



U.S. Environmental Protection Agency Region 7

ENVIRONMENTAL LAWS

Applicable to
Construction and Operation

of

Ethanol Plants

November 2007

EPA-907-B-07-001

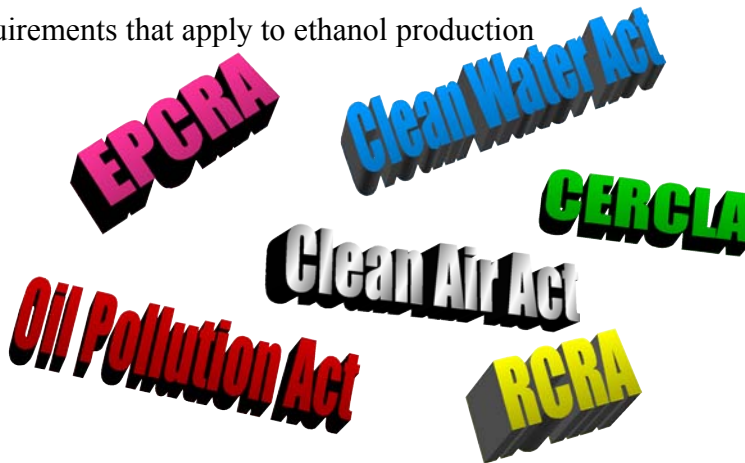
www.epa.gov/region07/priorities/agriculture



WHAT IS THE PURPOSE OF THIS MANUAL?

This compliance assistance manual serves as a road map of information on federal environmental programs and federal and state agency roles. Air, water, hazardous waste, accident prevention and release reporting are examples of requirements that might apply. This manual, like a road map, does not contain all the details of the federal and state statutes and regulations. Ethanol facility operators need to review the applicable statutes and regulations.

There are many federal environmental requirements that apply to ethanol production facilities. State environmental agencies may take the lead in implementing federal environmental programs and may have state requirements in addition to federal environmental requirements. The U.S. Environmental Protection Agency and state environmental agencies work in partnership and are available to answer questions about applicability of environmental requirements to individual ethanol production facilities. Our goal is to work with ethanol facility operators to ensure that human health and the environment are protected as ethanol production continues to increase in EPA's Region 7 (Iowa, Kansas, Missouri, and Nebraska).



DISCLAIMERS:

- This manual provides guidance to help the regulated community and the public understand ethanol facility obligations under environmental laws.
This manual is not a substitute for regulations, nor is it a regulation. It cannot impose legally binding requirements on EPA, states, or the regulated community. The reader must refer to federal and state laws and regulations for a complete understanding of all legal requirements.
- This manual does not represent final agency action and can be updated in the future.
- This manual does not limit the otherwise lawful prerogatives of regulating agencies. Agencies may act at variance with this guidance based on facility-specific circumstances.
- The mention of trade names, commercial products, industry references, and technical resources does not constitute an endorsement or recommendation for use.
- The information in this document is current as of its publication date.

TABLE OF CONTENTS

INTRODUCTION

I.1	Requirement for Renewable Fuels.....	I-1
I.2	Renewable Fuel Standard Program.....	I-2
I.3	Brief Overview of Ethanol Production Process.....	I-7

CHAPTER 1 WHAT LAWS APPLY WHEN I'M CONSTRUCTING OR MODIFYING AN ETHANOL PLANT?

1.1	National Environmental Policy Act.....	1-1
1.2	Clean Air Act.....	1-2
1.3	Clean Water Act.....	1-16
1.4	Safe Drinking Water Act.....	1-18
1.5	Pollution Prevention Act	1-23

CHAPTER 2 WHAT LAWS APPLY TO OPERATING AN ETHANOL PLANT?

2.1	Clean Air Act.....	2-1
2.2	Emergency Planning And Community Right To Know Act.....	2-5
2.3	Clean Water Act.....	2-11
2.4	Safe Drinking Water Act.....	2-18
2.5	Resource Conservation And Recovery Act – Hazardous Waste.....	2-20

APPENDICES

- APPENDIX A - SUMMARY OF LAWS PERTAINING TO ETHANOL PRODUCTION AND WHO TO CONTACT
- APPENDIX B - EMERGENCY PLANNING
- APPENDIX C - CLEAN AIR ACT SECTION 112 (r) - PREVENTION PROGRAM REQUIREMENTS
- APPENDIX D - DEFINITIONS OF ACRONYMS
- APPENDIX E - NEPA PROCESS
- APPENDIX F - DO I NEED A FACILITY RESPONSE PLAN?

INTRODUCTION

I.1 Requirement for Renewable Fuels

The Energy Policy Act of 2005 amended the Clean Air Act to establish a Renewable Fuel Standard (RFS) program. The RFS program, applicable for 2007 and beyond, is designed to encourage blending renewable fuels into our nation's motor vehicle fuel.

A renewable fuel is defined in the Energy Policy Act as a motor vehicle fuel that is produced from plant or animal products or wastes. Renewable fuels would include ethanol, biodiesel and other motor vehicle fuels made from renewable sources.

About 4.5 billion gallons of renewable fuels were used in the United States in 2006 as motor vehicle fuel. The RFS program requires that this volume increase to at least 7.5 billion gallons by 2012.



Photo courtesy Lawn & Landscape



EPA Region 7 Photo

There were about 21 ethanol production facilities in the four Region 7 states in 2001. That number grew to 75 by November 2007, according to the Renewable Fuels Association.

This guide was developed in response to the increasing number of ethanol production facilities, their potential environmental implications in Region 7, and our desire to help smooth our nation's transition to a renewable fuel source while maintaining a healthy environment.

I.2 Renewable Fuel Standard Program

If your facility produces 10,000 gallons or more of renewable fuel per year, you must comply with the Renewable Fuel Standard (RFS) Program.

You are required to:

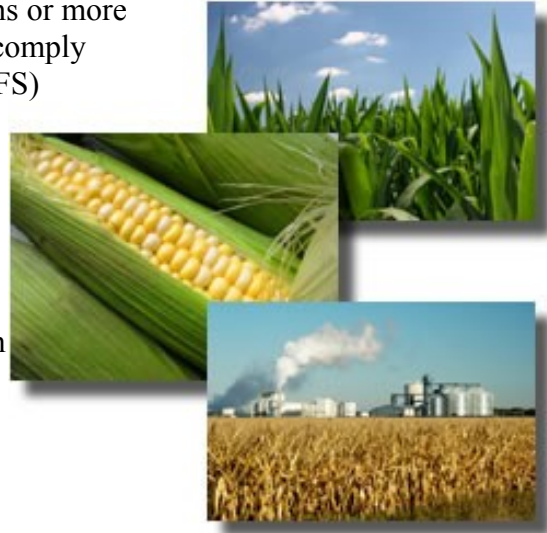
- Register
- Generate Renewable Identification Numbers (RINs),
- Transfer RINs with fuel,
- Product Transfer Documents,
- Blending,
- Exporting,
- Non-Road Use of Fuel,
- Attest Engagements,
- Keep records for 5 years, and
- Report quarterly; see <http://epa.gov/otaq/regs/fuels/rfsforms.htm> for forms.

Some producers may have additional requirements, if they sell or export renewable fuel, or create derived waste or cellulosic ethanol.

Facilities producing less than 10,000 gallons of renewable fuel per year are not subject to RFS requirements but may opt in voluntarily.

**For more information about the Renewable Fuel
Standard Program, please visit**

<http://epa.gov/otaq/renewablefuels/index.htm>



Registration

Before selling fuel, producers must register first with Fuel and Fuel Additives Registration (FFARS) program then the RFS program. The FFARS program is a completely separate program from the RFS program, each having its own separate registration process. More information about FFARS may be found at <http://www.epa.gov/otaq/additive.htm>. The FFARS registration forms may be found at <http://epa.gov/otaq/regs/fuels/ffarsfrms.htm>.

For the RFS program, ethanol producers must register their company and each facility at which they produce ethanol [40 CFR 80.1150(b)]. The registration forms can be found at <http://www.epa.gov/otaq/regs/fuels/fuelsregistration.htm>.

EPA Form 3520-12 (03-2007) - Fuel Manufacturer Notification for Motor Vehicle Fuel. The form is titled "Fuel Manufacturer Notification for Motor Vehicle Fuel" and includes the following sections:

- 1. Brand name(s) of the motor vehicle fuel covered by this notification (fuel)
- 2. Company Name: _____ 3. Company ID: _____
- 4. Address: _____
- 5. Type of Fuel (Check Only One):
 - (a) Unleaded Premium Gasoline
 - (b) Unleaded Regular Gasoline
 - (c) Unleaded Midgrade Gasoline
 - (d) Diesel 4 Diesel
 - (e) Diesel 2 Diesel
 - (f) Other (Specify): _____
- 6. Fuel Properties, by the column(s) specified:

	Specified by except:			Methods of Analysis (40 CFR 80.1150)
	Alcohol	Water	Sulfur	
(a) Aromatics				
(b) Olefins				
(c) Saturates				
(d) Polynuclear Organic Material				
(e) Sulfur				
(f) Trace Elements				
Gasoline:				
(a) Reid Vapor Pressure (RVP or psi)				
(b) Distillation: 10% Point (°C)				
(c) Distillation: 50% Point (°C)				
(d) Research Octane Number				
(e) Motor Octane Number				
Diesel Fuel:				
(a) Distillation: 90% Point (°C)				
(b) Distillation: End Point (°C)				
(c) Cetane Number or Index				

Ethanol producers are required to fill out one 3520-20A for the company and one 3520-20B for each facility. On form 3520-20A, ethanol producers are required to select “RFS” for question 7 and “RIN Generator” for question 8. On form 3520-20B, ethanol producers need to select “RIN generator.” After the forms are received, EPA will provide the ethanol producer with its Company and Facility IDs for the RFS program. (Remember that registration numbers discussed above for FFARS are not the appropriate registration numbers to be utilized in the RFS program and the generation of RINs, as discussed below.)

RIN Generation

RINs refer to Renewable Identification Numbers. Producers and importers of renewable fuel must generate RINs to represent all the renewable fuel they produce or import. The point in time when RINs must be generated is flexible, but no later than when the renewable fuel is transferred to another party [40 CFR 80.1126(e)(2)]. Total number of “gallon-RINs” that can be generated is determined from both the volume of fuel and its equivalence value. For ethanol, the equivalence value is 1.0 [40 CFR 80.1115(b)(2)]. For other renewable fuels, the equivalence value is set forth in the RFS regulations, and reflects the difference in BTU value as compared to ethanol.

For more information on the structure of a RIN, see 40 CFR 80.1125.

Transfer RINs: Moving RINs With Fuel and Selling Ethanol

All renewable producers/importers that sell only the fuel that they create or import must transfer RINs with fuel to the next party at the equivalence value. For ethanol, that is 1 RIN per gallon sold to the next party. RINs can only be transferred to parties registered for the RFS program; therefore renewable producers/importers that sell only the fuel they create or import can only sell to registered parties. [40 CFR 80.1128(a)(6)].

Renewable producers and importers that sell a volume of renewable fuel in addition to their own may sell between zero and 2.5 RINs to any party [40 CFR 80.1128(a)(4)]. RINs may only be sold to registered companies, but any company may purchase ethanol without RINs.

Product Transfer Documents

All parties that transfer renewable fuel must follow the Product Transfer Document (PTD) regulations per 40 CFR 80.1153. Every product transfer document must have the following information:

- Name and address of the transferor and transferee
- The transferor's and transferee's company registration number
- The volume of fuel transferred
- The date of transfer
- A list of RINs assigned to the volume [40 CFR 80.1153(a)(5)]; alternatively, assigned RINs may be transferred on a separate document to the same party on the same day. If a separate document is used to transfer the RINs, the PTD that transfers ownership of the fuel must state the number of "gallon-RINs" transferred and reference the document used to transfer the RINs.

If no assigned RINs are being transferred with renewable fuel, the PTD which is used to transfer ownership of the fuel shall state "No RINs Transferred."

Blending

Blenders of renewable fuel that create motor vehicle fuel (for example by blending ethanol with gasoline to produce E-85 or E-10), must separate RINs associated with the volume of renewable fuel [40 CFR 80.1129(b)(2)]. In addition, renewable fuel producers may, upon agreement with their customers, separate RINs from fuel in situations where customers are "splash blending." Blenders of renewable fuel

with assigned RINs, must separate the RINs and change the first digit (K code) of the RINs from 1 to 2 during the compliance quarter when the blending took place and before transferring those RINs to another party.

Exporting

Any company that exports renewable fuel in its neat form or blended with gasoline or diesel outside of the lower 48 states [40 CFR 80.1126(a)] (and after January 1, 2007, Hawaii) has a Renewable Volume Obligation (RVO). The RVO for exporters is determined by retiring RINs equal to the volume of fuel exported times the equivalence value, plus any prior year deficit. A producer that exports renewable fuel, must generate RINs for that volume, and upon export, separate those RINs [40 CFR 80.1129(b)(3)]. At the end of the compliance year, the exporter must determine its RVO [40 CFR 80.1130(b)]. In the event that an exporter does not have enough separated RINs to cover their RVO, they must acquire separated RINs to meet the RVO [40 CFR 80.1130(a)].

Non-Road Use of Fuel

EPA believes that most fuel that can be used as motor vehicle fuel and which otherwise meets the definition of “renewable fuel” (such as biodiesel and ethanol) will ultimately be used as motor vehicle fuel. Therefore, producers and importers of such products can assume that they meet the definition of “renewable fuel” and can assign RINs to them without tracking their ultimate use.

However, if fuel with assigned RINs is actually blended into gasoline or diesel that is known to be destined for use in a nonroad application, such as agricultural equipment, the presumption that led the fuel producer/importer to assign RINs to the product is no longer valid. Such fuel cannot be considered a motor vehicle fuel and thus is not in fact a “renewable fuel” that is valid for RFS compliance purposes. In such cases, the blender should treat the RINs associated with the blended fuel in the same way as for fuel with assigned RINs that is used in a heater or boiler.

If a producer/importer is transferring a volume of fuel to a party and knows the fuel is going off-road, then the producer/importer should not generate RINs for that volume.

Recordkeeping Requirements

Renewable producers and importers, obligated parties and owners of RINs who are neither renewable producers/importer nor obligated parties have several record keeping requirements. 40 CFR 80.1151(e) states records must be kept for 5 years.

Report

Renewable producers and importers are required to report on a quarterly basis to the EPA (40 CFR 80.1152). The reporting templates are located at: <http://epa.gov/otaq/regs/fuels/rfsforms.htm> . All renewable producers and importers are required to fill out three of these reports quarterly; RFS Activity Report (RFS0100), RFS RIN Transaction Report (RFS0200), and RFS RIN Generation Report (RFS0400).

Exporters of renewable fuel and obligated parties must also use the annual RFS Obligated Party Annual Compliance Report (RFS0300).

- RFS Activity Report (RFS0100):
Two reports required quarterly. One report for attached RINs and one report for separated RINs. Producers must indicate how many RINs they generated in the quarter and how many they transferred, in addition to any other RIN activities that apply.
- RFS RIN Transaction Report (RFS0200)
One report submitted per transaction.
- RFS RIN Generation Report (RFS0400)
One report submitted per batch.

All reports must be submitted via EPA's Central Data Exchange (CDX). CDX is an online portal that encrypts and sends reports to the EPA. In order for companies to use CDX they must register users well in advance of the reporting deadline.

CDX registration is based on individual users rather than corporate accounts. Responsible corporate officers of a company may register themselves or delegate the ability to submit reports to another person. Responsible corporate officers are still responsible for their delegates' submissions.

Attest Engagements

All producers must perform an "attest engagement" of the reports submitted to EPA. The attest engagements must be performed by a Certified Public Accountant or Certified Internal Auditor as per the regulations and they must mail a copy to the EPA.

I.3 Brief Overview of Ethanol Production Process

Ethanol is made from starch or sugar-based feedstocks. Corn or other starchy grains are often used for the feedstock. As grain is delivered to an ethanol plant, it is typically unloaded and stored in bins. The grain is then transferred to the milling process. There are two types of milling processes; wet milling and dry milling.



Photo courtesy of the Marshall Democrat News

The most common process for ethanol production is dry milling, where the whole corn kernel or other grain is ground into a flour or meal. The meal is mixed with water after milling to form a mash. The mash is heated and enzymes are added to break down the starch to fermentable sugars. The next stage is the fermentation process, which involves adding yeast to convert the sugars to ethanol and carbon dioxide.



Photo courtesy of the Nebraska Energy Office

The raw product is distilled after fermentation. Distillation separates the liquid ethanol from the wet stillage. Stillage is the residue that settles to the bottom after fermentation. If the wet stillage is dried it is called “dried distillers grain with solubles” or “dry cake.” It can also be sold wet, called “wet distillers grain with solubles,” commonly referred to as “wet cake,” for animal feed.

CHAPTER 1 WHAT LAWS APPLY WHEN I'M BUILDING OR MODIFYING AN ETHANOL PLANT?

This chapter discusses environmental laws and regulations that might apply to construction at an ethanol plant. A general construction resource that you might find useful is:

Managing your Environmental Responsibilities: A Planning Guide for Construction and Development (EPA/305-B-04-003). It is available at: <http://www.epa.gov/compliance/resources/publications/assistance/sectors/constructmyer/myerguide.pdf>

1.1 National Environmental Policy Act

If you're using federal money to construct an ethanol plant or any associated facility, such as an access road or water supply, then your plant is subject to the National Environmental Policy Act (NEPA). NEPA requires federal agencies to incorporate environmental considerations in their planning and decision-making and to prepare a detailed statement assessing the environmental impact of activities and alternatives that significantly affect the environment.

The NEPA assessment for ethanol plants should include all potential environmental and human health impacts. Resources such as wetlands, water quality, hazardous waste, and air quality are commonly analyzed. Ethanol plants should also consider potential impacts to road and railway capacity; water supply and local municipal water systems; and handling and deposition of byproducts (wet or dry cake) from the plant operation. Significant effects that are identified and determined to be unavoidable, may require mitigation to reduce or minimize the environmental or human health impacts.

Ethanol plants can have significant air emissions including volatile organic compounds, sulfur dioxide, nitrogen oxides, hazardous air pollutants and particulate matter. Selection of the plant location should focus on minimizing air quality impacts to downwind residents and consider other air emission sources in the area.

As part of the environmental evaluation, EPA recommends completing a thorough emissions accounting and air quality modeling analysis, including fugitive emissions from haul roads and storage piles. We also recommend evaluating any projected capacity increase or phased construction approach to consider the total potential air impacts to the project area.

