



# *Region 10 Resource Manual for the Risk Management Program*





## Table Of Contents

### General Overview

History of the Program .....	Page 1
Parts of the Program .....	Page 1
What Region 10 RMPs look Like .....	Page 3
Recent Changes to the Program .....	Page 4

### The Risk Management Program

Off-site Consequence Analysis .....	Page 5
5-Year Accident History .....	Page 5
Prevention Program .....	Page 6
Emergency Response .....	Page 9

### Appendix A - Regional Risk Management Program Information

Chemical and Quantities .....	Page 11
Region 10 Chemical Fact Sheet .....	Page 12
LEPC Fact Sheet .....	Page 13

Appendix B - Glossary .....	Page 17
-----------------------------	---------

Appendix C - List of Regulated Chemicals .....	Page 19
--	---------

Appendix D - Relevant Resources and Contact Information .....	Page 23
---	---------

Chemical Maps .....	Page 24
---------------------	---------

Acknowledgments and Methodology .....	Page 25
---------------------------------------	---------





# General Overview

## History of the Program

**B**efore the 1980's, U.S. citizens were largely unaware of or indifferent to the off-site dangers of chemical accidents. After the severe chemical accidents in Bhopal, India (1984) and Institute, West Virginia (1985), citizens and regulators began to see a need to pay attention to the U.S. potential for chemical accidents. The Bhopal incident killed several thousand people and injured hundreds of thousands of others, while the institute incident sent over 100 people to the hospital.

In response to the Bhopal and Institute disasters, the Environmental Protection Agency (EPA) began its Chemical Emergency Preparedness and Prevention Program (CEPP). This program includes regulations such as the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) as well as Section 112(r) of the Clean Air Act. These combined regulations enforce safety standards for hazardous chemicals and bridge the gaps in knowledge between communities and the chemical industry.

Section 112(r), also known as the risk management program, deals specifically with facilities that hold or use very toxic and flammable substances at or above thresholds as determined by the EPA. Currently there are 142 substances regulated under Section 112(r).

The primary goal of the risk management program is to protect the public and the environment from off-site releases of toxic and flammable substances. It is meant to insure that industries, community members and emergency responders have the proper tools to prevent and respond to chemical accidents before catastrophic releases occur.

## Parts of the Program

### General Duty Clause

Although many firms are not covered under the risk management program, all firms that hold or use hazardous substances must work to prevent chemical accidents and to ensure the safety of the public and the environment. *The General Duty Clause (GDC)* requires these firms to identify any risks that might result from the accidental release of hazardous substances. In addition, all firms are required to maintain safety standards and take necessary steps to prevent the accidental release of hazardous substances.

### List of Hazardous Chemicals

Section 112(r) required the EPA to create a list of substances to be regulated under the risk management program. Chemicals are placed on the list of regulated substances based on their flammability, acute toxicity and/or their accident histories. All of the chemicals that are regulated are produced in sufficient quantities to warrant listing and all of the chemicals on the list must have the potential to travel through the air to off-site locations. See Appendix C for a list of regulated substances and Appendix A for information about substances regulated in Region 10.

### Facilities covered by the law

Any firm that holds a regulated chemical at or above the EPA determined threshold level in a single process is regulated under the risk management program. These facilities must follow specific guidelines as determined by the EPA for accident prevention and emergency response.

### Accidents Waiting to Happen: New Report Issues Warning

Nearly five thousand U.S. chemical facilities are storing greater quantities of extremely hazardous substances than were released in the 1984 Bhopal, India, chemical accident, according to a new report released by U.S. PIRG and the Working Group on Community Right-to-Know. *Accidents Waiting to Happen: Hazardous Chemical Storage in the U.S.*, was released on the fifteenth anniversary of the Bhopal disaster, in which a Union Carbide pesticide factory released 90,000 pounds of the chemical methyl isocyanate. The resulting toxic cloud killed several thousand people and injured hundreds of thousands. The report examines facilities across the country storing chemicals that the U.S.EPA has defined as 'extremely hazardous substances' because of their potential for catastrophic accidents. Of those facilities, at least 100 are storing more than 30 million pounds of an extremely hazardous substance, or more than 300 times the amount released at Bhopal. Every state except Vermont has at least one facility storing greater amounts of hazardous substances than were released at Bhopal. The report also notes the high frequency of chemical accidents in the US., citing a study by the U.S. Chemical Safety Board (CSB) estimating that, on average, 60,000 chemical incidents happened every year between 1987 and 1996, or more than 150 every day. On average, these accidents kill about 250 people nationwide every year. (For complete article, please visit the Section 112(r) Y2K newsletter at: [www.epa.gov/r10earth/112r.htm](http://www.epa.gov/r10earth/112r.htm) )

### The General Duty Clause says:

*"The owners and operators of stationary sources producing, processing, handling, or storing [a chemical in 40 CFR Part 68 or any other extremely hazardous substance] have a general duty [in the same manner and to the same extent as the general duty clause in the Occupational Safety and Health Act (OSHA)], to identify hazards which may result from... releases using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur."* ([www.epa.gov/ceppo](http://www.epa.gov/ceppo))

There are three levels of regulation for facilities that are covered by the risk management program. Program 1 is meant for facilities that have relatively safe processes. These firms are not highly regulated. All firms must complete an Off-Site Consequence Analysis (OCA), a hazard assessment and an emergency response program. Every regulated firm must also document their risk management efforts in a Risk Management Plan (RMP) that will be displayed in a central database. Programs 2 and 3, on the other hand, are more highly regulated and are required to complete a more extensive prevention and hazard assessment plan.



*Ammonia Storage Tanks at the J.R. Simplot Rivergate Facility in Portland, Oregon*

### ***Is my firm covered under Section 112(r)?***

- Does your firm have any of the chemicals listed in Appendix C?
- Does your firm ever hold the above listed chemicals at or above threshold levels?
- Are the chemicals you hold at or above threshold amounts contained in one process? (See the text box on Process below).

***If your answer to all of the above questions is yes, you are most likely regulated under 112(r).***

### ***What Is a Process?***

Any activity that uses a regulated chemical can be included in a process. This includes storage, manufacturing, handling or on-site movement. A process is any combination of these activities that could result in a single release.

**Example:** Two storage tanks of ammonia are in one process if they are connected or if they could potentially be involved in a single accident.

## What Region 10 RMPs Look Like:

More than half of the RMPs for Region 10 are located in Washington State. The most common chemicals regulated in Region 10 are ammonia and chlorine for refrigeration and disinfection respectively (See Figure 1). However, facilities with flammable mixtures and ammonia tend to have the largest amounts of chemicals on site. In addition, most of the processes in Region 10 are regulated under programs 2 and 3 (See Figure 2).

Further information about the specifics of the Region 10 program can be found in Part II and Appendix A of this booklet.

Figure 1:  
Which Industries are Regulated in Region 10?

