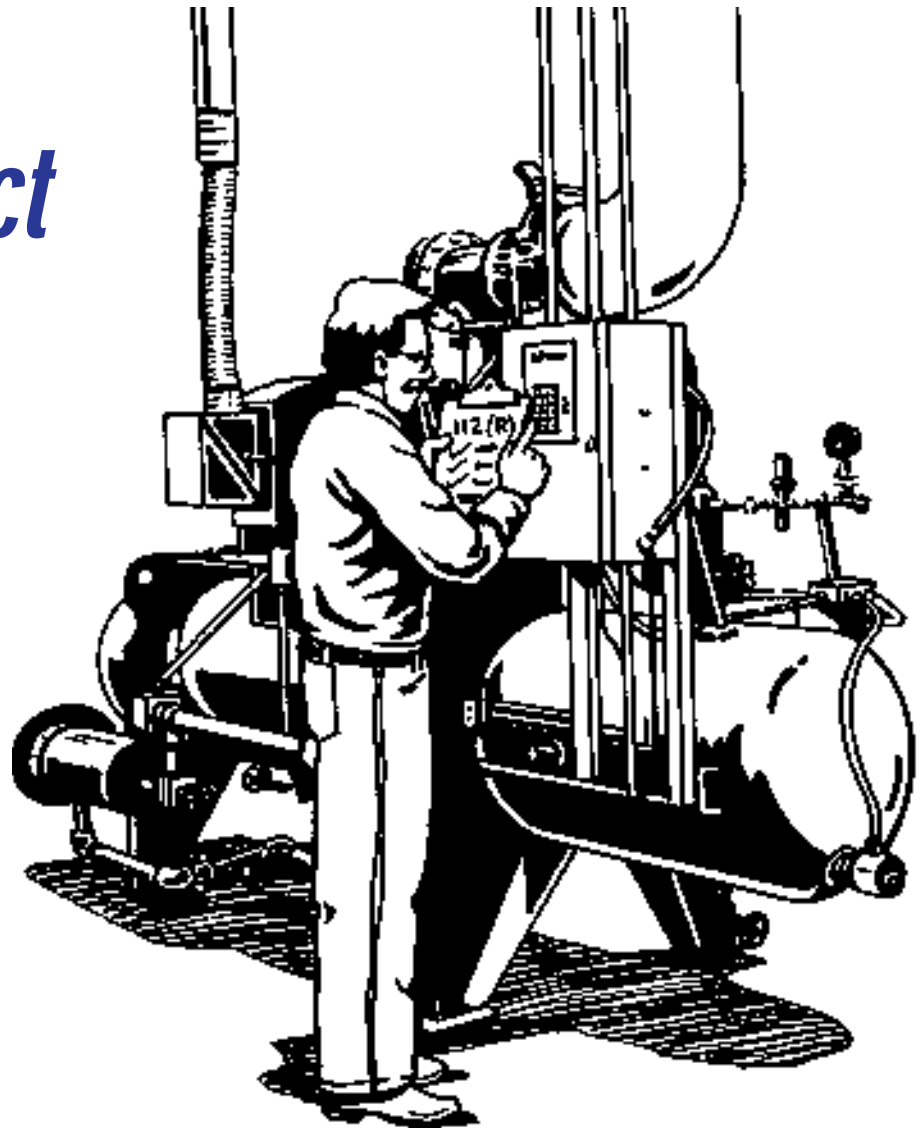
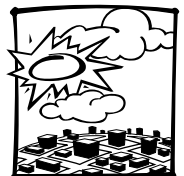


