

ETHANOL FACILITY REGULATORY ASSISTANCE GUIDE

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Compliance Information for Ethanol Production in Iowa

► PROVIDING SOUND REGULATORY ADVICE TO HELP EMERGING TECHNOLOGIES GROW IN IOWA

This guide is a general outline for ethanol facilities on potential regulatory requirements and regulatory agency approval times. Much of the information is related to environmental permitting by the Iowa Department of Natural Resources (IDNR). Your facility's permit requirements may differ depending upon the specific operations planned. Information is also provided about regulatory requirements administered by the Iowa Workforce Development, Labor Services Division and the Iowa Department of Public Safety, Fire Marshal Division. Requirements established by local units of government may also apply. Be sure to contact the city in which the facility will be located or the county if the facility is not located in a city, to identify these requirements.

Environmental

For the most part, air, water, and land quality permitting requirements are federal standards administered by the Iowa Department of Natural Resources (IDNR). Permits formally establish requirements with which owners and operators of ethanol facilities must comply.

A pre-application meeting with the IDNR is strongly recommended so that the ethanol facility can work with the IDNR to identify air, water, and land quality permitting requirements, application processes and timelines. Communicating with the IDNR, your employees and contractors, and other local, state, and federal agencies is vital to ensuring that your facility is in compliance.

Air Quality

Standard Air Construction Permit - The type of air quality permits needed for an ethanol processing facility is determined by the potential emissions from the facility. Construction permits must be applied for and obtained prior to beginning construction. There are several activities and processes that ethanol plants typically require construction permits for including:

- Grain receiving, grinding/milling, grain transfer, grain storage and distillation
- Ethanol storage tanks, boilers, additive storage tanks, fermenters, and diesel fire pump
- Cooling tower, ethanol truck load-out, ethanol rail load-out
- Drying of distillers dried grains with solubles (DDGS), DDGS storage and loadout, methanators
- Coal receiving, storage, conditioning, and fly-ash handling

Some emission control options that an ethanol plant will need to consider are thermal oxidizer on DDGS dryers, flares on ethanol loadouts, particulate filters on grain bins, and at a minimum low NO_x (nitrogen oxides) burners in any boilers. If burning coal a fluidized bed, selective non-catalytic reduction (SNCR), lime injection and a bag house should be considered.

PSD Air Construction Permits - Under the federal Prevention of Significant Deterioration (PSD) program, an ethanol facility that will emit one hundred or more tons of any criteria pollutants annually must have a PSD air permit.

An ethanol facility generally considers installing pollution controls for volatile organic compounds (ozone), and NO_x (nitrogen oxides) in order not to exceed PSD thresholds. The average IDNR time to approve a PSD permit is six to nine months. The ability of IDNR to approve a PSD permit within six months is based on a number of criteria. Visit <http://www.iowadnr.com/air/prof/const/const.html> for more information on IDNR guidelines.

Operating Permit (Title V) - If the ethanol facility has potential emissions that define it as a "major source" for a federal operating permit (also known as a Title V permit) the facility must apply for this permit within a year of starting operations. Visit www.iowalifechanging.com/business/downloads/airquality.pdf to find out more.



Water Quality

Wastewater Permits - Types of wastewater permits needed for an ethanol facility depend on:

- Where the facility is located
- Source of the water supply
- Types of processes used
- Resulting wastewaters
- How wastewaters are handled

An ethanol facility's wastewater is typically comprised of cooling tower water, boiler "blowdown water" and water softener discharge. Boiler blow down occurs when water is periodically discharged from the boiler to reduce energy consumption and to prevent suspended and total dissolved solids from forming sludge.

Industrial Pretreatment Agreement - If the ethanol facility plans to use the city's publicly owned treatment works (POTW), the volume and characteristics of the wastewater will determine if an industrial pretreatment agreement is required. The agreement identifies the level of pretreatment required of the facility and the quantity of wastewater it may send to the POTW.

Discharge limits are designed to prevent a discharge from interfering with effective POTW operation or passing wastewater through in amounts detrimental to fish and other aquatic life. Visit <http://www.iowadnr.com/water/pretreatment/index.html> for more information about the pretreatment program and treatment agreements.

