



FACT SHEET

Website: <http://www.dec.ny.gov/chemical/94368.html>

December 2013

Have questions? See
Who to Contact
below

Quasar Anaerobic Digestion Facilities - Update



Anaerobic digestion facility in Niagara County

Sustainable BioElectric LLC and Sustainable BioPower LLC, two Quasar Energy Group subsidiary companies recently received permits to construct and operate the Niagara BioEnergy and Buffalo BioEnergy Anaerobic Digestion Facilities in the Towns of Wheatfield and West Seneca, respectively. The anaerobic digestion facilities are designed to convert certain approved waste products into biogas, that is then converted into electricity.

What does an Anaerobic Digestion Facility do?

The anaerobic digestion facilities will accept manure, food waste, fats, oils, greases, sludges resulting from the treatment process at wastewater treatment plants (biosolids), energy crops, glycerin, stillage and other by-products from the production of ethanol and bio-diesel. The biosolids received are tested prior to acceptance at the anaerobic digestion facilities.

Once accepted, these solid and liquid biomasses are combined and ground into smaller pieces, and then sent through an anaerobic digestion process which takes up to 30 days to complete. The process generates biogas (primarily methane) which is converted to electricity by an engine located at the digester. The electricity is used onsite and any excess electricity is sold.

In addition to the gas, the digester also produces a digested liquid material, which can be used as a fertilizer on farm fields. The digested material, called digestate, must be tested prior to land application or storage and, if acceptable, would be trucked to either the land application site or a storage facility. The digestate is a non-hazardous material. Equate is the commercial name for the liquid (digested material) that comes from the anaerobic digestion facilities operated by the Quasar Energy Group subsidiaries.

Are there facilities like this in other areas?

Quasar operates a number of digesters in Ohio and also on a farm in western Massachusetts. The company's website www.quasarenergygroup.com contains additional information on these other operations.

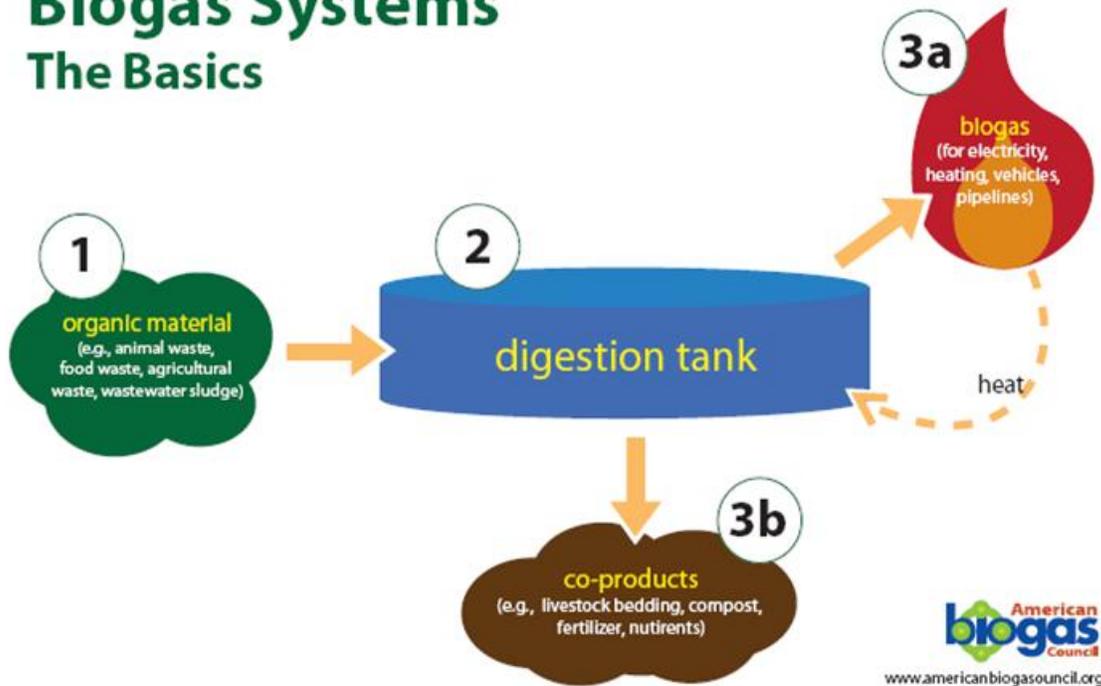
New York State currently has 139 Publicly Owned Treatment Works (POTWs) that anaerobically digest their sludge; some of these POTWs land-apply the resultant biosolids. Of the POTWs in the State, more than 100 currently either land apply or compost their biosolids.