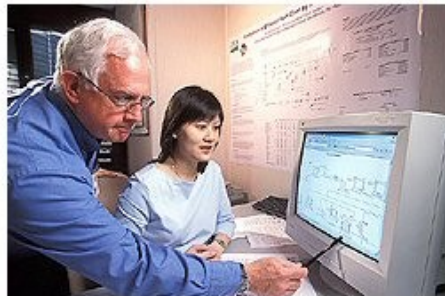


Photo courtesy of the USDA ARS

More information about the NEPA process is in Appendix E of this manual. NEPA contact information is in Appendix A.

1.2 Clean Air Act

The Clean Air Act, which was last amended in 1990, requires EPA to set national ambient air quality standards for widespread pollutants from numerous and diverse sources considered harmful to public health and the environment. The Clean Air Act establishes two types of national air quality standards:

- 1. Primary Standards**, which set limits to protect public health, including the health of sensitive populations such as asthmatics, children and the elderly.
- 2. Secondary Standards**, which set limits to protect public welfare, including visibility, animals, crops, vegetation, and buildings.

EPA has set national ambient air quality standards for six principal pollutants called “criteria” pollutants. Standards have been set for particulate matter, carbon monoxide, sulfur dioxide, nitrogen oxides, lead, and ozone. Note, volatile organic compounds lead to the formation of ozone (smog). Areas that have air quality as good or better than the standards are classified attainment areas. Areas that do not meet one or more of the standards are classified nonattainment areas. An area may be an attainment area for one pollutant and a nonattainment area for others. A list of designations is available at 40 CFR 81 or at:



EPA Region 7 Photo

www.epa.gov/oar/oaqps/greenbk

Significant quantities of particulate matter (including tiny particulates less than 10 microns in diameter know as PM₁₀), nitrogen dioxide, carbon monoxide, sulfur dioxide, and volatile organic compounds are released into the air during ethanol manufacturing activities. Some of these organic compounds are known as hazardous air pollutants. The volatile organic compounds emitted might include, but are not limited to, acetaldehyde, acrolein, ethanol, formaldehyde, 2-furaldehyde, methanol, acetic acid, and lactic acid.

The primary sources of air emissions from ethanol plants include the grain handling units, boilers, dried distillers grain with solubles (DDGS) dryers, fermentation, and distillation units. Other typical emission points at a dry mill ethanol plant include, but are not limited to, cooling cyclones, ethanol load out systems, cooling towers, storage tanks, centrate tanks, wastewater treatment processes, emergency equipment such as backup generators, and fugitive emissions such as those that come from equipment leaks and haul roads.

The types of pollutants emitted from these sources are listed in the table below.

Typical Dry Mill Emission Points

Emission Point	Typical Pollutant
Grain handling units	PM/ PM ₁₀
Boilers	PM/PM ₁₀ , NO ₂ , CO, SO ₂ , and VOCs
DDGS dryer	PM/PM ₁₀ , NO ₂ , CO, SO ₂ , and VOCs
Fermentation unit	VOCs
Distillation	VOCs
Cooling cyclone	PM/PM ₁₀ , and VOCs
Ethanol load out	VOCs
Cooling Towers	PM/PM ₁₀
Storage tank/Centrate tank	VOCs
Wastewater treatment process	H ₂ S and VOCs
Emergency equipment	PM/PM ₁₀ , NO ₂ , CO, SO ₂ , and VOCs
Fugitive emissions (e.g. equipment leaks, haul roads, etc.)	PM/PM ₁₀ , and VOCs
(Note: Some of the VOCs emitted are hazardous air pollutants (HAPs)).	

PM, particulate matter; NO₂, nitrogen dioxide; CO, carbon monoxide; VOCs, volatile organic compounds; H₂S, hydrogen sulfide; HAPs, hazardous air pollutants

The Clean Air Act requires certain permits to be obtained to minimize air emissions and protect human health and the environment before construction begins on an ethanol plant. These are described below.

Air Construction Permits

The Clean Air Act established a **preconstruction permitting program** in order to preserve and protect the national ambient air quality standards and enhance air quality. It is known as the **new source review** program.

New source review permits are issued by state or local air pollution control agencies. In very rare circumstances, EPA might issue the permit. We recommend having pre-application meetings with the permitting agency for construction permits; this makes sure your application is complete which helps speed up the permitting process.

Stationary sources are required to obtain a construction permit before the construction of a new facility or before modifying an existing source.

There are two kinds of new source review preconstruction permits:

1. Major Construction Permits.
2. Minor Construction Permits.

The type of permit required depends on the facility's potential to emit pollutants and the location of the facility.

Permits are legal documents which include requirements that the source must follow throughout the life of the facility. It is very important for facilities to be familiar with the requirements contained in their construction permits.

Major Construction Permits

There are two types of major construction permits under the new source review program:

1. Prevention of Significant Deterioration.
2. Nonattainment New Source Review permits.

Prevention of Significant Deterioration Permits

Prevention of significant deterioration permits are required for new major sources or a major source making a major modification in an **attainment area**.



Photo courtesy of Industrial Innovations

Under the prevention of significant deterioration program, a source is considered to be a major source if the facility has the potential to emit 100 tons per year or more of any criteria pollutant if the source is one of the specific source categories listed in the prevention of significant deterioration regulations (40 CFR Part 52.21(b)) or 250 tons per year of any criteria pollutant for sources not specifically listed in the prevention of significant deterioration regulations. The 250 tons-per-year major source threshold applies to ethanol plants that produce ethanol by a natural fermentation process.

Note: EPA published a final rule in the May 1, 2007 Federal Register that changed the federal prevention of significant deterioration regulations. The final rule changed the major source threshold for ethanol plants from 100 tons per year to 250 tons per year. Some state regulations may have retained the 100 ton per year major source threshold and will therefore be more stringent than the federal regulations. In those instances, facilities will need to comply with the more stringent state regulations. Boilers, or a combination of boilers, totaling more than 250 MMBtu/yr heat input, will be subject to the 100 ton per year major source threshold. Check with your state permitting agency to determine which threshold applies to your ethanol plant.

A major modification is any physical change or change in the method of operation of an existing major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Clean Air Act. The prevention of significant deterioration significance thresholds for the various pollutants under the program are listed in 40 CFR 52.21(b)(23)(i). The significant thresholds for the criteria pollutants are:

- Carbon monoxide: 100 tons per year
- Nitrogen oxides: 40 tons per year
- Sulfur dioxide: 40 tons per year
- Particulate Matter
 - ⇒ 25 tons per year of particulate matter emissions
 - ⇒ 15 tons per year of PM₁₀,
- Ozone: 40 tons per year of VOCs or nitrogen oxides
- Lead 0.6 tons per year

The PSD program requires the following elements:

- Installation of the Best Available Control Technology,
- An air quality analysis,
- An additional impact analysis, and
- Public involvement.



Best Available Control Technology is an emissions limitation based on the maximum degree of control that can be achieved. It is a case-by-case decision that considers energy, environmental, and economic impacts. Best Available Control Technology can be add-on pollution control equipment or modification of the production process or methods. This includes fuel cleaning or treatment and innovative fuel combustion techniques. Best Available Control Technology may be a design, equipment, work practice, or operational standard if imposition of an emission standard is infeasible.

The main purpose of the air quality analysis is to demonstrate that new emissions emitted from a proposed major stationary source or major modification, in conjunction with other applicable emissions from existing sources, will not cause or contribute to a violation of any applicable national ambient air quality standards or prevention of significant deterioration increment. Generally, the analysis will involve;

- 1) an assessment of existing air quality, which might include ambient monitoring data and air quality dispersion modeling results, and
- 2) predictions, using dispersion modeling, of ambient concentrations that will result from the applicant's proposed project and future growth associated with the project.

Prevention of significant deterioration increments keep the air quality in clean areas from deteriorating to the level set by the national ambient air quality standard. The national ambient air quality standard is a maximum allowable concentration ceiling. The prevention of significant deterioration increment is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. The baseline concentration is defined for each pollutant. In general, it is the ambient concentration existing at the time that the first complete PSD permit application affecting the area was submitted. Significant deterioration is said to occur when the amount of new pollution would exceed the applicable PSD increment. It is important to note, however, that the air quality cannot deteriorate beyond the concentration allowed by the applicable national ambient air quality standard, even if not all of the prevention of significant deterioration increment is consumed.

The additional impacts analysis assesses the impacts of air, ground, and water pollution on soils, vegetation, and visibility from any increase in emissions of any regulated pollutant from the source or modification under review and from associated growth. Associated growth is industrial, commercial, and residential growth that will occur in the area because of the source.

Nonattainment NSR permits

Nonattainment new source review applies to new major sources or major modifications at existing sources for pollutants where the source is **in an area that is not in attainment with the national ambient air quality standards**, also called a “nonattainment area.” In a nonattainment area, any stationary pollutant source with the potential to emit 100 tons per year or more is considered a major source. Nonattainment new source review requirements are customized for the specific nonattainment area.

All nonattainment new source review programs require:

- Installation of the lowest achievable emission rate,
- Emission offsets, and
- Opportunity for public involvement.

The lowest achievable emission rate is the most stringent emission limitation derived from either of the following:

- The most stringent emission limit contained in the implementation plan of any state for such class or category of source, or
- The most stringent emission limit achieved in practice by such class or category of source.

The emissions rate may result from a combination of emissions limiting measures such as:

- Add-on pollution control equipment,
- A process modification, and/or
- A change in the raw material processed.



Offsets are emission reductions, generally obtained from existing sources in the vicinity of a proposed source that must offset the emissions increase from the new source or modification and provide a net air quality benefit. The obvious purpose for requiring offsetting emissions decreases is to allow an area to move toward attainment of the national ambient air quality standards while allowing some industrial growth.

Minor Construction Permits

Minor new source review is for pollutants from stationary sources that do not require prevention of significant deterioration or nonattainment new source review permits. The purpose of minor new source review permits is to prevent building sources that would interfere with attainment or maintenance of national ambient air quality standards or violate the control strategy in nonattainment areas. Minor new source review permits often contain permit conditions that will limit the source's emissions to avoid becoming subject to the prevention of significant deterioration or nonattainment new source review regulations. The permit conditions generally involve enforceable emission and/or operating limits that will ensure air quality protection. As a result, the permits usually contain recordkeeping, reporting, monitoring, and testing requirements to ensure compliance with the permit conditions.

A facility obtaining a minor new source review construction permit might, depending on the state's air permitting requirements, be required to conduct an air quality review using computer modeling to predict the effects that a facility might have on the ambient air. Whether or not a facility needs to model will depend on the rate of emissions increase, facility history, plant location, type of source, and emission point configurations (e.g. stack heights). A construction permit cannot be issued if the plant will cause or significantly contribute to predicted violations of any ambient air quality standard.



The public is given notice when a construction permit might be issued for all three types of construction permits (prevention of significant deterioration, nonattainment new source review, and minor new source review). Each state has different procedures for notification on minor new source review permits. Please check with the applicable state to verify the procedures.

New Source Performance Standards

New source performance standards establish **technology-based standards** that regulate criteria air pollutants from new or modified sources. These regulations were developed to assure that sources are installing **the best-demonstrated technology to reduce emissions**.

New source performance standards contain emission limits; control device or equipment requirements; and work practice, performance testing, monitoring, recordkeeping, notification, and reporting requirements. These regulations can be found in 40 CFR Part 60.

The following new source performance standards typically apply to ethanol plants.

- Subpart A – General Provisions
 - Sources subject to the requirements might be subject to all or only a portion of the general provisions.

- Subpart Db – Industrial, Commercial, Institutional Steam Generating Units
 - Units with a capacity more than 100 million Btu per hour (MMBtu/hr)
 - Includes boilers and thermal oxidizers/waste-heat recovery boilers
 - Built, reconstructed, or modified after June 19, 1984
 - Regulated pollutants
 - Nitrogen oxides, particulate matter, sulfur dioxide
 - Opacity

- Subpart Dc – Industrial, Commercial, Institutional Steam Generating Units
 - Units with a capacity of 10 MMBtu/hr or more and less than or equal to 100 MMBtu/hr
 - Includes boilers and thermal oxidizers/waste-heat recovery boilers
 - Built, reconstructed, or modified after June 9, 1989
 - Regulated pollutants
 - Particulate matter, sulfur dioxide
 - Opacity

- Subpart Kb – Volatile Organic Liquid Storage Vessels
 - Vessels with a capacity of 75 m³ (approximately 19,800 gallons) or more
 - Built, reconstructed, or modified after July 23, 1984
 - Regulated pollutant
 - Volatile organic compounds
- Subpart Y – Coal Preparation Plants
 - Coal preparation plants that process more than 200 tons per day
 - Built, reconstructed, or modified after Oct. 24, 1974
 - Regulated pollutant
 - Particulate matter
- Subpart DD – Grain Elevators
 - Storage capacity of 1 million bushels or more
 - Built, reconstructed, or modified after Aug. 3, 1978
 - Regulated pollutants
 - Particulate matter
 - Opacity
- Subpart VV – Synthetic Organic Chemical Manufacturing Industry (SOCMI) Equipment Leaks
 - Ethanol is on the list of regulated synthetic organic chemicals
 - Built, reconstructed, or modified after Jan. 5, 1981
 - Regulated pollutant
 - Volatile organic compounds

- Subpart III – Stationary Compression Ignition Internal Combustion Engines
 - Stationary compression ignition internal combustion engines that begin construction (for this regulation, the date that construction begins is the date the engine is ordered by the owner or operator) after July 11, 2005 where the stationary compression ignition internal combustion engines are:
 - manufactured after April 1, 2006 and are not fire pump engines,
 - or manufactured as a certified National Fire Protection Association fire pump engine after July 1, 2006
 - Owners and operators of stationary compression ignition internal combustion engines that modify or reconstruct their stationary compression ignition internal combustion engines after July 11, 2005.
 - Regulated pollutants
 - Nitrogen oxides, particulate matter, carbon monoxide
 - Non-methane hydrocarbons (NMHC)
 - Sulfur oxides (through the use of lower sulfur fuels)

Facilities should be aware of these rules during the planning stages of a new plant or modification. The New Source Performance Standards requirements may have influence over the equipment and control devices that will be installed.

National Emission Standards for Hazardous Air Pollutants

If construction/modification of an ethanol plant involves the demolition or renovation of any existing public or commercial structures, and/or multiple residential structures, the federal asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation (40 CFR 61 Subpart M) may apply.

The asbestos NESHAP requires a thorough inspection by an accredited person prior to commencing demolition or renovation activity. A 10-day prior notification to the appropriate regulatory agency is necessary for all demolitions, regardless of whether any asbestos is present. Notification for renovations is required if there is greater than 160 square feet or 260 linear feet of regulated asbestos-containing material.

The asbestos NESHAP prohibits any visible emissions from demolition and renovation projects. The asbestos-containing materials must be wetted, and kept adequately wet, during the removal and disposal process. The asbestos waste must be stored in leak-tight containers prior to disposal, and must ultimately be disposed in approved landfills.

The asbestos NESHAP program has been delegated to each of the Region 7 states. For questions regarding specific demolition or renovation projects, contact the appropriate state agency. In some instances, states have requirements that are more stringent than the federal asbestos NESHAP.

NESHAPs regulate hazardous air pollutant emissions from stationary sources through technology-based standards, known as Maximum Achievable Control Technology (MACT) standards. **MACT standards are designed to require that a given type of source install the best-demonstrated control technology available.** New and existing facilities that fall within listed source categories and are major sources of hazardous air pollutants are subject to the MACT standards (although, there are a few MACT standards that include area sources). A major source of hazardous air pollutants has the potential to emit 10 tons per year of a single pollutant or 25 tons per year of a combination of pollutants. There are 187 regulated hazardous air pollutants. A list of them can be found at:

<http://www.epa.gov/ttn/atw/orig189.html>

MACT standards contain emission limits; control device or equipment requirements; and work practice, performance testing, monitoring, recordkeeping, notification, and reporting requirements. MACT standards can be found in 40 C.F.R. Part 63. The following MACT standards might apply to ethanol plants.

- Subpart A – General Provisions
 - Sources subject to MACT requirements might be subject to all or portions of the general provisions
- Subpart B – Case-by-Case MACT
 - Major hazardous air pollutant sources that construct or reconstruct and are not already covered by a MACT must obtain a construction permit with a case-by-case MACT
- Subpart FFFF – Miscellaneous Organic Chemical Manufacturing
 - Major hazardous air pollutant sources that operate miscellaneous organic chemical manufacturing process units.
 - Promulgation date Nov. 10, 2003
 - Compliance date
 - Existing sources – May 10, 2008
 - New sources
 - Startup before Nov. 10, 2003 – comply by Nov. 10, 2003
 - Startup after Nov. 10, 2003 – comply upon startup
- Subpart GGGG – Solvent Extraction for Vegetable Oil Production
 - Major hazardous air pollutant sources using an organic solvent (i.e., n-hexane) to extract vegetable oil from oil seeds such as soybean, corn germ, safflower etc.
 - Promulgation date April 12, 2001
 - Compliance date
 - Existing sources – April 12, 2004
 - New sources
 - Startup before April 12, 2001 – comply by April 12, 2001
 - Startup after April 12, 2001 – comply upon startup

- Subpart DDDDD – Industrial, Commercial, and Institutional Boilers & Process Heaters
 - This rule was vacated on June 8, 2007, by the U.S. Court of Appeals for the District of Columbia.

It is essential for a facility to be aware that **MACT standards might apply to their plant prior to construction**. Facility operators who construct after a rule is proposed that will apply to the facility must be in compliance with that rule by the time they begin operation of the plant.

Risk Management Design Considerations

The Risk Management Program is a requirement of 40 CFR Part 68 under the Clean Air Act Section 112(r). The purpose of this program is to prevent catastrophic accidents involving extremely hazardous chemicals. Consideration of these regulations during the planning and design of an ethanol plant could **save the facility from costly after-construction retrofits**. See Page 2-3 for more information about the Risk Management Program.



Increase net returns by planning how to prevent accidents

Under the Clean Air Act Section 112(r)(1), facilities, including ETHANOL FACILITIES of any size, have a GENERAL DUTY “to prevent releases, and to minimize the consequences of accidental releases which do occur.” Implementing “BEST PRACTICES” helps facilities to comply with this law.

1.3 Clean Water Act

This section discusses regulations pursuant to the Clean Water Act that may apply during the construction or modification of an ethanol plant. Plant operators should be aware that many requirements that apply during plant operation require permit applications be submitted well in advance of plant startup (i.e., before or during construction activities). While this chapter focuses on regulations that apply during plant construction and modification activities, operators should read and understand this entire document prior to commencing construction or modification of an ethanol plant.

