

# Water & Biofuels

One very important consideration for any biofuel plant is the disposal of waste water. Waste water would include such things as process water, sanitary waste water, and non-process waste water, e.g. non-contact cooling water, boiler blow down, etc.

There are several options for disposing of waste water. The decision to choose one option over the others will depend upon several factors: waste water characteristics, location, infrastructure availability, ability to meet discharge limits, etc. Below is a list of the different options and the requirements for each.

## Total Retention Facility (Lagoon/Impoundment system) - Permit Required from DEQ

1. Submit Forms 1 and 616-2SI.
2. A professional engineer licensed in the state of Oklahoma will need to stamp all design work for impoundments.
3. Permit issuance will generally take 4 to 6 months unless a significant number of public comments are received or there are uncorrected deficiencies in the facility's application.

## Discharge to Waters of the State (creek, river, etc) - Permit Required from DEQ

1. Submit forms 1, 2D, and 616-2SI (if necessary).
2. A professional engineer licensed in the state of Oklahoma will need to stamp all design work for treatment units and/or impoundments.
3. Permit issuance will generally take 5 to 11 months for a minor facility.
4. If the facility discharges Dissolved-Oxygen (DO) demanding substances, the facility will have to complete and submit a DO model for the receiving stream to the DEQ for approval. Once the DEQ approves the model, it will be sent to EPA for technical review. The model results are included in a proposed Water Quality Management Plan (WQMP) update, which requires a 45-day public notice, comment period, and opportunity for a public meeting. This process can take up to 4 to 6 months to complete.

## Discharge to Publicly Owned Treatment Works (POTW) with an Approved Pretreatment Program - Permit Required from City

1. To determine if a particular city system has an approved pretreatment program, please call DEQ.
2. Obtain permit from city.

## Discharge to Publicly Owned Treatment Works (POTW) without an Approved Pretreatment



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## Program - Permit Required from DEQ

1. Submit forms 605-008 and 616-2SI (if necessary).
2. A professional engineer licensed in the state of Oklahoma will need to stamp all design work for treatment units and/or impoundments.
3. Time needed for permit issuance will vary depending on site-specific issues involved with city, the city's engineer, the facility, and the DEQ. Each facility that wishes to discharge to a POTW should contact the DEQ directly for an estimate of the time needed to get the permit.

## Discharge of Sanitary Waste Water through Subsurface System - Authorization/Permit Required from DEQ

1. Only sanitary waste water may be disposed of in a subsurface septic tank system; no industrial waste water of any kind may be disposed of in a subsurface system.
2. Perform a soil profile or percolation test
3. Submit the authorization to construct
4. Once the authorization is received, the system may be constructed
5. Once constructed, have the system inspected by DEQ. If using a certified installer, they may do the inspection in lieu of DEQ.
6. An alternative system may be used such as aerobic treatment, lagoon or evapo-transpiration. Please contact the local DEQ office for more information.
7. All forms can be found here: <http://www.deq.state.ok.us/ECLSnw/forms.htm>

## Storm Water Permit

1. There are two types of storm water permits that may be required.
2. A storm water *construction* permit will be required for any facility that, in the process of construction, disturbs 1 acre of land or more.
3. The permit may be found here. A Notice of Intent (NOI) will need to be filed, a stormwater pollution prevention plan developed, and authorization received before any construction activities can occur.
4. Construction Permit with NOI: [http://www.deq.state.ok.us/WQDnew/stormwater/construction/okr10\\_final\\_permit\\_13\\_sep\\_2002.pdf](http://www.deq.state.ok.us/WQDnew/stormwater/construction/okr10_final_permit_13_sep_2002.pdf)
5. A storm water multi-sector permit will be required for any biofuel plant. Again, a Notice of Intent should be filed no later than 30 days before operations begin.
6. Biofuel plants will be subject to the requirements for Sector C.
7. Multi-sector permit with NOI: <http://www.deq.state.ok.us/WQDnew/stormwater/msgp/index.html>
8. Only the NOI for each permit needs to be submitted to DEQ. However it is important to realize that by submitting the NOI, the facility is agreeing to abide by the requirements of the permit. Please be sure to read the applicable requirements from each permit.

