons ea.	pigment, resin, solvent	S001 S002
	Tank 4005	Paint Plant RTO / Ohio Blowpipe	4,000 gallons	pigment, resin, solvent	S001 S002
	Tank 4008	Paint Plant RTO / Ohio Blowpipe	4,000 gallons	pigment, resin, solvent	S001 S002
	Tanks 4011-4012	Paint Plant RTO / Ohio Blowpipe	4,000 gallons ea.	pigment, resin, solvent	S001 S002
	75 hp Cowles	Ohio Blowpipe	n/a (portable tanks)	pigment, resin, solvent	S002
	60 hp Cowles	Ohio Blowpipe	n/a (portable tanks)	pigment, resin, solvent	S002
P001 P002	**Large Batch Center**				
	Mill/Tank – PM-6	Paint Plant RTO / Ohio Blowpipe	1,100 gallons	pigment, resin, solvent	S001 S002
	Mill/Tank – PM-201	Paint Plant RTO / Ohio Blowpipe	1,500 gallons	pigment, resin, solvent	S001 S002
	Mill/Tank – PM-203	Paint Plant RTO / Ohio Blowpipe	2,200 gallons	pigment, resin, solvent	S001 S002
	Mill/Tanks – PM-204	Paint Plant RTO / Ohio Blowpipe	2,700 gallons	pigment, resin, solvent	S001 S002
	Tanks 102-104	Paint Plant RTO / Ohio Blowpipe	1,100 gallons ea.	pigment, resin, solvent	S001 S002
	Tank 105	Paint Plant RTO / Ohio Blowpipe	2,200 gallons	pigment, resin, solvent	S001 S002
	Tanks 106-107	Paint Plant RTO / Ohio Blowpipe	4,200 gallons ea.	pigment, resin, solvent	S001 S002
	Tanks 108-111	Paint Plant RTO / Ohio Blowpipe	4,500 gallons ea.	pigment, resin, solvent	S001 S002
	Tank 112	Paint Plant RTO / Ohio Blowpipe	3,600 gallons	pigment, resin, solvent	S001 S002
	Tanks 200-204	Paint Plant RTO / Ohio Blowpipe	2,500 gallons ea.	pigment, resin, solvent	S001 S002
P001 P002	**Environ Work Center**				
	Coaxial/Mill – PM-210	Paint Plant RTO / Environ Baghouse	2,500 gallons	pigment, resin, solvent	S001 S003
	Coaxial/Mill – PM-211	Paint Plant RTO / Environ Baghouse	2,500 gallons	pigment, resin, solvent	S001 S003
	Coaxial/Mill – T-1500	Paint Plant RTO / Environ Baghouse	2,100 gallons	pigment, resin, solvent	S001 S003
	Coaxial/Mill – T-2000	Paint Plant RTO / Environ Baghouse	2,100 gallons	pigment, resin, solvent	S001 S003
	Mixers #1-3	Paint Plant RTO / Environ Baghouse	1,600 gallons ea.	pigment, resin, solvent	S001 S003
	Mixer #4	Paint Plant RTO / Environ Baghouse	2,000 gallons	pigment, resin, solvent	S001 S003

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Mixer #5	Paint Plant RTO / Environ Baghouse	2,700 gallons	pigment, resin, solvent	S001 S003
	Blenders #1-7	Paint Plant RTO / Environ Baghouse	5,200 gallons ea.	pigment, resin, solvent	S001 S003
	Blender #8	Paint Plant RTO / Environ Baghouse	3,800 gallons	pigment, resin, solvent	S001 S003
	Tanks 9-14	Paint Plant RTO / Environ Baghouse	4,250 gallons ea.	pigment, resin, solvent	S001 S003
	25 hp Cowles	Environ Baghouse	n/a (portable tanks)	pigment, resin, solvent	S003
P001 P002	**Solvent Still**				
	Solvent Still Vaporizer – Tank 101	Paint Plant RTO	4,000 gallons	waste solvent	S001
	Solvent Still Decanter – Tank 601	Paint Plant RTO	1,000 gallons	waste solvent	S001
	Solvent Still Receiver – Tank 102	Paint Plant RTO	3,000 gallons	waste solvent	S001
	Solvent Still Separator – Tank 207	Paint Plant RTO	200 gallons	waste solvent	S001
	Solvent Still Condenser	n/a	n/a	waste solvent	S001
P003	**Spray Booth No. 2004-B1**	Spray booth filters; Electrostatic spray guns	4,930 gal/yr	Coatings; cleaning solvent	2004B1
Development Center					
P004 P005	**K13/K15 Resin Process**				
	K13 Reactor	Development Center RTO, Carbon Bins (for back-up only)	1,350 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	S004, S-D60-62, S-D70
	K13 Thin Tank (BT-102)	Development Center RTO, Carbon Bins (for back-up only)	4,070 gallons	solvent, water, resin, additives	S004, S-D60-62, S-D70
	K13 Monomer Tank	Development Center RTO, Carbon Bins (for back-up only)	1,060 gallons	solvent, monomers, catalyst	S004, S-D60-62, S-D70
	K13 Catalyst Tank	Development Center RTO, Carbon Bins (for back-up only)	350 gallons	solvent, catalyst	S004, S-D60-62, S-D70
	K15 Reactor	Development Center RTO, Carbon Bins (for back-up only)	1,450 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	S004, S-D60-62, S-D70
	K15 Thin Tank (TR-3800)	Development Center RTO, Carbon Bins (for back-up only)	3,800 gallons	solvent, resin, epoxy, isocyanates, monomers, water	S004, S-D60-62, S-D70
	K15 Feed Tank	Development Center RTO, Carbon Bins (for back-up only)	1,000 gallons	solvent, epoxy, isocyanates, monomers	S004, S-D60-62, S-D70

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	K15 Amine Tank	Development Center RTO, Carbon Bins (for back-up only)	250 gallons	solvent, amines, catalyst	S004, S-D60-62, S-D70
P004 P005	**Large Side Reactor System**				
	K500A Reactor	Development Center RTO, Large Side Scrubber	482 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500A Thin Tank (TR-1200)	Development Center RTO, Large Side Scrubber (for back-up only)	1,190 gallons	solvent, resin, epoxy, isocyanates, monomers	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500A Monomer Tank	Development Center RTO, Large Side Scrubber (for back-up only)	500 gallons	solvent, monomers, catalyst	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500A Catalyst Tank	Development Center RTO, Large Side Scrubber (for back-up only)	120 gallons	solvent, catalyst	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Reactor	Development Center RTO, Large Side Scrubber (for back-up only)	480 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Thin Tank (HT-1500)	Development Center RTO, Large Side Scrubber (for back-up only)	1,500 gallons	solvent, resin, epoxy, isocyanates, monomers, water	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Monomer Tank	Development Center RTO, Large Side Scrubber (for back-up only)	500 gallons	solvent, monomers, catalyst	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Catalyst Tank	Development Center RTO, Large Side Scrubber (for back-up only)	120 gallons	solvent, catalyst	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Amine Tank 1	Development Center RTO, Large Side Scrubber (for back-up only)	30 gallons	solvent, amines	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Amine Tank 2	Development Center RTO, Large Side Scrubber (for back-up only)	30 gallons	solvent, amines	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500B Crosslinker Tank	Development Center RTO, Large Side Scrubber (for back-up only)	300 gallons	solvent, resin	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500F Reactor	Development Center RTO, Large Side Scrubber (for back-up only)	500 gallons	solvent, epoxy, catalyst, alcohols, isocyanates, monomers	S004, S-D05, 08, 26-30, 51, 60-63, 70