Dredge and Fill

Regulations developed under Section 404 of the Clean Water Act address the discharges of dredged or fill material into waters of the United States. Generally, the 404 Program requires a permit before these materials may be placed in a wetland, stream, river, lake, bay, etc. during construction activities. The U.S. Army Corps of Engineers administers the 404 program, including issuance of permits, enforcement, and making determinations on what constitutes a “water of the United States.”



EPA Region 7 Photo

If there is a potential for placing dredge or fill materials into a water of the United States during the construction or expansion of an ethanol plant, then a 404 permit is required. The following types of activities are regulated through the permitting process:

- Damming or filling a water of the U.S.
- Impounding a water of the U.S.
- Altering or dredging a water of the U.S.



An *individual permit* is required for activities that can have potentially significant impacts. Individual permits are reviewed by the U.S. Army Corps of Engineers, which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA Section 404(b)(1) guidelines. Coverage under a *general permit* may be suitable for most discharges that will have only minimal adverse effects. General permits are issued on a nationwide, regional, or State basis for particular categories of activities. The U.S. Army Corps of Engineers should be contacted before placing any dredge or fill material into waters of the U.S.

You may need to get a permit for dredging and filling activities. If you are not sure whether you need a permit, contact your local Corps of Engineers. See Appendix A.

Storm Water Construction Permits

Land disturbance caused by construction (i.e., clearing, grading, and excavating) can lead to serious environmental harm in both nearby and downstream water bodies. To minimize the impact of site runoff on water quality, a stormwater permit must be obtained for discharges to waters of the U.S. from any construction activity that disturbs one acre or more of land. In Region 7, the state environmental departments issue general permits to cover these discharges. General permits require submission of a simplified application (typically identified as a Notice of Intent or NOI) and development and implementation of a plan, often called a stormwater pollution prevention plan, to control discharges of sediment and other pollutants from the site during construction activities. Application due dates vary by state. The state and EPA Regional contacts for construction storm water permitting are listed in Appendix A. Further discussion of NPDES stormwater permits is provided in Section 2.3.



Photo Courtesy of USDA

Permit For Construction of a Wastewater Facility

If you will need to construct any type of wastewater treatment or holding system (including collection systems, pumping stations, storage units, etc.) to meet limits established in a wastewater disposal permit (See Section 2.3), you may be required to obtain a non-CWA construction permit from your state. The state will require you to submit plans and specifications for review and approval before any construction can begin on the treatment system. The treatment system and its appurtenances must be designed in accordance with the state's design standards which have been established to ensure adequate treatment prior to disposal. Please contact the person listed for your state in Appendix A, CWA National Pollutant Discharge Elimination (NPDES) Permits.

1.4 Safe Drinking Water Act

The **Safe Drinking Water Act** is the federal law that ensures the quality of Americans' drinking water. Congress originally passed the act in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources (rivers, lakes, reservoirs, springs, and ground water wells). The mandates of the act provide that the Public Water System Supervision program regulates the quality of public drinking water and the Underground Injection Control and Source Water Protection/Wellhead Protection programs protect drinking water sources.



The Public Water System Supervision Program

The majority of Americans receive drinking water from public water systems. A public water system is defined as any system that provides water to 25 or more users or that has 15 or more connections. This includes many types of systems that might not normally be thought of as public water systems, such as industries, mobile home parks, rest stops, schools, and park facilities that have their own source of water. If there are 25 or more workers or daily visitors to a facility that provides drinking water, the facility might be a public water system, regardless of ownership.

The Safe Drinking Water Act authorizes EPA to set national health-based standards for drinking water to protect against naturally occurring and man-made contaminants that might be found in drinking water.

Nationally, there are more than 170,000 public water systems providing water to the public, with more than 11,000 of those systems in Region 7. The public water system owners and operators are responsible for making sure they provide water that meets EPA standards. Oversight of these public water systems is the responsibility of EPA, states, and tribes.

Industrial facilities that have their own source of water (such as a well or stream) and provide drinking water to workers, visitors, or the public, are considered public water systems. A facility that uses water from another source, such as a municipal water supply, for drinking water is not regulated as a public water system.

If you also plan to use this existing water supply as the source of cooling or industrial processing water, you should check with the system operator to make sure the system can provide a sufficient quantity and quality of water for your needs. This is important for industries such as ethanol plants that need large quantities of water for manufacturing or processing.

If your facility will use its own water supply source to provide drinking water to 25 or more people per day for at least 60 days of the year, then you are regulated by the Public Water System Supervision Program, and you must obtain permits from the state to build and operate the water supply system. You will be required to perform routine testing of the water for a variety of contaminants, including microbiological, radiological, synthetic organics, and inorganics such as nitrate and lead.

Every public water system must be operated by a trained and qualified operator who is responsible for the quality of the water and meeting regulatory requirements. States have programs for training and certifying operators at a level appropriate to the level of water treatment at the facility. It is the responsibility of the water system owner to have a certified operator in charge.

Even if you plan to use your own water source for just supplying cooling or industrial processing water, there are several state water-supply related permits that might be required. These include:

- **Water Use Permit** - Withdrawing or using water from a surface or underground source typically requires a water use permit, depending on the volume of water that will be used daily.
- **Well Construction Permit** - Drilling a new well or modifying an existing well requires a well construction permit.

It is important for facilities that plan to use their own water supply source(s) to make sure that all of the necessary permits are in place before proceeding. Check with the state environmental, health or natural resources office listed in the Public Water System Supervision section of Appendix A before building or modifying a water supply.

The Underground Injection Control Program

The subsurface environment has been used for centuries to dispose of liquid wastes; the philosophy was that waste out of sight was out of mind. Realizing that this type of waste disposal could contaminate ground water prompted the development of the Underground Injection Control (UIC) program. The UIC program was one of the first Safe Drinking Water Act provisions created specifically to protect underground sources of drinking water. An underground source of drinking water is defined as an aquifer or portion of an aquifer that supplies a public water system or contains sufficient quantity of ground water to supply a public water system, that contains less than 10,000 mg/L total dissolved solids and that is not an exempted aquifer.



UIC Injection Well Head

The UIC program regulates wells where various municipal, agricultural, commercial and industrial users inject fluids underground for disposal, hydrocarbon production and storage, or mineral recovery. The UIC program defines an injection well as any bored, drilled or driven shaft or dug hole, where the depth is greater than the largest surface dimension and is used to discharge fluids underground; or a subsurface fluid distribution system. This definition covers a wide variety of injection practices, ranging from technically sophisticated and highly monitored wells that pump fluids into isolated formations up to two miles below the Earth's surface, to the far more numerous on-site drainage systems, such as septic systems, cesspools, and storm water wells, that discharge fluids a few feet underground. The program requirements are designed to ensure that injected fluids stay within the wells and the intended injection zones and do not endanger underground sources of drinking water.

Injection practices not regulated by the UIC program include 1) individual residential waste disposal systems that inject ONLY sanitary waste and 2) commercial waste disposal systems that serve fewer than 20 people that inject ONLY sanitary waste.

No injection is authorized without approval from the appropriate regulatory authority. Today, 36 states and territories have primacy for UIC programs and EPA directly implements 17 programs. These programs regulate more than 500,000 injection wells. The UIC program also oversees the disposal of up to 89 percent of all hazardous waste that is land-disposed in the U.S. In Region 7, all states, except Iowa, have been granted primary enforcement authority to run the UIC program. In the case of Iowa, Region 7 directly implements that program. These programs regulate the activities of over 33,000 active injection wells in Region 7.

An ethanol plant is subject to the requirements of the UIC Program if:

- It is disposing of storm water, cooling water, industrial or other fluids into the subsurface via an injection well;
- It has an on-site sanitary waste disposal system (e.g., septic system) that serves or has the capacity to serve 20 or more persons; or
- It has an on-site sanitary waste disposal system that is receiving other than a solely sanitary waste stream regardless of its capacity; or
- It is undergoing a remediation process where fluids are being introduced into the subsurface via an injection well to facilitate or enhance the cleanup.

Facilities that discharge fluids to streams, ponds, lagoons, or treatment facilities are not subject to the provisions of the UIC program but could be regulated by the Clean Water Act.

It is important that facilities planning on using an injection well check with the state environmental, health or natural resources office listed in the UIC section of Appendix A before constructing a new injection well or modifying their existing injection well to make sure that all of the necessary permits or approvals are in place before proceeding.

Ground Water/Source Water Protection Programs

Unlike other EPA environmental programs, there is as yet no "National Ground Water Act" with congressionally mandated legislation to protect ground water on a national basis. Rather, EPA has chosen a two-prong approach:

1. Almost every EPA program (e.g., Superfund, pesticides, etc.) has some measure of ground-water protection written into its legislation. Therefore, by carrying out these programmatic responsibilities, each program office contributes to EPA's overall ground-water protection effort.

2. Since formation of EPA's Office of Ground Water Protection in 1984, the Agency has placed the primary responsibility for developing, implementing, and coordinating ground-water protection programs with the states.

The following is a summary of the most significant programs that might affect ethanol plant operations:

Ground Water Protection Strategy - In 1984, EPA released its "Ground Water Protection Strategy" in which the Agency proposed a national program to protect ground water as a resource. Among its provisions was the principle that states are responsible for managing the ground-water resources within their own borders. In response to the national strategy, each state developed its own ground-water protection strategy.

Wellhead Protection Program - The Safe Drinking Water Act Amendments of 1986 contained a new ground-water initiative, the Wellhead Protection Program. Congress directed that an area around every public water supply well be defined, managed, and protected from human-caused sources of contamination. All of the states in Region 7 have approved state wellhead protection programs.

Sole Source Aquifer Program - Some aquifers are so important as drinking water supplies that there are no reasonably available alternative Sources if they should become contaminated. Under the provisions of the Safe Drinking Water Act, an individual or group may petition EPA to designate an aquifer as a sole source aquifer. EPA then has special authority to review projects that receive federal financial assistance and that could pose environmental hazards to water quality. Region 7 has no sole source aquifers.



Drinking Water Intake Wells

Source Water Protection Program - The Safe Drinking Water Act Amendments of 1996 added another initiative, the Source Water Protection Program. The program goes beyond just protecting ground water, which previous legislation has created, to encompass protecting the source of every community's water supply, regardless of whether it is from ground water or surface water. All of the states in Region 7 have an approved state source water protection programs.

It is important that facilities check with the state environmental, health or natural resources office listed in the Source Water Protection Program section of Appendix A prior to construction or modification to ensure that they will comply with any source water protection requirements before proceeding.

1.5 Pollution Prevention Act

Pollution prevention is the practice of preventing or reducing waste where it originates, at the source. It might include any of the following practices:

- conservation of energy or natural resources;
- reducing or eliminating pollutants;
- equipment or technology modifications;
- process or procedure modifications;
- reformulation or redesign of products;
- substitution of raw materials; or,
- improvements in housekeeping, maintenance, training or inventory control.



Although reducing the volume or toxicity of generated waste is the primary pollution prevention objective, facilities implementing such activities could also reap additional benefits. These benefits might include: reduced waste management costs, reduced energy costs, reduced water costs, more efficient operation, and reduced regulatory requirements.

Pollution prevention opportunities might differ from facility to facility, even if the processes are similar. A company should conduct a pollution prevention assessment to determine the benefits and opportunities available.

Assessing Pollution Prevention Opportunities

A pollution prevention assessment is a systematic procedure for identifying ways to reduce or eliminate waste. The four phases of a pollution prevention assessment are:

1. Planning and Organization,
2. Assessment,
3. Feasibility Analysis, and
4. Implementation.

The assessment consists of a careful review of a company's operations and waste streams and the selection of specific areas to assess. A number of options with the potential to minimize waste are developed and screened after a particular waste stream or area is established as the assessment focus. The technical and economic feasibility of the selected options are then evaluated. Finally, the most promising options are selected for implementation.

There are a number of pollution prevention guides available and assistance providers willing to conduct pollution prevention assessments. The EPA Publication "Facility Pollution Prevention Guide" (EPA/600/R-92/088) contains step-by-step directions and pollution prevention assessment forms to help companies with pollution prevention assessments. The "Facility Pollution Prevention Guide" is at:

<http://www.p2pays.org/ref/01/00370.pdf>

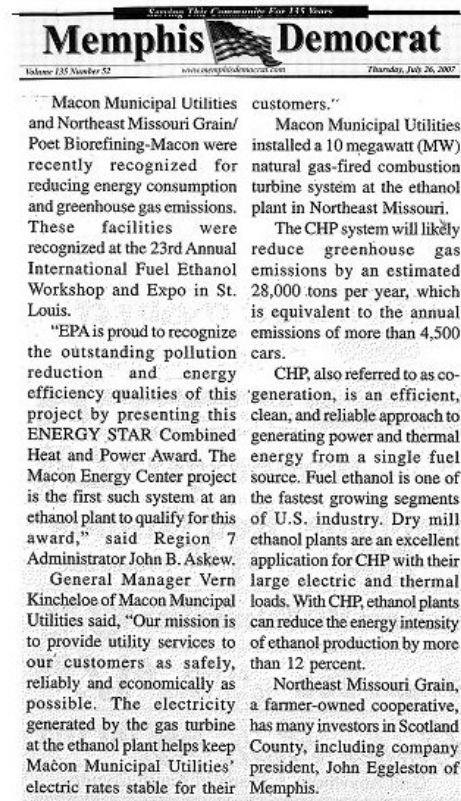
Pollution Prevention Examples

An efficient ethanol production facility generates little waste. Typical waste streams, such as carbon dioxide, distiller's grain and syrup, are all valued products in their own right. Carbon dioxide (given off during fermentation) can be collected, compressed and sold for use in carbonated beverages or for flash freezing meat. Distiller's grains are high in protein and other nutrients and can be used as livestock feed ingredients. Syrup, which is produced by some ethanol plants, can also be sold with the distiller's grains.

Ethanol production facilities might sell "wastes" (or co-products) as valuable products in an effort to reduce waste and generate revenue. Pollution prevention opportunities might also exist for other waste streams or even the general operation of the facility. **Implementing pollution prevention activities at ethanol production facilities might reduce operating costs and improve environmental compliance.** Most pollution prevention projects will require an initial investment, but the annual cost savings of a good project will typically pay for itself in two years or less.

Ethanol production facilities might consider using Combined Heat and Power. Combined heat and power, also known as cogeneration, is an efficient, clean, and reliable approach to generating power and thermal energy from a single fuel source. Dry mill ethanol plants are an excellent application for combined heat and power with their large electric and thermal loads. With combined heat and power, ethanol plants can reduce the energy intensity of ethanol production by more than twelve percent. Information about combined heat and power for ethanol facilities and the Combined Heat and Power Partnership is available at:

http://www.epa.gov/chp/project_resources/ethanol.htm



Award-winning cogeneration plant in Missouri

The table below contains examples of potential pollution prevention opportunities that might apply to ethanol production facilities. The items listed in the table do not constitute an exhaustive list. Note: some items listed might be common practice for most ethanol production facilities.

Pollution Prevention Example	Benefits
Installing a condenser to recover ethanol from vent discharges during distillation.	Recovered ethanol can be used on site as a supplemental fuel.
Updating or replacing existing grain loading and unloading apparatus.	Reduced grain and distillers grain losses.
Updating or replacing older electric motors and lights.	More efficient lights and electrical equipment will reduce energy costs.
For dry mill operations, replace “direct contact” steam use with a “non-contact” heat exchanger.	Reduces biochemical oxygen demand by ~50 percent and wastewater loading by ~25 percent.
Replace existing boiler and dryer fuel with a less polluting alternative	Results depend on fuel. Might reduce particulate matter, sulfur oxides and nitrous oxides.
Recycling/reuse of process water	Reduced water costs.
Capture carbon dioxide from fermentation process	Recovered carbon dioxide may be sold as product. Reduced odors.
Development of a preventive maintenance plan (environmental management system) to proactively prevent leaks and releases caused by poorly maintained equipment	Reduced emissions and releases. More efficient operation of process.
Pave access roads	Reduced fugitive emissions.
Combined heat and power	Reduce the energy intensity of ethanol production by more than twelve percent.

CHAPTER 2 WHAT LAWS APPLY TO OPERATING AN ETHANOL PLANT?

2.1 Clean Air Act

Air Operating Permits

An ethanol plant might need to obtain an air permit for day-to-day facility operations. There are two types of operating permits:

1. Major Source Title V Air Permits.
2. Minor Source Air Permits.

The potential emissions from the plant will determine whether a facility will obtain a major or minor operating permit.

Major Source Title V Air Permits

The federal operating permit program, known as the Title V program, was created by the Clean Air Act Amendments of 1990 and was designed to create a “one stop” permit. **The Title V operating permit compiles all of the applicable state and federal regulatory requirements, existing construction permit provisions, and recordkeeping, reporting, testing, and monitoring requirements into one permit.** The intention behind listing everything in one permit is to help facilities maintain compliance. It is common for a facility to have several construction permits for several pieces of equipment and it is difficult to keep track of all of the requirements in each permit. One permit with all of the facility’s requirements is intended to make it easier to track the requirements.



Public notification is also an important aspect of the operating permit program. The public is notified when an operating permit is proposed and is given the opportunity to comment during the 30-day public notice period. This also gives the public an opportunity to learn about the effects the facility might have on their environment.



Unlike a construction permit that must be obtained **prior** to construction and is valid for the entire life of the emission unit, an operating permit must be applied for within some period (often 12 months) **after** the facility begins operation. The operating permit is generally issued for a specific period of time (usually for five years) rather than the life of the operating unit.

An ethanol plant would need to obtain a Title V operating permit if the plant has the potential-to-emit quantities greater than 100 tons per year of any criteria pollutant or is a major source of hazardous air pollutants
(See Page 1-13).

Minor Source Air Permits

An ethanol plant can limit the facility's potential to emit criteria pollutants to less than 100 tons per year by accepting operational limits in a minor source operating permit. However, minor sources have less operational flexibility because they must keep their emissions below the major source threshold. Minor operating permits are not subject to review by EPA.

The Clean Air Act Section 112(r) - Prevention Program Requirements

Accident prevention is required by the **Risk Management Program** regulations, 40 CFR Part 68 under the Clean Air Act Section 112(r). An owner or operator of a facility (also called a “stationary source”) that has more than the threshold quantity of a regulated substance in a process is required to implement a risk management program. A risk management program includes a hazard assessment, development and implementation of an accident prevention and emergency response program, and analyzing the consequences of worst-case and alternative (less severe) scenarios. This information is then compiled into a Risk Management Plan, or RMP, and provided to EPA.

The purpose of the Risk Management Program is to prevent catastrophic accidents involving extremely hazardous substances. Explosions or other chemical accidents can occur at ethanol production facilities.



