

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

September 16, 2015

SUBJECT: **Syntheon, Inc.**
 Buncher Commerce Park, Building #25
 Leetsdale, PA 15056
 Allegheny County

Minor Modification to Synthetic Minor Source Operating Permit No. 0695a

TO: Sandra L. Etzel
 Chief Engineer

FROM: Melissa Jativa
 Air Quality Engineer

FACILITY DESCRIPTION:

Syntheon, Inc. is a manufacturing facility at the Buncher Commerce Park producing expanded polystyrene beads used for fill in specialty cushions, pillows, and other soft figurines. The facility is a synthetic minor source of volatile organic compounds (VOC's), and a minor source of nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), particulate matter <10 µm in diameter (PM₁₀), sulfur dioxide (SO₂), and hazardous air pollutants (HAP's) as defined in §2101.20 of Article XXI.

MINOR MODIFICATION DESCRIPTION:

The synthetic minor source operating permit for this facility was renewed on March 24, 2015. This minor permit modification was initiated by Syntheon. Syntheon submitted to the Department a brief description of the change including the emissions resulting from the change, proposed language for revising the Operating Permit conditions proposed to be changed, and certification by the responsible official that the proposed modifications meet the criteria for use of the minor permit modification procedures in §2103.14.c. After review of the application, the Department agreed that the use of ARCEL resin meets the Article XXI definition of a minor modification as it incorporates a change in *de minimis* emissions (§2103.14.e.4.E) of less than 1 tpy VOC.

The minor modification permits Syntheon to process one million pounds of ARCEL resin (polystyrene/polyethylene copolymer). The foaming agent (pentane) of the ARCEL resin material will not exceed 10.5 wt%. Following pre-expansion of the ARCEL, the material would continue to off-gas ("age") in the silo room until the pentane content of the pre-expanded material is less than 1.5 wt%. All pentane exhausted in the pre-expanders and silo age room is routed to the RTO.

Changes were made to the issued synthetic minor source operating permit renewal. Specifically, the following changes were made:

- Conditions II. and V.A.– changed the maximum capacity from 12.48 million pounds of expanded material per year to 13.48 million pounds of expanded material per year.
- Condition V.A.1.f – Added a maximum capacity of 1 million pounds of expanded polystyrene/ polyethylene copolymer material per year and 3,000 pounds per hour.
- Condition V.A.1.g – added a maximum capacity of 7,000 pounds per hour of total expanded material.
- Condition V.A.1.i – Added a pentane limit of 10.5% for the polystyrene/ polyethylene copolymer.
- Condition V.A.1.j – increased the annual limit of VOCs by 0.9 tons and increased the hourly limit of VOCs by 3.3 pounds.
- Condition VIII. – changed the emission limit summary from 26.4 tpy VOC’s to 27.3 tpy VOC’s.

The VOC emission changes were calculated as follows:

Short term:

ARCEL pre-expansion rate: $3,000 \text{ lb/hr} \times (0.105-0.015) \times (1 - 0.98) = 5.4 \text{ lbs/hr}$

EPS pre-expansion rate: $2,000 \text{ lb/hr} \times (0.068-0.015) \times (1 - 0.98) = 2.1 \text{ lbs/hr}$

Potential increase in VOC hourly emissions = $5.4 \text{ lb/hr} - 2.1 \text{ lbs/hr} = \mathbf{3.3 \text{ lbs/hr}}$

Long term:

ARCEL pre-expansion rate: $1,000,000 \text{ lb/yr} \times (0.105-0.015) \times (1 - 0.98) \div 2000 \text{ lbs/ton} = \mathbf{0.9 \text{ tpy}}$

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit application, and the facility is not in violation of the provisions of Article XXI, §2102.04.k. The amended synthetic minor source Operating Permit for Syntheon should be approved with the emission limitations, terms and conditions in Permit No. 0695a.