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	K500F Thin Tank (TR-750)	Development Center RTO, Carbon Bins (for back-up only)	750 gallons	solvent, resin, additives	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K500G Solvent Still	Development Center RTO / Carbon Bins / Large Side Scrubber	500 gallons	solvent, waste solvent	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K300 Reactor	Development Center RTO / Carbon Bins / Large Side Scrubber	300 gallons	solvent, epoxy, catalyst, alcohols, isocyanates, monomers	S004, S-D05, 08, 26-30, 51, 60-63, 70
	K300 Thin Tank (BT-500)	Development Center RTO / Carbon Bins / Large Side Scrubber	500 gallons	solvent, resin	S004, S-D05, 08, 26-30, 51, 60-63, 70
	Large Side Condensers	Development Center RTO / Carbon Bins / Large Side Scrubber	Sizes range from 20 to 200 square feet surface area (not liquid full)	solvent, monomers, water	S004, S-D05, 08, 26-30, 51, 60-63, 70
	Large Side Decanters	Development Center RTO / Carbon Bins / Large Side Scrubber	Sizes range from 2 to 4 gallons	solvent, water	S004, S-D05, 08, 26-30, 51, 60-63, 70
P004 P005	**LUWA Filmtruder**				
	LUWA Filmtruder	Development Center RTO / Carbon Bins		powder coating resin, solvent	S004 S-D61-62
	LUWA Drum Flaker	n/a		100% solid resin	
	LUWA Condenser	Development Center RTO / Carbon Bins	68 square feet surface area (not liquid full)	solvent	S004 S-D61-62
	LUWA Distillate Receiver	Development Center RTO / Carbon Bins	100 gallons	solvent	S004 S-D61-62
P004 P005	**R2000 Reactor Process**				
	R2000 Reactor	Development Center RTO, Carbon Bins (for back-up only)	2,000 gallons	solvent, epoxy, catalyst, alcohols, isocyanates, monomers	S004
	R2000 Pre-Reactor	Development Center RTO, Carbon Bins (for back-up only)	1,600 gallons	solvent, epoxy, catalyst, alcohols, isocyanates, monomers	S004
	R2000 Thin Tank (TR-5000)	Development Center RTO, Carbon Bins (for back-up only)	5,000 gallons	solvent, resin, additives, epoxy, catalyst, monomers, isocyanates, water	S004
	R2000 Monomer Feed Tank	Development Center RTO, Carbon Bins (for back-up only)	1,000 gallons	solvent, monomers catalyst,	S004

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	R2000 Catalyst Feed Tank	Development Center RTO, Carbon Bins (for back-up only)	400 gallons	solvent, catalyst	S004
	R2000 Distillate Tank	Development Center RTO, Carbon Bins (for back-up only)	400 gallons	solvent, water	S004
	BS6200 Batch Stripper	Development Center RTO, Carbon Bins (for back-up only)	6,250 gallons	solvent, resin	S004
	BS6200 Condenser	Development Center RTO, Carbon Bins (for back-up only)	1280 square feet surface area (not liquid full)	solvent, water	S004
	BS6200 Decanter	Development Center RTO, Carbon Bins (for back-up only)	72 gallons	solvent, water	S004
	BS6200 Receiver Tank	Development Center RTO, Carbon Bins (for back-up only)	590 gallons	solvent	S004
P004 P005	**BS5000 Resin Stripper**				
	BS5000 Batch Stripper	Development Center RTO, Carbon Bins (for back-up only)	5,000 gallons	solvent, resin	S004 S-D61-62
	BS5000 Condenser	Development Center RTO, Carbon Bins (for back-up only)	500 square feet surface area (not liquid full)	solvent, water	S004 S-D61-62
	BS5000 Decanter	Development Center RTO, Carbon Bins (for back-up only)	60 gallons	solvent, water	S004 S-D61-62
	BS5000 Receiver	Development Center RTO, Carbon Bins (for back-up only)	500 gallons	solvent, water	S004 S-D61-62
P005	**Small Side Reactor System**				
	K100 Reactor	Condenser, RTO (vacuum only)	100 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	--
	K100 Thin Tank (TR-250)	Condenser	250 gallons	solvent, resin, epoxy, isocyanates, monomers	--
	K100 Monomer Tank		80 gallons	solvent, monomers, catalyst, isocyanates	--
	K100 Surfactant Tank		55 gallons	solvent, monomers, catalyst, isocyanates	--
	K100 Catalyst Tank		20 gallons	solvent, catalyst	--
	K65B Reactor	Condenser, RTO (vacuum only)	65 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	--
	K65B Thin Tank (BT-100)	Condenser	100 gallons	solvent, resin	--

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	K65C Reactor	Condenser, RTO (vacuum only)	65 gallons	solvent, catalyst, monomers epoxy, isocyanates, amines, alcohols,	--
	K65C Thin Tank (TR-170)	Condenser	170 gallons	solvent, resin, epoxy, isocyanates, monomers	--
	K65C Monomer Tank		55 gallons	solvent, monomers, catalyst, isocyanates	--
	K65C Catalyst Tank		20 gallons	solvent, catalyst	--
	K50 Reactor	Condenser, RTO (vacuum only)	50 gallons	solvent, catalyst, monomers, epoxy, isocyanates, amines, alcohols,	--
	K50 Thin Tank (TR-125)	Condenser, RTO (vacuum only)	125 gallons	solvent, resin	--
	R5 Reactor	Vents through Flash Tank – Carbon Beds/ RTO	5 gallons	solvent, catalyst, monomers	--
	R5 Flash Tank	Condenser, Carbon Beds/ RTO	100 gallons	resin, solvent, catalyst, monomers	--
	R5 Monomer Tank		65 gallons	monomers, solvent	--
	R5 Monomer Feed Tank (K500D)	Development Center RTO, Carbon Bins (for back-up only)	500 gallons	monomers, solvent	--
	R5 Initiator Tank		10 gallons	solvent, catalyst	--
	R5 Post Initiator Tank		5 gallons	solvent, catalyst	--
Boilers					
B001	Boiler #1a	none	25.1 MMBtu/hr	natural gas, no.2 fuel oil	SB01A
B002	Boiler #2	none	25.1 MMBtu/hr	natural gas, no.2 fuel oil	SB02
B003	Warehouse Boiler	none	8.4 MMBtu/hr	natural gas, no.2 fuel oil	SWHB1
Paint Plant Storage Tanks					
	Tanks 103-104	none	30,000 gal. ea.	waste solvent	--
	Tank 224	none	25,000 gal.	resin	--
	Tank 225	none	30,000 gal.	resin	--
	Tanks 301-302	none	25,000 gal. ea.	solvent	--
	Tanks 303, 305-308, 311-314	none	12,000 gal. ea.	solvent, raw material	--

