

# Regulatory requirements for anaerobic digesters

Anaerobic digestion is a natural process by which organic material is broken down by bacteria in the absence of oxygen. Anaerobic digestion produces biogas that can be collected and used in energy production.

Digestion of organic materials is not a new concept. The first manure digester was installed in Minnesota in the 1990s. Initially, the focus of digestion was to harvest biogas to power an engine to create electricity. More recently, there has been renewed interest in digestion projects due to its viability as a source of renewable natural gas. This factsheet explains the state environmental regulatory requirements for digesters in Minnesota.

Regulations for digesters in Minnesota are primarily based on the type of organic materials (feedstock) used by the digester. Co-digestion, when two or more feedstocks are combined in a digester, has become more prevalent in digestion projects. Co-digestion crosses the boundaries of multiple programs at the Minnesota Pollution Control Agency (MPCA) and therefore may require multiple permits for the construction and operation of the digestion facility as well as land application of the digested materials.

## Permits for single feedstock digesters

When a digestion project only includes a single feedstock, the permit process is relatively straightforward. The MPCA program that regulates that feedstock will be the lead program to permit the digester and regulate land application of digested material. Typically, the regulations are like those that apply to non-digested feedstocks.

### Manure digesters

A feedlot permit is required for construction of the digester and any associated storage structures before and after the digestion process. A feedlot permit is also required for the operation of a digester that has the manure storage capacity for 1,000 or more animal units.

Commonly, manure-only digesters are located at a feedlot site as that is the source of its sole feedstock. In this situation, the digester can be incorporated into any feedlot permit required for the feedlot facility.

Land application of the digested material will be governed by feedlot rules and any applicable feedlot permit conditions, including those that result from the digester being a part of the feedlot facility's permit.

### Industrial by-product (IBP) digesters

IBP regulations are specific to land application of the IBP and construction, operation, and maintenance of structures used to store IBP prior to land application (e.g., industrial pond).

A general or individual IBP permit is required to authorize land application and storage of IBP. Land application of the digested IBP is governed by the IBP permit. If there is no land application or storage of digested material prior to land application, then an IBP permit will likely not be required.

An aboveground storage tank (AST) permit may be required when the project includes a storage capacity of 1 million gallons or more of other regulated substances. For more information, please refer to the MPCA AST program webpage at: [www.pca.state.mn.us/business-with-us/aboveground-storage-tanks](http://www.pca.state.mn.us/business-with-us/aboveground-storage-tanks).

### Solid waste digesters

For digestion projects only using feedstocks regulated by the MPCA's solid waste program (e.g., source-separated organic material), a solid waste permit may be required. For more information, please refer to the MPCA solid waste program webpage at: [www.pca.state.mn.us/business-with-us/waste-and-recycling](http://www.pca.state.mn.us/business-with-us/waste-and-recycling).

Land application of the digested material will likely be governed by an IBP permit. If there is no land application or storage of digested material prior to land application, then an IBP permit will likely not be required.

## Permits for multiple feedstock digesters (co-digestion)

Various feedstocks are regulated by different programs at the MPCA, and inherently there are some differences in applicable regulations. When a project includes co-digestion, the MPCA must determine how best to implement applicable regulations.

This factsheet focuses on the co-digestion of manure and IBPs. Co-digestion that involves wastes streams not regulated by the feedlot program or the IBP program will be addressed on a case-by-case basis.

### Primarily manure (co-digestion of at least 50% manure)

The MPCA will apply feedlot regulations to manure and IBP co-digestion projects when manure comprises at least 50% of the feedstock volume. When manure comprises at least 90% of the feedstock volume, the digester will be considered a manure-only digester and regulated as described above.

An individual feedlot permit is required for the construction of the facility and to authorize co-digestion. If co-digestion facilities are located at a feedlot site, the digester can be incorporated into the permit required for the feedlot facility provided it is an individual permit. On-site storage of IBP, prior to mixing with manure, may require an additional permit (e.g. AST permit) as it will not be covered by the feedlot permit.

Land application of the co-digested material will be governed by feedlot rules and any applicable feedlot permit conditions, including those that result from the digester being a part of the feedlot facility's permit.

### Primarily IBP (co-digestion of less than 50% manure)

The MPCA will apply IBP regulations to manure and IBP co-digestion projects when manure comprises less than 50% of the feedstock volume. In most respects, the digester will be regulated similarly to an IBP-only digester as described above. Likewise, the co-digested material is considered an IBP, and land application is governed by an IBP permit.

Storage of manure, prior to mixing with IBP, will require a feedlot permit for the construction of the manure storage structure as it will not be covered by the IBP permit.

## Air emission permits for digestion projects

Both single and multiple feedstock anaerobic digestion projects may also require permits for air emissions from the digester or associated components. For more information, please refer to the MPCA air permit program webpage at: [www.pca.state.mn.us/business-with-us/air-permits](http://www.pca.state.mn.us/business-with-us/air-permits).

## Environmental review

Certain proposed projects—based on their nature, size, location, or other factors—must go through an environmental review before any required permits or approvals can be issued. This includes anaerobic digestion projects. Anaerobic digesters are considered fuel conversion facilities within Minnesota rules and subject to mandatory environmental review when they process 25,000 dry tons or more per year of input.

Many manure digesters utilize dairy cow manure. For reference, 25,000 dry tons of input per year is equivalent to the manure produced by more than 8,000 lactating Holsteins or more than 11,000 lactating Jerseys.

For more information on the environmental review program, visit the MPCA website at: [www.pca.state.mn.us/business-with-us/environmental-review](http://www.pca.state.mn.us/business-with-us/environmental-review).

## Getting help or more information

For more information about the feedlot program as well as contact information, visit the feedlot program homepage at: [www.pca.state.mn.us/feedlots](http://www.pca.state.mn.us/feedlots)

For more information about the IBP program as well as contact information, visit the IBP program homepage at: [www.pca.state.mn.us/business-with-us/land-application-of-industrial-by-products](http://www.pca.state.mn.us/business-with-us/land-application-of-industrial-by-products)