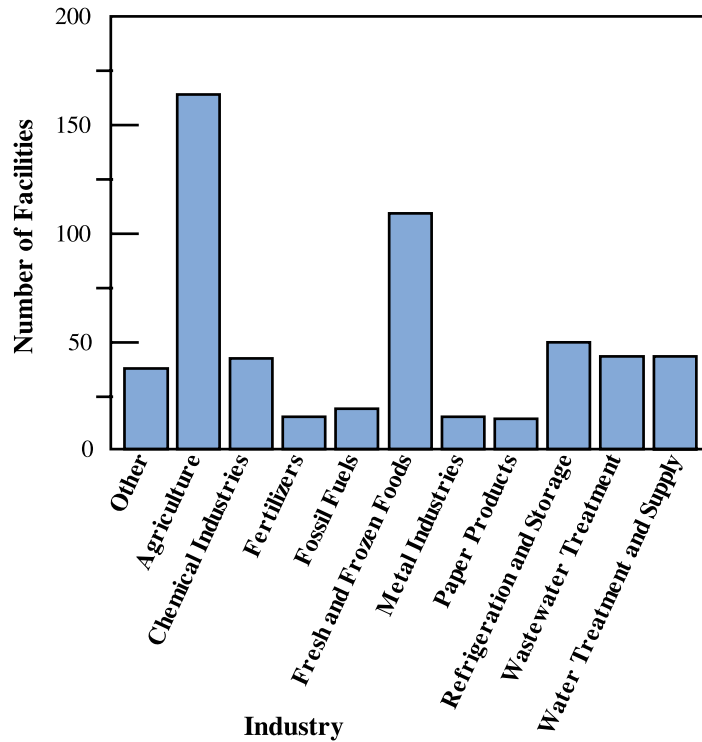
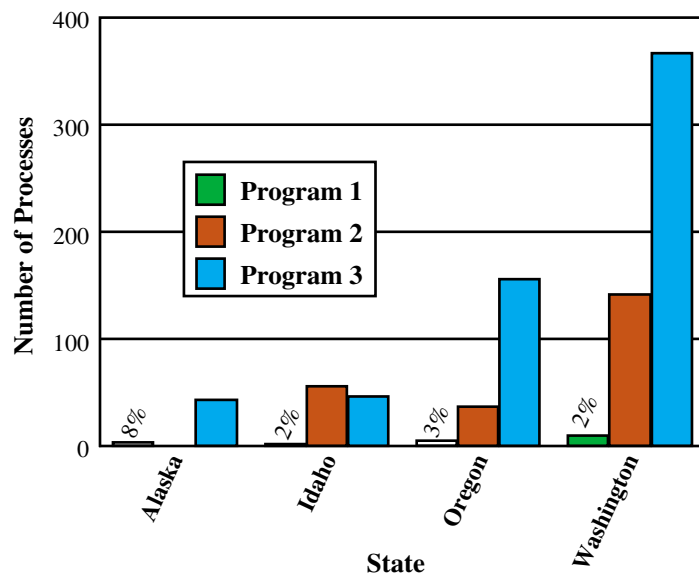


Figure 2:  
What are the Program Levels in Region 10?



## Recent Changes to the Program

Several changes have been made to the risk management program that affect both the regulated universe of the program and the requirements for regulated facilities.

### 1. Changes to the list of regulated substances

- All Division 1.1 explosives have been deleted from the program. The EPA believes that the current standards for explosives are sufficient to keep the public safe.
- All flammable mixtures have to have a National Fire Protection Association (NFPA) rating of 4 to be regulated.
- Transportation - No naturally occurring hydrocarbons (fossil fuels) or substances in transit are regulated by the risk management program.
- No chemicals located on the outer continental shelf are regulated under the risk management program. This includes sources such as oil exploration platforms.



*Emergency Responders in Clallam County.*

### 2. CSISSFRA -

While this may seem like a contender in the world's largest acronym contest, it is actually an important piece of legislation that drastically affects the risk management program. CSISSFRA stands for the Chemical Safety Information, Site Security and Fuels Regulatory Relief Act. The act limits access to Off-site Consequence Analysis (OCA) data that is reported in the RMPs. It also revises the list of regulated substances to exclude fuel retailers and facilities that use listed flammable substances as a fuel. Nationally, by exempting fuel retailers, this act cuts the number of regulated processes in half, with similar effects in Region 10.



# The Risk Management Program

## Off-Site Consequence Analysis

As part of the risk management program, covered facilities are required to complete an off-site consequence analysis. This analysis contains two parts. First, a facility must complete a *worse-case scenario*. This scenario outlines and evaluates the worst chemical accident that could occur at any given plant. Although such a scenario is very unlikely to occur, it gives facilities a chance to assess their overall chemical risks. Facilities must also write-up *alternative release scenarios*. In these scenarios, a facility describes more likely accident scenarios that could affect the public.

An example of a worse case scenario for a plant that holds chlorine might be the release of an entire rail car of chlorine in a ten-minute time span. A release at this rate is very unlikely. A more likely scenario might involve a hose or valve breaking, causing a smaller, but still harmful release.

## 5-Year Accident Histories

All regulated firms must also complete a 5-year accident history. All accidents reported in the accident history must have been caused by the release of a regulated chemical in a covered process. Many facilities that have not had reportable accidents in the last five years, have nevertheless had accidental releases.

All listed accidents must include specific information about the chemical that was released, how it was released and the damage the accident caused. Although this information may not be available about past accidents, the information must be collected about any accidents that happen in the future.

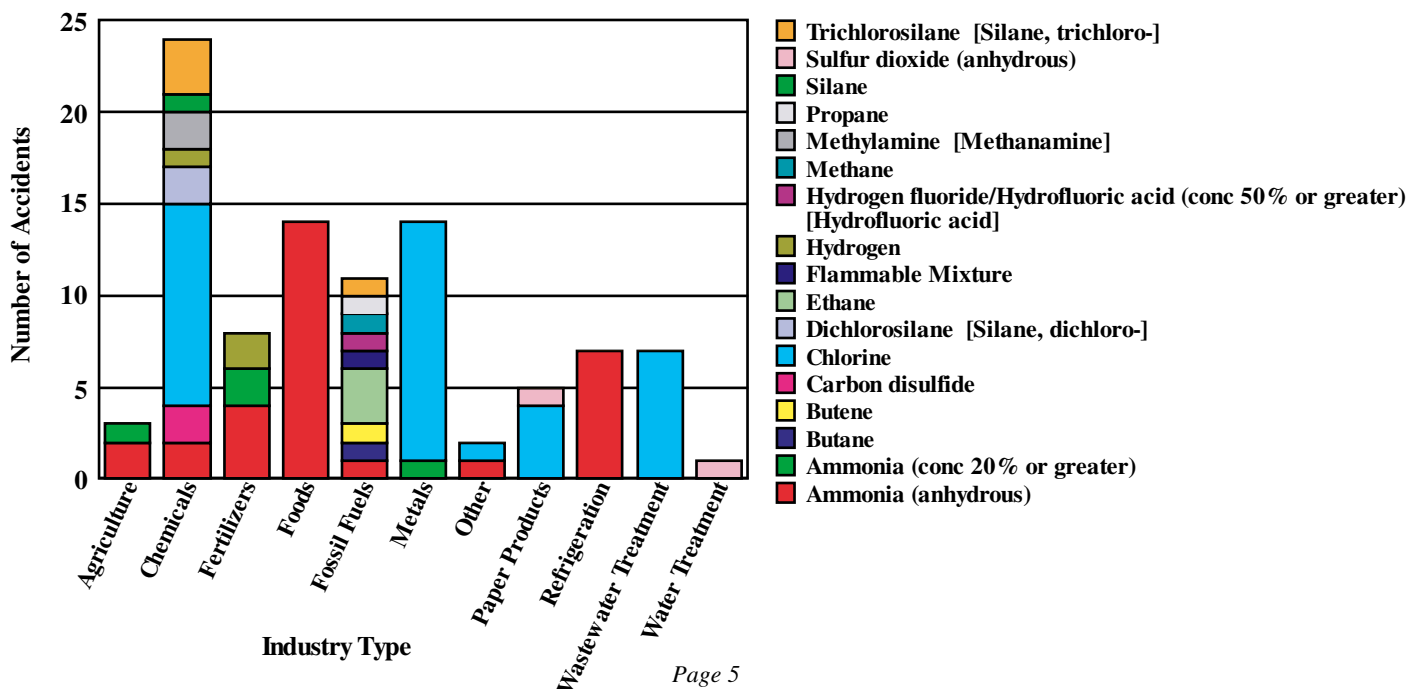
Although most of the accidents that occur in Region 10 involve ammonia or chlorine, there are several chemicals that present a greater risk to community members than these widely known chemicals. Methylamine and silane tend to affect between 50 and 60 people per accident (*see Figure 3*), while chlorine and ammonia affect less than 20 people per accident on average.