Preventing Accidental Releases under the Clean Air Act



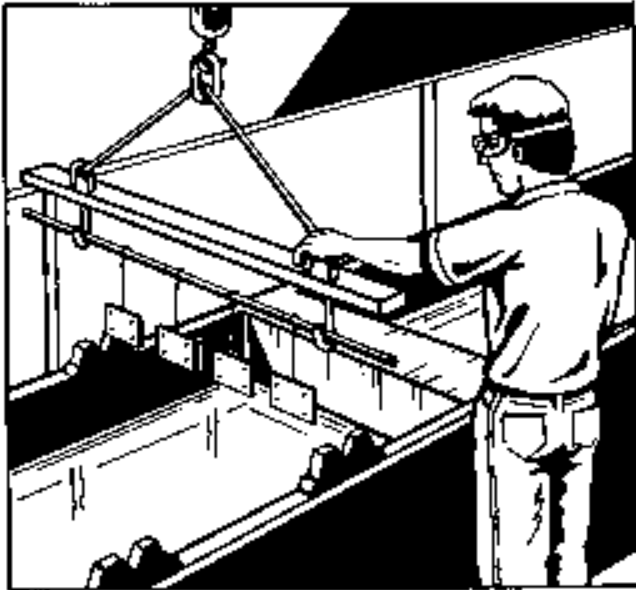
Kansas Small Business Environmental Assistance Program



Introduction

This factsheet provides you with guidance in understanding your potential requirements under the U.S. Environmental Protection Agency's (EPA) accident prevention and preparedness regulation [40 Code of Federal Regulations (CFR) Part 68]. It is by no means a complete listing or description of all of your potential requirements.

Definitions of italicized words in this document can be found in the glossary at the end of this publication.



What is the purpose of the regulation?

The purpose of section 112(r) of the Clean Air Act (CAA) is to prevent and minimize consequences of *accidental releases* of certain hazardous substances that could harm public health and the environment. The accidental release regulations require that affected facilities identify, assess, document, and minimize their chemical hazards by developing a risk management program and submitting a risk management plan (RMP).

Will I be affected by this regulation?

Your facility must comply with the regulation if it produces, handles, processes, distributes, or stores more than the threshold quantity of a regulated substance at any given time. Facilities in Kansas that could be affected include ammonia fertilizer retailers and users, propane retailers and users, manufacturers, cold storage facilities using ammonia as a refrigerant (including dairy and food distribution facilities), chemical distributors, water treatment facilities, and small businesses. The list of regulated chemicals and their thresholds can be found in the back of this publication. The list consists of acutely toxic, flammable, and volatile substances.

What do I have to do to comply?

The EPA has developed a three-program system to address risks that different processes may pose. To determine your potential regulatory requirements, you must first identify which programs apply to individual processes at your facility (see table below).

<p>Program 1 applies to any <i>covered process</i> that...</p>	<ul style="list-style-type: none"> ● within five years prior to submitting the RMP, has not had an accidental release of a regulated substance that resulted in death, <i>injury</i>, or required restoration of an <i>environmental receptor</i>; ● has <i>worst-case release</i> scenarios for toxics and flammables with no impact on <i>public receptors</i>; ● has emergency response procedures coordinated with local responders.
<p>Program 2 applies to any covered process...</p>	<ul style="list-style-type: none"> ● not covered under Program 1 or 3.
<p>Program 3 applies to any covered process...</p>	<ul style="list-style-type: none"> ● in the following Standard Industrial Classification (SIC) codes (2611, 2812, 2819, 2821, 2865, 2869, 2873, 2879, and 2911); or ● subject to the Occupational Safety and Health Administration's (OSHA) Process Safety Management standard (29 CFR 1910.119), unless the process is eligible for Program 1 (see above).

Once you know which programs apply to your processes, refer to the checklist below for related requirements.

Program Requirements	Program 1	Program 2	Program 3
Management system		X	X
Hazard assessment			
Worst-case release scenarios	X	X	X
<i>Alternative release scenarios</i>		X	X
Five year accident history	X	X	X
Prevention program		X	X
Emergency response program		X	X

Management System

If you have a Program 2 or Program 3 process, you will need to develop a management system to oversee implementation of the risk management program requirements. In addition, you will need to identify a single person or position in your facility who will have overall responsibility for developing, implementing, and ensuring integration of the program requirements.

Hazard Assessment

You will need to complete a hazard assessment for each covered process. The table below indicates the elements that you must include under each program.