Wastewater Construction Permit - If an ethanol facility selects to construct a pretreatment lagoon or wastewater treatment facility it must apply for a wastewater construction permit. The permit application should be submitted to IDNR at least four months prior to the start date of construction. Visit www.iowadnr.com/wastewater/index.html for information on IDNR waste water construction permits.

NPDES Wastewater Operation Permit - If an ethanol facility plans to discharge wastewater to a stream or by land application it must apply for a National Pollutant Discharge Elimination System (NPDES) operation permit prior to discharge. This permit specifies operating limits on the types and amounts of pollutants that can be discharged, and sets monitoring and reporting requirements. The average IDNR time to approve a NPDES operation permit is six months. Administrative rules require the permit application be submitted to IDNR six months prior to the anticipated start date of discharge.

Visit <http://www.iowadnr.com/water/npdes/index.html> for more information on IDNR wastewater operation permits.

NPDES - Domestic Wastewater (Septic) - If the ethanol facility disposes of domestic (human) wastewater in a county-approved septic tank followed by an absorption field with a design flow of 1500 gal/day or less, a NPDES discharge permit is not needed. However, if on-site treatment is followed by surface discharge, a NPDES "General Permit #4" will be required and a Notice of Intent must be sent to the IDNR.

If domestic wastewater volume is more than 1500 gal/day, an individual NPDES permit is required to operate the domestic wastewater treatment system. Visit <http://www.iowadnr.com/water/septic/index.html> for more information on septic system requirements.

NPDES - Stormwater - NPDES general permits cover common conditions associated with the discharge of industrial wastewater. In many cases these permits do not require extensive review by the IDNR. The average IDNR time to approve stormwater permits is seven days.

An ethanol facility is required to apply for stormwater "general permit #1" for stormwater discharge associated with industrial activity. If the facility undertakes any construction that disturbs more than one acre of land, stormwater "general permit #2" is needed. Visit <http://www.iowadnr.com/water/stormwater/index.html> for more information on DNR stormwater permits.

Water Supply Permits - An ethanol facility may opt to have its industrial and domestic water supply needs served by the local municipal or rural water system. If the facility decides to supply its own water, then a number of permits could be needed. These include permits for water withdrawal, well siting and construction, water treatment plant construction and water system operation. Additionally, an operator of the system must meet state certification requirements.

Well siting requires an on-site survey of the area, which can take one to two weeks. The water withdrawal permit requires 45 to 60 days, because public notification is required during that permitting process. Once the design and specifications of the project (including a completed viability assessment) are submitted by a professional engineer licensed in Iowa, the construction permit is routinely issued within one to two weeks. After the system is constructed and inspected, the operation permit is typically issued within one to two weeks. Visit <http://www.iowadnr.gov/water/wse/allocation.html> for more information on water supply permits.



Floodplain - If any part of the ethanol facility or its operations will be located within a floodplain, a floodplain permit is required. Contact IDNR for assistance in determining if any part of the site is located in a floodplain. The permit application should be submitted at least three months (preferably six months) prior to the start date that work begins. Please visit <http://www.iowadnr.com/water/floodplain/index.html> for more information on floodplain permits.

Land Quality

Solid waste such as office waste and packaging for an ethanol facility is normally sent to the county's landfill for disposal. If the ethanol facility opted to dispose of waste on site or, to install aboveground or underground tanks then several permits would be required. Treating, storing or disposing any hazardous waste will also require permits under the federal Resource Conservation and Recovery Act (RCRA). Visit <http://www.epa.gov/region7/waste/> for more information on RCRA permits.

Emergency Planning and Response - It is important that local officials, who will respond to an ethanol facility during an emergency, understand the layout and problems that could be encountered. Potential emergencies may include a medical call, fire or chemical spill. Rural fire departments may not stock alcohol resistant foam for responding to an ethanol spill or fire. Rules of the State Fire Marshal require that each ethanol plant keep on hand alcohol-resistant fire fighting foam of sufficient amount and type to use in fighting a fire involving materials found in the plant. For advice on the amount and type of foam to stock and appropriate storage locations, please contact the local fire department or the State Fire Marshal at 515.726.6145 or by e-mail at fminfo@dps.state.ia.us. It is important that each facility review with the local fire department and county emergency management coordinator emergency response procedures, the plant layout and location of hazardous areas. To identify the emergency management coordinator for your county and for more information, visit http://www.iowahomelandsecurity.org/asp/CoEM_FR/co_em.asp or call Iowa Homeland Security and Emergency Management at 515.725.3231.