### Why Is It Difficult to Get Access to OCA Data?

The goal of Section 112(r) is to protect the public and the environment from chemical accidents. The theory behind making this data difficult to access is that terrorists might use the data to cause the kinds of accidents that the EPA is trying to prevent.

Residents in the area of a covered facility can gain access to OCA data by going to [www.epa.gov/ceppo/readingroom.htm](http://www.epa.gov/ceppo/readingroom.htm).

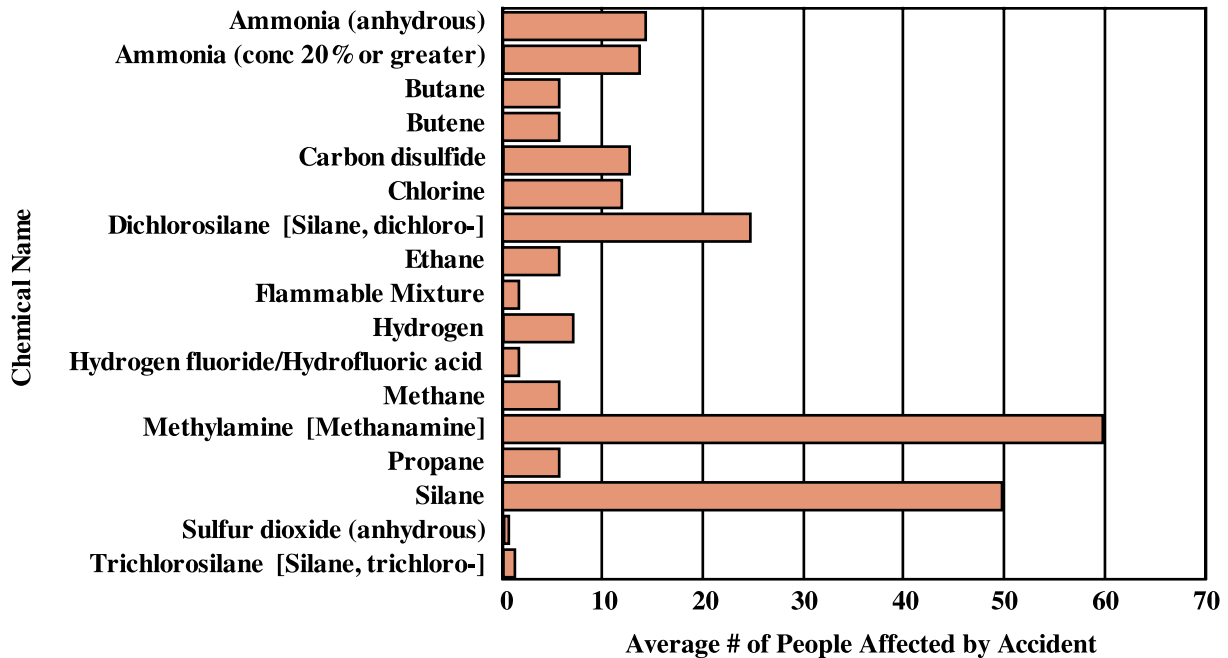
Figure 3:  
Accident History by Industry



Not all releases of hazardous substances count as accidents under Section 112(r). In order for an accident to be placed in the five year history, it must include one of the following things:

- Deaths
- Injuries
- Significant property damage on-site
- Off-site evacuations or sheltering in place
- Off-site property damage or environmental damage

Figure 4:  
**Which RMP Chemicals Affect People in Region 10?**  
*(Includes Death, Injury and Evacuation)*



## Prevention Program

All firms classified in Program 2 or 3 are required to assess and update their operations in order to prevent the possibility of future chemical accidents. Approximately 97% of the covered processes in Region 10 are either in Program 2 or 3, and so are subject to this requirement. This section of the risk management program is central to the deterrence of chemical accidents, the safety of the public and the protection of the environment.

This resource manual outlines the main parts of the prevention program for facilities listed in either Program 2 or Program 3. Please note that this is an overview for informational purposes only. Firms that need guidance in complying with the prevention program requirements should refer to the EPA guidance documents for compliance (See Appendix D).

### Safety Information

Facilities must have safety information about the equipment, covered processes and chemicals on-site. This information must include toxicity data about the chemicals in a process, information about the technology of the process, and safety information about the equipment used in the process.

Most firms are required to have Material Safety Data Sheets and manuals describing the hazards of on-site chemicals. This data may be used to describe the dangers of the hazardous chemicals, but it does not contain all necessary safety information.

### Sample of Hazard Data - Chlorine

**Toxicity** - LC50 inhalation (mouse) .4 mg/liter/1 hour - This means that at a concentration of .4 milligrams of chlorine gas in 1 liter of air, 50% of the mice in a toxicology study died. This number is used to decide how deadly or toxic a chemical is. In order to be considered severely toxic for the risk management program, a chemical must have an LC50 under .5 mg/liter/hour.

**OSHA PEL** - permissible exposure limits - This is the highest amount of a chemical that anyone could be exposed to at one time. For chlorine, this number is 3 milligrams for every liter of air.