**If you aren't sure whether
this rule applies to your
facility, call the
EPA HOTLINE
at:
(800) 424-9346
or
(800) 553-7672
(TDD).**

If one or more processes in an ethanol facility are subject to this rule, they will probably need to develop an accident prevention program and address emergency response issues. In order to develop the correct level of prevention program, facility personnel will need to determine whether it is subject to Program 1, Program 2, or Program 3. Appendix C will help you determine your program level and corresponding responsibilities.

There are 77 toxic substances and 63 flammable substances regulated by 40 CFR Part 68. Some examples of chemicals subject to the risk management program at ethanol plants are anhydrous ammonia, aqueous ammonia, sulfur dioxide, chlorine, and ethylene oxide. Typically, sulfur dioxide is used in the wet-milling ethanol production process. Anhydrous ammonia is sometimes used for adjusting or controlling acidity and as a nutrient for the yeast that converts sugar to alcohol. Flammable substances are used in the denaturant that are potentially regulated under this program, such as pentane, isopentane, isobutene, and butane. A few examples of extremely hazardous chemicals and their Risk Management Program thresholds are listed in the table below.

Risk Management Program 40 CFR Part 68.130

Regulated Substances	Threshold Quantity (in pounds)
Anhydrous ammonia	10,000
Sulfur dioxide	5,000
Chlorine	2,500
Isopentane/Pentane (denaturant)	10,000
Isobutane/Butane (denaturant)	10,000
Ethylene oxide	10,000
Aqueous ammonia (20 percent or more)	20,000
Denaturant with flammable mixture with a National Fire Protection Association 4 rating and more than 1 percent of listed chemical	10,000

2.2 Emergency Planning and Community Right to Know Act

Planning Requirements

Section 302 of the Emergency Planning Community Right to Know Act requires facilities with regulated chemicals above threshold planning quantities to notify the state emergency response commission and the local emergency planning committee within 60 days after they first receive a shipment or produce the substance on-site.

Section 303 of the Emergency Planning Community Right to Know Act requires local emergency planning committees to prepare comprehensive emergency response plans. These plans should identify all facilities subject to comply with this section, including ethanol facilities. These plans should also describe emergency response procedures, training schedules, and practice schedules, amongst other requirements.

Reporting Releases

Section 304 of the Emergency Planning Community Right to Know Act requires regulated facilities to report a release of an extremely hazardous substance. Ethanol production facilities are subject to spill reporting provisions if they release more than a reportable quantity of a chemical. A list of chemicals and their reportable quantities can be found at 40 CFR 302.4 and 355. A few examples of chemicals that might be spilled or released from an ethanol production facility are listed in the table, below.

CERCLA/EPCRA Spill Reportable Quantities in 40 CFR Part 355

Hazardous Chemical	Reportable Quantity (pounds in a 24 hr period)
Anhydrous ammonia	100
Sulfur dioxide	500
Chlorine	10
Waste Ethanol –D001 (Ignitability)	100

Initial notifications of a release can be made by telephone, radio, or in person. Any person in charge is to immediately* report releases to the National Response Center at (800) 424-8802 [40 CFR 302.6(a)]. Reporting should include the following:



- Chemical name or identity of the released substance;
- Indication of whether the substance is on the Comprehensive Environmental Response, Compensation, and Liability Act Section 302(a) list;
- Estimated quantity of release;
- Time and duration of release;
- Medium or media into which the release occurred; and
- Whether release threatens waterways (reporting requirement of the Clean Water Act contained in 40 CFR 117.21).

**National Response Center Phone Number
800-424-8802**

In addition, the owner/operator of a facility is required by 40 CFR 355.40 to **immediately* report releases that are likely to produce off-site exposure and exceed the threshold limit** to all affected local emergency planning committees and state emergency response commissions. This release report is to include:

- Chemical name(s) or identity of all substances involved in the accident;
- Estimate of quantity of substances released to the environment; and
- Time and duration of release.

* For EPCRA/CERCLA reporting purposes “immediately” is interpreted as “not to exceed 15 minutes after the person in charge has knowledge of the release.” This interpretation is documented in [A Legislative History of the Superfund Amendments and Reauthorization Act of 1986, Vol. 2, Oct. 1990.](#)

The facility owner or operator is also required to provide a **written follow-up emergency notice** as soon as possible (and within seven calendar days) to their affected local emergency planning committee and state emergency response commission after a release that requires notification.



The written follow-up notice should include the following:

- An update of all previously provided information;
- Actions taken to respond to the release;
- Known or anticipated acute or chronic health risks associated with a release; and
- Advice regarding medical attention necessary for exposed individuals.

Responding to Ethanol Accidents

Fires created by fuel mixtures composed of ethanol and gasoline, in various combinations, are difficult to extinguish with conventional fire-fighting foam. This is because these mixtures can mix readily with water (depending on the percentage of ethanol), degrading the effectiveness of fire-fighting foam, which is typically not alcohol-resistant. Adding water to ethanol can increase the quantity of ethanol that can support combustion. As little as 20 percent ethanol can flash in the temperature range of 100°F. A 40 percent solution can flash at about 80°F. The Pipeline and Hazardous Materials Safety Administration recommends the use of **alcohol-resistant foam** to fight fires involving ethanol fuel mixtures. The Renewable Fuels Association has a DVD titled, “**Responding to Ethanol Incidents**” available at www.ethanolRFA.org.



Ethanol fires can be nearly invisible; only noticeable by a heat wave.

Other Reporting Requirements

Section 311 of the Emergency Planning Community Right to Know Act requires the facility to have material safety data sheets on site for regulated chemicals that exceed certain quantities and to submit copies to their state emergency response commission, local emergency planning committee, and local fire department within three months of chemical receipt or production. This is a one-time submission that is updated only if new chemicals are stored and/or produced.

Reporting Hazardous Chemical Storage – Tier II Reporting

Chemical storage notification requirements under Section 312 of the Emergency Planning Community Right to Know Act and 40 CFR 370 Subpart D establish reporting for any hazardous chemical or extremely hazardous chemical that is stored at a facility in excess of the designated threshold planning quantity. These reports are also known as the Tier II hazardous chemical inventory form. The Tier II reports are due to the fire department, state emergency response commission, and local emergency planning committee by March 1 of each year. These reports include a minimum of the following information:

- The amount and the location of hazardous chemicals as defined in the Occupational Safety and Health Administration Hazardous Communication Standard,
- Storage codes and storage location,
- Physical and health hazards,
- Average daily amount stored, and
- Number of days on-site.



EPA Region 7 Photo

The purpose of the Tier II report is to provide emergency responders and the public with important information on the hazardous chemicals in their communities for the purpose of enhancing community awareness of chemical hazards and facilitating development of state and local emergency response plans.

Practically all ethanol production facilities need to file a Tier II report. A list of extremely hazardous chemicals and their threshold planning quantities can be found at 40 CFR Part 355. There is no formal list of hazardous chemicals, but a good rule of thumb is any chemical that has an OSHA Material Safety Data Sheet (MSDS) could be reportable if storage exceeds 10,000 pounds. A few examples of chemicals that an ethanol production facility may be required to file a Tier II form are listed in the table, below.

Chemical Storage (Tier II) at 40 CFR Parts 355 & 370

Hazardous Chemical	Threshold Planning Quantity (pounds)
Anhydrous ammonia	500
Sulfur dioxide	500
Chlorine	100
Propane	10,000
Denaturant (Natural Gas Condensate, Raw Gasoline, Casing Gasoline, Head Gas)	10,000
Ethanol	10,000
NOx	100

Toxic Release Inventory Reporting – Form A or Form R

Section 313 of the Emergency Planning Community Right to Know Act requires facilities to report air emission quantities for chemicals exceeding listed amounts. Each year these facilities are required to complete a Toxic Release Inventory (TRI) Form A or Form R report and submit it to EPA. The purpose of the inventory is to gather information on toxic chemicals so that the public and government can assess the hazards of toxic releases in a community.

A list of more than 600 regulated chemicals can be found at 40 CFR 372. A few examples of toxic chemicals released into the environment as reported by ethanol manufacturers in Region 7 include ammonia, chlorine, nitrates, benzene, cyclohexane, n-hexane, acetaldehyde, barium compounds, zinc compounds and copper compounds. While the range of quantities released varies from facility to facility, most toxic chemicals released during ethanol manufacturing are below 500 pounds per year.

Ethanol producers must keep track of the chemicals manufactured or used throughout the year, even if they are contained in a chemical mix such as gasoline or natural gas condensate. Information for determining the amounts of each hazardous chemical contained within a mixture can be found in the TRI reporting forms and instructions available at the following EPA Web address: www.epa.gov/tri/.

If a facility meets all of the following criteria, then it must submit a TRI Form A or Form R report to EPA by July 1 for toxic chemical releases which occurred during the preceding calendar year:

- The facility has 10 or more full time employees; and
- The facility is in Standard Industrial Classification major group codes or North American Industry Classification System subsector and industry codes. Applicable classifications and codes are listed in 40 CFR 372.22. Updated code designations can be found in 71 FR 108 (June 6, 2006).
- The facility manufactures (including importing), processes, or otherwise uses any Emergency Planning and Community Right to Know Act Section 313 chemical in quantities greater than the established threshold in the course of a calendar year.

FORM R TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

WHERE TO SEND COMPLETED FORMS: 1. TRI Data Processing Center: P.O. Box 1513, Lanham, MD 20705-1513, ATTN: TOXIC CHEMICAL RELEASE INVENTORY. 2. APPROPRIATE STATE OFFICE (See instructions in Appendix F). Enter "X" here if this is a revision. For EPA use only.

Important: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR

SECTION 2. TRADE SECRET INFORMATION

2.1 Are you clearing the toxic chemical identified on page 2 trade secret? Yes (Answer question 2.2. Attach substantiation forms) No (Do not answer 2.2. Go to Section 3) (Answer only if "YES" in 2.1)

2.2 Is this copy Simulated Unsimulated

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparer of this report.

Name and official title of owner/operator or senior management official: _____ Signature: _____ Date Reported: _____

SECTION 4. FACILITY IDENTIFICATION

4.1 Facility ID Number: _____

Facility or Establishment Name: _____ Facility or Establishment Name or Mailing Address (different from street address): _____

Street: _____ Mailing Address: _____

City/County/State/Zip Code: _____ City/State/Zip Code: _____ Country (two-digit): _____

4.2 This report contains information for: (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z) (aa) (ab) (ac) (ad) (ae) (af) (ag) (ah) (ai) (aj) (ak) (al) (am) (an) (ao) (ap) (aq) (ar) (as) (at) (au) (av) (aw) (ax) (ay) (az) (ba) (bb) (bc) (bd) (be) (bf) (bg) (bh) (bi) (bj) (bk) (bl) (bm) (bn) (bo) (bp) (bq) (br) (bs) (bt) (bu) (bv) (bw) (bx) (by) (bz) (ca) (cb) (cc) (cd) (ce) (cf) (cg) (ch) (ci) (cj) (ck) (cl) (cm) (cn) (co) (cp) (cq) (cr) (cs) (ct) (cu) (cv) (cw) (cx) (cy) (cz) (da) (db) (dc) (dd) (de) (df) (dg) (dh) (di) (dj) (dk) (dl) (dm) (dn) (do) (dp) (dq) (dr) (ds) (dt) (du) (dv) (dw) (dx) (dy) (dz) (ea) (eb) (ec) (ed) (ee) (ef) (eg) (eh) (ei) (ej) (ek) (el) (em) (en) (eo) (ep) (eq) (er) (es) (et) (eu) (ev) (ew) (ex) (ey) (ez) (fa) (fb) (fc) (fd) (fe) (ff) (fg) (fh) (fi) (fj) (fk) (fl) (fm) (fn) (fo) (fp) (fq) (fr) (fs) (ft) (fu) (fv) (fw) (fx) (fy) (fz) (ga) (gb) (gc) (gd) (ge) (gf) (gg) (gh) (gi) (gj) (gk) (gl) (gm) (gn) (go) (gp) (gq) (gr) (gs) (gt) (gu) (gv) (gw) (gx) (gy) (gz) (ha) (hb) (hc) (hd) (he) (hf) (hg) (hh) (hi) (hj) (hk) (hl) (hm) (hn) (ho) (hp) (hq) (hr) (hs) (ht) (hu) (hv) (hw) (hx) (hy) (hz) (ia) (ib) (ic) (id) (ie) (if) (ig) (ih) (ii) (ij) (ik) (il) (im) (in) (io) (ip) (iq) (ir) (is) (it) (iu) (iv) (iw) (ix) (iy) (iz) (ja) (jb) (jc) (jd) (je) (jf) (jg) (jh) (ji) (jj) (jk) (jl) (jm) (jn) (jo) (jp) (jq) (jr) (js) (jt) (ju) (jv) (jw) (jx) (jy) (jz) (ka) (kb) (kc) (kd) (ke) (kf) (kg) (kh) (ki) (kj) (kk) (kl) (km) (kn) (ko) (kp) (kq) (kr) (ks) (kt) (ku) (kv) (kw) (kx) (ky) (kz) (la) (lb) (lc) (ld) (le) (lf) (lg) (lh) (li) (lj) (lk) (ll) (lm) (ln) (lo) (lp) (lq) (lr) (ls) (lt) (lu) (lv) (lw) (lx) (ly) (lz) (ma) (mb) (mc) (md) (me) (mf) (mg) (mh) (mi) (mj) (mk) (ml) (mm) (mn) (mo) (mp) (mq) (mr) (ms) (mt) (mu) (mv) (mw) (mx) (my) (mz) (na) (nb) (nc) (nd) (ne) (nf) (ng) (nh) (ni) (nj) (nk) (nl) (nm) (nn) (no) (np) (nq) (nr) (ns) (nt) (nu) (nv) (nw) (nx) (ny) (nz) (oa) (ob) (oc) (od) (oe) (of) (og) (oh) (oi) (oj) (ok) (ol) (om) (on) (oo) (op) (oq) (or) (os) (ot) (ou) (ov) (ow) (ox) (oy) (oz) (pa) (pb) (pc) (pd) (pe) (pf) (pg) (ph) (pi) (pj) (pk) (pl) (pm) (pn) (po) (pp) (pq) (pr) (ps) (pt) (pu) (pv) (pw) (px) (py) (pz) (qa) (qb) (qc) (qd) (qe) (qf) (qg) (qh) (qi) (qj) (qk) (ql) (qm) (qn) (qo) (qp) (qq) (qr) (qs) (qt) (qu) (qv) (qw) (qx) (qy) (qz) (ra) (rb) (rc) (rd) (re) (rf) (rg) (rh) (ri) (rj) (rk) (rl) (rm) (rn) (ro) (rp) (rq) (rr) (rs) (rt) (ru) (rv) (rw) (rx) (ry) (rz) (sa) (sb) (sc) (sd) (se) (sf) (sg) (sh) (si) (sj) (sk) (sl) (sm) (sn) (so) (sp) (sq) (sr) (ss) (st) (su) (sv) (sw) (sx) (sy) (sz) (ta) (tb) (tc) (td) (te) (tf) (tg) (th) (ti) (tj) (tk) (tl) (tm) (tn) (to) (tp) (tq) (tr) (ts) (tt) (tu) (tv) (tw) (tx) (ty) (tz) (ua) (ub) (uc) (ud) (ue) (uf) (ug) (uh) (ui) (uj) (uk) (ul) (um) (un) (uo) (up) (uq) (ur) (us) (ut) (uu) (uv) (uw) (ux) (uy) (uz) (va) (vb) (vc) (vd) (ve) (vf) (vg) (vh) (vi) (vj) (vk) (vl) (vm) (vn) (vo) (vp) (vq) (vr) (vs) (vt) (vu) (vv) (vw) (vx) (vy) (vz) (wa) (wb) (wc) (wd) (we) (wf) (wg) (wh) (wi) (wj) (wk) (wl) (wm) (wn) (wo) (wp) (wq) (wr) (ws) (wt) (wu) (wv) (ww) (wx) (wy) (wz) (xa) (xb) (xc) (xd) (xe) (xf) (xg) (xh) (xi) (xj) (xk) (xl) (xm) (xn) (xo) (xp) (xq) (xr) (xs) (xt) (xu) (xv) (xw) (xx) (xy) (xz) (ya) (yb) (yc) (yd) (ye) (yf) (yg) (yh) (yi) (yj) (yk) (yl) (ym) (yn) (yo) (yp) (yq) (yr) (ys) (yt) (yu) (yv) (yw) (yx) (yz) (za) (zb) (zc) (zd) (ze) (zf) (zg) (zh) (zi) (zj) (zk) (zl) (zm) (zn) (zo) (zp) (zq) (zr) (zs) (zt) (zu) (zv) (zw) (zx) (zy) (zz)

SECTION 5. PARENT COMPANY INFORMATION

5.1 Name of Parent Company: _____ NA

5.2 Parent Company's Dun & Bradstreet Number: _____ NA

EPA Form 9250-1 (Rev. 03/2003) - Previous editions are obsolete.

Most ethanol production facilities in Region 7 have more than 10 employees. In addition, there are many different listed chemicals that are “manufactured,” “processed,” or “otherwise used” in the production of ethanol. Therefore, **most ethanol production facilities are required to submit a Form A or R.**

2.3 Clean Water Act

Water is required at ethanol facilities for processing and for the production of steam that is typically used in biomass pretreatment and ethanol distillation processes. An ethanol plant's wastewater is typically comprised of cooling tower blowdown, boiler blowdown, and water softener discharge.

In addition, stormwater runoff from the facility may be contaminated from precipitation (rain or snow) coming in contact with plant operations and requires adequate control and management.

Wastewater Discharge Permits

Wastewater from an ethanol plant can be disposed of in various ways. The method of disposal determines what kind of permit is needed and what permitting authority will issue it. In general, there are three alternatives for the disposal of wastewater:

- Direct discharge to a receiving stream,
- Discharge to a municipal wastewater treatment system, and
- Land application.

Permits for Disposal Directly to a Water Body



EPA Region 7 Photo

Any discharge directly into a water body (e.g. stream, river, lake, etc.) or by conveyance (i.e., pipe, culvert) to a water body, must be permitted prior to discharge. In Region 7, these permits are **issued by the state in which the ethanol facility will be located** under the National Pollutant Discharge Elimination System (NPDES), the federal water pollution control program created by the Clean Water Act.

An NPDES permit regulates the amount of pollutants that can be discharged. The permit writer will establish limits in that permit that protect the water quality of the receiving water body. In addition to numeric effluent limitations, NPDES permits will include monitoring, reporting, and recordkeeping requirements. Permits are required whether or not on-site treatment occurs.

To receive an NPDES permit, **a written application must be made with the respective state agency 180 days prior to commencing discharge.** The application will consist of multiple forms covering different aspects of the discharge. In general, the application forms will include:

- General Information,
- Existing Industrial Wastewater,
- New Source and New Discharger Industrial Wastewater,
- Non-Process Wastewater only, and
- Stormwater Discharges Associated with Industrial Activity.