I.D.	Source Description	Control Device(s)	Maximum Capacity	Fuel/Raw Material	Stack I.D.
	Tank 320	none	25,000 gal.	solvent, raw material	--
	Tank 321 & 324	none	10,000 gal. ea.	solvent, raw material	--
	Tank 322	none	20,000 gal.	solvent, raw material	--
	Tanks 401-402	none	30,000 gal. ea.	cleaning solvent	--
Development Center Storage Tanks					
	Tanks 1, 3-5	none	5,000 gal. ea.	monomer solution, solvent	--
	Tank 2	none	5,200 gal.	monomer solution, solvent	--
	Tanks 6-8, BT122, BT126	none	5,000 gal. ea.	cleaning solvent	--

STACKS:

Table 3: Stacks

Stack ID	Stack Name	Stack Height (ft)	Stack Diameter (ft)	Exhaust Rate (acfm)	Exhaust Temp. (ºF)	Outer Material
P001 – Paint Plant Controlled Emissions						
S001	Paint Plant RTO	30	1.5	4,800	180	Aluminized Steel
S002	Paint Plant Ohio Blowpipe Dust Collector	55	1.7	3,600	97	Carbon Steel
S003	Paint Plant Environ Dust Collector	55	1.7	3,600	97	Carbon Steel
P002 – Paint Plant Uncontrolled Emissions						
NA	NA	NA	NA	NA	NA	NA
P003 – Paint Plant Freightliner Spray Booth						
2004B1	Spray Booth	25	0.7	1,600	72	Stainless Steel
P004 – Development Center Controlled Emissions						
S004	Development Center RTO	30	1.5	4,800	180	Aluminized Steel
P005 – Development Center Uncontrolled Emissions						
S-D05	Large Side Resin Process	47	Rectangle 26” x 34”	9,000	70	Galvanized Steel
S-D08	Large Side Resin Process	45	4	17,500	70	Carbon Steel
S-D26	Large Side Resin Process	40	Rectangle 0.75’ x 2’	10	70	Carbon Steel
S-D27	Large Side Resin Process	40	Rectangle 0.75’ x 2’	10	70	Carbon Steel
S-D28	Large Side Resin Process	40	Rectangle	10	70	Carbon

Stack ID	Stack Name	Stack Height (ft)	Stack Diameter (ft)	Exhaust Rate (acfm)	Exhaust Temp. (ºF)	Outer Material
			1.1' x 3.1'			Steel
S-D29	Large Side Resin Process	40	Rectangle 0.75' x 2'	10	70	Carbon Steel
S-D30	Large Side Resin Process	40	Rectangle 0.5' x 1.4'	10	70	Carbon Steel
S-D51	Large Side Resin Process	39	2.83	10	70	Carbon Steel
S-D60	K13/K15 Resin Process; Large Side Resin Process	42	0.17	15	70	Stainless Steel
S-D61	K13/K15 Resin Process; Large Side Resin Process; LUWA Filmtruder; Batch Stripper (BS5000)	41	0.17	5	70	Carbon Steel
S-D62	K13/K15 Resin Process; Large Side Resin Process; LUWA Filmtruder; Batch Stripper (BS5000)	47	0.17	5	70	Carbon Steel
S-D63	Large Side Resin Process	43	0.5	88	70	Stainless Steel
S-D70	K13/K15 Resin Process; Large Side Resin Process	47	Rectangle 26" x 34"	9,000	70	Galvanized Steel
Paint Plant Boilers						
SB01A	Boiler #1	43	2	9,200	360-450	Stainless Steel
SB02	Boiler #2	43	2	9,200	360-450	Stainless Steel
SWHB1	Warehouse Boiler	43	2	9,200	360-450	Stainless Steel
Paint Spray Booths						
General Paint Plant Ventilation (S-2100, S-1201, S-2117, S-2118, S-2130, S-2132, S-2143, S-2144, S-2155, S-2156, S-2157, S-2158, S-2159, S-2160, S-2161, S-2162, S-2163, S-2166, S-2168, S-2170, S-2194, S-PVC, S-PVC-SB, S-P2121, S-P2160)		40	1.5	Varies	70	Stainless Steel

METHOD OF DEMONSTRATING COMPLIANCE:

Compliance with the emission standards set in this permit will be demonstrated through testing of both the Paint Plant RTO and Development Center RTO at least once every five (5) years to determine destruction efficiency. Ongoing compliance demonstrations for the Paint Plant include continuous monitoring of the Paint Plant RTO temperature, continuous monitoring of the differential pressure across the Ohio Blowpipe dust collector and Environ Baghouse, records of fuel consumption in the RTO and boilers, and records of all production and solvent use. Ongoing compliance demonstrations for the Development Center include continuous monitoring of the Development Center RTO temperature, and recordkeeping of all production, materials, and solvent use. Both the Paint Plant and Development Center will be required to institute comprehensive Leak Detection and Repair (LDAR) procedures. Compliance with the short-term (lb/hr) limits must be maintained at all times, including startup and shutdown. Any emissions due to startup, shutdown, or malfunction are included in facility's total annual emissions.

If the facility elects to demonstrate compliance with an outlet concentration limit, continuous emissions monitors (CEMs) must be installed in accordance with §63.2450(j) (for the Development Center) and §63.8000(d) (for the Paint Plant), and all applicable CEMs requirements followed accordingly.

The reporting period requirements of §63.2520(b) (for the Development Center) and §63.8075(b) (for the Paint Plant) apply. However, the Department has approved different dates for the reporting schedule in accordance with

the sections referenced above, which the facility will follow. See operating permit No. 0057 for the specific conditions for determining compliance with the applicable requirements.

The Notification of Compliance Status Report for the Paint Plant (in accordance with 40 CFR Part 63, Subpart HHHHH, §63.8075(d)) was submitted on January 28, 2009. The Notification of Compliance Status Report for the Development Center (in accordance with 40 CFR Part 63, Subpart FFFF, §63.2520(d)) was submitted on August 26, 2009.

REGULATORY APPLICABILITY:

1. **Article XX1 Requirements for Issuance:**
   See Permit Application No. 0057, Appendix F. The requirements of Article XXI, Parts B, and C for the issuance of operating permits have been met for this facility. Article XXI, Part D, Part E & Part H will have the necessary sections addressed individually.

2. **Testing Requirements:**
   Testing is required on the Paint Plant RTO once every five (5) years. See installation permit #0057-I005a. The Department reserves the right to require additional testing if necessary in the future to assure compliance with the terms and conditions of Installation Permit No. 0057-I006. The conditions of this Installation Permit have been incorporated into this Title V permit.

