

New York State Department of Environmental Conservation

Division of Environmental Permits, Region 3

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January 15, 2015

John Giardiello, Director
Town of Orangetown ZBA
20 Greenburg Road
Orangeburg, New York 10962

Re: Anellotech Inc Site Plan – Addition to Building 123 Pearl River (Pfizer Campus)
Proposed Research and Development Facility
Town of Orangetown, Rockland County

Dear Mr. Giardiello:

This is in response to the Town of Orangetown Zoning Board of Appeals notice dated November 24, 2014 regarding the proposed Anellotech Site Plan – Addition to Building 123 Pearl River Pfizer Campus. Based upon the information provided, the proposal consists of a Research and Development facility that will produce organic chemicals from sustainable and renewable biomass.

Based upon our review of the circulated documents, the New York State Department of Environmental Conservation (DEC) provides the following comments:

1. **Air Resources** – Research and Development facilities are exempt from Air permitting requirements under 6 NYCRR Part 201. However, Department staff have reviewed the submitted documents with respect to permitting guidelines found within 6 NYCRR Part 212, General Process Air Sources. See the attached comments prepared by DEC R3 Division of Air.
2. **Materials Management** – This facility will be subject to solid waste permitting. However, the Department requires additional information in order to determine if the project is eligible for coverage under a Research, Development, and Demonstration Permit, or if a full Part 360 Permit for Solid Waste Management Facilities will be required. By copy of this letter we are making the project sponsor aware of the following information required by the Department in order to make that determination:
 - i. Type of waste (biomass) that will be accepted at the facility. A description of the components of the waste and their origin must be given;
 - ii. The amount of waste per day that will be received at the facility;
 - iii. A flow diagram of the process with a brief description of each piece of equipment and its function;

SEQR LEAD AGENCY DESIGNATION
Anellotech, Inc. – Proposed Research and Development Facility
Town of Orangetown, Rockland County

- iv. A description of any bi-products (other than BTXs and ash) that will be generated;
- v. Characterization of the ash (hazardous or non-hazardous);
- vi. Disposal location of the ash
- vii. Days and time of operation;
- viii. Number of employees;
- ix. Approximately, how long the research and development phase will last and when would full scale operation begin;
- x. The intended use of the final products.

Questions regarding Part 360 requirements should be addressed to James Lansing at (845) 256-3123.

Thank you for providing the Department with the opportunity to provide these comments with regard to this proposal. If you have any questions or comments about this letter, please contact me at (845) 256-3040.

Sincerely,



Joseph R. Murray
Environmental Analyst
Division of Environmental Permits

enc: Comments prepared by NYSDEC R3 Division of Air

cc: G. Sweikert, DEC R3 Air
J. Lansing, DEC R3 Materials Management
Anellotech, Inc.

Anellotech

The DEC Region 3 DAR has received a request for review the Anellotech expansion project from the Town of Orangetown Zoning Board of Appeals. Anellotech is a Research and Development company that is proposing to build a process development test facility to measure the yield of mixed benzene/toluene/xylene (BTX) samples made from sustainable biomass.

Research and Development activities under the State Air regulations are defined as;

The primary purpose of such activities is to conduct research and development into processes and products, where such activities are conducted under the close supervision of technically trained personnel. Research and development activities do not include activities whose primary purpose is to produce commercial quantities of materials.

The Department has no Air permitting jurisdiction since Research and Development is exempt under 6NYCRR PART 201.

§201-3.1 Applicability

(a) Except as provided in subdivision (c) of this section, the owner or operator of an emission source listed as an exempt or trivial activity in this Subpart is exempt from the registration and permitting provisions of Subparts 201-4, 201-5, and 201-6 of this Part.

(44) Research and development activities, including both stand-alone and activities within a major facility

The owner or operator of an emission source or activity that is listed as being exempt may be required to certify that it is operated within the specific criteria described in this Subpart. The owner or operator of any such emission source or activity must maintain all records necessary for demonstrating compliance with this Subpart on-site for a period of five years, and make them available to representatives of the department upon request.

The project was reviewed under DEC permitting guidelines of Part 212(Air Toxics).

Anellotech's proposed exhaust vent pipe parameters and Benzene emission rates are listed in the tables below. The emission rates assume a 98% benzene abatement. Projected actual benzene destruction percentage is 99.5% from the catalytic oxidizer.