Hazard Assessment Requirements	Program 1	Program 2	Program 3
Worst-case release^{a,b}	one for each covered process	one worst-case representative of all regulated toxics and one representative of all regulated flammables	same as Program 2
Alternative release^c	none required	one for each regulated toxic and one representative of all flammables	same as Program 2
Five-year accident history	Include all accidental releases from covered processes that resulted in: <ul style="list-style-type: none"> on-site deaths, injuries or significant property damage; or offsite deaths, injuries, evacuations, sheltering in place, property damage or environmental damage. 		

^aYou are required to do additional worst-case analyses if a worst-case release from another covered process could potentially affect different public receptors.

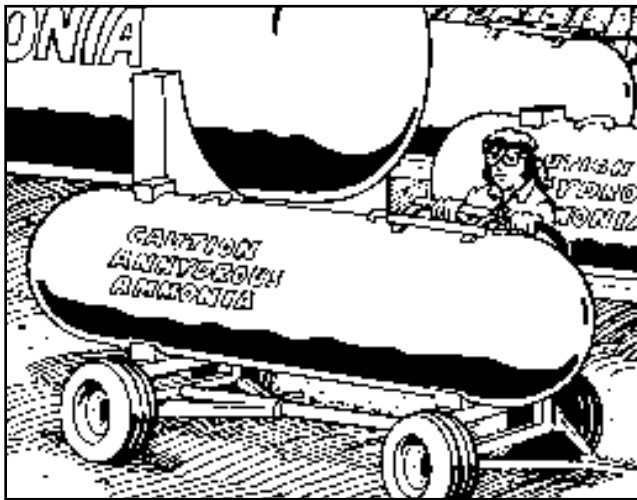
^bFor regulated toxic substances normally a gas at ambient temperature or a gas or liquid under pressure, worst-case assumes that the quantity in the vessel or pipe is released as a gas over 10 minutes. For toxic gases handled as refrigerated liquids at ambient pressure, worst-case assumes that the substance is released as a gas over 10 minutes (if no passive mitigation)

or forms a liquid pool (if there is passive mitigation). For toxics that are liquids at ambient pressure, worst-case assumes that the spilled material instantaneously forms a liquid pool. Worst-case release for flammables assumes that the quantity of the substance vaporizes and forms a vapor cloud explosion.

^cBoth active and passive mitigation measures can be considered in alternative release scenarios. Only passive mitigation may be considered in worst-case scenarios.

For worst-case and alternative release scenarios, you will need to quantify potential exposures to human populations and identify potential environmental damage. EPA has developed the *RMP Offsite Consequence Analysis Guidance* document to assist you with these analyses.

You will need to revise your worst and alternative release scenarios (that is, your offsite consequence analyses) at least once every five years. If you have changes in processes, quantities stored or handled, or any changes that increase or decrease the distance to the *endpoint* by a factor of two or more, you will need to revise your offsite consequence analyses within six months of the change and submit a revised RMP.



You will need to provide information on your accidental releases, including types and amounts of chemicals released, duration, dates, times, and offsite consequences.

Prevention Program

OSHA's process safety management (PSM) standard is the basis of the section 112(r) prevention program.

Program 3 processes will typically have a full PSM program in place. If you can demonstrate compliance with the PSM standard, you have also demonstrated compliance with the Program 3 prevention requirements.

The Program 2 prevention requirements address many of the PSM elements but are tailored to processes with less complex chemical uses and will involve less documentation and recordkeeping than Program 3 processes. EPA expects that many Program 2 processes will be able to demonstrate compliance with prevention requirements by following industry standards and codes, good engineering practices, and federal and state regulations.

Program 1 processes have no prevention program requirements.

The table below presents the prevention program requirements for Program 2 and Program 3 processes.

Prevention Program Requirements	
Program 2	Program 3
Safety information	Process safety information
Hazard review of regulated process(es) process(es)	Process hazard analysis of regulated
Operating procedures	Operating procedures
Initial and refresher employee safety training	Initial and refresher employee safety training
Maintenance of process equipment	<i>Mechanical integrity</i> of process equipment
Internal audits to ensure compliance with prevention program	Internal audits to ensure compliance with prevention program
Accident investigation procedures	Accident investigation procedures
	Pre-startup review procedures
	Management of changes that may affect safety of regulated processes
	<i>Hot work</i> permits
	Employee participation
	Contractors

You will need to redo your hazard review or process hazard analysis whenever a *major change* in your process occurs and submit a revised RMP within six months of the time you made the change.