New York has been regulating these practices for more than 30 years and has long established standards for pathogen treatment, pollutant limits, and site controls to address the potential human health and environmental concerns associated with this practice.

What is Anaerobic Digestion?

Anaerobic digestion is a naturally occurring biological process in which large numbers of anaerobic bacteria convert organic matter into methane and carbon dioxide (a mixture called biogas) in the absence of air. It is a widely used biological process for treating wastewater solids. This process stabilizes the organic matter in wastewater solids, reduces pathogens and odors, and reduces the total solids/sludge quantity by converting part of the volatile solids fraction to biogas. Anaerobic digestion results in a product that contains stabilized solids, as well as some available forms of nutrients such as ammonia-nitrogen. [USEPA Biosolids Technology Fact Sheet – Multi-State Anaerobic Digestion http://water.epa.gov/scitech/wastetech/upload/2006_10_16_mtb_multi-stage.pdf]

Biogas Systems The Basics



What types of permits have been issued?

Solid waste and air pollution control permits have been issued for the anaerobic digestion facilities located on Liberty Drive in Wheatfield and North America Drive in West Seneca. A solid waste permit has also been issued to Quasar subsidiary Sustainable BioElectric LLC for the land application of the digestate on ten (10) specific farm fields in various Niagara County municipalities (Cambria, Lewiston, Pendleton, Wheatfield and Wilson). There are two permit modification applications currently under review with DEC to add additional specific fields to this permit. These additional fields are located in various municipalities in Niagara, Erie and Wyoming Counties. Any field on which the company wants to land apply the digestate must be approved by DEC prior to land application of the material. There is also a solid waste permit application under review with DEC for an approximately 1 million gallon storage tank in the Town of Marilla to hold the digested material

during times of year when it cannot be land applied directly from the digestion facility.

What conditions is Quasar required to meet under their permit?

The design and operation of storage and land application facilities for agricultural use of septage, biosolids, food processing waste and other solid waste is regulated under 6 NYCRR Solid Waste Management Regulations Part 360-4. This includes the digestate generated at the Niagara BioEnergy and Buffalo BioEnergy Anaerobic Digestion Facilities. This subpart of the Solid Waste Management Regulations includes many design criteria, operational and closure requirements to ensure that these facilities are operated in a manner that is protective of the environment and human health. These criteria and requirements include, but are not limited to, the following:

- **Sampling**
 - Each biosolids source and the digestate resulting from the anaerobic digestion process must be analyzed for: Total Kjeldahl Nitrogen, Ammonia, Nitrate, Total Phosphorus, Total Potassium, pH, Total Solids, Total Volatile Solids, Arsenic, Cadmium, Total Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium and Zinc. Nutrient analyses are required to determine the proper application rate to meet but not exceed the needs of the crop grown. Metals (copper, etc.) are compared to standards found in the Part 360 Regulations.

- **Odor Control**
 - A biofilter, which uses moist organic materials to adsorb and then biologically degrade odorous compounds, will be constructed and maintained at both of the digester sites. Also, as stated above, the digestion process stabilizes the solids and minimizes odors by converting methane and carbon dioxide to biogas which is captured at the digesters to create electricity. Odors must also be controlled at the storage and land application sites so that they do not become a nuisance. Some practices for controlling odors at the site of a storage facility include allowing a crust to form on top of the liquid in the storage tank that will naturally capture and contain odors and then loading and unloading the tank from the bottom so the crust is not disturbed and loading the digestate in a below grade receiving hopper to contain odors. At land application sites odor can be minimized by direct injection of the digestate below the surface of the fields.