# Biodiesel

## What it is and where it is used

- Biodiesel is a renewable fuel used in diesel engines and is derived from plant- or animal-based natural oils.
- An accepted standard of biodiesel has been registered with the Environmental Protection Agency as a fuel and fuel additive and is approved for blending (up to 20%) by the American Society of Testing and Materials (ASTM). This standard of ASTM D 6751 is what should be produced and used in blends.
- ASTM D 6751 in the pure form is called B100 and contains no petroleum. This B100 can be combined with any percentage of petroleum-based diesel fuel to produce "blends". Common blends include B5 (5% biodiesel and 95% petroleum diesel) and B20 (20% biodiesel and 80% petroleum diesel); however there are other blends available. ASTM D 6751 has been tested and approved for blending in concentrations up to B20.
- Biodiesel can be used with petroleum based diesel fuel (up to a B20 blend) in existing diesel engines with little or no modification. For use in existing diesel engines, always check with your engine manufacturer.
- Use of certain blends of the accepted standard of ASTM D 6751 is covered by some manufacturer's warranties. Check with your manufacturer for the most up-to-date warranty information.

## What it is NOT

- Biodiesel is not the same thing as raw vegetable oil or unaltered, used frying grease. It is precisely produced by a chemical process which removes the glycerin from the oil. Other 'bio-derived' materials that do not meet D 6751 may cause engine and fuel system problems and void engine warranties.
- Biodiesel is not ethanol or E85. For more information on ethanol and E85, see the ethanol fact sheet.

## Use of Biodiesel

- Biodiesel blends up to B20 can be used in any diesel engine, without any modifications. Biodiesel is an excellent lubricant and can reduce wear in diesel engines. However, the solvent properties of biodiesel will clean out any residue present in an engine system. If left unchecked, this could lead to clogged filters.

## Emissions from biodiesel use/environmental effects

- Use of biodiesel can reduce emissions of particulate matter (PM) and some ozone-forming pollutants, including hydrocarbons (HC) and carbon monoxide (CO). The amount of emissions decreased depends on the blend concentrations, engine type and feedstock.
- When using B20, emission reductions are typically 10% for PM, 21 % for HC and 11 % for CO.
- Not all emissions are decreased; nitrogen oxides (NO<sub>x</sub>) are thought to increase by about 2% when using a B20 blend.

## Permitting Biodiesel Production Facilities

- Facilities with emissions under 40 TPY generally are "permit exempt" unless they are subject to an emission, equipment, or work practice standard under NSPS (New Source Performance Standard) or NESHAP (National Emissions Standards for Hazardous Air Pollutants), or meet the definition of a "major source."
- The Air Quality Division (AQD) operates a dual permitting system – construction and operating permits.
- A **construction permit** is required before a new source is constructed or an existing source is modified. The construction permit is issued after it is determined the source is designed to meet applicable rules and pre-construction requirements.
- An **operating permit** is issued after construction is completed and demonstration is made that the source is capable of meeting applicable emissions limitations and air pollution control requirements. Permits and sources are further classified as either major or minor based on their potential-to-emit (PTE).
- A **major source** is any source with PTE of 100 TPY or more of any regulated air pollutant, 10 TPY or more of any one HAP, or 25 TPY or more of any combination of HAPs. Major source permit fees range from \$900 to \$2,000.
- **Minor sources** are those that do not meet the major source definition. Minor source permit fees range from \$150 to \$1500.
- If you are not sure whether you need a permit, you should request that the AQD staff perform an **Applicability Determination (AD)**. The AD is a written document issued by the DEQ to determine whether a particular source or operation is subject to the requirements of a rule, including whether or not you need a permit. If you need a permit, the fee of \$250 for the AD is credited towards the permit fee.

## Where I can purchase biodiesel

Currently the only public biodiesel fueling stations in Oklahoma are located in Lawton and Frederick.

## Contacts:

- For general information on biodiesel, contact Leon Ashford at 405-702-4173 or Tracy Rudisill at 405- 702-4167.
- For permitting information on biodiesel production facilities, contact Phillip Fielder at 405-702-4180.

## Links for more information:

- Environmental Protection Agency [www.epa.gov](http://www.epa.gov)
- Association of Central Oklahoma Governments [www.acogok.org](http://www.acogok.org)
- Indian Nations Council of Governments [www.incog.org](http://www.incog.org)
- National Renewable Energy Laboratory [www.nrel.gov](http://www.nrel.gov)
- Alternative Fuels Data Center [www.eere.energy.gov/afdc/](http://www.eere.energy.gov/afdc/)
- National Biodiesel Board [www.nbb.org](http://www.nbb.org)

# Waste Tips for Biofuel Plants

## Hazardous Waste

A biofuel plant may generate wastes from its processes that are classified as hazardous. As a result, the waste(s) must be managed and disposed of properly according to regulations. For the most part, DEQ hazardous waste regulations mirror the federal 40 CFR Part 260-279 regulations. Additional Oklahoma rules can be found in OAC 252:205 and may be found here: [www.deq.state.ok.us](http://www.deq.state.ok.us). Your waste may need to be tested to determine if it meets the definition of "hazardous".