For further information, refer to the state contact information in Appendix A under CWA National Pollutant Discharge Elimination System (NPDES) Permits.

Permits to Discharge to a Municipal Wastewater Treatment Plant

Most of the larger cities in Region 7 implement an EPA or state-approved pretreatment program to prevent wastewater discharges from having a deleterious affect on their treatment plant, collection system, and the water body into which they discharge. **Cities with pretreatment programs issue permits** to significant industrial users, which are those facilities that discharge a minimum of 25,000 gallons per day of wastewater, 5% of the receiving wastewater treatment plant's capacity, or have been determined by the city to have significant potential to affect their plant and its operations. The city will require a permit application be filed with the city pretreatment coordinator prior to discharge. The amount of time required for the permit application to be filed prior to discharge can vary but may be as long as 180 days. The pretreatment permit will contain numeric limits based on local treatment plant capabilities and environmental conditions. In addition, the permit will also contain monitoring, reporting, and recordkeeping requirements.

To determine if your city has a pretreatment program, either contact the city's Public Works Department or contact the state pretreatment coordinator listed in Appendix A under CWA Pretreatment Program.

For discharges to cities that are too small to implement a pretreatment program, the state is the permitting authority. Depending on the state in which the plant is located, you may be required to obtain a discharge permit or enter into a treatment agreement with the municipality receiving the wastewater. To determine if you will be required to apply for a permit, contact the state pretreatment coordinator listed in Appendix A under CWA Pretreatment Program.

Permits for Land Application for Wastewater Disposal

There are no federal regulations that apply to wastewater that is properly disposed of by land application. However, land application of wastewater may be covered by an NPDES permit

(stormwater or non-stormwater) where it is determined that pollutants run off the application site to a water of the United States. In Region 7, **states administer programs that establish proper land application** procedures to ensure that wastewaters are applied at agronomic rates, which are rates that plants assimilate the nutrients in the wastewater without pollutant loss through runoff.

For more information about land application, contact the same state officials that are listed in Appendix A under CWA National Pollutant Discharge Elimination System (NPDES) Permits.



Industrial Stormwater Permits

Industrial activity by its very nature can create pollution problems if not controlled. Therefore, industrial facilities must obtain stormwater permits during plant operation in addition to construction permits described in Section 1.3.



EPA's NPDES regulations require that a stormwater permit be obtained for discharges to waters of the United States from certain industrial activities including ethanol manufacturing. These stormwater discharges may be covered under the NPDES permit issued for

controlling process and other plant discharges, or it may be covered by a separate stormwater-only NPDES permit. Stormwater-only discharges are typically covered under a general permit issued by the state environmental department.

Similar to the stormwater construction permit, industrial stormwater general permits require submission of a simplified application (e.g., a Notice of Intent or NOI) and development and implementation of a plan, often called a stormwater pollution prevention plan, to control discharges of pollutants from the facility during operation. In some instances, these general permits may include numeric effluent limitations and monitoring and reporting requirements. Stormwater controls are needed for areas of the facility exposed to precipitation such as industrial plant yards, material and waste handling, storage areas, shipping and receiving areas, and areas of the site where past materials/residuals still exist.

Permit application due dates vary by state in advance of commencement of discharge from these industrial activities. Individual stormwater applications are due at least 180 days prior to commencement of a stormwater discharges associated with industrial activity. The state and EPA Regional contacts for industrial storm water permitting are listed in Appendix A under CWA Stormwater.

Spill Prevention, Control and Countermeasure Regulations

The purpose of the Spill Prevention, Control and Countermeasure regulation is to prevent discharges of **oil into navigable waters or adjoining shorelines**. The regulation can be found at 40 CFR 112 and is implemented by the EPA.



An ethanol facility is subject to this regulation if:

- 1) It is non-transportation related;
- 2) It has a total above-ground oil storage capacity greater than 1,320 gallons or a completely buried oil storage capacity greater than 42,000 gallons; and
- 3) There is a reasonable expectation of an oil discharge into or upon navigable waters of the United States or adjoining shorelines.

When calculating oil storage capacity, the facility is required to include:

- Storage capacity for oil of any kind in any form as defined in 40 CFR 112.2. This includes oils such as gasoline and natural gasoline, which are often stored on-site and used to denature ethanol, and ethanol that has been denatured with oil.
- Oil storage and other oil-filled equipment, such as oil-filled transformers.

When calculating oil storage capacity, the facility should not include:

- Containers with a capacity of less than 55 gallons;
- Completely buried tanks that are subject to all the technical requirements of the Underground Storage Tank Regulation (40 CFR 280), or technical requirements of a state underground storage tank program approved under 40 CFR 281;
- Containers that are permanently closed as defined in 40 CFR 112.2; or
- Parts of the facility used exclusively for wastewater treatment and not used to satisfy any requirements of 40 CFR 112.

A “reasonable expectation” that the facility could discharge oil into or upon navigable waters is based upon the location of the ethanol plant. The plant’s location relative to streams, ponds, ditches, storm or sanitary sewers, wetlands, mud flats, sand flats, or navigable waters should be considered. The distance to navigable waters, volume of materials stored, worst-case weather conditions, drainage patterns, land contours, soil conditions, etc., must be taken into account. Man-made features such as dikes, equipment or other structures which may serve to restrain, hinder, contain, or prevent an oil discharge may NOT be considered in the “reasonable expectation” determination [40 CFR 112.1(d)(1)(i).]



Photo Courtesy of Coast Guard

Facilities that are subject to the oil spill prevention regulation must prepare and implement a spill prevention plan. The owner or operator of a facility existing on or before Aug. 16, 2002, must maintain and implement the current plan and amend and implement a plan revised to meet the 2002 rule amendments on or before July 1, 2009. The owner or operator of a facility that became operational after Aug. 16, 2002 must prepare and implement a plan on or before July 1, 2009 or before beginning operations, whichever is later.

A facility that transfers oil over water to or from vessels and has a total oil storage capacity of 42,000 gallons or more, and a facility that has a total storage capacity of 1 million gallons or more, might be subject to the Facility Response Plan requirements in 40 CFR 112, Subpart D. For additional information about Facility Response Plans, see Appendix F, “Do I need a facility Response Plan?”

Reporting Oil Discharges

Oil discharges must be **immediately** reported to the National Response Center if they are in a quantity that “may be harmful” according to the Clean Water Act Section 311(b)(4) and 40 CFR 110.6.



An oil discharge must be reported to the National Response Center if it:

- violates applicable water quality standards,
- causes a film or sheen upon or discoloration of the surface of the water or adjoining shoreline, or
- causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shoreline.

**National Response Center Phone Number
800-424-8802**

2.4 Safe Drinking Water Act

The Public Water System Supervision Program

If your facility uses its own water supply source to provide drinking water to 25 or more people per day for at least 60 days of the year, then you are covered by the Public Water System Supervision Program and you must obtain permits for the construction/modification and operation of the water supply system. Even if you only use your own water source for supplying cooling or industrial processing water, there are several state-issued water-supply related permits that might be required. These include:



- **Water Use Permit** - Withdrawing or using water from a surface or underground source typically requires a water use permit, depending on the volume of water that will be used daily. Any increase in water withdrawal/use could require a modification to an existing water use permit.
- **Well Construction Permit** - Drilling a new well or modifying an existing well requires a well construction permit.
- **Operator Certification** – Every public water system must be operated by a trained and qualified operator who is responsible for the quality of the water and meeting the regulatory requirements. States have programs for training and certifying operators at a level appropriate to the level of water treatment at the facility. It is the responsibility of the water system owner to have a certified operator in charge.
- **Routine testing** – Your drinking water must be tested for compliance with all the federal and state drinking water standards. The cost of sampling and analysis are the responsibility of the water system owner. Standards are set for microbiological contaminants, man-made chemicals and pesticides, naturally-occurring inorganics, and contamination caused by human activity, such as lead and nitrates. There are also requirements for operational testing, record-keeping and reporting, correction of sanitary deficiencies, and notification of the public when problems occur.

It is important that facilities planning to develop their own water supply or modify their existing source(s) first check with the state environmental, health or natural resources office listed in the public water system supervision section of Appendix A to ensure that all of the necessary permits are in place before proceeding.

If your facility is using water from an existing water supply system such as a municipal water supply for your drinking water source, then the Public Water System Supervision Program does not apply. However, if you also plan to use this

existing water supply as the source of cooling or industrial processing water, you should check with the system operator to make sure the system can provide a sufficient quantity of water for your needs. This is important for industries such as ethanol plants, which need large quantities of water for manufacturing or processing.

The Underground Injection Control Program

The Underground Injection Control program regulates wells that are used by cities, agriculture, business and industry to inject fluids underground for disposal, hydrocarbon production and storage, or mineral recovery. The program defines an injection well as any bored, drilled or driven shaft or dug hole, where the depth is greater than the largest surface dimension and is used to discharge fluids underground or a subsurface fluid distribution system. This definition covers a wide variety of injection practices that range from technically sophisticated and highly monitored wells that pump fluids into isolated formations up to two miles below the Earth's surface to the far more numerous on-site drainage systems, such as septic systems, cesspools, and storm water wells which discharge fluids a few feet underground. The program requirements are designed to ensure that injected fluids stay within the wells and the intended injection zones and do not endanger underground drinking water sources. No injection is authorized without approval from the appropriate regulatory authority.

Injection practices not regulated by the underground injection program include individual residential waste disposal systems that inject ONLY sanitary waste and commercial waste disposal systems that serve fewer than 20 persons that inject ONLY sanitary waste.

An ethanol plant is subject to the requirements of the underground injection program if:

- it is disposing of storm water, cooling water, industrial or other fluids into the subsurface via an injection well; or
- it has an on-site sanitary waste disposal system (eg. septic system) that serves or has the capacity to serve 20 or more people; or
- it has an on-site sanitary waste disposal system that is receiving other than a solely sanitary waste stream regardless of its capacity; or
- it is undergoing a remediation process where fluids are being introduced into the subsurface via an injection well to facilitate or enhance the cleanup.

Facilities that discharge fluids to streams, ponds, lagoons, or treatment facilities are not subject to the provisions of the underground injection program but could be regulated by the Clean Water Act.

It is important that facilities planning on using a new injection well or modifying an existing one check with the state environmental, health or natural resources office listed in the underground injection section of Appendix A to make sure that all of the necessary permits or approvals are in place before proceeding.

2.5 Resource Conservation and Recovery Act - Hazardous Waste

All ethanol plants will probably generate some quantities of hazardous waste. However, the hazardous waste being generated might not be directly related to the production of ethanol. Hazardous waste generation at ethanol plants is mostly associated with other plant operations that might result in waste streams such as gasoline, spent solvents, lab packs, various paint wastes, used oil, waste ethanol (D001), waste lamps, and batteries. There are usually no hazardous waste permitting requirements for ethanol plants that generate hazardous waste.



There are, however, requirements for hazardous waste generators to properly notify and obtain an identification number from EPA or the applicable state environmental agency if the plant generates hazardous wastes in quantities greater than 100 kg in any month. Hazardous wastes must be properly managed according to 40 CFR Part 262 until disposed at a permitted treatment, storage, or disposal facility. If your ethanol plant will have hazardous waste transported to a treatment, storage, or disposal facility, your facility must use a hazardous waste manifest with an EPA identification number.

Hazardous waste management requirements vary according to the amount of hazardous waste a plant generates in a given month. It is important that ethanol plants properly characterize, manage, and track each of their hazardous waste streams from the point of generation to the ultimate treatment, storage or disposal

of the hazardous waste. An excellent document that provides more detailed information about this topic is “Managing Your Hazardous Waste – A Guide for Small Businesses.” Facilities can find this document on the Internet at www.epa.gov by searching for its title or publication number “EPA530-K-01-005.”

Underground Storage Tanks

Ethanol facilities might have underground storage tanks. Underground storage tanks are regulated to prevent their contents from entering the environment. The greatest potential hazard from a leaking underground storage tank is that the petroleum or other hazardous substance can seep into the soil and contaminate ground water, the source of drinking water for nearly half of all Americans. A leaking underground storage tank can also present other health and environmental risks, including the potential for fire and explosion.



Photo Courtesy of Missouri Department of Natural Resources

An underground storage tank is one or a combination of tanks (including underground pipes connected to them) used to contain an accumulation of regulated substances. The volume of the tanks (including the volume of underground pipes connected to them) is 10 percent or more beneath the surface of the ground.

The full definition of underground storage tanks, including the exemptions, can be found in 40 CFR 280.12. The term “regulated substance” is defined in 40 CFR 280.12. It includes any substance defined in Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure. “Regulated substance” includes substances such as gasoline, diesel, fuel oils, petroleum solvents, and used oils. It does not include any substance regulated as a hazardous waste under subtitle C.

Each of the four states in Region 7 is approved to implement underground storage tank programs except for underground storage tanks on Indian reservations. More information about the state’s programs can be found at their Web sites listed in Appendix A.

APPENDIX A – SUMMARY OF LAWS PERTAINING TO ETHANOL PRODUCTION AND CONTACTS

This appendix includes a list of contact and resource information for Region 7. Contact information for locations outside of Region 7 may be found at www.envcap.org/statetools/ or by contacting the EPA Region where the facility is located.

Clean Air Act

For additional information about the Clean Air Act (CAA), please contact:

Law Citing	Regulation	Description	Contacts
CAA	40 CFR 52.21	Air Permits	Iowa Department of Natural Resources: - Dave Phelps (515) 281-8189 - Web site: www.iowacleanair.com
CAA	40 CFR Part 60	New Source Performance Standards	Kansas Department of Health & Environment: - John Ramsey (785) 296-1992 - Web site: www.kdheks.gov/bar/
CAA	40 CFR Part 63	Maximum Achievable Control Technology	Missouri Department of Natural Resources: - Kyra Moore (573) 751-4817 - Web site: www.dnr.mo.gov/env/apcp/
CAA	40 CFR Part 61 Subpart M	Asbestos	Nebraska Department of Environmental Quality: - Clark Smith (402) 471-4204, or - Melissa Ellis (402) 471-6624 - Web site: www.deq.state.ne.us - Toll Free NDEQ Construction Permit Hotline is 1-(877) 834-0474
CAA	40 CFR Part 61 Subpart M	Asbestos	Tepf cmY j kr rg EPA Region 7 (913) 551-72; 5 whipple.randall@epa.gov
CAA 112(r)	40 CFR Part 68	Risk Management Program	EPA Hotline: (800) 424-9346 or (703) 412-9810 or (800) 553-7672 (TDD) http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/index.html EPA Region 7: George Hess, (913) 551-7540, hess.george@epa.gov

National Environmental Policy Act

For additional information about the National Environmental Policy Act, please contact:

Joe Cothorn
NEPA team leader
Environmental Services Division
Environmental Protection Agency Region 7
(913) 551-7148
cothorn.joe@epa.gov

Clean Water Act (CWA)

CWA National Pollutant Discharge Elimination System (NPDES) Permits

Agency	Contact	Web Address
Iowa Department of Natural Resources	Angela Chen (515) 281-4736 angela.chen@dnr.state.ia.us	www.iowadnr.gov/water/npdes/index.html
Kansas Department of Health and Environment	Don Carlson (785) 296-5547 dcarlson@kdhe.state.ks.us	www.kdheks.gov/indust/
Missouri Department of Natural Resources	Rob Morrison (573) 526-0991 rob.morrison@dnr.mo.gov	www.dnr.mo.gov/env/wpp/permits/index.html
Nebraska Department of Environmental Quality	Donna Garden (402) 471-1367 donna.garden@ndeq.state.ne.us	www.deq.state.ne.us
EPA	Pradip Dalal (913) 551-7454 dalal.pradip@epa.gov	http://cfpub.epa.gov/npdes/home.cfm?program_id=45

CWA Pretreatment Program

Agency	Pretreatment Coordinator	Web Address
Iowa Department of Natural Resources	Tom Atkinson (515) 281-5054 tom.atkinson@dnr.state.ia.us	www.iowadnr.gov/water/pretreatment/index.html
Kansas Department of Health and Environment	Steve Caspers (785) 296-5551 scaspers@kdhe.state.ks.us	www.kdheks.gov/indust
Missouri Department of Natural Resources	Richard Laux (573) 751-6982 richard.laux@dnr.mo.gov	www.dnr.mo.gov/index.html
Nebraska Department of Environmental Quality	Chuck Duerschner (treatment facility construction permits) chuck.duerschner@ndeq.state.ne.us or Donna Garden (402) 471-1367 donna.garden@ndeq.state.ne.us	www.deq.state.ne.us
EPA	Paul Marshall (913) 551-7419 marshall.paul@epa.gov	http://cfpub.epa.gov/npdes/home.cfm?program_id=3

CWA Stormwater

Agency	Contact	Web Address
Iowa Department of Natural Resources	Joe Griffin (515) 281-7017 or Terry Kirchenman (constr. permits) (515) 281-8885 terry.kirschenman@dnr.state.ia.us	www.iowadnr.gov/water/stormwater/who.html
Kansas Department of Health and Environment	Joe Mester (785) 296-6804 jmester@kdhe.state.ks.us	www.kdheks.gov/stormwater
Missouri Department of Natural Resources	Kevin Mohammadi (573) 751-1740 mohammadi.kevin@dnr.mo.us	www.dnr.mo.gov/env/wpp/stormwater/s-w-land-disturb-permits.htm
Nebraska Department of Environmental Quality	Mary Schorer (402) 471-2186 mary.schorer@ndeq.state.ne.us	www.deq.state.ne.us
EPA	Tanya L. Black (913) 551-7170 black.tanyal@epa.gov	http://cfpub.epa.gov/npdes/home.cfm?program_id=6

