Division of Environmental and Financial Assistance
February 2023

Want to Start a Craft Brewery? Know Your Ohio EPA Regulations

Background



The craft segment of the beverage market has grown rapidly in the last few years throughout Ohio. If you are thinking about starting a craft brewery operation, it's important for you to know the environmental and permitting requirements that could apply to your business. This fact sheet will highlight environmental and infrastructure considerations as well as sustainability opportunities for craft breweries.

What environmental regulations apply?

You may be considering an urban location where the brewery will discharge wastewater into the local municipal sewer (called a publicly owned treatment works or POTW). In these situations, the local POTW will determine the requirements that the brewery must follow for discharging to their system. Ohio EPA also regulates other areas and may require permits for activities such as:

- constructing on-site waste water treatment and collection systems;
- direct discharge of wastewater to a stream, river or other "water of the state;"
- discharges of storm water from construction activities if you are building a new brewery or expanding your operations;
- constructing and operating a private well that supplies drinking water;
- air permitting; and
- waste management.

Wastewater requirements

The effluent created from the brewing process is highly organic and can be expensive for POTWs to treat. It's important to know that POTWs are designed to treat sewage and sanitary wastewater, not industrial wastewaters. Wastewater from brewery operations that contains high levels of organics can negatively impact a POTW's treatment process. POTWs are required to meet water quality standards for the treated effluent that is discharged from their plant into rivers, streams or other waterbodies. Because of the challenging nature in treating high strength wastewater from some microbrewery operations, an increasing number of POTWs are implementing an extra surcharge on high strength brewery effluent.

If your craft brewery is not located near a POTW or cannot be connected to a sewer, it will likely connect to on-site treatment, like a septic system. These systems can only handle domestic sewage and wastewater (for example, restrooms and sinks). In this situation, any brewing process wastewater would need to be collected and transported to a POTW for disposal.

If you intend to discharge to a POTW, they may also require pre-treatment of wastewater to reduce contaminants prior to discharging to them. If you are required to install a pretreatment system, you may be required to get a permit-to-install (PTI) from Ohio EPA's Division of Surface Water, along with an indirect discharge permit from the POTW. Additionally, the installation of a holding tank or other wastewater holding or storage/treatment system may also require a PTI from Ohio EPA. For more information, see the ***Division of Surface Water's pretreatment webpage.***

If your brewery will directly discharge process wastewater to a stream, river, lake, pond, marsh or any other waters of the state, then you are required to obtain a National Pollution Discharge Elimination System (NPDES) permit from Ohio EPA. Additionally, an NPDES permit is required if wastewater enters a ditch, storm sewer or other conveyance system that leads to a waterway. For more information, see the ***Division of Surface Water's Individual Wastewater Discharge Permit webpage***.

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Storm water requirements

Any project that disturbs one or more acres of land must obtain a permit to discharge stormwater from the construction site to control sediment and pollutant runoff during rain and snow events. Projects that disturb less than one acre, but are part of a larger development, also need a permit to discharge stormwater. For more information, see Ohio EPA's ***Small Construction Projects Require Storm Water Permits*** fact sheet.

If raw materials, byproducts or waste products are stored outdoors, brewery operations may be subject to ***Ohio EPA's industrial storm water program*** and may be required to obtain an NPDES permit to control storm water at the facility. If your brewery does not store materials outside, you can qualify for a ***No Exposure Certification*** instead of obtaining a storm water permit. For more information, see Ohio EPA's ***Does my small business need a storm water permit?*** fact sheet.

General permit options are available for both construction stormwater and industrial stormwater discharges. To obtain coverage under the NPDES general industrial storm water and/or construction stormwater permit, you need to submit the applicable ***Notice of Intent (NOI) form(s) and application fee(s)*** to Ohio EPA. Additionally, a comprehensive storm water pollution prevention plan (SWP3) must be developed for each discharge before submitting your NOI.

Drinking water requirements

If your brewery relies on its own well that supplies process water and/or water for drinking, cooking, washing hands, washing dishes or bathing, it may meet Ohio EPA's definition of a public water system. A public water system is one that has at least 15 service connections or regularly provides water to 25 or more people for 60 or more days a year. Under these rules, plans for installing or changing a well must be submitted. Additionally, well systems must be tested periodically and the test results reported to Ohio EPA. Contact your ***local Ohio EPA district office***, Division of Drinking and Ground Waters for more information on well system requirements.

Air pollution requirements

An air pollution source is anything that emits air pollution, such as dust, fumes, gases, mist, smoke, vapors or odors. In Ohio, air permits are required for all sources of air pollution unless the source is exempt. A common source of air pollution that may exist at a brewery is grain receiving and handling operations, however, depending on the scale and operations of the facility there may be additional sources. All potential sources of air pollution should be identified and evaluated for permitting applicability. Some sources of air pollution may be ***permanently exempt,*** may be ***permitted by rule*** or may meet the ***de minimis exemption.*** For additional information, see the ***Division of Air Pollution Control's Air Permitting webpage***.

Waste management requirements



You may generate solid waste from your brewery such as spent grains, yeast, trub, diatomaceous earth and packaging. Solid wastes must be sent to a landfill, unless there are recycling or beneficial use opportunities for these wastes, as described later in this factsheet. ***Ohio EPA's Beneficial Use Program*** promotes the diversion of wastes from landfill disposal – contact them to learn more about the land application of the brewing wastewaters on fields, crops or in other irrigation uses.

