



**Review for the Town of Orangetown, NY
Of Anellotech Air Emissions**

January 21, 2015

Summary of Triumvirate Environmental

Executive Summary

Triumvirate is a rapidly growing, multi-dimensional environmental services firm, headquartered in Somerville, Massachusetts, offering comprehensive services that serve the full complement of our clients' regulatory compliance needs. The depth and breadth of our professional services provide a "one-stop shop" with a menu of bundled services unparalleled in the industry. We are experts in all facets of Environmental Health and Safety (EH&S) regulatory compliance and an industry leader in the hazardous materials management and transportation market.

Founded in 1988, the Triumvirate provides comprehensive services including multi-media EH&S compliance consulting, onsite support, engineering and remediation, decommissioning, wastewater, field service, and waste management. We believe that our approach is predicated upon our client's overall business objectives, incorporating financial aspects in combination with risk management, technical, and compliance-related needs.

Distinguished by our long-term, partnership philosophy, we provide tailored environmental services to industrial, higher education, healthcare, and life sciences clients. To better integrate with your business, we have national, corporate divisions dedicated to each industry.

We are a customer-intimate focused organization employing nearly 400 environmental health and safety professionals serving four primary vertical markets – industrial, including high technology and energy/utilities, colleges and universities, life science and healthcare.

Corporate Qualifications

Triumvirate's team of EH&S Compliance Advisors are well qualified to provide the requested services based on our expertise with the federal, state, and local regulatory requirements specific to your facilities and operations. Our consulting services are designed to meet the needs of your specific EH&S compliance programs, utilizing the most efficient and cost effective staffing strategies.

Triumvirate provides assistance for compliance with applicable regulatory requirements including, but not limited to:

1. **CWA** - Process wastewater discharge permit and pretreatment requirements in accordance with Clean Water Act regulations set forth by the Massachusetts Water Resource Authority (MWRA), Massachusetts Department of Environmental Protection (MassDEP), and U.S. Environmental Protection Agency (EPA), including NPDES permitting, Stormwater Pollution Prevention Plan development, implementation and training, Sewer Use permitting and compliance oversight, and full facility audits;
2. **CAA** - Air emission permitting and reporting requirements in accordance with Clean Air Act (CAA) regulations as set forth by the MassDEP and U.S. EPA, including Major Source permitting, Limited and Comprehensive Plans, Restricted Emissions Status, Source Registration, and Risk Management Plans;

3. **EPCRA/TUR** - Chemical inventory and release reporting for hazardous materials above Threshold Reporting Quantities as required by Emergency Planning & Community Right-to-Know Act (EPCRA), including Tier II reporting and SARA 313 Toxic Chemical Release Inventory Reporting, and MA Toxics Use Reduction Act reporting and plan development;
4. **DOT** - U.S. Department of Transportation (DOT) and International Air Transport Agency (IATA) hazardous material/waste and dangerous goods shipping requirements, including development of facility shipping protocols, audits, hazmat transportation security plan development and training and onsite assistance for packaging in accordance with IATA;
5. **RCRA** - Hazardous and Universal waste management requirements set forth by the MassDEP and U.S. EPA, including onsite program assistance, Contingency Plan development and training, biennial reporting, and employee training;
6. **OSHA** - Employee safety and health programs and practices in accordance with the Occupational Safety & Health Agency (OSHA) Agency standards for industry (e.g., Hazard Communication, Emergency Spill Response, Respiratory Protection, Electrical Safety, Confined Space Entry, Noise Protection, etc.);
7. **Fire Prevention** - Flammable materials storage in conformance with local Fire Department and state fire prevention regulations including permitting for storage and compliance with the Hazardous Materials Processing regulations;
8. **ISO 14001 and OHSAS 18001** – International standards for the establishment and implementation of Environmental Management Systems and Safety Programs, including program development, tracking, implementation and maintenance.
9. **Chemical Facility And Counter-Terrorism Act** – Identification and establishment of programs for Chemicals of Interest as determined by the U.S. Department of Homeland Security, including chemical inventory review, Top Screen assistance and security planning;
10. **Oil Pollution Prevention** requirements for Spill Prevention Control & Countermeasures planning as required by the U.S. EPA, including SPCC Plan development, facility inspections, and full compliance audits.

Summary of Anellotech Findings

Triumvirate was retained by the Town of Orangetown to evaluate the proposed addition to Anellotech and the potential impact from emissions from the site to the general public. Triumvirate reviewed documentation supplied by the Town of Orangetown, Anellotech and the New York State Department of Environmental Conservation.

Introduction

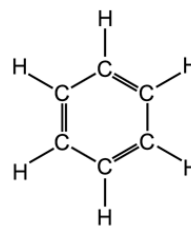
Anellotech is a research and development (R&D) company that is proposing to build a process development test facility as an addition to Building 123 Pearl River (Pfizer campus). This new addition is referred to as DS3 test facility.

With this new addition, Anellotech intends to turn organic waste materials (other than food) into a benzene/toluene/xylene (BTX) mixture.