CWA 404 Permits/ Wetlands Program

District\State Coverage	Contact	Internet Site
Iowa and Missouri Rock Island District Covers Iowa except area covered by the Omaha District and northeastern part of Missouri	U.S. Army Rock Island Dist. Corps of Engineers Rock Island, Ill. (309) 794-5376	www2.mvr.usace.army.mil/Regulatory/default.cfm
Nebraska Omaha District Omaha Office	U.S. Army Omaha District Corps of Engineers (402) 896-0896	www.nwo.usace.army.mil/html/od-r/regwebpg.htm
Nebraska Omaha District Kearney Office	U.S. Army Omaha District Corps of Engineers (308) 234-1403	www.nwo.usace.army.mil/html/od-r/regwebpg.htm
Missouri St. Louis District	U.S. Army St. Louis District Corps of Engineers (314) 331-8574	www.mvs.usace.army.mil/permits/permits.html
Missouri Kansas City District	U.S. Army Corps of Engineers Northwestern Division Kansas City District Kansas City, Mo. (816) 389-3990	www.nwk.usace.army.mil/regulatory/regulatory.htm
Kansas Kansas City District Northern Kansas Area	U.S. Army Corps of Engineers Northwestern Division Kansas City District Marquette, Kan. (785) 546-2130	www.nwk.usace.army.mil/regulatory/regulatory.htm
Kansas Kansas City District Southern Kansas Area	U.S. Army Corps of Engineers Northwestern Division Kansas City District El Dorado, Kan. (316) 322-8247	www.nwk.usace.army.mil/regulatory/regulatory.htm
Memphis District	U.S. Army Corps of Engineers Memphis District Memphis, Tenn. (901) 544-0736	www.mvm.usace.army.mil/regulatory/memphis.htm
Little Rock District	U.S. Army Corps of Engineers Little Rock District Little Rock, Ark. (501) 324-5295	www.swl.usace.army.mil/regulatory

Additional information on CWA wetlands is available from the following at the EPA Region 7 office:

State	Name	Phone	E-mail
Iowa	Jason M. Daniels	(913) 551-7443	daniels.jason@epa.gov
Kansas	Kathleen Mulder	(913) 551-7542	mulder.kathy@epa.gov
Missouri	Vicky Johnson	(913) 551-7564	johnson.vicky@epa.gov
Nebraska	Eliodora Chamberlain	(913) 551-7945	chamberlain.eliodora@epa.gov

Construction Industry Compliance Assistance Center may be found at <http://cicacenter.org/wetlands.html>

CWA Chemical Release Notification Requirements

Subject	Law and Regulation	Who to Notify	When
CWA Release Notification	CWA 40 CFR 110 & 40 CFR 117	National Response Center (800) 424-8802	Immediately
Notification of Slug Loading to POTW	CWA 40 CFR 403	POTW, State Pretreatment Program	Immediately
Notification of Hazardous Waste Discharge to Septic System	CWA 40 CFR 144	EPA Regional Underground Injection Control Well Program, and state injection program	Immediately
State Statutes	State Laws	State Environmental Agency	Varies

Emergency Planning and Community Right to Know Act (EPCRA)

EPCRA Chemical Release Notification Requirements

Subject	Law and Regulation	Who to Notify	When
EPCRA Release Notification	EPCRA 40 CFR 355	<p>-State Emergency Response Commissions (SERC)s: Iowa Department of Natural Resources – (515) 281-8694 Kansas Division of Emergency Management – (785) 296-8013 or (800) -275-0297 Missouri Department of Natural Resources – (573) 634-2436 Nebraska Department of Environmental Quality – (402) 471-2186 or (402) 471-4230; Evenings and Weekends call Nebraska State Patrol – (402) 471-4545</p> <p>-Local Emergency Planning Committee (LEPC)</p>	Immediately*
CERCLA Release Notification	CERCLA 40 CFR 300, 302	<p>National Response Center (800) 424-8802</p>	Immediately*
State Statutes	State Laws	State Environmental Agency	Varies

* For Emergency Planning/Superfund reporting purposes “immediately” is interpreted as “not to exceed 15 minutes after the person in charge has knowledge of the release.” This interpretation is documented in A Legislative History of the Superfund Amendments and Reauthorization Act of 1986, Volume 2, October 1990.

Reporting Hazardous Chemical Storage – Tier II Reporting (EPCRA §312)

Tier II Administration	Tier II Reporting	Contact
<p>Iowa Department of Natural Resources</p>	<p>Submit to: Adam Broughton Emergency Response Unit Iowa Department of Natural Resources 401 SW 7th Street, Suite I Des Moines, IA 50309</p>	<p>Adam Broughton Phone: (515) 281-8694 Fax: (515) 725-0218 emergencyresponse@dnr.state.ia.us</p>
<p>Kansas Division of Health and Environment</p>	<p>Web site: www.kdhe.state.ks.us/bar/index.html</p> <p>Submit to: Kansas State Emergency Response Commission 1000 SW Jackson; Suite 310 Topeka, KS 66612-1366</p> <p>Information regarding the reporting process, instructions, or blank forms may be requested by writing to: Kansas State Emergency Response Commission 1000 SW Jackson; Suite 310 Topeka, KS 66612-1366 or calling (785) 296-1688, (785) 296-1689, or (785) 296-1691</p>	<p>Kimberly Steves ksteves@kdhe.state.ks.us Phone: (785) 296-4359 Fax: (785) 296-1545</p>
<p>Missouri Emergency Response Commission</p>	<p>Web site: http://hazmat.dps.mo.gov/</p> <p>Submit to: Missouri Emergency Response Commission 2302 Militia Drive PO Box 3133 Jefferson City, MO 65102</p> <p>Special Instructions: Submit all Tier II reports on the MISSOURI TIER TWO Electronic filing tool located at http://hazmat.dps.state.mo.us</p>	<p>For more information, including sample forms and instructions, visit http://hazmat.dps.mo.gov/ (800) 780-1014 Or (573) 526-9239 Fax - (573) 526-9261</p>
<p>Nebraska Department of Environmental Quality</p>	<p>Submit to: Nebraska Department of Environmental Quality 1200 N Street, Suite 400 P.O. Box 98922 Lincoln, NE 68509 www.deq.state.ne.us/EAD.nsf/Pages/NEPCRA</p>	<p>Mark Lohnes (402) 471-4251 mark.lohnes@ndeq.state.ne.us</p>

Toxic Release Inventory Reporting (EPCRA §313)

Agency	TRI Reporting	Contact
<p>Iowa Department of Natural Resources</p>	<p>Submit to: Adam Broughton Emergency Response Unit Iowa Department of Natural Resources 401 SW 7th Street, Suite I Des Moines, IA 50309</p>	<p>For TRI reporting questions, you may contact Adam Broughton at: Phone: (515) 281-8694 Fax: (515) 725-0218 emergencyresponse@dnr.state.ia.us</p>
<p>Kansas Department of Health and Environment</p>	<p>Submit to: Kimberly Steves, Environmental Health Scientist Kansas Department of Health and Environment Bureau of Air & Radiation Asbestos & Hazardous Chemical Information Unit 1000 SW Jackson, Suite 310 Topeka, KS 66612-1366</p> <p>Web Site: www.kdhe.state.ks.us</p>	<p>For TRI reporting questions, contact Kimberly Steves at: ksteves@kdhe.state.ks.us Phone: (785) 296-4359 Fax: (785) 296-1545</p>
<p>Missouri Department of Natural Resources</p>	<p>Submit by Certified Mail Only to: TOXICS RELEASE INVENTORY c/o Todd Crawford, PE Missouri Department of Natural Resources Division of Environmental Quality 1101 Riverside Drive Jefferson City, MO 65101</p> <p>Web Site: www.dnr.mo.gov/env/tri/index.htm</p>	<p>For TRI reporting questions, contact Todd Crawford at: todd.crawford@dnr.mo.gov Toll Free: 1-800-361-4827 Phone: (573) 571-6892 Fax: (573) 571-9227</p>
<p>Nebraska Department of Environmental Quality</p>	<p>Submit by Certified Mail Only to: Mark Lohnes SARA Title III and NEPCRA Coordinator Nebraska Department of Environmental Quality 1200 N. Street, Suite 400 Lincoln, NE 68509</p> <p>Web Site: www.deq.state.ne.us</p>	<p>For TRI reporting questions, contact Mark Lohnes at: mark.lohnes@ndeq.state.ne.us Phone: (402) 471-4251 Fax: (402) 471-2909</p>

Resource Conservation and Recovery Act (RCRA)

RCRA Hazardous Waste

Agency	Contact	Web Address
Iowa (EPA Region 7)	Edwin G. Buckner, PE RCRA Enforcement and State Programs Branch (913) 551-7621 buckner.edwin@epa.gov	www.epa.gov
Kansas Department of Health and Environment	Jim Rudeen Bureau of Waste Management (785) 296-1600	www.kdheks.gov/waste/index.html
Missouri Department of Natural Resources	Tom Judge (573) 751-0752	www.dnr.mo.gov/env/hwp/index/html
Nebraska Department of Environmental Quality	Morgan Leibrandt (402) 471-4217	www.deq.state.ne.us
EPA	Edwin G. Buckner, PE RCRA Enforcement and State Programs Branch (913) 551-7621 buckner.edwin@epa.gov	www.epa.gov

RCRA Underground Storage Tanks

State Agency	Internet Address
Iowa Department of Natural Resources	www.iowadnr.gov/land/ust/index.html
Kansas Department of Health and Environment	www.kdheks.gov/tanks/index.html
Missouri Department of Natural Resources	www.dnr.mo.gov/env/hwp/tanks/tanks.htm
Nebraska State Fire Marshal	www.sfm.ne.gov
Nebraska Department of Environmental Quality	www.deq.state.ne.us

Safe Drinking Water Act (SDWA)

SDWA Public Water Supply Supervision Program

Agency	Contact	Web Address
Iowa Department of Natural Resources	Dennis Alt (515) 725-0275 dennis.alt@dnr.state.ia.us	www.iowadnr.gov/water/drinking
Kansas Department of Health and Environment	Don Carlson (785) 296-5547 dcarlson@kdhe.state.ks.us	www.kdheks.gov/indust
Missouri Department of Natural Resources	Steve Sturgess (573) 751-1187 steve.sturgess@dnr.mo.gov	www.dnr.mo.gov/env/wpp/dw-index.htm
Nebraska Department of Health and Human Services	Jack Daniel (402) 471-0510 jack.daniel@hhs.state.ne.us	www.hhs.state.ne.us/enh/pwsindex.htm
EPA	Mary Mindrup (913) 551-7431 mindrup.maryp@epa.gov	www.epa.gov/safewater/pws/index.html

SDWA Underground Injection Control Program

Agency	Contact	Web Address
Iowa Implemented by EPA-Region 7	Kurt Hildebrandt (913) 551-7413 hildebrandt.kurt@epa.gov	www.epa.gov/region07/water/dwgw.htm
Kansas Department of Health and Environment	Kirk Hoeffner (785) 296-5551 k.hoeffner@kdhe.state.ks.us	www.kdheks.gov/geo
Missouri Department of Natural Resources	Jeff Jaquess (573) 368-2195 richard.laux@dnr.mo.gov	www.dnr.mo.gov/index.html
Nebraska Department of Environmental Quality	David Miesbach (402) 471-4982 david.miesbach@ndeq.state.ne.us	www.deq.state.ne.us/GroundW.nsf/Pages/UIC
EPA	Kurt Hildebrandt (913) 551- 7413 hildebrandt.kurt@epa.gov	www.epa.gov/safewater/uic

SDWA Source Water Protection Program

Agency	Contact	Web Address
Iowa Department of Natural Resources	Rebecca Ohrtman (515) 281-0932 rebecca.ohrtman@dnr.state.ia.us	www.iowadnr.gov/water/watershed/source_water.html
Kansas Department of Health and Environment	Sheryl Ervin (785) 296-8038 servin@kdhe.state.ks.us	www.kdheks.gov/nps/swap/
Missouri Department of Natural Resources	Frank McDaniels (573) 526-5449 frank.mcdaniels@dnr.mo.gov	www.dnr.mo.gov/env/wpp/wellhd/
Nebraska Department of Environmental Quality	Deana Barger 1(402) 471-6988 deana.barger@ndeq.state.ne.us	www.deq.state.ne.us/GroundW.nsf/Pages/WHPA
EPA	Stephane Lindberg (913) 551-7423 lindberg.stephanie@epa.gov	cfpub.epa.gov/safewater/sourcewater/

Spill Prevention, Control and Countermeasure (SPCC)

For more information about the SPCC/FRP rule:

- please visit <http://www.epa.gov/oilspill>,
- call the toll free **EPA Hotline at (800) 424-9346**, or
- obtain a copy of the “SPCC Guidance for Regional Inspectors” at <http://www.epa.gov/oilspill/guidance.htm>.

To speak with someone from EPA Region 7, please contact:

- Ward Burns, burns.ward@epa.gov, (913) 551-7960,
- Alan Hancock, hancock.alan@epa.gov, (913) 551-7647, or
- Paul Doherty, doherty.paul@epa.gov, (913) 551-7924 (for facility response plan questions).

Pollution Prevention (P2)

- To contact EPA Region 7 P2 staff, call **toll free: (800) 223-0425**
- P2 Internet Sites:
 - EPA Region 7 Pollution Prevention www.epa.gov/region07/p2
 - EPA Pollution Prevention www.epa.gov/p2
 - Pollution Prevention Resource Information Center www.p2ric.org/
 - EnviroSense <http://es.epa.gov/>
- Recommended P2 EPA Publication:
 - *Facility Pollution Prevention Guide* (EPA/600/R-92/088)

APPENDIX B – EMERGENCY PLANNING

B.1 Emergency Response Program Development

An emergency response program should be proactive and ongoing. EPA interprets “response” to be consistent with Occupational Safety and Health’s Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard (29 CFR 1910.120). OSHA defines emergency response as, “*a response effort by employees from outside the immediate release area or by other designated responders...to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance.*”

Response Program Development should involve:

1. Systematic Planning;
2. Local Emergency Medical Service Personnel; and
3. Consideration of Counterterrorism Measures.



Ethanol fire drill using 500 gallons

Response actions during the first few minutes of release are the most critical. They should not only be **planned**, but also **well rehearsed** to minimize the effects of a release. Facilities that take a comprehensive approach in developing a facility-specific emergency response program are better prepared to respond in a release event.

An emergency response plan outlines the action and equipment necessary for effective emergency response. However, a facility must conduct training, evaluate its program, maintain emergency equipment, and regularly coordinate with local agencies in order for an emergency response plan to be useful in an emergency.

Systematic Planning

The following outline is an approach to an emergency response program. These proactive efforts should enable a facility to efficiently integrate facility-specific information, key technical and management resources, and relevant existing emergency response programs that might require coordination.

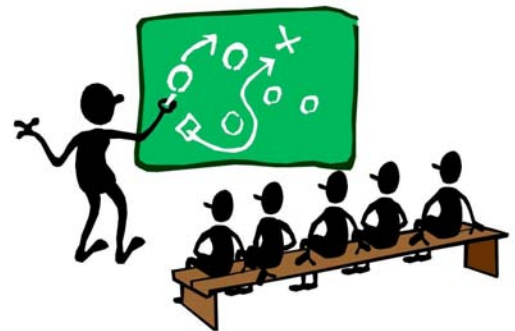
1. Identify Federal, State, and Local Regulations Relevant to Emergency Response

Applicable regulations and guidance documents need to be identified for the development of your facility emergency response program. Facilities are encouraged to contact the EPA hotline at (800) 424-9346 or for help identifying appropriate federal and state regulations.

2. The Program Development Team

A facility should select a team of employees who bring expertise from each of its functional areas. Ideally, the team members should also have varying degrees of emergency response responsibilities and experience within and outside the facility. A three-member team for a small facility might involve a couple of process operators who are cross-trained as emergency responders. A large facility with its own response team might need representatives from the following areas:

- Maintenance;
- Operations or Production Personnel;
- Process or Upper Management;
- Legal or Public Affairs;
- Fire and Hazmat Response;
- Environmental, Health, and Safety;
- Security;
- Emergency Coordinator; and
- Labor Relations or Personnel.



3. Collect Existing Facility Specific Documents and Information

Members of the development team should collect, review, and maintain copies of the following types of facility-specific materials:

- Site plans;
- Existing emergency plans or procedures;
- Submissions to the local emergency planning committee;
- Hazard evaluation and release modeling information;
- Hazard communication and emergency response training;
- Emergency drill and exercise programs;
- After-action reports and response critiques; and
- Mutual aid agreements.

The team might also identify related program materials from the following sources:

- Corporate and industry sponsored safety, training, and planning efforts; and
- Federal, state, and local government safety, training, and planning efforts.

Under CAA Section 112(r)(1), facilities have a general duty:

- to use appropriate hazard assessment techniques to identify hazards that might result from release;
- to design and maintain a safe facility, taking such steps as necessary to prevent releases; and
- to minimize the consequences of accidental releases, which do occur.

Facilities are responsible under this **General Duty Clause** for ensuring that any process release can be effectively handled. Facilities that rely on local responders must determine if the local responders have suitable equipment and training. If they do not, the facility must take steps to meet any needs (e.g., develop facility response capabilities, develop mutual aid agreements, hire response contractors, partially fund local responders).

4. Identify Emergency Response Gaps

The team or a leadership subset should use the information collected to assess compliance with each emergency response program element of EPA's Risk Management Program (40 CFR Part 68). This assessment will expose gaps that exist.

Facilities complying with Occupational Safety and Health's Hazardous Waste Operations and Emergency Response Standard will typically already satisfy most or all of EPA's requirements. An assessment of the gaps will help the team focus their efforts. (Note: Even if a facility is complying with OSHA's HAZWOPER Standard, it must submit a risk management plan to EPA as required by 40 CFR Part 68.)

5. Tailor Emergency Response Program to Facility Specific Hazards

All processes and chemicals at a facility pose a variety of hazards, making it is necessary to tailor elements of an emergency response program to facility-specific hazards.

Some common considerations of facility-specific hazards include the facility's susceptibility to the following:

- Fires, spills, and vapor releases;
- Floods, temperature extremes, tornadoes, earthquakes, and hurricanes;
- Loss of utilities (including power failures and brownouts);
- Train derailments, vehicle accidents, bomb threats, and other man-made disasters; and
- Chemical incompatibilities; e.g. ammonia and chlorine.



6. Integrate Emergency Response Program Throughout Existing Plans

Many federal statutes and regulations require emergency response planning. Plans for specific responses can leave personnel and emergency responders confused. Many facilities have developed an integrated contingency plan to consolidate emergency plans into a single response plan. Here is a suggested ICP format:

Introduction

- Background Information
- Facility Overview
- Scope and Objective of ICP

Core Emergency Response Plan

- Essential procedures to initiate, conduct, and terminate an emergency response
- Procedures for emergency recognition, notification, and initial response (e.g., assessment, mobilization, implementation)

Supporting Annexes

- Key supporting information and information required for regulatory compliance, such as:
 - ✓ Emergency Response Teams
 - ✓ External Notification
 - ✓ Evacuation Assembly Areas
 - ✓ Emergency Response Equipment
 - ✓ Incident Command
 - ✓ Spill Prevention, Control and Countermeasures Plans

The National Response Team, a multiagency group led by EPA, published integrated contingency plan guidance in the Federal Register (61 FR 28642) June 5, 1996. The guidance provides a mechanism for consolidating multiple plans, prepared to comply with various regulations, into a single, functional emergency response plan.