3. **New Source Performance Standards (NSPS):**
   Because Boiler #1a, #2, and the Warehouse Boiler have capacities less than 250 MMBtu/hr, 40 CFR Part 60, Subpart D – *Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971* does not apply.

   Because Boiler #1a and the Warehouse Boiler have capacities less than 100 MMBtu/hr, 1984, 40 CFR Part 60, Subpart Db – *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* does not apply.

   Because Boilers #1a, #2, and the Warehouse Boiler were all constructed prior to June 9, 1989, 40 CFR Part 60, Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* does not apply.

   Because all storage tanks with capacities between 75 m3 and 151 m3 (19,813 and 39,890 gallons) contain materials with a maximum true vapor pressure less than 2.18 psi, 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels* does not apply.

4. **NESHAP and MACT Standards:**
   The Development Center, with the exception of the Small Side Reactor System, is subject to 40 CFR Part 63, Subpart FFFF – *National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing*.

   The Paint Plant is subject to 40 CFR Part 63, Subpart HHHHH – *National Emission Standards for Hazardous Air Pollutants: Miscellaneous Coating Manufacturing*.

RACT/MACT Comparison

RACT Condition		Explanation
1.1	PPG shall not operate the resin Plant at any time while generating VOC emission unless the facility's REECO Thermal Oxidizer is in service and all associated emission control systems are operating as required below, with the exception of required maintenance and or repairs of the subject thermal oxidizer.	Applies to the Paint Plant resin process, which no longer exists at the facility.
1.2	The thermal oxidizer shall be properly maintained and operated at all times, with instrumentation to continuously monitor and record the incinerator temperature, with	

RACT Condition		**Explanation**
	one of the three alternative requirements being met and maintained: a. Minimum VOC destruction efficiency of 95% by weight; or b. Maximum outlet concentration of 20 ppmdv VOC; or c. Minimum incineration temperature of 1,500 °F	
1.3	The thermal oxidizer destruction efficiency shall be determined every five years according to EPA approved test methods and §2108.02 of Article XXI.	
1.4	All reactor vessels shall be equipped with condenser units at all times.	
1.5	The following Resin process systems shall be vented to the thermal oxidizer unit at all times when generating VOC emissions: a. Four reactor condenser vents (K-6 thru 9) b. Five raw material weigh tanks c. Four manual ejectors d. Five mixers-resin thindown tanks e. Seven blenders	
1.6	Revent system shall be provided for the following processes: a. Molten raw material storage tanks b. Molten raw material weigh tanks c. Mixer unit during product dropping d. Finished product tankwagon loading	
1.7	Dispensing systems shall not be used unless they are of closed design or minimize free-fall of liquids.	
1.8	All process and control equipment shall be properly operated and maintained according to good engineering and air pollution control practices at all times.	
1.9	Process equipment cleaning shall be conducted to minimize VOC emissions.	
1.10	Floor cleaning operations shall employ waterbased cleaners. The use of solvents will be limited to spot cleaning.	
1.11	Records shall be kept by the facility to demonstrate compliance with the requirements of §2105.06 of Article XXI and Order No. 254. Such records shall provide sufficient data and calculations to clearly demonstrate that all requirements of this Section are met. All data and information required to determine compliance shall be recorded and maintained by the facility as required by §2105.06 of Article XXI and Order No. 254. Such records shall include, but not be limited to the following: a. REECO Thermal Oxidizer destruction efficiency tests b. Daily records of REECO Thermal Oxidizer operating temperatures	
1.12	All records shall be retained by the facility for at least five years and shall be made available to the Department upon request as required by §2105.06.g.3 of Article XXI.	
1.13	PPG shall not allow process operations involving VOC's at the facility to operate unless all stationary mixers are equipped with covers which completely enclose the mixer openings, except for an opening no larger than necessary to allow for safe clearance for a mixer shaft. Such covers shall either extend at least one-half inch beyond the outer rim of the vessel or be attached to the rim.	Combined with condition #1.14 and streamlined into §63.8005(a)(1) and Table 1.2.b.i.
1.14	At no time shall PPG allow any stationary mixer operations at the facility unless all covers are closed at all times except when production, sampling, maintenance or inspection procedures otherwise requires access.	See #1.13 above.
1.15	Portable and stationary vessels shall not be used at the facility to process products containing VOC's unless the covers are maintained in good condition, such that when in place, they maintain contact with their respective rims for at least 90% of the circumference of the rim.	Streamlined into §63.8005(a)(1) and Table 1.1 in TVOP
1.16	Dispensing systems shall not be used unless they are of closed design or minimize free-fall of liquids.	Combined with #1.17; no streamlining required
1.17	Filling of solvent borne coatings shall not be performed unless they are in a closed system.	Combined with #1.16; no streamlining required
1.18	All grinding mills shall be of completely closed design at all times.	No streamlining required
1.19	All process and control equipment shall be properly operated and maintained according to good engineering and air pollution control practices at all times.	No streamlining required
1.20	Process equipment cleaning shall be conducted to minimize VOC emissions.	No streamlining required
1.21	Floor cleaning operations shall employ waterbased cleaners. The use of solvents will be limited to spot cleaning.	No streamlining required
1.22	Records shall be kept by the facility to demonstrate compliance with the	Included in addition to MACT

RACT Condition		Explanation
	requirements of §2105.06 of Article XXI and Order No. 254. Such records shall provide sufficient data and calculations to clearly demonstrate that all requirements of this Section are met. All data and information required to determine compliance shall be recorded and maintained by the facility as required by §2105.06 of Article XXI and Order No. 254. Such records shall include, but not be limited to the following: a. Records of specific solvents and quantities used. b. Records of paint production rates by number of batches and quantity of paint produced in each batch.	recordkeeping conditions
1.23	All records shall be retained by the facility for at least five years and shall be made available to the Department upon request as required by §2105.06.g.3 of Article XXI.	No streamlining required

PAINT PLANT EMISSIONS CALCULATIONS:

Paint Plant RTO

VOC emission rates of VOC venting to the RTO are based on a stack test conducted on the previous control device (the REECO thermal oxidizer) in April and May of 2001, plus an adjustment added to account for operational variability, and plus a factor to account for current increases in production.

Combustion emission calculations, except for PM, PM_{10}, and $PM_{2.5}$ were based on emission factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98); PM, PM_{10}, and $PM_{2.5}$ emissions were based on Article XXI emission limits (§2104.02). A 15% adjustment was added to all emissions calculated with AP-42 factors to account for operational variability. All PM was assumed to be PM_{10}, and all PM_{10} was assumed to be $PM_{2.5}$.

