

**COMMONWEALTH OF PENNSYLVANIA**  
**Department of Environmental Protection**  
**Southwest Regional Office**

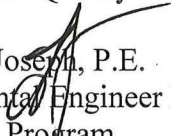
**MEMO**

**TO** Air Quality Permit File SOOP-11-00433

**FROM** Jesse S. Parihar  
Air Quality Engineering Specialist  
Bureau of Air Quality



**THROUGH** Thomas J. Joseph, P.E.  
Environmental Engineer Manager  
Air Quality Program



Mark R. Gorog, P.E.  
Regional Manager  
Air Quality Program



**DATE** August 04, 2016

**RE** Review of Application for State Only Operating Permit  
GapVax, Inc.  
GapVax Facility  
City of Johnstown, Cambria County  
AUTH # 876047; APS # 747476; PF # 554651

**BACKGROUND:**

GapVax, Inc. manufactures custom-built large truck-mounted, industrial and municipal vacuum systems. The equipment is used in a multitude of applications from clearing storm sewers and septic tanks to hydro-excavating and environmental clean-up. Raw materials used at this facility include the truck chassis (cab and trailer) and sheet metal, which is formed to specifications. Welding, grinding, shot blasting, steam cleaning and painting of metal all occur at this facility. GapVax is located on Central Avenue within the City of Johnstown, Cambria County. In 2010, GapVax began manufacturing dump body trucks due to closure of Thiel Trucking. Only the regular steel, floor, and the bottom of the stainless bodies were painted at GapVax facility at that time. The building is heated via a natural gas-fired boiler rated at 3.0 MMBtu/hr.

On October 18, 2006, GapVax was issued an Operating Permit Number OP-11- 00433, which expired on October 18, 2011. The facility operated a single paint booth system using TE40 (high efficiency) air cap gun. On April 15, 2011, the Department received the renewal application for the above facility which was later amended by the applicant on March 12, 2015, to update information on responsible personal and contact person.

## **PREVIOUS PLAN APPROVALS:**

On May 09, 1999, a Plan Approval Number PA-11- 00433A was issued to the above facility for the construction and operation of a paint booth manufactured by Custom Paint Booth Corporation for Systems by Lebron, Inc. Model Number SLI 601818 for painting 144 units and numerous metal parts. This source was controlled by a glass fiber filter manufactured by Vilodon, Model Number 200-02600 handling 40,000 ACFM at 140°F with an overall efficiency of 95% for overspray. There is also shot blast booth that is controlled by a cartridge type dust collector that exhausts inside the building. VOC emissions were limited to 6.67 tpy. On August 23, 2001, the Department received the State Operating Permit (SOOP) application for the above facility and the Plan Approval Number PA-11- 00433A was incorporated in the operating permit. On October 18, 2006, OP-11- 00433 was issued.

According to the inspection report dated May 17, 2010, GapVax began manufacturing dump body trucks in 2010, due to closure of Thiel Trucking. GapVax purchases the cab and chassis, adds the hydraulics and fabricates the dump body of stainless, steel, or aluminum. The facility produces approximately 70 finished trucks every year. Each truck requires approximately 11 gallons of primer and 8 gallons of topcoat. Only the regular steel, the floor, and bottom of the stainless bodies are painted at the above facility.

On May 27, 2015, the Department received Plan Approval Application (PA-11- 00433B) for installation and operation of three (3) new coating booths for trucks and large equipment due to increase in vehicles from 90 to 250 vehicles per year. GapVax replaced the old TE40 (high efficiency) air cap gun with HVLP HV40 pressure feed spray guns for coating applications. The facility paints the vacuum truck parts that are fabricated from hot rolled steel (HRS) and consist of the truck chassis, haul tanks, compressed air tanks, dust collector cyclones, baghouse, boom pipes, and miscellaneous structural steel, brackets, air piping, ladders, and platforms etc. As noted, the facility will keep and maintain the existing booth as a back-up in the event one of the new booths becomes temporarily inoperable. On February 12, 2016, the Department issued the plan approval (PA-11- 00433B) which expired on July 28, 2016.

The operating permit (OP-11- 00433) establishes a VOC emission limit of 49 tpy. The following facility sources are being incorporated in the proposed operating permit:

- Three (3) Col-Met Spray Booths; one for interior coating, second for priming, and third for exterior or top coating. All booths are manufactured by Col-Met Spray Booths. Each booth has four (4) individual HVLP paint guns; manufactured by DeVilbiss and model # Tekna ProLite HV40. Each gun has transfer efficiency greater than 65%.