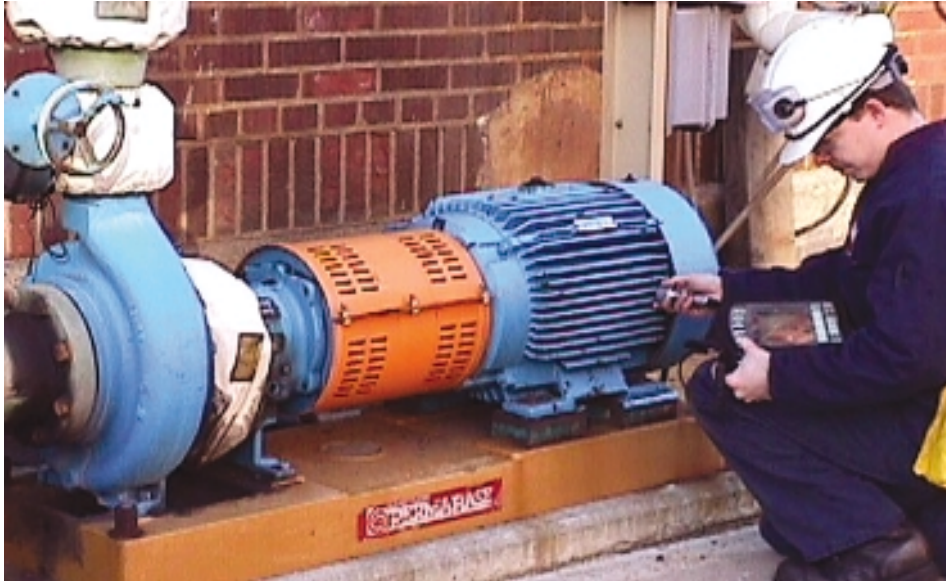
Most of the information in a Material Safety Data Sheet is highly technical. Pay special attention to the list of chemicals that should not be mixed with the chemical and the first aid treatment requirements for exposure.

### **Hazard Review/Analysis**

The firm must also conduct a review of the hazards associated with their process. The most important of these are listed below:

- Hazards of the Process - assessment of the possible hazards associated with a process
- Identification of incidents that had the potential for catastrophic consequences - An assessment of past incidents and their potential for catastrophic effects
- Consequences of failure of engineering and administrative controls
- Human Factors - how could human error cause the release of a deadly chemical?

After the review has been completed, the owner of a facility must adopt policies to address the findings of the hazard analysis. If an owner or operator finds that there are administrative controls that do not function properly, they need to implement policies to correct the problem.



*Pioneer Americas Process Safety Management Images*

### **The Hazards of a Deadly Chemical - Chlorine**

Inhalation of chlorine gas at 500 parts per million for five minutes has been known to cause death in humans. Inhalation at 1000 parts per million for a few deep breaths can also cause death. In Region 10 there are 122 firms that could have an airborne release of chlorine.

Other health effects of chlorine exposure include coughing, choking, wheezing, skin irritation, burns, blistering and blurred vision (Materials Safety Data Sheets).

Without the proper safety procedures, this important sterilizer can become a deadly threat.

## **Process Safety Management Profile**

### **Pioneer Americas, Inc.**

The Tacoma Pioneer Americas facility is located in the industrial Tidelands area near the Port of Tacoma on the Hylebos Waterway. The facility has been in business since 1929 and manufactures chlorine, sodium hydroxide, muriatic acid and calcium chloride. These chemicals provide important benefits in critical applications such as water purification, household disinfectants, synthetic fibers, plastics manufacturing, cosmetics, medical products, and pharmaceutical products.

As a Washington Labor and Industries Voluntary Prevention Program Star facility, Pioneer Americas, Inc. has done many things to continually improve their process safety management at the Tacoma Plant. As part of this process, they not only investigate accidents as they happen, but they also encourage their employees to report near misses, so that all potential chemical accidents are addressed.

The comprehensive safety procedures at Pioneer were extremely helpful in dealing with the Northwest energy crisis. By having a detailed plan for making changes in operations, they were able to safely and efficiently change their processes to meet the new problems caused by the energy crisis.

### **Environmental Outreach**

A focal point of Pioneer Americas' outreach efforts is their very active Community Advisory Panel (CAP). The panel meets every six weeks and provides a forum to discuss real community concerns. Recent meeting topics have included the energy crisis, employee training, ozone depleting substances, and emergency response readiness. They use CAP members as observers during emergency response drills and routinely ask the group for feedback on their handling of issues that the public is concerned about. Advisory panel members are very candid in their assessment of plant performance and each brings a different perspective that is very valuable in the critiquing process.

For information about the Community Advisory Panel or other information about Process Safety Management at the Tacoma Plant contact: **Karl B. Iams, Environmental Manager, (253) 593-1300.**

### ***Operating Procedure***

All facilities covered under 112(r) must have written operating procedures that provide clear instructions for safely conducting activities using regulated hazardous chemicals.

### **-PHASES, LIMITS, SAFETY-**

*Some questions to ask:*

#### **I. Operating phases**

- What safety steps need to be taken before a machine is started or a chemical is used?
- What happens when an emergency occurs?
- How is it decided that emergency procedures are necessary? When is it okay to go back to normal operating procedures?

#### **II. Operating Limits**

- What happens when a machine is working outside its normal operating limits?
- How could this situation be corrected in the future?

#### **III. Safety and Health Hazards**

- Where is the health hazard data for regulated chemicals located in the facility?
- Does every employee have access to this data?
- What precautions are taken to prevent human exposure? What steps are taken if exposure occurs?
- What safety systems are in place and how do they work?

#### ***Do you want to Risk it?***

Of the reportable accidents in Region 10 approximately 10% were caused in part by management error and 21% to improper procedures. Of the accidents, there were 46 injuries and 3 deaths

### ***Training***

Proper training is essential to the health and safety of on-site workers, contractors and the public. Approximately 36% of the reportable chemical accidents in Region 10 were in part due to human error. The importance of proper training cannot be overemphasized in accident prevention.

Any employee who works with regulated chemicals must receive training in the health hazards and safety procedures related to their work. Each employee needs to know both regular and emergency procedures for their process.

See Appendix D for information about hazardous materials training for employees and emergency responders

### ***Mechanical Integrity and Maintenance***

Section 112(r) requires that owners of facilities regularly inspect their machinery. The machinery should be checked for integrity as well as proper installation and maintenance. All machines and equipment should be regularly maintained and all deficiencies should be corrected.

41% of the chemical accidents in Region 10 accidents in the last five years were caused by equipment failure. Equipment-related failures have caused 33 injuries and 4 deaths in the last five years.



***Training at Pioneer Americas***



***Training at Pioneer Americas***

# Emergency Response

## So I did everything I could to prevent a release, now what?

Even the safest facilities can have accidental chemical releases; it is the job of both emergency responders and facility owners to work out a plan in case of emergency...

### What to Do in Case of Emergency: Industry

- Know how to inform local emergency responders and the public -
- Visit the Local Emergency Planning Council database to determine what LEPC you should be coordinating with.
- Make sure that EVERY employee knows where all first aid and emergency equipment is located.
- Make sure that EVERY employee knows what to do in case of an accident.
- Know how to change your plan when your process changes.

### What to Do in Case of Emergency: Emergency Responders

- Know where RMP facilities are located in your jurisdiction and coordinate emergency response plans with these facilities. (see Figure 4 for information about accidents in different LEPCs)
- Find out the potential for accidental releases at the facilities you work with and prepare for any emergencies that could occur.