Natural gas heating value: 1,020 Btu/scf
Hours of operation: 8,760 hours/year

Uncontrolled VOC's: 118.9 lb/hr
Heat Rating: 1.6 MMBtu/hr
Destruction Efficiency: 95%
Controlled VOC's: 5.94 lb/hr = **26.03 tpy**

Table 4: Paint Plant RTO Combustion Emissions

Pollutant	AP-42 factors[1]	Paint Plant RTO	
		lb/hr	tpy
Particulate Matter	--	0.013	**0.056**
PM_{10}	--	0.013	**0.056**
$PM_{2.5}$	--	0.013	**0.056**
Nitrogen Oxides	100	0.180	**0.790**
Sulfur Oxides	0.6	0.001	**0.005**
Carbon Monoxide	84	0.152	**0.664**
VOCs	5.5	0.001	**0.043**

1. lb/10^6 scf, except for PM and PM_{10}, which are based on 0.008 lb/MMBtu (§2104.02). All PM is assumed to be PM_{10}, and all PM_{10} is assumed to be $PM_{2.5}$.

HAP Emissions

Based on the stack test conducted on the REECO thermal oxidizer in April and May 2001, HAP emissions from the Paint Plant to the REECO were approximately 62.63% of the VOC emissions. Therefore, estimated HAP emissions from this installation are: 26.03 × 0.6263 = **16.30 tpy** HAP's

Uncontrolled Paint Plant Emissions

The methodology for calculating uncontrolled Paint Plant emissions is based on production numbers from 2008 (the last full production year before this permit was issued) and a maximum production of 20,000,000 gallons of production in any 12-month period). The calculation methodology is as follows:

1. Determine the total plant-wide solvent usage.
2. Determine annual plant-wide Absolute Material Utilization (AMU) value.
3. Determine the total amount of solvent loss (i.e. amount not in the product) by using the formula: (1 – AMU) × solvent usage.
4. Determine the amount of VOC emissions controlled by the RTO by multiplying the most recent stack test (October 23, 2007) VOC content of the RTO inlet stream (lb/hr) by the RTO online hours during production operation.
5. Determine amount of solvent loss entering the waste streams. First, the total amount of solvent-containing waste shipped offsite is determined by using hazardous waste manifests. Then, by using waste shipment analytical data from PPG's Treatment, Storage, & Disposal Facility (TSDF), estimate the solvent content in the waste stream. Multiply the waste stream amount by the solvent content to determine total solvent loss offsite.
6. Determine the total fugitive emissions by subtracting the total controlled emissions and solvent losses in the waste from the total solvent losses.
7. Add a factor to allow for operational variability.

The AMU is a factor calculated monthly by PPG based on the total amount of raw material in minus the total product out. The difference is loss due to vaporization loss, spillage, waste, etc.

Table 5 shows the calculation of uncontrolled emissions in pounds per year. Solvent was considered to be 100% VOC. The following bases were used:

2008 Production:	7,143,564 gallons
Production Ratio (20 MM/2008):	2.80
RTO inlet (from stack test):	4.17 lb/hr of VOC
Solvent loss (based on AMU):	2.6%
Solvent in solvent-based waste:	45%
Solvent in water-based waste:	15%
Solvent in still sludge/bulk paint waste:	20%
Variability Factor:	15%

Table 5: Paint Plant Uncontrolled VOC Emissions Mass Balance

Total Solvent Usage		
1	17,868,000	Total Solvent Usage, 2008, lb solvent/yr
2	50,030,400	Total Solvent Usage, potential , lb solvent/yr (= Line 1 × 2.8)
3	1,300,662	Solvent loss (= Line 2 × 2.6%)
4	102,272	Solvent controlled by RTO (= 4.17 lb/hr × 5,989 hr/yr)
5	1,198,390	Remainder Solvent Loss, lb/yr (= Line 3 – Line 4)
Solvent-Based Waste (drums)		
6	299,522	Solvent-based Paint Waste, 2008, lb/yr
7	838,579	Solvent-based Paint Waste, potential, lb/yr (= Line 6 × 2.8)
8	377,360	Total solvent lost in solvent-based waste (= Line 7 × 45%)
Water-Based Waste (drums)		

9	263,473	Aqueous paint waste, 2008, lb/yr
10	737,651	Aqueous paint waste, potential, lb/yr (= Line 9 × 2.8)
11	110,648	Total solvent lost in water-based waste (= Line 10 × 15%)
Still Sludge / Bulk Paint Waste		
12	522,820	Total still sludge/bulk paint waste (2008), lb/yr
13	1,463,751	Total still sludge/bulk paint waste, potential, lb/yr (= Line 12 × 2.8)
14	292,750	Liquid still sludge/bulk paint waste (= Line 9 × 20%)
15	780,758	Total waste, lb/yr (= Line 8 + Line 11 + Line 14)
Total Uncontrolled Solvent Emissions		
16	417,632	Uncontrolled solvent emissions, lb/yr (= Line 5 – Line 15)
17	480,276	Uncontrolled solvent emissions + variability factor, lb/yr
18	**240.1**	**Total uncontrolled solvent emissions, tpy**

HAP Emissions
Based on the solvent content of the coatings produced, HAPs make up approximately 50% of the solvents. Therefore, estimated uncontrolled HAP emissions from the Paint Plant are: 240.1 × 0.50 = **120.1 tpy HAP's**.

For both the VOC and HAP emissions, calculated emissions from the Paint Plant storage tanks were subtracted out and included in the section titled "Paint Plant Storage Tanks" below. Estimated uncontrolled Paint Plant VOC and HAP emissions are 2.14 tpy (all VOC is considered HAP).

Uncontrolled VOC emissions: 240.1 tpy – 2.14 tpy = **238.0 tpy VOC**
Uncontrolled HAP emissions: 120.1 tpy – 2.14 tpy = **117.9 tpy HAP**

Freightliner Spray Booth
VOC and HAP emissions from the Paint Plant Spray Booth (IP #0057-I004) are based on plant production numbers which yield the following assumptions:

1. Cleaning solution is 50% acetone and 50% butyl acetate (no HAP's)
2. Five (5) gallons of cleaning solution is used each shift for cleanup
3. Collection efficiency of spray gun (for cleaning solution) = 90%
4. 3 shifts/day × 7 days/week × 52 weeks/year = 1,092 shifts per year
5. Product spray breakdown:
   HSB base coats: 58% metallic colors: 56%
   HST colors: 42% solid colors: 44%
   Each HSB coat gets a coat of HSC clear
   Each HST coat gets a coat of GXH hardener
   Each panel gets two coatings
6. 54 sprayouts per day; 32 ounces of coating each sprayout
7. Average VOC and HAP content per gallon of coating is as listed in Table 6 below.