Facilities and Equipment – Construction, Installation, and Inspections

Construction - An ethanol plant is defined by the rules of the Fire Marshal as a refinery and therefore the construction of such a facility is subject to the general fire safety requirements for an industrial occupancy, as well as certain additional requirements. These additional requirements include submission of construction plans for the plant to the State Fire Marshal prior to construc-

tion, including construction of additions to an existing plant and maintaining a supply of alcohol-resistant fire fighting foam on the premises, but separated from any area in which flammable liquids are stored. Construction of a plant may also be subject to local fire code and local or state building code requirements. For further information, contact the State Building Code Bureau at 515.725.6145 or by e-mail at bcinfo@dps.state.ia.us and the government of the city or county (if outside of any city) in which the plant will be located.

Above Ground Tanks, Propane, and Non-Soluble Oils - Transportation, storage, handling and use of flammable or combustible liquids such as gasoline, diesel fuel, fuel oil or alcohol (ethanol or methanol) and of liquefied petroleum gas (propane) are regulated by the Iowa Department of Public Safety, Fire Marshal Division. Installation plans must be submitted for an above ground petroleum storage tank (AST) of any size before installation occurs. If an AST will have capacity equal or greater than 1,101 gallons it must also be registered with the State Fire Marshal. Installation plans must be submitted for stationary installations of liquid propane that will store more than 2,000 gallons in an individual tank, or an aggregate of more than 4,000 gallons. Visit <http://www.dps.state.ia.us/fm/flammable/index.shtml> for more information about these requirements and a helpful guide to plan submission.

Also be aware that the local fire department may require submission of an installation plan for a local permit.

U.S. EPA requires that a Spill Prevention, Control, and Countermeasure Plan (SPCC) be prepared, kept onsite, and available for review by EPA for aggregate storage of an AST of 1,320 gallons or more, or for underground storage tank storage of 42,000 gallons or more. Visit <http://www.epa.gov/oilspill/spccguid.htm> for more information.

Boilers, Pressure Vessels - It is helpful to understand the requirements for high pressure boilers and pressure vessels that will be operated at the ethanol facility before the equipment is purchased to prevent unnecessary delays. Contact the Iowa Workforce Development, Labor Services Division at least ten days before you install, repair or alter this type of equipment. Both boilers and pressure vessels are required to pass inspection before operation and then to pass regular inspections. You have the option to have your inspections performed by an authorized inspector employed by an insurance company or by a state inspector. If you choose to use a state inspector, please contact the state two to four weeks in advance. Visit http://www.iowaworkforce.org/labor/boiler_inspection_.htm to find out more about these requirements.



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Elevators, Dumbwaiters and Related Equipment - Before installing passenger elevators, freight elevators, dumbwaiters and related equipment at the ethanol facility, you will need an installation permit from Iowa Workforce Development, Labor Services Division. Submitting your application two months before construction of this equipment will also help prevent avoidable delays. The equipment will also need to pass inspection by state inspectors before it is operated. When scheduling your inspection please contact the state three to six weeks in advance. Visit www.iowaworkforce.org/labor/elevator_forms.htm for helpful information on elevator regulations.

Health and Safety - Planning and designing the ethanol facility consistent with occupational safety and health standards can save time and money once your facility is operational. These standards are administered by the Iowa Workforce Development, Labor Services Division which can provide information to project designers. Partnering with the Occupational Safety and Health Consultation and Education Bureau is another method to save time and money. By preventing worker illnesses and injuries, employers save on hiring, retraining, and worker's compensation costs. Visit <http://www.iowaworkforce.org/labor/iosh/consultation/index.htm> for more information.

Report Spills and Releases - Oil and chemical spills must be reported as soon as possible, but no later than 6 hours after onset or discovery. The IDNR 24-hour emergency response phone number is: 515.281.8694.

Contacts

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