### What to Do in Case of Emergency: Public

- Get information about the RMP facilities in your area and find out how their chemical releases could affect you.
- Use TOXNET (See Appendix D) and community right-to-know data and learn how to respond to the kinds of chemicals that exist.
- Read the Executive Summaries of facilities in your area to get an idea of what kinds of accidents may occur.
- Visit the EPA library if you need more information (See Appendix D)

**I Already have to comply with OSHA Process Safety Management standards. Do I need to do more?**

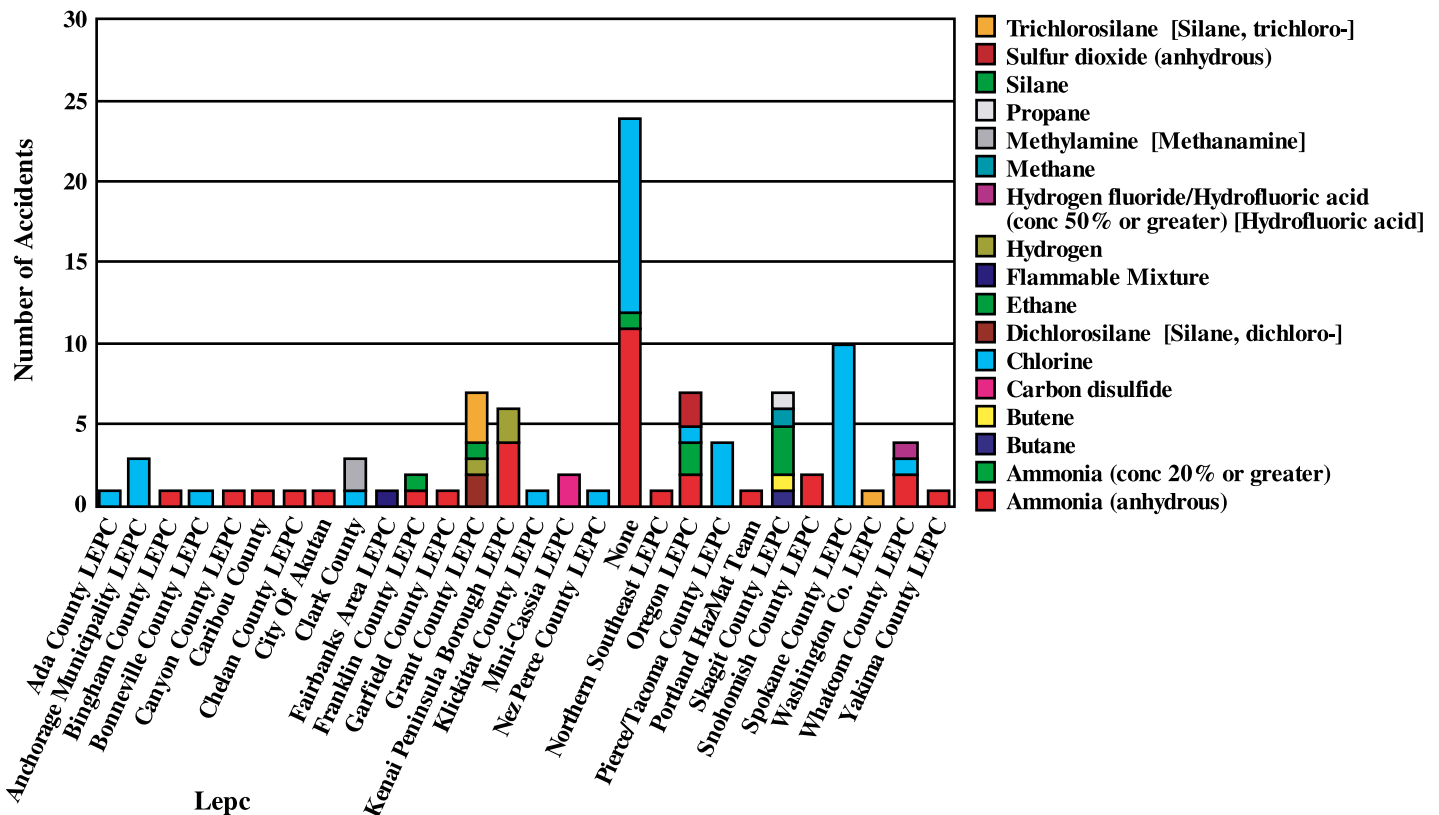
Not for the prevention program - If you comply with OSHA PSM standards, you have already met the requirements for the prevention program. OSHA and the EPA have intentionally created identical standards for their prevention programs in order to avoid extra work and unnecessary complication.

Remember that Section 112(r) deals with the off-site consequences of chemical accidents and OSHA PSM deals with on-site safety management. Both programs require the same prevention standards, and differ with respect to the additional sections of the program.

### Who Reports Accidents?

Approximately 1/3 of the RMP reportable accidents in Region 10 were not reported to local responders. Remember that these accidents had either significant on-site or off-site effects.

Figure 5: Reportable Accident History by LEPC



## Local Emergency Planning Committees and the Risk Management Program

### Snohomish County – Nominated for National Chemical Safety Award

- Brought the regional director of the risk management program to speak about the general characteristics of the program.
  - *This meeting included members of the public and many members of industry who are regulated under the program.*
- Produced a brochure on Shelter in Place for local school and public libraries.
- With the help of Kimberley-Clark, Inc., Snohomish County purchased a second computer system for emergency responders in the county.
  - *The idea to purchase this system came out of the meetings about the risk management program.*



*HazMat Emergency Response Exercise in Clallam County.*

### Lewis County

- Developed a Hazard Mapping Program on CD-ROM.
  - This program maps:
    - ✓ All of the critical public areas in Lewis county
    - ✓ All of the hazardous materials sites in Lewis County
    - ✓ Has overlays comparing sensitive natural disaster areas to the hazardous materials sites
    - ✓ Will eventually contain information about the chemical quantities at each hazardous materials site.

For more information about the Hazard Mapping Program contact **Steve Mansfield** or **Jill Kangas** at **(360) 740-1151**.

# Regional Risk Management Program Information

## Overview

The purpose of this appendix is to provide general as well as specific information about the risk management program within Region 10. Pages 12-15 contain data sheets about the chemicals and LEPCs in Region 10. These sheets are a good reference point for specific information about risk management in Region 10.

Although some chemicals, like ammonia, are at many facilities, they do not represent the largest quantity of chemicals in Region 10. Despite the fact that ammonia exists at many facilities, it does not cause as many accidents per facility as many other chemicals.

Figure 6:  
Which Chemicals are Causing Accidents in Region 10?