Paint particulates are captured on a dual dry filter system consisting of a polyester fabric primary filter followed by a secondary pocket filter. Each of the Col-Met paint spray booths are equipped with a manometer to measure pressure drop across exhaust filters to indicate the condition of the filters. Flow Technology's Series CC50 - 2 pocket cube filters of size 24"x24"x15" maintain an average removal efficiency of 99%. Pocket cube filters are used as primary or secondary filters in paint systems, made of dual density, single ply, and 100% polyester media. According to

manufacturer the rated air flow of the filter tested per ASHRAE 52.2 is 150 fpm and displays superior dust-holding capacity of 6.9 lbs per square foot. The ultrasonic welding of seams eliminates the potential leakage of dust through needle and stitch holes and maximizes the efficiency and performance.

The manufacturer recommends:

- Visually inspect all filters for damage and debris buildup.
- Replace damaged or clogged filters. The filter condition is acceptable when the manometer tube scale is between the two arrows.
- The filters must be changed when manometer scale exceeds red pointer flag.

The paint booths have air makeup units (AMU), which supply filtered, heated atmospheric air. The AMU is heated by natural gas combustion. Each of the three (3) paint booths (interior coating, priming, and top coating) utilizes a natural gas-fired air make-up unit to supply air to the booth to replace air that is exhausted. The air make-up's information is summarized below in Table 1.

**Table: 1**  
**Air Make-Up Units**

Location	Air Make-Up Model	Air Flow	Maximum MMBtu/hr.	Natural Gas Combustion
Coating Booth	EH/EHC-812	8,000-12,000 cfm	1.5	1,500 cft/hr. maximum
Prime Booth	EH/EHC-812	8,000-12,000 cfm	1.5	1,500 cft/hr. maximum
Top Coat Booth	EH/EHC-812	8,000-12,000 cfm	1.5	1,500 cft/hr. maximum

The temperature of the AMU discharge air is controlled by a thermostat. The airflow capacity of the fan and motor are matched to the airflow capacity of the spray booth exhaust fans. These units also have the capability to provide a paint cure cycle. This cycle, employed after the paint spraying operations are complete, typically involves supplying air that is heated to the paint area of the booth to decrease paint cure times. The facility is heated with in-floor circulated hot water supplied by an existing natural gas-fired boiler rated at 3.0 MMBtu/hr. All the parts to be painted go through the following process:

- Manual Blast Booth—Raw steel parts are shot blasted in a manual blast booth. Blast dust is collected and filtered, the filtered air is returned to the building.
- Weld Particulate – Particulate from welding operations collected and removed prior to exhaust with a dust collector. Filtered air is returned to the plant.

- Sanding: All the proposed parts to be painted are sanded, detached, masked, and generally prepared for painting at the facility. Sanding dust is collected and filtered, the filtered air is returned to the building.
- Prime Paint – The exterior of the parts are then manually spray painted with a low VOC/HAP prime paint. The parts are painted with high transfer efficiency paint in a downdraft paint booth that filters and recirculates the air. According to the applicant, the facility uses Tekna ProLite HV40 a high volume low pressure (HVLP) paint spray gun, manufactured by DeVilbiss, and having 65% transfer efficiency.
- Sanding and Preparation – After primer is applied, the parts are sanded, detached, masked and generally prepared for top coat painting. Sanding dust is collected and filtered air returned to the building so as to prevent exhausting outside the building.
- Interior Coating – The interior of the haul tanks and dust collectors are manually spray coated with a low VOC/HAP coating in a downdraft paint booth with high transfer spray equipment. As submitted by the applicant, the facility uses Tekna ProLite HV40 a high volume low pressure (HVLP) paint spray gun, manufactured by DeVilbiss, and with 65% transfer efficiency. The exhaust air is filtered to remove particulates. In order to reduce the overall exhaust rate and to minimize energy cost, a large portion of the exhaust (80%) is returned to the booth and the remainder (20%) exhausts to the atmosphere.
- Top Coat Paint – The exterior of the primed parts are manually spray painted with a series of low VOC/HAP top coat paints. The application equipment and spray booth are identical to the prime paint process.