### The following are examples of waste streams that should be considered potential hazardous waste that will require a waste determination:

- Still Bottom Sludges
- Sludges from floor drains, sand pits, oil/water separators, etc.
- Wastewater treatment sludges
- Fluorescent light tubes
- High intensity discharge lamps
- Parts washer solvent, sludges, or filters

- Aerosol cans containing paints, solvents, flammable propellants, etc.
- Paint wastes to include spent paint solvents
- Rags and wipes not managed under a rag laundering contract
- Batteries
- Computer monitors
- Cleaning products
- Strong acids or bases, i.e., acid hydrolysis processes
- Spent oils not managed as used oil as provided for under 40 CFR Part 279
- Spent solvents or wastewater from azeotropic distillation processes
- Secondary materials from ethanol production
- Tube and vessel cleaning wastes, i.e., boilers and reaction vessels

## Non-Hazardous Industrial Solid Waste

Additionally, any waste generated from production activities (e.g. non-office waste) may require testing and notification to DEQ. This type of waste is called Non-hazardous Industrial Solid Waste (NHIW). The regulations for NHIW may be found in OAC 252:515-31 ([www.deq.state.ok.us](http://www.deq.state.ok.us)) and apply to facilities that generate greater than 10 cubic yards of NHIW per calendar month.

# SARA Title III & Biofuels

## There are four areas of SARA Title III that may apply to you:

- Section 302: Emergency Planning
- Section 304: Emergency Release Notification
- Section 311 & 312: Hazardous Chemical Inventory (Tier II)
- Section 313: Toxic Release Inventory Reporting

### Section 302:

Applies only to facilities that use or store Extremely Hazardous Substances (EHS) above Threshold Planning Quantities. There are 360 specific EHSs, which can be found at: <https://www.deq.state.ok.us/CSDnew/saratitleiii/EPA%20EHSLIST.xls> or by calling (800) 869-1400. (TPQ) are specific for each chemical, but generally 100-500 pounds. TPQ is based upon weight of EHS which is per cent in a mixture. TPQ must be present at any one time, not cumulative over the course of a year.

### Section 304:

Fixed facilities must immediately notify the National Response Center (NRC), the appropriate LEPC (local emergency planning committee), and DEQ if there is a release into the environment of a listed hazardous substance that exceeds the reportable quantity for that substance. Once the release has been discovered, notifications must be made within 15 minutes.

The emergency notification needs to include:

- The chemical name
- Whether the chemical is an EHS
- An estimate of the quantity released
- The time and duration of the release
- Medium released into (air, water, land)

Any known or anticipated acute or chronic health risks associated with the release, and where necessary, advice regarding medical attention for exposed persons

- Proper precautions, such as evacuation
- Name and number of contact person

### Section 311 and 312 (Tier II)

Applies to facilities where any chemical requiring an MSDS (Material Safety Data Sheet) is present either in use or in storage.

Applies only if the threshold is exceeded

- For an EHS, it is equal to the TPQ or 500 lbs., whichever is less
- For any other chemical with an MSDS, it is equal to 10,000 lbs.

Chemical must be on the premises above the threshold for any 24 hour period.

Submit a Tier 2 Hazardous Chemical Inventory Report electronically for those chemicals exceeding the threshold

Due every year by March 1<sup>st</sup>

Report chemicals on-site the previous calendar year

Send reports to the Oklahoma Department of Environmental Quality

### Section 313 (Toxics Release Inventory)

Applies to a facility only if all three conditions are met:

- Belongs to a specified Standard Industrial Classification (SIC) Code, most involved with manufacturing or manufacturing support
- Has more than ten full-time employees or the equivalent 20,000 employee hours per year

Produces, manufactures, or uses one or more of the >600 listed chemicals above threshold amounts

- 25,000 lbs. total for a year if processed or manufactured
- 10,000 lbs. total for a year for ancillary use
- Chemicals designated Persistent, Bioaccumulative and Toxic (PBT) have significantly lower thresholds that are specified for each chemical or chemical group

Applies to chemical use over an entire year, not just any one time.

Applies to amount of chemical actually used in the course of a year.