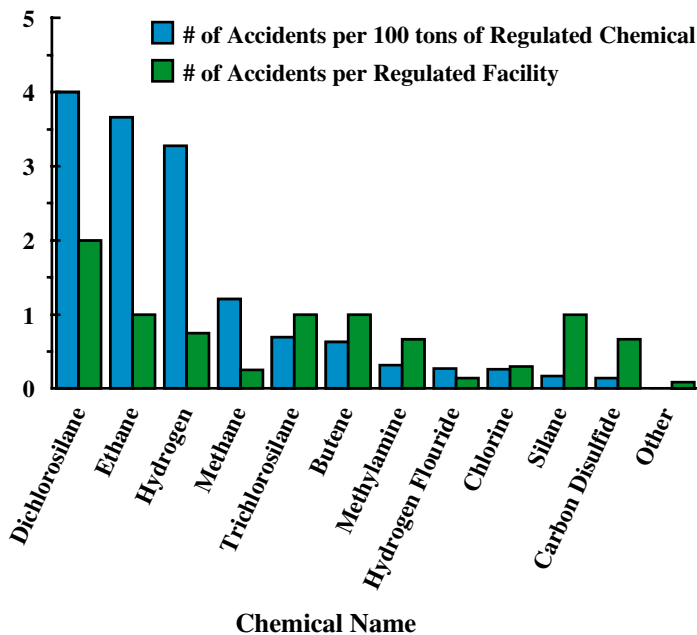
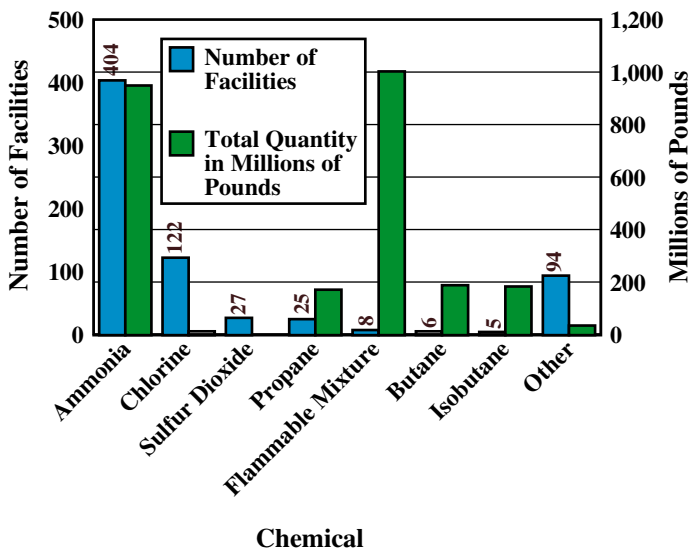


Figure 7:  
What Are the Most Common Chemicals in Region 10?



## Region 10 Chemical Fact Sheet

Chemical Name	Threshold	Quantity in Region	Average Quantity Per Process	Number of Processes	Most Common Industry
1-Butene	10,000	2,370,052	592,513	4	Fossil Fuels
1-Pentene	10,000	17,049	4,262	4	Other
2-Butene	10,000	2,000,000	2,000,000	1	Other
Acetaldehyde	10,000	46,872	46,872	1	Chemical Industries
Acetylene [Ethyne]	10,000	52,339	17,446	3	Fossil Fuels
Acrolein [2-Propenal]	5,000	60,000	60,000	1	Other
Ammonia (anhydrous)	10,000	851,290,521	2,418,439	352	Refrigeration and Storage
Ammonia (conc 20% or greater)	20,000	99,752,953	1,216,499	82	Paper Products
Butane	10,000	188,942,476	11,114,263	17	Fossil Fuels
Butene	10,000	158,804	52,935	3	Other
Carbon disulfide	20,000	1,441,342	360,336	4	Fertilizers
Chlorine	2,500	13,693,900	100,690	136	Water Treatment & Supply
Chlorine dioxide [Chlorine oxide (ClO <sub>2</sub> )]	1,000	289,506	24,126	12	Paper Products
Cyclohexylamine [Cyclohexanamine]	15,000	15,000	15,000	1	Chemical Industries
Dichlorosilane [Silane, dichloro-]	10,000	50,000	25,000	2	Metal Industries
Dimethylamine [Methanamine, N-methyl-]	10,000	570,980	190,327	3	Fertilizers
Epichlorohydrin [Oxirane, (chloromethyl)-]	20,000	570,000	190,000	3	Chemical Industries
Ethane	10,000	81,818	6,818	12	Fossil Fuels
Ethyl ether [Ethane, 1,1'-oxybis-]	10,000	11,810	11,810	1	Paper Products
Ethylene [Ethene]	10,000	1,356	271	5	Other
Flammable Mixture	10,000	1,003,910,246	27,132,709	37	Wastewater Treatment
Formaldehyde (solution)	15,000	8,762,966	350,519	25	Paper Products
Hydrochloric acid (conc 37% or greater)	15,000	116,651	38,884	3	Metal Industries
Hydrogen	10,000	91,678	11,460	8	Metal Industries
Hydrogen chloride (anhydrous) [Hydrochloric acid]	5,000	108,120	36,040	3	Other
Hydrogen fluoride/Hydrofluoric acid (conc 50% or greater) [Hydrofluoric acid]	1,000	363,134	51,876	7	Metal Industries
Hydrogen sulfide	10,000	5,979	1,993	3	Other
Isobutane [Propane, 2-methyl]	10,000	185,341,141	12,356,076	15	Fossil Fuels
Isopentane [Butane, 2-methyl-]	10,000	2,204,551	200,414	11	Fossil Fuels
Methane	10,000	82,597	8,260	10	Wastewater Treatment
Methylamine [Methanamine]	10,000	624,720	156,180	4	Fertilizers
Methyltrichlorosilane [Silane, trichloromethyl-]	5,000	8,000	8,000	1	Metal Industries
Pentane	10,000	12,229,815	940,755	13	Fossil Fuels
Phosgene [Carbonic dichloride]	500	18,400	18,400	1	Metal Industries
Propadiene [1,2-Propadiene]	10,000	55,000	55,000	1	Metal Industries
Propane	10,000	171,447,956	4,898,513	35	Wastewater Treatment
Propylene [1-Propene]	10,000	437,537	62,505	7	Fossil Fuels
Silane	10,000	600,000	300,000	2	Metal Industries
Sulfur dioxide (anhydrous)	5,000	2,418,850	83,409	29	Water Treatment & Supply
Titanium tetrachloride [Titanium chloride (TiCl <sub>4</sub> ) (T-4)-]	2,500	1,305,000	652,500	2	Metal Industries
Toluene diisocyanate (unspecified isomer) [Benzene, 1,3-diisocyanatomethyl-]	10,000	740,000	370,000	2	Other
Trichlorosilane [Silane, trichloro-]	10,000	572,900	114,580	5	Metal Industries
Vinyl acetate monomer [Acetic acid ethenyl ester]	15,000	380,000	190,000	2	Other