**RFD:**

On August 23, 2007, the Department approved an RFD for installation and operation of BCI/Global Finishing Solutions Spray Booth Retro Fit Kit (GFS) Model Number CDG 1618DPSB-50-6 cross draft spray booth, manufactured in December 2007. GapVax used two new coatings; AUE-370 M, a primer and a black top coat.

*Note:* The above two new coatings are used in the old booth which is infrequently used and kept as a backup.

**NOV:**

On December 18, 2015, the above facility was inspected by me (Jesse Parihar) and air quality specialist Philip Sapala. During the inspection it was observed the three (3) Col-Met Paint Spray Booths, a shot and sand blasting unit, and a baghouse were installed prior to receiving authorization from the Department. Installation without prior approval is a violation of 25 Pa. Code §127.11. On December 21, 2015, a notice of violation (NOV) was sent to the applicant. The applicant requested to resolve the case without imposing any penalty as these sources were

non-operational and there have been no additional compliance issues at the facility. On January 11, 2016, the Department's Enforcement Section closed out the case.

**Exempt Sources:**

The facility has two (2) baghouses, twenty (20) boilers, and ten (10) exhaust fans as exempt sources per detail given below:

- Baghouse # 1 rated at 19,000 ACFM; manufactured by Fintech Manufacturing; Model # FT5D25-50-19000; connected to the new shot blast booth, and vents into the building.

The baghouse contains 50 cartridges; each cartridge is 36" long, 12.75" outer diameter, and 8.375" inner diameter; the effective area -200 square feet, and air to filter area ratio – 1.73 to 1. The filter media is 1.5" pleat having 80% cellulose and 20% polyester. The cartridge cleaned by reverse pulse air jet. The pressure drop across the collector can be read on a magnehelic gauge. Based on 99.9% efficiency rating the manufacturer estimated maximum PM/PM<sub>10</sub> emissions to be less than 0.002 grains/dscf. Air compressor supplying compressed air to the collector is equipped with an air dryer and oil trap (Nirvana cycling refrigerated dryer). As reverse air pulses to clean cartridges, the particulates enter collection hopper then into drums which are sealed to unit. The blasting operation will occur in a permanently-located enclosure. The baghouse dust will be transported to proper off-site disposition. As noted, the specific blasting media used will be steel grit (SGL080-D). The blast booth is served by twenty (20) 24"x 24" pocket filters (each). The efficiency rating of these MERV pocket filters is 90-95%.

The second baghouse, Baghouse # 2, is connected to a Sand/Prep/Mask baghouse, exhaust inside the building, and is exempt from plan approval requirements with the following specification:

- Baghouse # 2 rated at 10,000 ACFM; manufactured by Oven Empire Manufacturing; Model # CM-10000-LD; connected to the new a Sand/Prep/Mask area, and vents into the building.

The baghouse contains 10 cartridges; each cartridge is 36" long, and 13.75" outer diameter. The filter media is 1.5" pleat having 80% cellulose and 20% polyester. The cartridge cleaned by reverse pulse air jet. The pressure drop across the collector can be read on a magnehelic gauge. Based on 99.9% efficiency rating the manufacturer estimated maximum PM/PM<sub>10</sub> emissions to be less than 0.002 grains/dscf. Air compressor supplying compressed air to the collector is equipped with an air dryer and oil trap (Nirvana cycling refrigerated dryer). As reverse air pulses to clean cartridges, the particulates enter collection hopper then into drums which are sealed to unit. As noted, the baghouse dust is transported to proper off-site disposition. As noted, the specific blasting media used will be steel grit (SGL080-D). The blast booth is served by fort-eight (48) 24"x 24" pocket filters (each). The efficiency rating of these MERV pocket filters is 90-95%. As noted, no air is discharged to the outside atmosphere from any of the above units. All clean air returns to the building and is discharged through the final pocket filters.

- Natural Gas Boilers:

Nineteen (19) Buderus boilers are installed; each of the high efficiency units (96%) and rated at 0.333 MMBtu/hr. These are fueled by natural gas supplied by a public utility. These sources are exempt sources per Pa Code §127.14(a)(3).

One (1) natural gas boiler installed for comfort heating in an auxiliary report shop and connected to the new expansion building. This single Buderus GB142-45, fueled by natural gas supplied by a public utility, is rated at 0.16 MMBtu/hr also exempt from plan approval requirements per Pa Code §127.14(a)(3).

- Exhaust Fans:

The facility has ten (10) exhaust fans installed for employee comfort ventilation and designed to remove pollutants generated by other sources. These sources are exempt per Pa Code §127.14(a)(1).