7. Prepare Written Emergency Procedures

Facilities are required by risk management program regulations 40 CFR 68.52 (b)(4) and 40 CFR 68.69(a)(iv) to prepare written emergency shutdown procedures and instructions for operators, emergency responders, and others. At a minimum, these materials should be developed for each of the most likely emergency scenarios (e.g., power failure, fire event). These materials should include the following:

- A manual of standard operating instructions,
- A system drawing showing the integral parts and their locations,
- Emergency shutdown procedures and subsequent start-up procedures,
- A table of the ranges of safe operating parameters measured at crucial locations,
- Safety procedures to be exercised at various locations, and
- An emergency response flow chart.

8. Develop and Maintain Emergency Tools

There are a number of tools that can be used to assist in a more orderly response during an emergency.

One such tool in the event of an accidental release of volatile chemicals is a wind sock. A wind sock can be an extremely helpful emergency tool as it can help determine wind direction and approximate wind speed at a glance. This information will help determine which direction the chemical is heading and help estimate approximate distance of the release. Facilities should mount wind socks in appropriate places and incorporate their use in their emergency response plans.



Some facilities have developed posters and signs with information for employees and emergency responders. These materials should be effective for the intended people (e.g., other languages, appropriate reading level, locations of signs relative to hazards and emergency exits).

For example: the significance of the position of the windsock and its implications relative to evacuation routes should be discussed with all staff members so that an orderly emergency response will result.

Process flow diagrams (also referred to as P&IDs), ladder/logic diagrams, or single line diagrams should be kept up to date and incorporated into operator training programs. Some facilities laminate the P&IDs and/or ladder/logic diagrams and then post them adjacent to the equipment and store a copy with on-site emergency response equipment and plans.

Role of Emergency Medical Service (EMS) in Planning

An integrated emergency medical response is critical in an emergency. People seriously injured by a hazardous material have a greater chance of recovery when:

- Appropriate emergency treatment is provided by prepared EMS personnel at the scene;
- The patient is transported to a facility having the most appropriate personnel and technical resources; and
- Communication with the medical facility is open to relay information regarding the material affecting the patient.

EMS agencies are crucial links in the community response system and are often the first to arrive at an emergency scene. They must be able to assess the nature of the hazard while attending to the immediate needs of victims.



The absence of EMS personnel in emergency response planning has resulted in the following types of problems:

- Incidents poorly managed by facility personnel and first responders;
- Ineffective communication channels and/or redundant or no communication between private and public sectors;
- Medical facilities inadequately prepared to treat or manage incoming patients involved in hazardous materials injuries; and
- Medical staff not informed as to the lethal effects of a chemical release.

EMS personnel reinforce the importance of defining safe response scenarios, medical practices, and transportation guidelines in an emergency. They will also be critical links in collaborating with other response agencies (e.g., police and fire departments and hospitals).

EMS personnel should also participate in annual disaster drills and emergency plan reviews, keeping in mind lessons learned during other emergency events.

Your state emergency response commission and your local emergency planning committee play extremely important roles in emergency response planning. Their roles are:

State Commission:

- Establish local emergency planning districts,
- Establish procedures for handling public requests for information,
- Appoint and oversee local emergency planning committees,
- Review local committees' emergency plans,

Local Committee:

- Prepare and maintain a comprehensive emergency response plan for the district,
- Provide hazardous chemical data to the public, and
- Respond to or coordinate response.

Counter-Terrorism (CT) Measures

Before specifically considering CT, a facility should ensure their emergency plan is up to date. Simply adding CT materials to an outdated plan will not produce an effective emergency plan. For example, review of an emergency plan sometimes identifies outdated emergency contact information or process modification and facility construction that had not yet been addressed. After updating an emergency plan, a facility should consider adding information and procedures related to potential terrorist threats.

Facility owners/operators should review their emergency response plan based on the following considerations:

1. Emergency Contact Information

The National Response Center is the sole federal point of contact for reporting chemical spills/releases. NRC duty officers take reports of actual or potential terrorism, then link emergency calls to the following:

- Department of Defense (for technical advice on dealing with weapons of mass destruction), and
- Federal Bureau of Investigation (to initiate federal response actions and incident investigations).

**National Response Center Phone Number
800-424-8802**

2. Response Functions

An emergency response plan should clearly define responsibilities in an event. The plan should indicate how response functions change if an emergency occurs as the result of a known or suspected terrorist event. For example, an Incident Command System might transition to a Unified Command structure. The change in response leadership is typically necessary to accommodate emergency response efforts that involve mutual-aid partners and state and federal responders.

3. Hazards Analysis

Weapons of mass destruction (e.g., explosive, chemical, biological, and nuclear) should be considered when reviewing the hazards analysis portion of an emergency response plan. A facility should identify potential targets and their vulnerability to attack. Such a review would result in improvements to help ensure a facility is adequately protected. **The emergency response plan is generally made publicly available and should not include details of the security system(s).**

4. Mitigation Procedures

Procedures included in an emergency response plan should involve consequence management efforts. The mitigation activities should be designed to protect workers and the public from further exposure to hazards. In general, public health officials, emergency medical service personnel, and criminal investigators should work together to identify and mitigate hazards following an event. The emergency plan could include a list of basic questions to ask victims, affected emergency responders, and other individuals in the affected population. Information and effective communication are critical in identifying and mitigating effects of a terrorist incident.

Active and passive mitigation systems should be considered. Passive mitigation means equipment, devices, or technology that function without human, mechanical, or other energy input. Examples of passive mitigation include dikes and enclosed systems. Active mitigation means equipment, devices, or technologies that need human, mechanical, or other energy input to function. Examples of active mitigation include interlocks, shutdown systems, pressure-relieving devices, flares, emergency isolation systems, and fire protection systems.

The system design, location, operating procedures, and emergency response procedures should be taken into consideration when determining the mitigation system to use. The design of the mitigation system should consider the different factors that would influence the system operation and potential release scenarios.

B.2 Emergency Planning and Response Guidance

The following materials are available for additional assistance in developing your emergency response program:

- ***Criteria for Review of Hazardous Materials Emergency Plans (NRT-1A)***, National Response Team, May 1988.
Provides evaluation criteria for emergency response plans.
- ***Emergency Response Guidebook***, U.S. Department of Transportation, 2000.
Lists more than 1,000 hazardous materials and provides general hazard information and recommended isolation distances.
- ***Hazardous Materials Emergency Planning Guide (NRT-1)***, National Response Team, 1987.
Designed to help communities plan for hazardous materials incidents and includes useful information on planning teams, plan review, and ongoing planning efforts.
- ***Hazardous Materials Guide for First Responders, Federal Emergency Management Association and U.S. Fire Administration***, 1998.
- ***LEPCs and Deliberate Releases: Addressing Terrorist Activities in the Local Emergency Plan***, EPA 550-F-01-005, August 2001.
Discusses how counterterrorism measures can be incorporated into emergency planning.
- ***NIOSH Pocket Guide to Chemical Hazards***, NIOSH Publication No. 2000-130, July 2000.
Provides 10 relevant databases, including recommendations for chemical protective clothing, toxicologic chemical reviews, and the 2000 Emergency Response Guidebook.
- ***Integrated Contingency Plan***, National Response Team, 61 FR 28642, June 5, 1996. Guidance on consolidating multiple plans into a single, functional emergency response plan that complies with various federal regulations.

B.3 Practicing Your Plan

Effective responses to chemical releases require practice in addition to planning. Emergency responders must practice evaluation, isolation, containment and mitigation to prevent catastrophic releases. The following should be reviewed and practiced, as applicable, on a regular basis:



- **Typical Chemical Accidents**
- **Exposure Limits For Chemicals**
- **Requirements under Part 68 of the Clean Air Act - Risk Management Program**

- **Inspect Emergency Equipment**

Emergency equipment should be inspected regularly to ensure respirators and other equipment are available, accessible, and usable. Air-purifying respirators must have appropriate and unexpired cartridges. Self-contained breathing apparatus air should be suitable for the temperature in which the SCBA will be worn. Facilities should also periodically verify that on-site response personnel are trained and fit-tested for the proper use of the emergency equipment.



Inspect Emergency Equipment Regularly

- **Establish Emergency Shutdown and Start-up Procedures**
Establish and practice emergency shutdown and start-up procedures on what to do during and after a power failure.
- **Conducting Emergency Response Drills**
Numerous facilities are beginning to stage realistic response exercises with their local fire department or their hazmat emergency response teams. The response drills should all be announced and involve preplanning to ensure they are realistic but different from recent drills. All emergency responders (on-site and off-site) should “suit up” as part of each drill event.

Facilities have used regular emergency response drills to maintain and increase public awareness. Facilities might involve citizens in the immediate vicinity of their property. Emergency response and preparedness brochures might be distributed to nearby residences and businesses.

APPENDIX C - CLEAN AIR ACT SECTION 112(r) - PREVENTION PROGRAM REQUIREMENTS

C.1 Determine Your Facility's Program Level

If you have determined that your facility is subject to 40 CFR Part 68, you will first need to ascertain whether your facility is subject to **PROGRAM 1**, **PROGRAM 2**, or **PROGRAM 3**. This appendix will guide you in making that determination as well as your corresponding responsibilities.

Your facility is subject to **PROGRAM 1** if:

- The process has not had an accidental release of a regulated substance that resulted in death or injury, or required restoration of an environmental receptor, within five years of the date you submit your facility's risk management plan;
- Your process has worst-case release scenarios with no possible effect to public receptors; and
- Your process has emergency response procedures coordinated with local responders.

Your facility is subject to **PROGRAM 2** if:

- It has any process that does not meet criteria for Program 1 or Program 3.

Your facility is subject to **PROGRAM 3** if:

- It has any covered process in North American Industrial Classification System (NAICS) code 32211, 32411, 32511, 325181, 325188, 325192, 325199, 325211, 325311, 32532; or
- It has any covered process that does not meet the eligibility requirements for Program 1 **and** the process is subject to the Occupational Safety and Health process safety management standard (29 CFR 1910.119). **Most ethanol plants that handle risk management plan toxic chemicals are Program 3 facilities.**

If you aren't sure whether this rule applies to your facility or which program (1, 2, or 3) applies, call the EPA HOTLINE for assistance at: (800) 424-9346 or (800) 553-7672 (TDD).

C.2 Program Responsibilities

Once you have determined your facility's program level, the following table summarizes what the corresponding requirements are.

Program Level	Program 1 40 CFR 68.12 (b)	Program 2 (40 CFR 68.12 (c)) & Program 3 (40 CFR 68.12 (d))
Management System	None required	Required
HAZARD ASSESSMENT		
Worst-Case Scenario	One for each covered process.	One worst-case representative of all regulated toxics and one representative of all regulated flammables.
Alternative Release	None required	One for each regulated toxic and one representative of all flammables.
Five-Year Accident History	Program 1 facilities have certified no accidents.	Provide information for accidental releases from covered processes that resulted in: <ol style="list-style-type: none"> 1. On-site deaths, injuries, or significant property damage; <u>or</u> 2. Off-site deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage.
Prevention Program	None required	Required
Emergency Response Program	Must ensure that facility is included in the community emergency response plan. For facilities with only flammables, coordinate response actions with local fire department.	Required if not included in Community Emergency Response Plan.
Submit a Risk Management Plan	Required	Required

Management System

The management system referred to in the table on the previous page is a requirement for Program 2 and 3 facilities to oversee their risk management programs. Facilities are required by 40 CFR 68.15 to do the following:

1. Develop a management system to oversee implementing the risk management program elements;
2. Designate a qualified person or position with the overall responsibility for developing, implementing, and ensuring integration of the risk management program elements; and
3. Document names of people or positions and define lines of authority through an organizational chart or other similar document.

Hazard Assessment

The hazard assessment referred to in the table on the previous page must include a worst-case scenario for Program 1 facilities and an off-site consequence analysis for each covered Program 2 or 3 process as follows:

- Worst-case and alternative release scenarios require that potential exposures to human populations be quantified and potential environmental damage identified;
- Revised analyses and a revised risk management plan are required by 40 CFR 68.36 within six months of changes in processes or any changes that increase or decrease the distance to an endpoint by a factor of two or more; and
- Worst-case and alternative release scenarios must be reviewed and updated at least once every five years.

Many facilities provide an accurate map showing these scenario distances (although not required) to the local emergency planning committee for their planning purposes.

Facilities subject to EPA's risk management program must also provide information on any accidental releases that resulted in deaths, injuries, significant property damage, evacuations, sheltering in place, or environmental damage.

Hazard Assessment Resources

- *Risk Management Program Guidance for Offsite Consequence Analysis*, available at <http://www.epa.gov/ceppo/>.
- Appendix E of EPA's *General Risk Management Program Guidance*, available at <http://www.epa.gov/ceppo/>.
- EPA's *Technical Background Document for Offsite Consequence Analysis for Anhydrous Ammonia, Aqueous Ammonia, Chlorine, and Sulfur Dioxide* (April 1999), available at <http://www.epa.gov/ceppo/>.
- RMP*Comp™ software program developed by the National Oceanic and Atmospheric Administration and EPA, available at <http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/rmp-comp.htm>.

Facilities may choose to use publicly available or proprietary air dispersion models to do off-site consequence analysis. However, modelers should carefully review 40 CFR 68 requirements and EPA's *General Risk Management Program Guidance* to ensure compliance with the required conditions.

Prevention Program

Please consider the following when building a prevention program on Occupational Safety and Health's process safety management standard or creating a new program:

- Assessing all hazards that could affect the public or the environment off site;
- Integrating elements of the prevention program to ensure each change in any element in the program leads to review of other elements;
- Involving staff early on to secure their input in developing a concise and comprehensive program;
- Visiting facilities that have successful accident prevention programs to learn of their implementation procedures; and
- Applying inspection checklists to determine areas in need of improvement.

Your prevention program requirements might already be satisfied if your facility is in compliance with Occupational Safety and Health’s process safety management standard, which is the basis for the Risk Management **Program 3**, with the addition of the off-site consequence analysis. Program 3 regulatory references are listed on the next page.

Program 2 prevention requirements address process safety management elements tailored to the less complex processes and chemical usage and involve less documentation than Program 3. Program 2 processes demonstrate compliance by following industry standards and codes, engineering practices, and federal and state regulations. Program 2 regulatory references are listed below.

Program 1 processes have no prevention program requirements.

Prevention Program Regulatory Reference

Section	Program 2
68.48	Safety Information
68.50	Hazard Review
68.52	Operating Procedures
68.54	Training
68.56	Maintenance
68.58	Compliance Audits
68.60	Incident Investigation

Section	Program 3
68.65	Process Safety Information
68.67	Processes Hazard Analysis
68.69	Operating Procedures
68.71	Training
68.73	Mechanical Integrity
68.75	Management of Change
68.77	Pre-Startup Review
68.79	Compliance Audits
68.81	Incident Investigation
68.83	Employee Participation
68.85	Hot Work Permit
68.87	Contractors

Five-Year Accident History

A five-year accident history must be completed and included within a facility's risk management plan by 40 CFR 68.42 and 68.168 if the release caused at least one of the following:

- **On-site** deaths, injuries, or significant property damage; or
- Known **off-site** deaths, injuries, property damage, environmental damage, evacuations, or sheltering in place.

The facility's risk management plan must be modified to include a reportable accident within six months after its occurrence. 1A five-year accident history report must include:

- **Date and Time.** Date and approximate time when accidental release began.
- **Chemical(s).**
- **Quantity Released.** Estimate of amount released (using at least two significant digits when possible).
- **Release Event.** Identify cause of release event (e.g., gas release, liquid spill, evaporation, fire, explosion).
- **Release Source.** Indicate release source(s) (e.g., storage or process vessel, piping, transfer hose, valve, pump).
- **Weather Conditions.** On-site weather station, or the nearest weather station, information (e.g., wind speed and direction, temperature, atmospheric stability class, precipitation). Also, many local airports will have and provide current weather conditions.
- **On-Site Impacts.** On-site effects including deaths, injuries, property damage.
- **Known Off-Site Impacts.** Deaths, injuries, evacuations, shelter-in-place, environmental damage.
- **Initiating Event.** Immediate cause of accident (e.g., equipment failure, human error, weather conditions, theft).

- **Contributing Factors.** Factors contributing to the release, but not the initiating event. For example, equipment failure, human error, improper procedures, over pressurization, upset condition, bypass condition, maintenance activity/inactivity, process design, unsuitable equipment, unusual weather conditions, management error.
- **Off-site Emergency Responder Notifications.** If known, indicate the emergency response agencies that were contacted (e.g., police, fire, EMS, LEPC, SERC, NRC).
- **Changes Resulting from Accident.** Measures taken to prevent recurrence (e.g., improved/upgraded equipment, revised maintenance, revised training, revised operating procedures, new process controls, new mitigation systems, revised emergency response plan, changed process, reduced inventory).

Emergency Response Program

A facility has the option to coordinate its response with its LEPC, with the intent that the **facility employees will not be responding to an accidental release** (40 CFR 68.90(b)). If this is the case, then the emergency response program must have mechanisms in place to notify emergency responders and the **facility is not required to comply with the requirements of 40 CFR 68.95**, as described below.

If the facility employees will be responding to the emergency, **Program 2** and **Program 3** facilities and its employees must follow the steps outlined in the emergency response program (40 CFR 68.95). The facility must have:

- Procedures for informing the public and local emergency response agencies about accidental releases;
- Documentation of proper first-aid and emergency medical treatment for accidental human exposure;
- Procedures and measures for emergency response after an accidental release;
- Procedures for using and maintaining emergency response equipment;
- Training for employees in their emergency response responsibilities; and
- Procedures to review and update the emergency response plan.

Emergency Response Plans

Emergency response plans developed to comply with other federal contingency planning requirements can meet the above requirements if they include the 40 CFR Part 68 required elements. The emergency response plan must be facility-specific. It must be maintained and kept at the facility.

C.3 Additional Risk Management Plan Information

Registration

Each registration must include, but is not limited to:

1. Facility Name and Address;
2. Contact Person at Facility;
3. Names and Quantities of Regulated Chemicals On-Site; and
4. North American Industry Classification System Code (information on NAICS codes can be found at: <http://www.census.gov/epcd/www/naics.html>. Click on NAICS under the “Business” heading.)

Risk Management Plan Updates and Resubmittals

A facility must update and resubmit its risk management plan **within six months** of:

1. A change that requires a revised off-site consequence analysis (40 CFR 68.36);
2. A change that requires a revised hazard review or process safety analysis;
3. A change that results in a change in program level of a covered process. The implementing agency for this regulation can ask the facility to revise the risk management plan under the audits provisions of 40 CFR 68.220. Risk management plans must be revised and resubmitted at least once every five years; or
4. The date of an accident that meets the criteria for the five-year accident history after April 9, 2004.