Sprayout Emissions:

Table 6: Paint Plant Spray Booth Emissions

Coating Material	Estimated Percent of Sprayouts	lb VOC / gallon	lb HAP / gallon	VOC Emissions lb/year	HAP Emissions lb/year
HSB Metallic	½ (58% × 56%) = 16.24%	3.01	0	2,402.08	0.00

Coating Material	Estimated Percent of Sprayouts	lb VOC / gallon	lb HAP / gallon	VOC Emissions lb/year	HAP Emissions lb/year
HSB Solids	½ (58% × 44%) = 12.76%	2.78	0	1,743.13	0.00
HST Metallic	½ (42% × 56%) = 11.76%	2.98	0.175	1,722.10	101.13
HST Solids	½ (42% × 44%) = 9.24%	3.13	0.16	1,421.19	72.65
GXH Hardener	½ (42%) = 21.00%	2.61	0	2,693.36	0.00
HSC Clear	½ (58%) = 29.00%	3.26	0.224	4,645.70	319.21
Totals:				**14,627.56**	**492.99**

Sample calculation (VOC's from HSB Metallic):
$54\ ^{sprayouts}/_{day} \times 365\ ^{days}/_{year} \times 32\ ^{ounces}/_{sprayout} \div 128\ ^{ounces}/_{gallon} \times 3.01\ ^{lbVOC}/_{gallon} \times 16.24\% = \mathbf{2{,}402\ ^{lb}/_{year}}$

Clean-up Emissions:

Acetone = 6.59 lb/gallon; Butyl Acetate = 7.35 lb/gallon
lb_{VOC}/gallon = ½ (6.59 + 7.35) ÷ 2 = 3.49 lb/gallon (acetone is not considered a VOC)
VOC's emitted during clean-up:
3.49 lb/gal × (1 – 0.90) × 5 gal/shift × 1,092 shifts/year = **1,902.81 lb_{VOC}/year**

Total VOC emissions:

Sprayout emissions	14,627.56 lb/year	
Cleanup emissions	1,902.81 lb/year	
Total	16,530.37 lb/year	= **8.27 tons/year**
Total HAP emissions:	492.99 lb/year	= **0.25 tons/year**

Environ, Trix Clears, & Large Batch Center

All emissions from the Environ, Trix Clears, and Large Batch Center are included as part of the Paint Plant RTO emissions under TVOP section V.A. Per Installation Permit #0057-I003, condition VI.1.f, the combined VOC emissions from the RTO from these processes are limited to:

VOC Emissions:	0.78 lb/hr	**0.26 tpy**
HAP Emissions:	0.49 lb/hr	**0.13 tpy**

Per Installation Permit #0057-I003, conditions VI.1.h & j, the particulate emissions from the Environ, Trix Clears, and Large Batch Center processes are limited to the following:

Table 7: PM Emissions from Environ, Trix Clears and Large Batch Processes

Pollutant	lb/hr	tpy
Environ Baghouse		
Particulate Matter[2]	0.62	2.72
PM_{10}	0.62	2.72
HAP (particulates)	0.25	1.10
Ohio Blowpipe Dust Collector		
Particulate Matter[1]	0.73	3.20
PM_{10}	0.73	3.20

1. All PM is assumed to be PM_{10}, and all PM_{10} is assumed to be $PM_{2.5}$.

Paint Plant Storage Tanks

Emissions from the Paint Plant storage tanks were estimated using the USEPA Tanks 4.0.9d program and 2007 production numbers. The ratio of potential emissions to actual emissions was assumed to be 2.80, same as the uncontrolled Paint Plant emissions estimate. All VOCs are assumed to be HAP.

Table 8: Paint Plant Storage Tank Emissions

Tank ID	Vapor Pressure (psia)[1]	Through-put (gallons)	Turnovers per year	Emissions (lb/year)	Tank ID	Vapor Pressure (psia)[1]	Through-put (gallons)	Turnovers per year	Emissions (lb/year)
103	0.2556	210,000	7	222	311	0.1592	4,900	0.5	32
104	0.2556	210,000	7	222	312	0.0004	70,000	6	0.14
224	0.0001	260,000	11	0.07	313	0.0213	49,000	4.4	8
225	0.0001	285,000	11.5	0.13	314	0.1291	20,000	1.7	23
301	0.0193	116,000	5	15	320	0.0677	220,000	9.4	62
302	0.0193	97,000	4	18	321	0.4963	21,000	2.2	45
303	0.0715	105,000	9	41	322	0.2556	52,000	2.7	88
305	0.0213	15,000	1.3	6	324	0.5153	96,000	11	248
306	0.0213	50,000	4.4	72	400	0.1296	420,000	14	184
307	0.2	81,500	6.7	100	401	0.1296	55,000	1.8	72
308	0.0116	176,000	15	9	402	0.1296	32,000	1	64

1. Vapor pressure at liquid surface temperature of 52 ºF.

Total Paint Plant storage tank emissions (2007): 1,531.34 lb/year = 0.766 tpy
Total Paint Plant storage tank emissions (potential): 0.766 tpy × 2.80 = **2.14 tpy of VOC and HAP**

Boilers

Emissions from Boiler #1a, Boiler #2, and the Warehouse Boiler are based on the limits set forth in the following permits. Sulfur oxide limits were not specified in the permits, so limits are based on factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98) and Section 1.3: Fuel Oil Combustion (9/98).

Boiler #1a Permit #5048898-000-76200 (issued 01/07/86)
Boiler #2 Permit #5048898-000-00900 (issued 03/08/80)
Warehouse Boiler Permit #5048898-000-00902 (issued 09/27/82)

The following assumptions were also used as a basis:

Natural gas rating: 1,030 Btu/scf
Fuel oil rating: 140,000 Btu/gallon
Hours on fuel oil: 500 hours/year
Fuel oil sulfur: 0.2%
SO_X factors: 0.6 lb/MMscf natural gas; 28.4 lb/Mgal fuel oil

Table 9: Paint Plant Boiler Emissions

	Boiler	Boiler #1a		Boiler #2		Warehouse Boiler	
	Rating	25.1 MMBtu/hr		25.1 MMBtu/hr		8.4 MMBtu/hr	
Pollutant	Factor[1]	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Particulate Matter	0.001	0.025	**0.110**	0.025	**0.110**	0.008	**0.037**
PM_{10}	0.001	0.025	**0.110**	0.025	**0.110**	0.008	**0.037**
$PM_{2.5}$	0.001	0.025	**0.110**	0.025	**0.110**	0.008	**0.037**
Nitrogen Oxides	0.18	4.518	**19.789**	4.518	**19.789**	1.512	**6.623**
Sulfur Oxides	--	5.092	**1.333**	5.092	**1.333**	1.704	**0.446**
Carbon Monoxide	0.015	0.377	**1.649**	0.377	**1.649**	0.126	**0.552**
VOCs	0.004	0.100	**0.440**	0.100	**0.440**	0.034	**0.147**

1. Factors are in lb/MMBtu.

DEVELOPMENT CENTER EMISSIONS CALCULATIONS:

Development Center RTO

VOC emission rates of VOC venting to the RTO are based on a stack test conducted on the previous control device (the REECO thermal oxidizer) in April and May of 2001, plus a 10% adjustment added to account for operational variability, and plus a 5% factor to account for current increases in production.