All the above exempt sources are of negligible emission and not included in the facility-wide emission estimate.

### **REGULATORY ANALYSIS:**

The requirements established by 25 PA Code §129.52 Surface Coating Processes were included in this permit because the facility has emitted greater than 2.7 tons of VOC in a year. The applicable §129.52 Table 1 surface coating process category is miscellaneous metal parts & products, extreme performance coatings. The VOC content limit of this category is 6.67 lb VOC/gal coating solids. Coatings used at this facility meet this limit.

The requirements of NESHAPS (National Emission Standards for Hazardous Air Pollutants) for Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources were considered and determined that the facility is not subject to the following subparts of 40 CFR Part 63.

**40 CFR 63 Subpart MMMM** (National Emission Standards for Surface Coating of Miscellaneous Metal Parts and Products); this subpart establishes national emission standards for hazardous air pollutants (NESHAP) for miscellaneous metal parts and products surface coating facilities. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations. 40 CFR Section 63.3881(b) excludes this facility from these requirements due to federally enforceable limit of 9.0 tons per year of a single HAP and 24.0 tons per year of combined HAP included in this permit.

**40 CFR Part 63 Subpart HHHHHH** (National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources);

The facility is subject to the requirements of §63.11170(b)(2) and (3) as it operates an area source of HAP and perform spray application of coatings, as defined in §63.11180, to motor vehicles and mobile equipment and perform spray application of coatings that contain the target HAP, as defined in §63.11180, to a plastic and/or metal substrate on a part or product, except

spray coating applications that meet the definition of facility maintenance or space vehicle in §63.11180.

The facility is also subject to the requirements of § 63.11173(e), (f), and (g) of this subpart that requires that all painters must be certified that they have completed training in the proper spray application of surface coatings and the proper setup and maintenance of spray equipment.

**40 CFR Part 60 Subpart Dc** (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units):

The requirements of this subpart was considered and determined the facility is not subject to the requirements of this subpart as this subpart applies to steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989, and that has a maximum design heat input capacity of 29 megawatts (MW) [100 Million British thermal units per hour (MMBtu/hr)] or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). The existing boiler rated at 3 MMBtu/hr and is not subject to this section for keeping record of monthly gas usage per section 60.48c(g)(2)(3).

Limits for CO, SO<sub>x</sub>, NO<sub>x</sub>, and PM<sub>10</sub> which had been set at the major source thresholds were removed from this SOOP and listed in the miscellaneous Section of the permit since the facility is a natural minor for these pollutants. The limits for VOC and HAP were carried over from the current SOOP to ensure that GapVax, Inc. remains below Title V thresholds. The following State Air Pollution Control regulations were evaluated for their applicability to the facility:

**25 Pa Code 121.7** (Prohibition of air pollution)

No person may permit air pollution as that term is defined in the act.

**25 Pa Code 123.2** (Fugitive particulate matter)

A person may not permit fugitive particulate matter to be emitted into the outdoor atmosphere from a source specified in 123.1 (a)(1) - (9) (relating to prohibition of certain fugitive emissions) if such emissions are visible at the point the emissions pass outside the person's property.

**25 Pa Code 123.31** (Limitations)

The Owner/Operator may not permit the emission into the outdoor atmosphere of any malodorous air contaminants from any source, in such a manner that the malodors are detectable outside the property of the Facility.

**25 Pa Code Section 135.4** (Report format)

This facility is subject to the report format requirements and has been included in plan approval conditions.

**25 Pa Code Section 135.21** (Emission Statements)

This facility is subject to the reporting requirement of annual emissions.

**25 Pa. Code § 127.441(Malfunctioning Reporting)**

The existing malfunctioning conditions will be replaced with the most recent standard malfunction condition in the proposed permit.

**EMISSIONS and CONTROLS:**

GapVax has reported zero HAP emissions in the annual emission statements submitted to the Department. The Department discussed HAP issue with the applicant and revealed that there were some minor HAPs contained in the paint material which was not reported in AIMS. The applicant has agreed to report HAPs in the future. HAP content of the two-part Heresite coating used at this facility is 2.43% by weight (toluene). VOC content of this same coating is greater than 23.7%.