## Region 10 Local Emergency Planning Committees (LEPCs)

LEPC	Number of Facilities Reporting	Number of Facilities In LEPC	Quantity	Most Common Industry
Ada County LEPC	1	2	24000	Wastewater Treatment
Adams County LEPC	6	9	121099295	Fresh and Frozen Foods
Aleutian & Pribilof LEPC	2	3	100500	Fresh and Frozen Foods
Aleutians East Borough LEPC	1	2	51000	Fresh and Frozen Foods
Anchorage Municipality LEPC	2	3	138000	Wastewater Treatment
Asotin County LEPC	2	7	123440	Agriculture
Athena Fire Dept.	1	0	343000	Agriculture
Auburn (City Of) LEPC	1	7	22009	Refrigeration and Storage
Bannock County LEPC	2	4	168600	Wastewater Treatment
Benewah County LEPC	1	5	56650	Agriculture
Benton County LEPC	21	29	327534486	Water Treatment and Supply
Bingham County LEPC	4	6	394000	Fresh and Frozen Foods
Boise County	0	1		
Bonner County LEPC	0	2		
Bonneville County LEPC	2	2	103000	Wastewater Treatment
Boundary County	1	2	77850	Agriculture
Bristol Bay	1	0	25000	Fresh and Frozen Foods
Canyon County LEPC	8	12	939898	Refrigeration and Storage
Caribou County	4	5	473200	Chemical Industries
Chelan County LEPC	7	12	126320	Wastewater Treatment
City of Sand Point	1	0	30000	Fresh and Frozen Foods
City Of Akutan	1	0	60000	Fresh and Frozen Foods
City of Keizer	1	0	36000	Wastewater Treatment
City of Pullman LEPC	1	0	6000	Wastewater Treatment
City of St. Paul	1	0	30000	Fresh and Frozen Foods
City of Umatilla	1	0	91800	Agriculture
Clallam County	0	1		
Clark County	5	17	1942354	Water Treatment and Supply
Clearwater County LEPC	2	3	119800	Agriculture
Columbia County LEPC	2	6	816000	Agriculture
Cowlitz County LEPC	6	13	570072	Water Treatment and Supply
Custer County	0	1		
Douglas County LEPC	7	12	412400	Water Treatment and Supply
ECHO	4	0	468440	Fresh and Frozen Foods
ESCA	1	0	16000	Wastewater Treatment
Fairbanks Area LEPC	3	3	968906	Metal Industries
Ferry County	1	2	150000	Metal Industries
Forest Grove LEPC	1	0	35000	Refrigeration and Storage
Franklin County LEPC	12	30	615135	Water Treatment and Supply
“Franklin County, ID”	0	1		
Fremont County LEPC	1	1	145000	Agriculture
Garfield County LEPC	4	9	1133569	Agriculture
Gem County	0	2		
Gooding County LEPC	1	1	14000	Fresh and Frozen Foods
Grant County LEPC	8	15	2277695	Metal Industries

## Region 10 Local Emergency Planning Committees (LEPCs)

LEPC	Number of Facilities Reporting	Number of Facilities In LEPC	Quantity	Most Common Industry
Grays Harbor County	0	1		
Greater Ketchikan Area LEPC	3	0	67760	Water Treatment and Supply
Hermiston County	1	0	64000	Fresh and Frozen Foods
Hood River County LEPC	1	0	14000	Refrigeration and Storage
Idaho County LEPC	3	4	1124000	Agriculture
Island County	0	2		
Jefferson County LEPC	2	4	336130	Water Treatment and Supply
Jerome County LEPC	1	5	24000	Fresh and Frozen Foods
Kenai Peninsula Borough LEPC	4	4	1123010393	Fresh and Frozen Foods
Kent (City Of) LEPC	1	8	400000	Other
King County LEPC	15	25	1066985	Water Treatment and Supply
Kitsap County LEPC	2	8	4000	Wastewater Treatment
Kittitas County LEPC	2	3	131000	Fresh and Frozen Foods
Klickitat County LEPC	2	6	43983	Refrigeration and Storage
Kodiak Island Borough LEPC	4	4	68479	Fresh and Frozen Foods
Kootenai County LEPC	1	3	14000	Wastewater Treatment
LaGrand Rural Fire Department	1	0	361200	Agriculture
Latah County LEPC	5	9	572471	Agriculture
"LEPC District 5, Pocatello, ID"	1	0	1220000	Fertilizers
Lewis County LEPC	5	2	573000	Fresh and Frozen Foods
Lewis County LEPC	5	5		
Lincoln County LEPC	14	16	3785801	Agriculture
Linn County LEPC	1	0	300000	Fertilizers
Madison County LEPC	1	2	290000	Agriculture
Marion County Fire District	1	0	73000	Agriculture
Mason County	0	4		
Mini-Cassia LEPC	3	11	702202	Fresh and Frozen Foods
Minidoka County LEPC	5	0	763834	Fresh and Frozen Foods
Morrow County LEPC	1	0	78734	Agriculture
Nampa Fire Department	1	0	51988	Chemical Industries
Nez Perce County LEPC	9	13	3956550	Wastewater Treatment
None	115	0	21902490	Water Treatment and Supply
Northern Southeast LEPC	1	2	19000	Fresh and Frozen Foods
Okanogan County LEPC	2	4	124000	Refrigeration and Storage
Oregon	45	153	313744092	Water Treatment and Supply
Owyhee County LEPC	1	2	75000	Agriculture
Pacific County	0	1		
Payette County	0	3		
Pend Oreille County LEPC	1	2	720000	Paper Products
Pendleton	1	0	76500	Agriculture
Petersburg-Wrangell Lepc	0	1		
Pierce County LEPC	10	14	3836571	Water Treatment and Supply
Power County LEPC	2	3	200000	Fresh and Frozen Foods
Pullman (City Of) LEPC	2	4	203800	Wastewater Treatment
Puyallup (City Of) LEPC	1	8	38000	Refrigeration and Storage

## Region 10 Local Emergency Planning Committees (LEPCs)

LEPC	Number of Facilities Reporting	Number of Facilities In LEPC	Quantity	Most Common Industry
Quincy LEPC	1	0	29000	Fresh and Frozen Foods
San Juan County	0	2		
Sherman County LEPC	1	0	78734	Agriculture
Skagit County LEPC	5	8	58194066	Water Treatment and Supply
Skamania County	0	5		
Skyomish	0	1		
Snohomish County LEPC	6	9	713406	Water Treatment and Supply
Spokane County LEPC	13	17	1987397	Wastewater Treatment
Steilacoom Town	0	6		
Stevens County LEPC	1	4	330000	Metal Industries
SW Snohomish County LEPC	1	4	6000	Wastewater Treatment
Thurston County	0	4		
Twin Falls County LEPC	5	8	682833	Fresh and Frozen Foods
Wahkiakum County	0	3		
Walla Walla County LEPC	13	22	3018130	Water Treatment and Supply
Wasco Emergency Service	1	0	18000	Water Treatment and Supply
Washington County LEPC	1	1	67200	Fossil Fuels
Whatcom County LEPC	12	14	534090967	Water Treatment and Supply
Whatcom County Sheriffs Dpt.	1	0	52000	Fossil Fuels
Whitman County LEPC	29	36	11465760	Fossil Fuels
Yakima County LEPC	1	20	733144	Other



# Glossary

## Appendix B Glossary

**CAA -Clean Air Act** - This 1970 act is one of the first federal laws to control pollution and emissions in the United States. This act was amended to include Section 112[r] in 1990.