Combustion emission calculations, except for PM, PM_{10}, and $PM_{2.5}$ were based on emission factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98); PM, PM_{10}, and $PM_{2.5}$ emissions were based on Article XXI emission limits (§2104.02). A 15% adjustment was added to all emissions calculated with AP-42 factors to account for operational variability. All PM was assumed to be PM_{10}, and all PM_{10} was assumed to be $PM_{2.5}$.

Natural gas heating value: 1,020 Btu/scf
Hours of operation: 8,760 hours/year

Uncontrolled VOC's: 41.8 lb/hr (36.3 lb/hr + 2 adjustment factors)
Heat Rating: 1.6 MMBtu/hr
Destruction Efficiency: 98%
Controlled VOC's: 0.84 lb/hr = **3.66 tpy**

Table 10: Development Center RTO Combustion Emissions

Pollutant	AP-42 factors[1]	Paint Plant RTO	
		lb/hr	tpy
Particulate Matter	--	0.013	**0.056**
PM_{10}	--	0.013	**0.056**
$PM_{2.5}$	--	0.013	**0.056**
Nitrogen Oxides	100	0.180	**0.790**
Sulfur Oxides	0.6	0.001	**0.005**
Carbon Monoxide	84	0.152	**0.664**
VOCs	5.5	0.001	**0.043**

1. lb/10^6 scf, except for PM and PM_{10}, which are based on 0.008 lb/MMBtu (§2104.02). All PM is assumed to be PM_{10}.

HAP Emissions

All VOC emissions from the Development Center were assumed to be HAP's (**3.66 tpy**).

R2000 Resin Manufacturing Process

Per Installation Permit #0057-I001, condition V.1.d, and adjusted to 98% reduction in the DC RTO (instead of the 95% reduction in the REECO), emissions from the RTO stack and fugitive emissions due to the R2000 Resin Process are:

Table 11: R2000 Resin Process Emissions

Pollutant	RTO Emissions (tpy)	Fugitives (tpy)	Total (tpy)
Volatile Organic Compounds	0.658	2.25	2.91
Ethyl Benzene	0.015	0.09	0.11
Methyl Isobutyl Ketone	0.176	1.19	1.37
Toluene	0.048	0.33	0.38

Xylene	0.048	0.33	0.38

Uncontrolled Development Center Emissions

Estimates of uncontrolled (fugitive) emissions from the Development Center were based on factors found in US EPA document *Protocol for Equipment Leak Emissions Estimates* (November 1995, EPA-453/R-95-017). Leak threshold values for each type of component were taken from 40 CFR Part 63, Subpart UU - *National Emission Standards for Equipment Leaks – Control Level 2 Standards*, as referenced in Subpart FFFF, §63.2480(b).

Components Above Leak Threshold: 2%
Components Below Leak Threshold: 98% ("default zero")
Hours of Operation: 8,760 hours/year

Small Side Reactor System emissions are based on internal measurements performed by PPG showing 0.35 tons of VOC produced from 150 tons of material. This yields an emission factor of:

$35\ ton_{VOC} \div 150\ ton_{mat} \times lb_{VOC}/lb_{mat} \times 10\ lb_{mat}/gal_{mat} = 0.023\ lb_{VOC}/gal_{mat}$

Based on a maximum production of 60,000 gallons per year at 10 lb/gal, emissions from the Small Side Reactor System are: $60{,}000\ gal/yr \times 0.023\ lb_{VOC}/gal_{mat} \div 2{,}000\ lb/ton = 0.690\ tpy$

Table 12: Development Center Uncontrolled Emissions

Equipment Type	Service	Number	MACT Leak Threshold[1] (ppm_v)	Above Leak Threshold Emission Factor[2] (lb/hr/source)	"Default Zero" Emission Factor[3] (lb/hr/source)	Emissions (tpy)
Valves	gas	144	500	9.36×10^{-4}	1.46×10^{-6}	**0.013**
	light liq.	2,698	500	2.00×10^{-3}	1.08×10^{-6}	**0.485**
	heavy liq.	0	500	0.00×10^{0}	0.00×10^{0}	**0.000**
Pump Seals	light liq.	94	1,000	1.24×10^{-2}	1.65×10^{-5}	**0.109**
	heavy liq.	0	2,000	2.20×10^{-2}	1.65×10^{-5}	**0.000**
PRV	gas	17	500	7.02×10^{-3}	1.65×10^{-5}	**0.012**
Connectors	gas	2,204	500	1.65×10^{-3}	1.34×10^{-6}	**0.330**
	light liq.	24,196	500	1.65×10^{-3}	1.34×10^{-6}	**3.627**
Agitator Seals	gas	6	10,000	8.28×10^{-2}	1.65×10^{-5}	**0.044**
	light liq.	48	10,000	8.28×10^{-2}	1.65×10^{-5}	**0.352**
Small Side Reactors						**0.690**
					Total:	**5.671**

1. 40 CFR Part 63, Subpart UU
2. USEPA *Protocol for Equipment Leak Emission Estimates*, Table 2-9
3. USEPA *Protocol for Equipment Leak Emission Estimates*, Table 2-11

HAP Emissions

HAPs were assumed to be 50% of the total VOC emissions, or **2.836 tpy**.

For both the VOC and HAP emissions, calculated emissions from the Development Center storage tanks were subtracted out and included in the section titled "Development Center Storage Tanks" below. Estimated uncontrolled Development Center VOC and HAP emissions are 0.687 tpy (all VOC is considered HAP).

Uncontrolled VOC emissions: 5.671 tpy – 0.687 tpy = **4.98 tpy VOC**
Uncontrolled HAP emissions: 2.836 tpy – 0.687 tpy = **2.15 tpy HAP**

Development Center Storage Tanks

Emissions from the Development Center storage tanks were estimated using the USEPA Tanks 4.0.9d program and 2007 production numbers. The ratio of potential emissions to actual emissions was assumed to be 2.80, same as the uncontrolled Development Center emissions estimate. All VOCs are assumed to be HAP.

Table 13: Development Center Storage Tank Emissions

Tank ID	Vapor Pressure (psia)[1]	Through-put (gallons)	Turnovers per year	Emissions (lb/year)	Tank ID	Vapor Pressure (psia)[1]	Through-put (gallons)	Turnovers per year	Emissions (lb/year)
1	0.1592	27,000	5	24	6	0.22	64,000	12.5	52
2	0.3256	44,000	8.5	115	7	0.22	64,000	12.5	52
3	0.0538	33,000	6.7	9	8	0.22	64,000	12.5	52
4	0.0002	36,000	7	0.07	BT122	0.22	96,000	21	66
5	0.2176	60,000	12	55	BT126	0.22	96,000	21	66

1. Vapor pressure at liquid surface temperature of 52 ºF.

Total Development Center storage tank emissions (2007): 491.074 lb/year = 0.246 tpy
Total Development Center storage tank emissions (potential): 0.246 tpy × 2.80 = **0.687 tpy of VOC & HAP**

SOURCES OF MINOR SIGNIFICANCE:

Make-Up Air Units

Emissions of particulate matter from the Make-Up Air Units are based on the maximum allowable under Article XXI, §2102.04.a.1.A, 0.008 lb/MMBtu. Emissions of NO_X and CO are based on emission factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98), 100 lb/MMscf and 84 lb/MMscf, respectively. A natural gas value of 1,030 Btu/scf was used, and operation of 8,760 hours per year was assumed.