Anellotech: Proposed Exhaust Vent Pipe Parameters				
<i>Height*</i>	<i>Inner Diameter</i>	<i>Exit Temperature</i>	<i>Plume Exit Velocity</i>	<i>Flow Rate</i>
99.08 ft	0.25 ft	751.7 °F	36.09 ft/s	106 ACFM

*Height value is from the ground. Vent pipe will be located on top of an 84-foot-tall building.

Anellotech: BTX Emissions (from proposed exhaust vent pipe)					
Emission Rate (lb/hr)			Potential To Emit (lb/yr)*		
Benzene	Toluene	Xylenes	Benzene	Toluene	Xylenes
0.00183	0.00074	0.00006	16.03	6.44	0.54

*Potential to emit calculation is based on 8760 hours of operation per year (operating 24 hrs/day, 365 days/year).

The emissions of air pollutants from the facility will be controlled using a catalytic oxidizer which is the same kind of technology used to treat car & truck mobile emission sources. This technology is proven to be very reliable since its introduction in 1975. They propose to monitor the performance of the converter by continuous monitoring of the delta T across the unit. They propose to continuously monitor the signal from the oxidizer's air blower. These two measurements will tell if the oxidizer is mechanically working and that hydrocarbon oxidation reaction is occurring. The facility will commence shutdown procedures if these measurements show the oxidizer is not properly working.

Anellotech: Benzene Concentration Analysis

The table below compares the modeled values of Anellotech's benzene emission concentrations with the state and federal guidance standards. Modeling was conducted by NYSDEC Division of Air Resources personnel.

DEC standard modeling utilizing the BEE-Line AerScreen program produced a short term (1 hour) maximum concentration of 0.072 $\mu\text{g}/\text{m}^3$. DEC personnel utilized specific terrain and meteorological data unique to the facility's location. The model shows a concentration level that is 18,000x less than the DEC's short term guidance concentration (SGC).

When the modeled annual value is compared to the state and federal standard limits, the projected maximum annual concentration is shown to be 18x lower than both the DEC's annual guidance concentration (AGC) and the EPA's "one in a million" cancer risk level³ (E-6). See attached map for concentration gradient.

Benzene Emission Concentrations	Maximum Short term, 1 hour ($\mu\text{g}/\text{m}^3$)		Maximum Long term, 1 year ($\mu\text{g}/\text{m}^3$)
<i>DEC Modeling</i>	0.072		0.0072
<i>DEC Guidance Concentrations</i> ¹	1300		0.13 ⁴
<i>EPA Cancer Risk Levels</i> ² ($\mu\text{g}/\text{m}^3$)	1 in 10,000 (E-4) 13.0	1 in 100,000 (E-5) 1.30	1 in 1,000,000 ³ (E-6) 0.13

1. NYSDEC derived Short Term and Annual Guidance Concentrations (Benzene).
2. EPA Integrated Risk Information System, II.C. Quantitative Estimate of Carcinogenic Risk from Inhalation Exposure, II.C.1.2. Extrapolation Method (Benzene).
3. EPA Definition, “1 in a million cancer risk”: A risk level of 1 in a million implies a likelihood that up to one person, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the specific concentration over 70 years (an assumed lifetime). This risk would be an excess cancer risk that is in addition to any cancer risk borne by a person not exposed to these air toxics.
4. DEC’s Annual Guidance Concentration uses the same “1 in a million” cancer risk concentration as EPA’s E-6 range.

Toluene and Xylene have significantly higher acceptable exposure limits compared to benzene, are present at considerably lower concentration, thus making the public’s risk for these even smaller. The State of New York has published a list of hazardous chemical short term (SGC) and annual lifetime (AGC) reference concentrations and the list includes toluene and mixed xylenes. The link to the list is;

http://www.dec.ny.gov/docs/air_pdf/agcsgc14.pdf

Summary

Anellotech is an R&D facility and is exempt from Air permitting requirements

Research and development activities do not include activities whose primary purpose is to produce commercial quantities of materials.

Anellotech must maintain all records necessary for demonstrating compliance on-site for a period of five years, and make them available to representatives of the department upon request. These records will include verification of all emission rate parameters used in model.

Facility will install and monitor control equipment.

Potential Benzene emission rate of less than 20 pounds per year. Toluene and Xylene will be present in lower concentrations than benzene.

When the modeled annual value is compared to the state and federal standard limits, the projected maximum annual concentration is shown to be 18x lower than both the DEC's annual guidance concentration (AGC) and the EPA's "one in a million" cancer risk level ³ (E-6).

Anellotech: Benzene, Max 1 Hour Concentrations

Max 1 Hour Conc: 10m, 0.072 ug/m³