**Table: 2  
Actual VOC Emission Report in AIMS**

<b>Year</b>	<b>VOC (tpy)</b>
2014	11.86
2013	7.80
2012	7.15
2011	6.49
2010	5.05
2009	3.74

The emissions at this facility arise from the VOCs contained in the various primers, paints, solvents, and coatings used during the coating process. The coating units are located inside the three (3) separate booths that include coating booth, prime booth, and top coat booth. The paint particulates are captured on a dual filter system consisting of a polyester fabric primary filter followed by a secondary pocket filter. The filters are mounted on the exhaust plenums of the paint booths. Air pressure switches are mounted downstream of the filters to measure the air pressure differential between the plenum and building at large. The air pressure differential increases when the filters are loaded with paint particulate. Upon a “fully loaded set-point”, a dirty filter light is illuminated at the booth control panel. If the filters are not replaced with clean filters and the pressure continues to build, a maximum set-point will be reached, and close a solenoid on the compressed air supply to the paint guns to prevent further painting. A record of the dirty filter condition is also recorded in the alarm log of the system PLC.



Clean-up solvents are used to purge the paint gun feed lines and wipe equipment off. The majority of the solvent used is for purging the lines when changing color or ending the production day. Purge solvents are captured in a waste vessel and recycled off site. Fugitive emissions are from solvent used to clean equipment. The plant is located in an ozone transport region established under Section 184 of the Clean Air Act. The facility is a synthetic minor source of VOC and HAP because the proposed facility wide potential to emit upon issuance of this SOOP will be limited to not equal or exceed 49.0 tpy for VOC, 9.0 tpy for single HAP, and 24.0 tpy for combined HAPs.

The facility also includes an existing small natural gas-fired boiler rated at 3.0 MMBtu/hr and a small welding station. The boiler is used for heating the building with in-floor circulated hot water. The boiler is rated less than 10 MMBtu/hr and is exempt from plan approval requirements. However, the emissions from the boiler are included in the facility-wide emissions. The particulates from the welding operation are collected and removed with a dust collector before exhausting indoors to the facility.

Potential to emit from plan approval (PA-11-00433B) is listed below in Table: 3

**Table: 3**  
**Potential to Emit**

Pollutants	Emission from three spray coating booths (tpy)	Emission from a Boiler (3.0 MMBtu/hr) (tpy)	Potential Emissions (tpy)
VOC	44.07	0.09	44.16
Combined HAP	14.07	-	14.07
CO	-	1.10	1.10
NO <sub>x</sub>	-	1.27	1.27
PM	0.40	0.09	0.49
SO <sub>x</sub>	-	0.01	0.01

Emission values may be slightly different due to round off.

Emission limits in the existing operating permit number OP-11- 00433 are set at 49.0 tons VOC, 9.0 tons of a single HAP, and 24.0 tons of all HAPs combined per consecutive 12-month rolling period. Limits for CO, SO<sub>x</sub>, NO<sub>x</sub>, and PM<sub>10</sub> were not included since the facility is a natural minor for these pollutants. The existing back-up paint booth in addition to the emissions from PA-11-004333B enables the facility to reach the emission limits for VOC and HAP already required in the current operating permit.

The facility wide potential to emit from all sources is listed below in Table 4.

**Table: 4**  
**Facility wide Potential to Emit**

Pollutants	Emission Limits (tpy)
VOC	49.0
Single HAP	9.0
Combined HAP	24.0

**RECOMMENDATIONS:**

On December 27, 2010, an annual compliance monitoring inspection was performed by Mr. Phil Sapala, Air Quality Specialist. The Department did not note any violations at the time of the inspection. On December 18, 2015, the above facility was inspected jointly by me (Jesse Parihar) and air quality specialist Philip Sapala. The applicant installed the three (3) Col-Met Paint Spray Booths, a shot and sand blasting unit, and a baghouse prior to receiving authorization from the Department. On December 21, 2015, a notice of violation (NOV) was sent to the applicant for violating 25 Pa. Code §127.11. The applicant requested to resolve the case without imposing any penalty as these sources were non-operational and there have been no additional compliance issues at the facility. On January 11, 2016, the Department's Enforcement Section closed out the case. There were no pending violation issues or new violation issues with the facility.

The Notice of Intent to Issue will be published in the PA Bulletin for a 30-day public comment period. The proposed Operating Permit renewal will be submitted to GapVax Inc. for review as well as the Department's Air Quality Specialist and District Supervisor for this facility. It is my recommendation that the State Only Operating Permit renewal for GapVax Inc./ Johnstown Plant, SOOP 11-00433, be issued.