Emergency Response Program

The emergency response program outlines procedures your facility and each of your employees must follow during an accidental release. These are the components of the emergency response program for both Program 2 and Program 3 processes.

1. An emergency response plan, maintained and kept on-site, including the following elements:
 - 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.
2. Procedures for using and maintaining emergency response equipment;
3. Training for employees in their emergency response procedures; and
4. Procedures to review and update the emergency response plan as appropriate.

Emergency response plans you have developed to comply with other federal contingency planning requirements (such as the OSHA Hazardous Waste and Emergency Operations (HAZWOPER) rule (29 CFR 1910.120)) or that have been developed in accordance with the National Response Team's *Integrated Contingency Plan Guidance* ("One Plan") can meet the emergency response program requirements, provided the plan is coordinated with the community emergency response plan under the Emergency Planning and Community Right-to-Know Act (EPCRA) section 302 and includes this rule's required elements.

If your facility's employees will not be the ones responding to an accidental release at your facility, you are not required to develop an emergency response plan, provided the appropriate responses to your facility's hazards have been discussed in the community emergency response plan developed under EPCRA section 302 for toxics or coordinated with the local fire department for flammables. You also must ensure that there is a mechanism to contact local emergency responders.

What are the components of the RMP?

You will need to submit a single RMP that consists of an executive summary and registration for all covered processes.

Executive Summary

The executive summary must include a brief description of the following elements:

- accidental release prevention and emergency response

policies at your facility;

- regulated substances that are on-site;
- worst-case and alternative release scenarios;
- general accidental release prevention program and chemical-specific prevention steps;
- five-year accident history;
- emergency response program; and
- planned changes to improve safety.

Registration

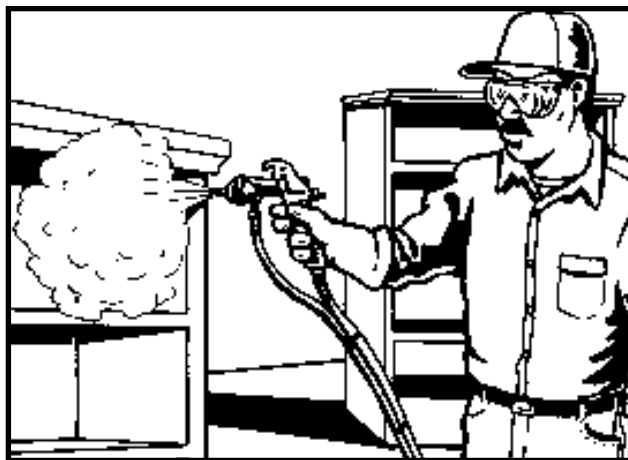
The RMP registration requirements are based on the EPCRA section 312 Tier II form. Your registration must include:

- name and address of your facility;
- name of a contact person;
- names and quantities of regulated chemicals on-site; and
- facility SIC code.

In addition, you will need to include the following information in your RMP:

- results of your worst-case and alternative release scenarios;
- dates for the most recent reviews and updates you have performed on your prevention program; and
- answers to questions indicating that you have an emergency response plan, with actions to be taken to respond to a release and procedures to inform the public and local response agencies.

EPA, in conjunction with industry, has completed a sample



RMP for the ammonia refrigeration industry and is developing similar guidance for water treatment systems and propane retailers and users. These model RMPs will explicitly cite other regulations, codes, and standards that satisfy specific elements of this rule. For example, the propane program will be based on the National Fire Protection Association's (NFPA) Standard Code of Practice for the Storage and Handling of Liquefied Petroleum Gases (NFPA-58). If you are in compliance

with NFPA-58, you will be in substantial compliance with your Program 2 requirements for propane.

What is the deadline for compliance?