Based on information provided by Anellotech, Triumvirate Environmental understands that this facility will be used for research and development purposes only. Therefore, according to the New York State Air regulations, the facility is exempt from air permitting jurisdiction under 6NYCRR PART 201.

After extensive review, independently and with the information supplied by Anellotech, we have come to the following conclusions:

Benzene Fact Sheet



Chemical Information:

Is a colorless or light yellow liquid at room temperature.

Has a sweet (petroleum-like) odor.

Is highly flammable.

Is a carcinogen (long-term exposure) according to EPA and NIOSH.

Causes skin and eye irritation (short-term exposure).

Evaporates into the air very quickly.

Vapor is heavier than air and may sink into low-lying areas.

Dissolves only slightly in water and will float on top of water.

Common Sources of Benzene

Benzene is formed from both natural processes and human activities.

Natural Sources: volcanoes and forest fires.

By-Products of: crude oil, gasoline, and cigarette smoke.

Benzene is widely used in the United States. It ranks in the top 20 chemicals for production volume.

Industrial Uses: making plastics, resins, and nylon and synthetic fibers, some types of lubricants, rubbers, dyes, detergents, drugs, and pesticides.

Types of Exposure to Benzene

High Exposure: Indoor Air

Cigarette smoke, motor vehicle exhaust, smoke from wood burning fires, petroleum-based household products

Medium Exposure: Outdoor Air, Groundwater and Drinking Water

Exhaust from motor vehicles, motor vehicle service stations; contamination from leaking storage tanks (gasoline and petroleum products).

Low Exposure: Soil and Sediment

Benzene evaporates rapidly and does not accumulate in soil. Low concentrations may be detected if a gasoline or petroleum spill occurs.

Benzene in the environment does not build up in plants and animals.

The seriousness of poisoning caused by benzene depends on the amount, route, and length of time of exposure, as well as the age and preexisting medical condition of the exposed person.

The use of Benzene is highly regulated by OSHA, DOT, EPA, NIOSH ADGIH, NFPA, and ARC.

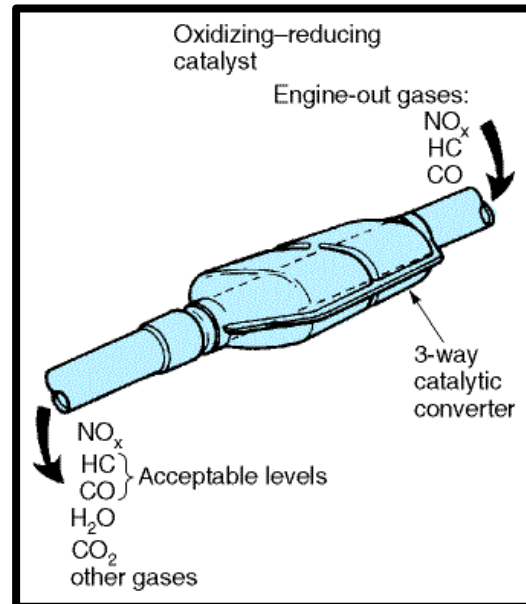
Environmental Impact on Community

If Anellotech was operating the DS3 test facility at maximum operating limits (24 hours/day, 365 days/year), the projected emission, after the control device, are as follows:

<i>Chemical</i>	<i>Pounds per Year</i>	<i>% of Total</i>
Benzene	15	56%
Toluene	10	37%
Xylene	2	1%
BTX (Total)	27	

These numbers represent potential emissions from the facility after passing through an emission control device. The facility proposes to install a catalytic oxidizer that will remove $\geq 98\%$ of the chemicals from the system's by-product. This control device is an integral part of the entire process.

The catalytic oxidizer operates similarly to the catalytic converter used in all motor vehicles. The figure here shows the basic mechanics of a catalytic converter.



Benzene will be the largest constituent of the emissions from Anellotech. Triumvirate Environmental focused the research on benzene for this reason.

Comparison of Anellotech Proposed Benzene Emissions to Common Benzene Exposures

	Anellotech	Automobiles	Lawnmowers
lbs/hour	0.0017	0.254	0.114
lbs/year	15	2225	995

Assuming this equipment is running 24 hours/day, 365 days/year.

In comparison, a person who smokes one pack of cigarettes per day/per year, directly ingests 1 pound of benzene.

Emission Exposures Based on Distance

Distance in Meters	micrograms/hour
2	0.072
163	0.065
326	0.059
500	0.046
750	0.035

1 pound = 453592370 micrograms

This table was based on air dispersion modeling. Based on benzenes emission rate in 1 hour, the recordable levels decrease as the distance from the vent pipe. As mentioned before, benzene readily evaporates in ambient air.

In Conclusion:

Based upon the constituents of the emissions properties, we focused upon benzene since this material will be the predominant material emitted. We reviewed data supplied by Anellotech, as well as from the Environmental Protection Agency, Occupational Safety and Health Agency and Center for Disease Control to assist in our conclusion of the proposed addition.

In our professional opinion, the level of benzene potentially emitted from the facility is below any regulatory levels and therefore, poses minimum if any potential impact to the surrounding community. This information is based upon readily published EPA Emission Levels for the State of New York and nearby community.