Applies only if chemical is present above *de minimis* concentrations

- 1% for most chemicals
- 0.1 % for OSHA designated carcinogens
- *de minimis* concentration exemption does not apply to PBT's

Reporting for Section 313

Submit Form R or Form A every year by July 1<sup>st</sup> on diskette or compact disk

Send to both

Department of Environmental Quality

Environmental Protection Agency (EPA) headquarters through the TRI Data Processing Center

Or

Submit via EPA's Central Data Exchange to satisfy requirement for both agencies

### Questions?

The applicability of any of the above regulations to your facility can be discussed one-on-one. For questions regarding "Toxics Release Inventory" contact Ms. Jami Murphy, or for information on "Tier II" contact Tom Bergman or Bo Baggett at the Department of Environmental Quality, 405-702-1000 or 1-800-869-1400.

# Ethanol Fact Sheet

## Ethanol

### What it is and where it is used

- Ethanol is ethyl alcohol, a fuel produced from renewable resources. It is made mainly from corn but can also be made from wheat, barley, sorghum, sugarcane, etc. Current research is investigating the use of "cellulosic feedstocks" including switchgrass, cornstalks, and paper pulp.
- Ethanol can be blended with gasoline to make a motor fuel. Terminology is often used interchangeably and can be easily confused. The three terms below are sometimes referred to as "ethanol for "gasohol":
  - "Ethanol" is the 100 percent pure ethanol coming from the production facility.
  - "E10" is the blend of 10 percent ethanol and 90 percent gasoline.
  - "E85" is the blend of 85 percent ethanol and 15 percent gasoline.

### What it is NOT

- Ethanol is not biodiesel. For more information on biodiesel, see the biodiesel fact sheet.

### Use of Ethanol blends

- Blends of E10 or lower are often used as a fuel oxygenate to reduce vehicle emissions. These blends can be used in most post 1983 cars without adverse effects on the vehicle.
- E85 can **only** be used in "flexible fuel vehicles." Flexible fuel vehicles (FFVs) can run on gasoline or E85. Many consumers are unaware their vehicle is an FFV. An FFV will be marked on the inside of the fuel cover or by a logo elsewhere on the vehicle. A list of FFVs can be found at [www.e85fuel.com](http://www.e85fuel.com). Always double-check the vehicle's owner manual.
- Using E85 in FFVs decreases fuel economy up to 30 percent.

### Emissions from ethanol blends/environmental effects

- Use of E85 can reduce many exhaust emissions, though the actual emissions will vary with engine design. These numbers reflect the potential reductions offered by ethanol (E85) relative to conventional gasoline:
  - Reductions in volatile organic compounds (VOCs) of 15 percent.
  - Reductions in carbon monoxide (CO) of 40 percent.
  - Reductions in particulate matter (PM) emissions of 20 percent.
  - Reductions in nitrogen oxides (NOx) emissions of 10 percent.
  - Reductions in sulfate emissions of 80 percent.

### Ethanol Production Facilities

- While ethanol production facilities are considered good for the economy, many other factors should be considered by communities.
  - Ethanol production facilities consume and discharge large amounts of water. Water issues can be discussed with Ed Dibrberg at 405-702-8184.
  - While ethanol and its blends are considered by many to be "environmentally friendly" in comparison to petroleum refineries, ethanol plants also release pollutants into the air.

### Permitting Ethanol Production Facilities

- Facilities with emissions under 40 tons per year (TPY) generally are "permit exempt" *unless* they are subject to an emission, equipment, or work practice standard under NSPS (New Source Performance Standard) or NESHAP (National Emissions Standards for Hazardous Air Pollutants), or meet the definition of a "major source."
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### Contacts:

- For general information on ethanol, contact Leon Ashford at 405-702-4173 or Tracy Rudisill 405-702-4167.
- For air permitting information on ethanol production facilities, contact Phillip Fielder at 405-702-4180.

### Links for more information:

- Environmental Protection Agency [www.epa.gov](http://www.epa.gov) specifically [www.epa.gov/OMS/consumer/fuels/altfuels/420f00035.pdf](http://www.epa.gov/OMS/consumer/fuels/altfuels/420f00035.pdf)
- Association of Central Oklahoma Governments [www.acogok.org](http://www.acogok.org)
- Indian Nations Council of Governments [www.incog.org](http://www.incog.org)
- National Renewable Energy Laboratory [www.nrel.gov](http://www.nrel.gov)
- Alternative Fuels Data Center [www.eere.energy.gov/afdc/](http://www.eere.energy.gov/afdc/)
- National Ethanol Vehicle Coalition [www.e85fuel.com](http://www.e85fuel.com)



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