If affected, you have until June 21, 1999, to register, develop and submit your RMP. After June 21, 1999, you must comply with rule requirements when a regulated substance is first present at your facility above the threshold quantity.

You must update and resubmit your RMP within six months of a change that 1) requires a revised offsite consequence analysis; 2) requires a revised hazards review or process hazards analysis; or 3) results in a change in program level of a covered process. If you are no longer covered under the rule, you must submit a revised registration to EPA within six months. Otherwise you must revise and resubmit your RMP at least once every five years.

What can I do to lessen my burden under this regulation?

You must comply with the regulatory requirements if your facility produces, handles, processes, distributes or stores a listed chemical in excess of its threshold quantity at any one time. Reducing the number and quantities of these regulated substances at your facility reduces your requirements under this regulation. In most instances, having fewer toxic, flammable, or volatile substances at your facility is inherently safer for you, your employees, your neighbors, and the environment. Inventory reduction and chemical substitution may be ways of achieving a safer and cleaner work place and complying with this regulation.

To whom do I submit my RMP?

EPA is currently making arrangements so that you will be able to submit your RMP electronically to a central electronic database in addition to hard copy. State emergency response commissions (SERC) and local emergency planning committees (LEPC), as well as the general public, will be able to access and download this information as needed.

Who can call if I have questions?

SBEAP Technical Assistance at KSU 800-578-8898
EPA Region 7 Toxic Substances Prevention and Planning 913-551-7731

Additional resources:

CAA 112(r) Frequently Asked Questions
Instructions--CAAA 112(r) RMP Data Elements
CAA 112(r) RMP Data Elements
CAA 112(r) RMP Offsite Consequence Analysis Guidance
Model RMP for Ammonia Refrigeration Units
Sample RMP for the Propane Industry
These documents, as well as text of the *RMP Preamble* and the *RMP Final Rule*, should be consulted for additional details. These are available on the Internet at <http://www.epa.gov/swercepp/acc-pre.html>, by dialing EPA's EPCRA hotline at 800-535-0202, or modem-dialing EPA's electronic bulletin board at 919-541-5742. Or you can call SBEAP Technical Assistance at KSU 800-578-8898.

Glossary:

- *Accidental release* means an unanticipated emission of a regulated substance or other extremely hazardous substance into the ambient air from a stationary source.
- *Active mitigation systems* means those systems that operate with human, mechanical, or other energy input and includes excess flow valves, fail-safe and automatic shut-down valves, scrubbers, flares, deluge systems, and water curtains.
- *Alternative release scenario* means a scenario that is more likely to occur than the worst-case scenario. These could include transfer hose releases due to splits or sudden hose uncoupling; process piping releases from failures at flanges, joints, welds, valves, valve seals, and drains or bleeds; process vessel or pump releases due to cracks, seal failure or drain, bleed, or plug failure; vessel overfilling and spill or overpressurization and venting through relief valves or rupture disks; and shipping container mishandling and breakage or puncturing leading to a spill. Active and passive mitigation measures may both be considered in the alternative release scenario evaluation, provided they are capable of withstanding the event that triggered the release and would still be functional.
- *Covered process* means a process that has a regulated substance which at any one time exceeds a threshold quantity.
- The *endpoint* for a toxic substance, as developed by the American Industrial Hygiene Association (AIHA), represents the maximum airborne concentration below which individuals could be exposed for up to an hour without experiencing or developing irreversible or other serious health effects or symptoms that could impact their ability to take protective action. Toxic endpoints are listed at the end of the regulation. The endpoint for vapor cloud explosions is an overpressure of 1 psi; for alternative flammable releases, it is a radiant heat exposure level of 5 kw/m² for 40 seconds; and for vapor cloud fires and jet fires, it is the lower flammability limit (LFL) as specified by the NFPA or other recognized sources.
- *Environmental receptor* means natural areas such as

national or state parks, forests, or monuments; officially designated wildlife sanctuaries, preserves, refuges, or areas; and federal wilderness areas that could be exposed at any time to toxic concentrations, radiant heat, or overpressure greater than or equal to the endpoints designated in the regulation as a result of an accidental release.