- **Monitoring of Soil Conditions**
 - Prior to land application, annual soil sampling is required. The soil will be analyzed for the following parameters: pH, arsenic, cadmium, chromium (total), copper, lead, mercury, molybdenum, nickel, selenium, and zinc. Soil analyses are required to determine if soil has metal loading below the required levels outlined in Part 360.
 - A minimum of one analysis is required for every 50 acres, or fraction thereof. Each soil sample must be a composite of a minimum of ten randomly selected sample locations.
 - The soil pH must be adjusted to 6.5 standard units or higher prior to land application.
 - The application rate must not exceed the agronomic rate for the crop grown. Calculations showing the nutrient loading, including nitrogen, phosphorus and potassium are required annually.

- **Land Application Location and Timing Restrictions**
 - Land application is prohibited in areas where groundwater is within 24 inches of the ground surface at the time of application.
 - Land application is prohibited in areas where bedrock lies less than 24 inches below the ground surface.
 - Land application is prohibited on water saturated ground or during heavy rainfall.
 - Land application on snow-covered or frozen ground is only acceptable if applied by direct injection below the land surface.
 - Each area must be staked prior to land application to define the application boundaries.
 - Minimum horizontal separation distances must be maintained between the perimeter of the land application area and property lines, residences, places of business, public contact areas, potable water wells, surface waters, State regulated wetlands and drainage swales.

- **Biosolids Treatment for Pathogen and Vector Reduction**
 - The digestate generated at the Quasar Anaerobic Digestion facilities have been treated through the anaerobic digestion process to reduce pathogens. Digestate containing biosolids must meet standards for pathogens, vectors (e.g. insects, rodents, birds, vermin), and metals in accordance with 6 NYCRR Part 360 Regulations prior to land application.
 - Digestate containing biosolids must be injected below the surface of the land.

- **Transportation**
 - Transportation of the digestate over public roads must be done by a waste hauler permitted pursuant to 6 NYCRR Part 364. The regulatory requirements specified in this Part are designed to protect the environment from potential mishandling of regulated waste from the point of generation to the site of ultimate treatment, storage, disposal or land application.

- **Design and Operation of Storage Facilities**
 - All storage facilities must be completely drained, cleaned and inspected once every 12 months.
 - For surface impoundments, construction must be certified by an engineer licensed to practice in NYS.
 - Minimum separation distances, as described above, apply to storage facilities as well.
 - Maintain two feet of freeboard to minimize the risk of overflow after heavy precipitation events, etc.

Regulatory Information

The anaerobic digestion facilities, any proposed storage tanks or lagoons for the digestate and operations that involve land application of the digestate are highly regulated and are required to meet regulations and permit requirements set by New York State. The solid waste regulations that cover these types of facilities are located at 6 NYCRR 360-1.9(b), 360-1.14 and 360-4 and can be obtained on the DEC website at www.dec.ny.gov/regs/4412.html. These regulations cover permit application requirements, design criteria and operational requirements for these facilities. The anaerobic

digestion facilities are also covered by the air pollution control regulations located at 6 NYCRR 201-5. These regulations are available at www.dec.ny.gov/regs/4301.html.

In addition to meeting state requirements, Quasar Energy Group must also follow all local municipal ordinances and requirements relating to Anaerobic Digestion Facilities. DEC's permitting process ensures that this facility meets all applicable state environmental regulations; local municipal requirements are set separately and remain at the discretion of the municipality or town.

What is DEC's role in this process?

DEC operates as a neutral regulator, ensuring that if a company or individual's activities have the potential to create environmental impact, that these activities undergo a thorough review and permitting process to ensure that applicable regulatory standards are met before any activity occurs. Quasar Energy Group approached DEC because the activities they will undertake require a permit. DEC does not solicit companies to apply for a permit, and does not endorse or promote permit applicants. DEC will not issue a permit unless an applicant's permit application meets all applicable and required state environmental regulations.

Who to Contact

Comments and questions are always welcome and should be directed as follows:

Project Related Questions:

Lisa Porter
NYS DEC
270 Michigan Ave
Buffalo, NY 14203
716-851-7165
region9@gw.dec.state.ny.us