Some wastes generated by your brewery may be classified as hazardous wastes and require special management considerations. Spent fluorescent bulbs (waste lamps), batteries and mercury-containing devices (for example, thermostats and mercury thermometers) can be considered hazardous waste. These common waste streams can be managed under Ohio's ***Universal Waste rules***. Other wastes that may be common to breweries that could potentially be hazardous are caustic cleaners and disinfectants that cannot be managed through the POTW.

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Opportunities for More Environmental Sustainable Practices

Reducing wastewater and water use

Water use and wastewater generation are big areas of concern for craft breweries. On average, seven barrels of water are consumed for every one barrel produced by the brewery. In addition, 70 percent of incoming water to breweries are discharged as effluent into the sewer system. Calculating water costs with the general rule of thumb that a brewery is paying for it twice (price of incoming water and POTW surcharge) helps drive innovation and encourages water conservation practices.

Craft breweries* have on average the following water use breakdown:

- brew house (25 percent)
- cellars (17 percent)
- packaging (38 percent)
- utilities (20 percent)

* ***Brewers Association Water and Wastewater: Treatment/Volume Reduction Manual***

The first step to increasing efficiency and lowering discharge levels and organic concentration is to ensure proper data collection, measurement and management. The ***Brewers Association*** provides an industry benchmark based on the amount of water used versus beer produced. Installing additional meters at water intensive points of the production process can help identify areas for potential intervention and savings. Specific practices proven effective include:

- fixing leaks;
- closed-loop fermentation cooling vessels;
- cleaning in Place (CIP) system; and
- installing high efficiency spray nozzles.

Another technique to investigate is to side stream high strength waste. This could include spent yeast from the fermenting tanks and proteins, sludge and wort from rinsing spent hops and hot trub. There may be other options to manage these materials, for example, working with a facility that has received Ohio EPA authorization to land apply the material, compost or put in an anaerobic digester. See the solid waste section below for more information.

Solid waste reductions

Some common solid wastes generated from the brewing process are spent grains, diatomaceous earth (filtering agent), spent yeast and trub. Below are some sustainable best practices when dealing with these waste sources. Some of the practices, such as composting and beneficial use, may require authorizations from Ohio EPA.

Spent grains:

- animal feed
- bakery ingredients
- compost
- biogas generation

Diatomaceous Earth:

- reduce use when possible
- replacement with cross-flow filtration technology
- compost
- additive to construction materials

Spent Yeast and Trub:

- save and re-use
- animal feed
- compost

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Energy reductions

Energy use and management are important costs to consider and reduce for craft breweries. Energy use in breweries varies depending on size, location and types of product. The largest electrical load is from refrigeration while the brewing process consumes the largest amount of natural gas. Other large uses for electricity include compressed air and packaging.

Like water use and solid waste reductions, the first and most important step in energy management and reductions is measuring and accounting for its use.

Some best practices to reduce energy include:

- repairing steam and air leaks;
- shutting down equipment and lighting when not used;
- lighting retrofits;
- variable speed drives (process, HVAC and support applications);
- new insulation; and
- purchasing Energy Star equipment.

Where to get more help

For additional best practices and details, the Brewers Association created four sustainability manuals and benchmarking tools to help brewers measure sustainability and cost savings efforts and activities.

Water and Wastewater: Treatment/Volume Reduction Manual from the Brewers Association
Includes guidance documents, checklist and spreadsheet tools to track water use, find water efficiency opportunities and understand the full cost of water use.

Solid Waste Reduction Manual from the Brewers Association
Includes workplace recycling program guidance, on-site composting checklist and a solid waste analysis spreadsheet.

Energy Usage, GHG Reduction, Efficiency and Load Management Manual from the Brewers Association
Includes guidance documents, checklists and spreadsheet tools for energy audits and efficiency projects.

Wastewater Management Guidance Manual from the Brewers Association
Takes a more advance look at craft brewing wastewater management and strategies.

Ohio EPA's ***Office of Compliance Assistance and Pollution Prevention*** (OCAPP) can help brewers. OCAPP offers free and confidential on-site compliance assistance, waste assessments and has extensive resources available with technical information to help identify ways to reduce waste and save money.

Another tool available to brewers is Ohio EPA's Ohio Materials Marketplace. The ***Ohio Materials Marketplace*** is an online platform designed to facilitate cross-industry materials reuse among Ohio businesses and organizations. This free platform allows Ohio businesses and other organizations to easily post by-product and waste materials available to be utilized as another organization's production input. This could include many of the typical wastes generated by brewers. For more information, visit ***Ohio Materials Marketplace information webpage*** or contact us at (800) 329-7518.

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Central Office
Lazarus Government Center
50 W. Town St., Suite 700
Columbus, OH 43215
(614) 644-3020

Central District Office
Lazarus Government Center
50 W. Town St., Suite 700
Columbus, OH 43215
(614) 728-3778
(800) 686-2330

Northwest District Office
347 N. Dunbridge Rd.
Bowling Green, OH 43402
(419) 352-8461
(800) 686-6930

Southeast District Office
2195 E. Front Street
Logan, OH 43138
(740) 385-8501
(800) 686-7330

Northeast District Office
2110 E. Aurora Rd.
Twinsburg, OH 44087
(330) 963-1200
(800) 686-6330

Southwest District Office
401 E. Fifth St.
Dayton, OH 45402
(937) 285-6357
(800) 686-8930

Toll-free numbers are for citizens with questions or concerns about environmental issues.
The regulated community should use the business line for routine business.
Spills and emergencies should be reported to (800) 282-9378.