- *Hot work* means work involving electric or gas welding, cutting, brazing, or similar flame or spark-producing operations.

- *Injury* means any effect on a human that results either from direct exposure to toxic concentrations, radiant heat, or overpressures from accidental releases or from the direct consequences of a vapor cloud explosion (such as flying glass, debris, and other projectiles) from an accidental release and that requires medical treatment or hospitalization.

- *Major change* means introduction of a new process, process equipment or regulated substance, an alteration of process chemistry that results in any change to safe operating limits, or other alteration that introduces a new hazard.

- *Mechanical integrity* means the process of ensuring that process equipment is fabricated from the proper construction materials and is properly installed, maintained, and replaced to prevent failures and accidental releases.

- *Passive mitigations systems* means those systems that operate without human, mechanical, or other energy input and includes building enclosures, dikes, and containment walls.

- *Process* means any manufacturing, storing, distributing, handling, or use of a regulated substance. Interconnected vessels holding a regulated substance are considered a process. Unconnected vessels that could potentially release a regulated substance are also considered a process. Transportation operations, including pipelines and vehicles under active shipping papers, are not considered processes under this rule.

- *Public receptor* means offsite residences and institutions (e.g., schools, hospitals); industrial, commercial, and office buildings; parks or recreational areas inhabited or occupied by the public at any time without restriction by your facility where members of the public could be exposed to toxic concentrations, radiant heat, or overpressure as a result of an accidental release.

- *Vessel* means any reactor tank, drum, barrel, cylinder, vat, kettle, boiler, pipe, hose, or other container.

- *Worst-case release* means the release of the largest quantity of a regulated substance from a vessel or process line failure that results in the greatest distance to an endpoint.

Regulated chemicals and their thresholds under the Accidental Release Prevention Rule

Chemical	CAS #	Threshold (lbs.)
Acetaldehyde	75070	10,000
Acetylene	74862	10,000
Acrolein	107028	5,000
Acrylonitrile	107131	20,000
Acrylyl chloride	814686	5,000
Allyl alcohol	107186	15,000
Allylamine	107119	10,000
Ammonia (anhydrous)	7664417	10,000
Ammonia (conc. of 20% or greater)	7664417	20,000
Arsenous trichloride	7784341	15,000
Arsine	7784421	1,000
Boron trichloride	10294345	5,000
Boron trifluoride	7637072	5,000
Boron trifluoride compound with methyl ether	353424	15,000
Bromine	7726956	10,000
Bromotrifluorethylene	598732	10,000
Butane	106978	10,000
Butene	25167673	10,000
1-Butene	106989	10,000
1,3-Butadiene	106990	10,000
2-Butene	107017	10,000
2-Butene-cis	590181	10,000
2-Butene-trans	624646	10,000
Carbon disulfide	75150	20,000
Carbon oxysulfide	463581	10,000
Chlorine	7782505	2,500
Chlorine dioxide	10049044	1,000
Chlorine monoxide	7791211	10,000
Chloroform	67663	20,000
Chloromethyl ether	542881	1,000
Chloromethyl methyl ether	107302	5,000
1-Chloropropylene	590216	10,000
2-Chloropropylene	557982	10,000
Crotonaldehyde	4170303	20,000
Crotonaldehyde, (E)-	123739	20,000
Cyanogen	460195	10,000
Cyanogen chloride	506774	10,000
Cyclohexylamine	108918	15,000
Cyclopropane	75194	10,000
Diborane	19287457	2,500
Dichlorosilane	4109960	10,000
Difluoroethane	75376	10,000
Dimethylamine	124403	10,000
Dimethyldichlorosilane	75785	5,000
1,1-Dimethyl hydrazine	57147	15,000
2, 2-Dimethylpropane	463821	10,000
Epichlorohydrin	106898	20,000
Ethane	74-84-0	10,000
Ethylamine	75047	10,000
Ethyl acetylene	107006	10,000
Ethyl chloride	75003	10,000
Ethyl ether	60297	10,000
Ethyl mercaptan	75081	10,000