A facility must update and resubmit its risk management plan **within one month** of a **change of the emergency contact information**.

Facilities no longer covered under the risk management plan rule are required by 40 CFR 68.190(c) to “de-register” with EPA **within six months** of the time it is no longer covered. (See Chapter 8 of RMP*Submit User 2004 Manual. The RMP Submit 2004 software can be downloaded at: <http://www.epa.gov/ceppo/>. Click on “Chemical Preparedness and Prevention,” “Tools & Resources,” “Databases and Software,” “EPA Databases and Software,” then “RMP Submit 2004.”)

C.4 Plan to Work Safely – Best Practices

Accidents are preventable through increased operator training, improved procedures, and better communication of lessons learned. **A major component of working safely is to develop and implement “best practices” at your facility.** Best practices are intended to help facility engineers and operators:

- Learn from experiences of other facility engineers and operators;
- Encourage proactive measures to minimize and prevent accidents relating to ethanol operations;
- Recognize specific actions taken to improve process safety, prevent accidents, and enhance emergency planning and response efforts; and
- Be better prepared to help facility managers understand and approve the efforts required to incorporate these and other best practices.



Under the Clean Air Act Section 112(r)(1), facilities, including ETHANOL FACILITIES of any size, have a GENERAL DUTY “to prevent releases, and to minimize the consequences of accidental releases which do occur.” Implementing “BEST PRACTICES” helps facilities to comply with this law.

Best practices in the ethanol industry are still being established. According to the American Petroleum Institute, “the oil and natural gas industry is becoming an increasingly safer place to work, despite a job environment that often involves heavy equipment, hazardous materials, high temperatures and high pressure equipment. This is reflected by a declining rate of illnesses and injuries...” For more safety tips, please visit: <http://www.api.org>.

Additional Risk Management Plan Resources

Risk management plan guidance documents and training modules are available through the following sources:

- EPA’s Chemical Emergency Preparedness and Prevention Office at <http://www.epa.gov/swercepp/acc-pre.html>;
- EPA’s Emergency Planning and Community Right to Know Act hotline at (800) 535-0202; or
- EPA’s Technology Transfer Network at <http://www.epa.gov/ttn>.

Confidential Business Information

Facilities can claim some risk management plan information as confidential business information. EPA then determines the validity of the facility’s claim. The information can be released if EPA determines that the information is not confidential and has notified the facility. If EPA determines that the information is confidential, a local emergency planning committee might be able to obtain the information under 40 CFR 2.301(h)(3). That regulation provides for sharing confidential business information with state and local agencies having responsibilities under the Clean Air Act or its implementing regulations. Local committees can only gain access to confidential data under this rule if they can protect its confidentiality.

Local emergency planning committees, under Emergency Planning and Community Right to Know Act Section 303(d)(3), can compel Section 302 facilities to provide any information necessary to develop and implement a community emergency plan. A Section 302 facility must comply with requests from a local committee for information even if the facility has made a valid confidential business information claim.

APPENDIX D - DEFINITIONS OF ACRONYMS

Below is a list of common acronyms and their meaning you might encounter. You can also find a more comprehensive list of environmental terms and acronyms at <http://www.epa.gov/OCEPAt/terms/>.

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing Materials
ATSDR	Agency for Toxic Substances and Disease Registry
BACT	Best Available Control Technology
BOD	Biochemical Oxygen Demand
CAA	Clean Air Act
CAS	Chemical Abstracts Service
CBI	Confidential Business Information
CEPPO	Chemical Emergency Preparedness and Prevention Office
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (or "Superfund")
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CT	Counter-Terrorism
CWA	Clean Water Act
DDGS	Dried Distillers Grain with Solubles
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
EPA HQ	U.S. Environmental Protection Agency Headquarters
EPCRA	Emergency Planning and Community Right-To-Know Act
ERPGs	Emergency Response Planning Guidelines
FR	Federal Register
GPO	Government Printing Office
HAPs	Hazardous Air Pollutants
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste and Emergency Operations
HCFC	Hydrochlorofluorocarbon
ICP	Integrated Contingency Plan
IDLH	Immediately Dangerous to Life and Health
ISO	International Standards Organization
LAER	Lowest Achievable Emission Rate
LEPC	Local Emergency Planning Committee
MACT	Maximum Achievable Control Technology
MMBtu/hr	Million British Thermal Units per hour
MSDS	Material Safety Data Sheet
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health

Environmental Laws Applicable to Construction and Operation of Ethanol Plants
U.S. Environmental Protection Agency Region 7

NOAA	National Oceanic and Atmospheric Administration
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NRT	National Response Team
NSC	National Safety Council
NSCEP	National Service Center for Environmental Publications
NSPS	New Source Performance Standards
NSR	New Source Review
NTIS	National Technical Information Service
OCA	Offsite Consequences Analysis
ODS	Ozone-Depleting Substance
OPA	Oil Pollution Act
OSHA	Occupational Safety and Health Administration
OSHRC	Occupational Safety and Health Review Commission
OSWER	Office of Solid Waste and Emergency Response
P2	Pollution Prevention
P&IDs	Piping and Instrumentation Diagrams
Pb	Lead
PEL	Permissible Exposure Limit
PHA	Process Hazard Analysis
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
PSM	Process Safety Management
PTE	Potential to Emit
PWSS	Public Water Supply Supervision
RA	Regional Administrator
RCRA	Resource Conservation and Recovery Act
RFS	Renewable Fuel Standard
RMP	Risk Management Plan
RQ	Reportable Quantity
SCBA	Self-Contained Breathing Apparatus
SDWA	Safe Drinking Water Act
SERC	State Emergency Response Commission
SIC	Standard Industrial Classification
SO ₂	Sulfur Dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
SOPs	Standard Operating Procedures
SPCC	Spill Prevention, Control and Countermeasures
STEL	Short Term Exposure Limit
SWP	Source Water Protection
TDD	Telephone Device for the Deaf
TPQ	Total Planning Quantity
TRI	Toxic Release Inventory
UIC	Underground Injection Control
USDW	Underground Source(s) of Drinking Water
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WHP	Wellhead Protection Program

APPENDIX E – NATIONAL ENVIRONMENTAL POLICY ACT PROCESS

The National Environmental Policy Act process consists of an evaluation of the environmental effects of a federal activity, including its alternatives. There are three levels of analysis, depending on whether or not an activity could significantly affect the environment. These three levels include:

1. a categorical exclusion determination;
2. preparation of an environmental assessment/finding of no significant impact;
3. and preparation of an environmental impact statement.

At the first level, an undertaking can be categorically excluded from a detailed environmental analysis if it meets certain criteria that a federal agency has previously determined as having no significant environmental impact. A number of agencies have developed lists of actions that are normally categorically excluded from environmental evaluation under their National Environmental Policy Act regulations.

A federal agency at the second level of analysis prepares a written environmental assessment to determine whether or not a federal activity would significantly affect the environment. If the answer is no, the agency issues a finding of no significant impact. The finding of no significant impact can address measures an agency will take to reduce potentially significant impacts.

If the environmental assessment finds that the environmental consequences of a proposed federal activity might be significant, an environmental impact statement is prepared. An environmental impact statement is a more detailed evaluation of the proposed action and alternatives. The public, other federal agencies, and outside parties can provide input into the preparation of an environmental impact statement and then comment on the draft statement when it is completed.

If a federal agency anticipates that an activity might significantly impact the environment, or if a project is environmentally controversial, a federal agency could choose to prepare an environmental impact statement without having to first prepare an environmental assessment.

A federal agency will prepare a public record of its decision after a final environmental impact statement is prepared. The public record will address how the findings, including consideration of alternatives, were incorporated into the agency's decision-making process.

APPENDIX F – DO I HAVE TO PREPARE A FACILITY RESPONSE PLAN?

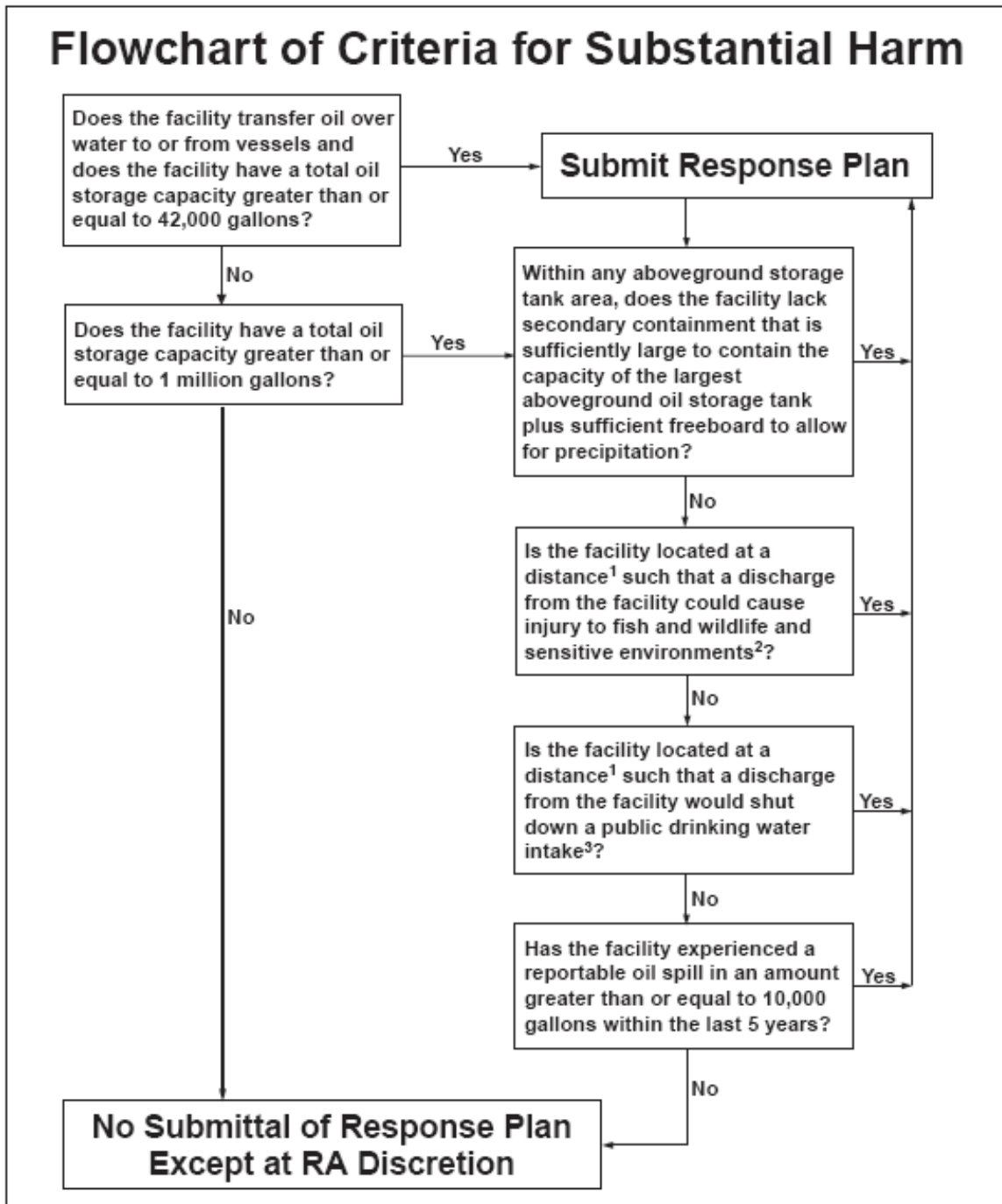
If your facility is regulated under the Spill Prevention, Control and Countermeasure regulation and an oil discharge from your facility could reasonably be expected to cause “substantial harm” to the environment from a discharge to navigable waters of the United States or the adjoining shoreline, you must prepare a facility response plan and submit it to the appropriate EPA regional office.



The flowchart of criteria for substantial harm (next page) shows the questions you must answer to determine if your facility can be classified as a substantial harm facility. The classification can be met in one of two ways:

- Your facility meets the substantial harm criteria outlined in 40 CFR 112.20(f) (1); or
- An EPA **regional administrator** determines that your facility poses a threat of substantial harm to the environment.

The following table is from 40 CFR Part 112 , Appendix C



¹ Calculated using the appropriate formulas in Attachment C-III to this appendix or a comparable formula.

² For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (59 FR 14713, March 29, 1994) and the applicable Area Contingency Plan.

³ Public drinking water intakes are analogous to public water systems as described at 40 CFR 143.2(c).

Over Water Transfers

You can determine whether your facility meets the over water transfer criterion by answering the following question:

Does your facility transfer oil over water to or from vessels, and does your facility have an oil storage capacity of 42,000 gallons or more?

In order to answer the above question you must first know the following:

- Your facility's oil storage capacity can be determined by adding the capacities of all oil storage containers (e.g., drums, tanks, electrical equipment), including aboveground containers with a capacity of 55 gallons or more.
- A *vessel* means any type of watercraft capable of being used as a means of transportation on water.

If you answered "yes" to the above question, your facility might pose a risk of substantial harm and you must prepare and submit a facility response plan to the regional administrator.

If you answered "no" to the above question, you must consider whether your facility meets any of the criteria for facilities with 1 million gallons or more of oil storage capacity. (Please see the next section.)

Oil Storage Capacity

You can determine whether your facility meets the oil storage capacity criterion by answering the following question:

Does your facility have a total oil storage capacity of 1 million gallons or more?

If you answered "yes" to the above question, you need to further evaluate the following criteria:

- Secondary containment
- Proximity to fish and wildlife and sensitive environments
- Proximity to public drinking water intakes
- Reportable discharge of 10,000 gallons or more within the last five years



EPA Region 7 Photo

If you answered “no” to the above question, you do not have to prepare and submit a facility response plan except at the discretion of the EPA regional administrator. Instead, you are required to prepare a certification that your facility is not a substantial harm facility (40 CFR 112, Appendix C, Attachment C-II) and maintain this at your facility along with your spill prevention, control and countermeasures plan.

Secondary Containment

You can determine whether your facility meets the secondary containment criterion by answering the following question:

Does your facility lack secondary containment large enough to hold the capacity of the largest aboveground storage tank within each storage area plus sufficient freeboard to allow for precipitation?

If you answered “yes” to the above question, your facility is a substantial harm facility, and you have to prepare and submit a facility response plan.

If you answered “no” to the above question, you do not have to prepare and submit a facility response plan because of the secondary containment criterion. You must consider whether your facility meets other specified factors. (Please see the next section.)

Fish and Wildlife and Sensitive Environments

You can determine whether your facility meets the *fish and wildlife and sensitive environments* criterion by answering the following question:

Could a discharge from your facility cause injury to fish and wildlife and sensitive environments?

You must determine the following to answer the above question:

- Calculate the distance that discharged oil could travel from your facility before it is contained. You should use the planning distance calculations for fish and wildlife and sensitive environments to identify all fish and wildlife and sensitive environments within the planning distance. (See 40 CFR 112, Appendix C, Attachment C-III.)
- According to 40 CFR 112.2, *injury* means a measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource. The change can result either directly or indirectly from exposure to a discharge of oil; from exposure to a product; or from reactions resulting from a discharge of oil.

- You must check other sources to determine what constitutes an area that is sensitive for fish and wildlife or the environment. These areas are identified by their legal designation, by evaluations conducted by area committee members or members of the federal on-scene coordinators' discharge response structure, or in an area contingency plan. These areas can be identified either because of sensitivity to the effects of a discharge event or danger to human health. Examples of these environments include:



- Wetlands;
 - National and state parks;
 - Critical habitats for endangered species;
 - Wilderness and natural resource areas;
 - Marine sanctuaries and estuarine reserves;
 - Conservation areas;
 - Preserves;
 - Wildlife areas;
 - Wildlife refuges;
 - Wild and scenic rivers;
 - Recreation areas;
 - National forests;
 - Federal and state lands that are research natural areas;
 - Heritage program areas;
 - Land trust areas; and
 - Historical and archeological parks.
- Additional information about fish and wildlife and sensitive environments is in Appendices I, II, and III to Department of Commerce/National Oceanic and Atmospheric Administration's Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments [59 FR 14713 (March 29, 1994)].

If you answered “yes” to the above question, your facility is a substantial harm facility, and you have to prepare and submit a facility response plan.

If you answered “no” to the above question, you do not have to prepare and submit a facility response plan because of the fish and wildlife and sensitive environments criterion. You must consider whether your facility meets other specified factors. (Please see the next section.)

Public Drinking Water Intakes

You can determine whether your facility meets the public drinking water intake criterion by answering the following question:

Could a discharge from your facility affect public drinking water intakes?

To answer the above question, you must first determine the following:

- You must calculate the distance that discharged oil could travel from your facility before it is contained. To do so, you may use the formulas provided in the regulation. (See 40 CFR 112, Appendix C, Attachment C-III.)
- A system is a public water system if it provides piped water for human consumption and has at least 15 service connections or regularly serves at least 25 individuals.
- Public drinking water systems include collection, treatment, storage, and distribution facilities.
- To locate a downstream public drinking water intake, consult the appropriate area contingency plan, and contact the municipal or county water authority for each area that might be affected by an oil discharge from your facility.

If you answered “yes” to the above question, your facility is a substantial harm facility, and you have to prepare and submit a facility response plan.

If you answered “no” to the above question, you do not have to prepare and submit a facility response plan because of the public drinking water intake criterion. You must consider whether your facility meets other specified factors. (Please see the next section.)

Oil Spill History

You can determine whether your facility meets the reportable discharges criterion by answering the following question:

Has your facility had a reportable discharge of 10,000 gallons or more within the last five years?

If you answered “yes” to the above question, your facility is a substantial harm facility, and you have to prepare and submit a facility response plan.



EPA Region 7 Photo

If you answered “no” to the above question, and have followed the sequence of questions to reach this final question, you do not have to prepare and submit a facility response plan except at the discretion of the EPA regional administrator. Instead, you are required to complete and maintain a certification (with your spill prevention, control and countermeasure plan) that your facility is not a substantial harm facility.

Certification of Non-Substantial Harm

If none of the substantial harm criteria applies to your facility, as described in 40 CFR 112.20(e) and in Appendix C, paragraph 3.0 of Part 112, you must complete and maintain at your facility, within your spill prevention, control and countermeasure plan, a certification form indicating that you have determined that your facility is not a “substantial harm” facility. If you decide to use an alternative formula (i.e., one that is not described above or in 40 CFR 112.20(f)(1)(ii)(B) or (C)) to determine that your facility does not meet the substantial harm criteria, you must attach documentation to the certification form that demonstrates the reliability and analytical soundness of the comparable formula and you must notify the EPA regional administrator in writing that you used an alternative formula.