Table 14: Make-Up Air Unit Emissions (in tpy)

Unit	Rating MMBtu/hr	PM	PM_{10}	$PM_{2.5}$	NO_X	CO
PP MAU 1	1.6	0.056	0.056	0.056	0.680	0.572
PP MAU 1	1.89	0.066	0.066	0.066	0.804	0.675
PP MAU 1	3.93	0.138	0.138	0.138	1.671	1.404
PP MAU 1	2.52	0.088	0.088	0.088	1.072	0.900
PP MAU 1	0.6	0.012	0.012	0.012	0.255	0.214
PP MAU 1	0.53	0.019	0.019	0.019	0.225	0.189
PP MAU 1	0.55	0.019	0.019	0.019	0.234	0.196
PP Sub-Total		**0.407**	**0.407**	**0.407**	**4.941**	**4.151**
DC MAU: DC	3.0	0.105	0.105	0.105	1.276	1.072
DC MAU: K13/K15	1.0	0.035	0.035	0.035	0.425	0.357
DC MAU: R2000	1.0	0.035	0.035	0.035	0.425	0.357
DC MAU: Reznor	0.4	0.014	0.014	0.014	0.170	0.143
DC Sub-Total		**0.189**	**0.189**	**0.189**	**2.296**	**1.929**
Total		**0.596**	**0.596**	**0.596**	**7.238**	**6.080**

Other Sources of Minor Significance

Table 15: Sources of Minor Significance

Location	Source Description	Basis for Exemption
Paint Plant	Boiler House Emergency Generator (natural gas-fired) – 51 hp	Total PTE is <2.5 tpy of NO_X for all emergency generators
	Warehouse Emergency Generator (diesel-fired) – 550 hp	
	Fire Pump & Engine (diesel-fired) – 256 hp	
	Inert Gas Generator	Unit is electric
	20 – Laboratory Hoods	Laboratory equipment used exclusively for chemical or physical analyses
	23 – Laboratory Ovens (electric)	Units are electric
	1 – Laboratory Oven (natural gas-fired) – 40,000 Btu/hr	Units are <0.5 MMBtu/hr; total PTE is <0.6 tpy of NO_X and <0.5 tpy of CO for all Laboratory Ovens at the facility
	4 – Laboratory Ovens (natural gas-fired) – 50,000 Btu/hr ea.	
	1 – Laboratory Oven (natural gas-fired) – 200,000 Btu/hr	
	General Lab Ventilation	Laboratory equipment used exclusively for chemical or physical analyses
Research Building	Laboratory Hoods	Laboratory equipment used exclusively for chemical or physical analyses
	Electric Ovens	Units are electric
	Powder Coat Spray Booth and Dust Collector	Laboratory equipment used exclusively for chemical or physical analyses
	2 – Laboratory Ovens (natural gas-fired) – 40,000 Btu/hr ea.	Units are <0.5 MMBtu/hr; total PTE is <0.6 tpy of NO_X and <0.5 tpy of CO for all Laboratory Ovens at the facility
	6 – Laboratory Ovens (natural gas-fired) – 50,000 Btu/hr ea.	
	2 – Laboratory Ovens (natural gas-fired) – 55,000 Btu/hr ea.	
	Laboratory Oven (natural gas-fired) – 300,000 Btu/hr	
	Laboratory Oven (natural gas-fired) – 80,000 Btu/hr	
	Laboratory Oven (natural gas-fired) – 65,000 Btu/hr	
	Dispersion Lab	Laboratory equipment used exclusively for chemical or physical analyses
	Coil Lab	Laboratory equipment used exclusively for chemical or physical analyses
	Electric Hot Oil Heater	Unit is electric
	Space Heaters	Units are electric

Location	Source Description	Basis for Exemption
Facility	Parking Lots and Roadways	PTE is <0.7 tpy of particulate

Emissions estimates for parking lots and roadways were based on the methodology and factors in U.S. EPA AP-42 Section 13.2.1: Paved Roads (11/03). The emission factor is based on the following equation:

$E = k \times (sL/2)^{0.65} \times (W/3)^{1.5}$, where:

E = particulate emission factor (having the same units as k)
k = base emission factor for particle size range (lb/VMT)
sL = road surface silt loading (g/m^2)
W = average weight (tons) of the vehicles traveling the road
VMT = vehicle miles traveled

VMT was estimated using best engineering judgment, and the RACM control efficiency is based on a vehicle speed limit of 20 mph (60%).

Table 15: Parking Lot & Roadway Emissions

PM								
Vehicle Type	k	sL	W	E	Road Traffic VMT/yr	Control Eff. %	Max. PTE	
							lb/yr	tpy
Light-Duty	0.082	0.30	1.5	0.008	2,000	65	6	0.003
Heavy-Duty	0.082	0.30	24	0.54	7,000		1,329	0.66
Total					**9,000**		**1,335**	**0.67**
PM_{10}								
Vehicle Type	k	sL	W	E	Road Traffic VMT/yr	Control Eff. %	Max. PTE	
							lb/yr	tpy
Light-Duty	0.016	0.30	1.5	0.0017	2,000	65	1.16	0.00058
Heavy-Duty	0.016	0.30	24	0.11	7,000		259	0.13
Total					**9,000**		**261**	**0.13**
$PM_{2.5}$								
Vehicle Type	k	sL	W	E	Road Traffic VMT/yr	Control Eff. %	Max. PTE	
							lb/yr	tpy
Light-Duty	0.004	0.30	1.5	0.0004	2,000	65	0.29	0.00014
Heavy-Duty	0.004	0.30	24	0.03	7,000		65	0.032
Total					**9,000**		**65**	**0.033**

EMISSIONS SUMMARY:

Table 16: Emissions Summary for PPG Industries, Inc. – Springdale Plant

Pollutant	Paint Plant (tpy[1])	Development Center (tpy[1])	Total (tpy[1])
Particulate Matter	6.64	0.25	**6.89**

Particulate Matter <10 μm	6.64	0.25	**6.89**
Particulate Matter <2.5 μm ($PM_{2.5}$)	6.64	0.25	**6.89**
Nitrogen Oxides (NO_X)	51.93	3.09	**55.02**
Sulfur Oxides (SO_X)	3.12	0.01	**3.12**
Carbon Monoxide (CO)	8.67	2.59	**11.26**
Volatile Organic Compounds (VOC)	275.5	9.37	**284.9**
Hazardous Air Pollutants (HAP)	137.7	6.50	**144.2**

1. A year is defined as any consecutive 12-month period.

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit application and the facility was found to be in compliance. The Title V Operating Permit for the PPG Springdale facility should be approved with the emission limitations and terms & conditions in Permit No. 0057.