<i>Chemical</i>	<i>CAS #</i>	<i>Threshold (lbs.)</i>
Ethyl nitrite	109955	10,000
Ethylene	74851	10,000
Ethylenediamine	107153	20,000
Ethyleneimine	151564	10,000
Ethylene oxide	75218	10,000
Fluorine	7782414	1,000
Formaldehyde (solution)	50000	15,000
Furan	110009	5,000
Hydrazine	302012	15,000
Hydrochloric acid (conc. of 30% or greater)*	7647010	15,000
Hydrocyanic acid	74908	2,500
Hydrogen	1333740	10,000
Hydrogen chloride	7647010	5,000
Hydrogen sulfide	7783064	10,000
Hydrogen fluoride	7664393	1,000
Hydrogen selenide	7783075	500
Hydrofluoric acid (conc. of 50% or greater)	7664393	1,000
Iron, pentacarbonyl	13463406	2,500
Isobutane	75285	10,000
Isobutyronitrile	78820	20,000
Isopentane	78784	10,000
Isoprene	78795	10,000
Isopropylamine	75310	10,000
Isopropyl chloride	75296	10,000
Isopropyl chloroformate	108236	15,000
Methacrylonitrile	126987	10,000
Methane	74828	10,000
Methyl chloride	74873	10,000
Methyl chloroformate	79221	5,000
Methyl ether	115106	10,000
Methyl formate	107313	10,000
Methyl hydrazine	60344	15,000
Methyl isocyanate	624839	10,000
Methyl mercaptan	74931	10,000
Methyl thiocyanate	556649	20,000
2-Methyl-1-butene	563462	10,000
3-Methyl-1-butene	563451	10,000
2-Methylpropene	115117	10,000
Methyltrichlorosilane	75796	5,000
Monomethylamine	74895	10,000
Nickel carbonyl	13463393	1,000
Nitric acid (conc. of 80% or greater)	7697372	15,000
Nitric oxide	10102439	10,000
Oleum	8014957	10,000
1,3-Pentadiene	504609	10,000
Pentane	109660	10,000
1-Pentene	109671	10,000
2-Pentene, (E)	646048	10,000
2-Pentene, (Z)	627203	10,000
Peracetic acid	79210	10,000
Perchloromethylmercaptan	594423	10,000
Phosgene	75445	500
Phosphine	7803512	5,000
Phosphorus oxychloride	10025873	5,000
Phosphorus trichloride	7719122	15,000
Piperidine	110894	15,000
Propadiene	463490	10,000
Propane	74986	10,000
Propionitrile	107120	10,000
Propylene	115071	10,000

<i>Chemical</i>	<i>CAS #</i>	<i>Threshold (lbs.)</i>
Propyleneimine	75558	10,000
Propyl chloroformate	109615	15,000
Propylene oxide	75569	10,000
Propyne	74997	10,000
Silane	7803625	10,000
Sulfur dioxide	7446095	5,000
Sulfur tetrafluoride	7783600	2,500
Sulfur trioxide	7446119	10,000
Tetrafluoroethylene	116143	10,000
Tetramethyl lead	75741	10,000
Tetramethylsilane	75763	10,000
Tetranitromethane	509148	10,000
Titanium tetrachloride	7550-45-0	2,500
Toluene diisocyanate	26471625	10,000
Toluene 2,4-diisocyanate	584849	10,000
Toluene 2,6-diisocyanate	91087	10,000
Trichlorosilane	10025782	10,000
Trifluorochloroethylene	79389	10,000
Trimethylamine	75503	10,000
Trimethylchlorosilane	75774	10,000
Vinyl acetylene	689974	10,000
Vinyl chloride	75014	10,000
Vinyl ethyl ether	109922	10,000
Vinyl fluoride	75025	10,000
Vinylidene chloride	75354	10,000
Vinylidene fluoride	75387	10,000
Vinyl acetate monomer	108054	15,000
Vinyl methyl ether	107255	10,000

*The concentration is anticipated to change to 37% as proposed in the Federal Register.

Acknowledgements

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