**Catastrophic Release** - Major uncontrolled emission, fire, or explosion involving one or more regulated substances that presents imminent and substantial danger to public health and the environment

**CEPPO** - Chemical Emergency Preparedness and Prevention Office

**CSISSFERRA** - Chemical Safety Information Site Security and Fuels Regulatory Relief act—This is the act that exempts many of the fuels previously regulated under the risk management program, and adds security requirements to the program itself.

**Environmental Receptor** - Any place designated as a wilderness area, National Park or Forest, or wildlife refuge.

**EPCRA** - Emergency Planning and Community Right-to-Know Act - This 1986 act requires facilities that have hazardous substances to plan for chemical emergencies and inform the public about chemical releases and on-site risks.

**LEPC** - Local Emergency Planning Committee - Local community organization responsible for emergency planning. this group includes members from industry, emergency response teams and community members.

**NAICS** - North American Industries Classification System - This is the systems used to classify businesses into their respective industries. In this booklet, many of these classifications have been combined for ease of reading and clarity.

**Offsite** - Any place where there is a public or environmental receptor.

**OSHA** - Occupational Health and Safety Administration. This agency is in charge of the safety of on-site workers and contractors, while the EPA is charged with the safety of the public and off-site environmental receptors

**Public** - Anyone that who is not a contractor or employee at a facility.

**Public Receptor** - Any area around a facility that could be occupied by the public without restriction by the facility (i.e., hospitals, schools, parks, office buildings, houses etc.).

**RMP** - Risk Management Plan - The document that a facility produces describing what they have done to meet the requirements of the risk management program

**Section 112(r) of the Clean Air Act** - The Risk Management Program - This includes the General Duty Clause, the list of regulated substances, and the requirements for regulated facilities.



# List of Regulated Chemicals

CAS #	Regulated Substance - Toxics	TQ (Lbs.)	TQ (CF)	TQ (Gal.)
107-02-8	Acrolein	5,000		717
107-13-1	Acrylonitrile	20,000		3,012
814-68-6	Acrylyl chloride	5,000		
107-18-6	Allyl alcohol	15,000		2,126
107-11-9	Allylamine	10,000		1,798
7664-41-7	Ammonia (anhydrous)	10,000	415,600	1,565
7664-41-7	Ammonia (>= conc. 20%)	20,000		3,912
7784-34-1	Arsenous trichloride	15,000		841
7784-42-1	Arsine	1,000	5,000	45
10294-34-5	Boron trichloride	5,000	16,500	816
7637-07-2	Boron trifluoride	5,000	28,000	384
353-42-4	Boron trifluoride compound with methyl ether (1:1)	15,000		1,238
7726-95-6	Bromine	10,000		386
75-15-0	Carbon disulfide	20,000		1,854
7782-50-5	Chlorine	2,500	41,239	193
10049-04-4	Chlorine dioxide	1,000	41,239	80
67-66-3	Chloroform	20,000		1,618
542-88-1	Chloromethyl ether	1,000		564
107-30-2	Chloromethyl methyl ether	5,000		
4170-30-3	Crotonaldehyde	20,000		2,935
123-73-9	Crotonaldehyde, (E)-	20,000		2,802
506-77-4	Cyanogen chloride ((CN)Cl)	10,000	280,266	1,004
108-91-8	Cyclohexylamine	15,000		2,077
19287-45-7	Diborane	2,500	35,125	
75-78-5	Dimethyldichlorosilane	5,000		560
57-14-7	1,1-Dimethylhydrazine	15,000		2,285
106-89-8	Epichlorohydrin	20,000		2,037
107-15-3	Ethylenediamine	20,000		2,677
151-56-4	Ethyleneimine	10,000		1,448
75-21-8	Ethylene oxide	10,000	87,800	1,385
7782-41-4	Fluorine	1,000	10,170	109
50-00-0	Formaldehyde (solution)	15,000		2,217
110-00-9	Furan	5,000		644
302-01-2	Hydrazine	15,000		1,800
7647-01-0	Hydrochloric acid (>= conc. 37%)	15,000		1,689
74-90-8	Hydrocyanic acid	2,500		437
7647-01-0	Hydrogen chloride (anhydrous)	5,000	54,500	475
7664-39-3	Hydrogen fluoride/Hydrofluoric acid (>= conc. 50%)	1,000		105
7783-07-5	Hydrogen selenide	500		28
7783-06-4	Hydrogen sulfide	10,000	266,920	1,017
13463-40-6	Iron, pentacarbonyl-	2,500		202
78-82-0	Isobutyronitrile	20,000		3,171

CAS #	Regulated Substance - Toxics	TQ (Lbs.)	TQ (CF)	TQ (Gal.)
108-23-6	Isopropyl chloroformate	15,000		
126-98-7	Methacrylonitrile	10,000		1,506
74-87-3	Methyl chloride	10,000	75,000	1,310
79-22-1	Methyl chloroformate	5,000		493
60-34-4	Methyl hydrazine	15,000		2,068
624-83-9	Methyl isocyanate	10,000		1,255
74-93-1	Methyl mercaptan	10,000	116,110	1,385
556-64-9	Methyl thiocyanate	20,000		
75-79-6	Methyltrichlorosilane	5,000		473
13463-39-3	Nickel carbonyl	1,000		91
7697-37-2	Nitric acid (>= conc. 80%)	15,000		1,202
10102-43-9	Nitric oxide	10,000	130,000	949
8014-95-7	Oleum (fuming sulfuric acid)	10,000		
79-21-0	Peracetic acid	10,000		1,048
594-42-3	Perchloromethyl mercaptan	10,000		700
75-44-5	Phosgene	500	1,950	43
7803-51-2	Phosphine	5,000	79,008	508
10025-87-3	Phosphorus oxychloride	5,000		359
7719-12-2	Phosphorus trichloride	15,000		
110-89-4	Piperidine	15,000		2,097
107-12-0	Propionitrile	10,000		1,545
109-61-5	Propyl chloroformate	15,000		
75-55-8	Propyleneimine	10,000		1,506
75-56-9	Propylene oxide	10,000		1,403
7446-09-5	Sulfur dioxide (anhydrous)	5,000	29,950	413
7783-60-0	Sulfur tetrafluoride	2,500		
7446-11-9	Sulfur trioxide	10,000		628
75-74-1	Tetramethyllead	10,000		604
509-14-8	Tetranitromethane	10,000		735
7550-45-0	Titanium tetrachloride	2,500		175
584-84-9	Toluene 2,4-diisocyanate	10,000		984
91-08-7	Toluene 2,6-diisocyanate	10,000		
26471-62-5	Toluene diisocyanate (mixed isomers))	10,000		984
75-77-4	Trimethylchlorosilane	10,000		1,401
108-05-4	Vinyl acetate monomer	15,000		1,407
75-07-0	Acetaldehyde	10,000		1,545
74-86-2	Acetylene	10,000	147,000	1,950
598-73-2	Bromotrifluoroethylene	10,000		
106-99-0	1,3-Butadiene	10,000	69,000	1,854
106-97-8	Butane	10,000	63,356	2,008
106-98-9	1-Butene	10,000	65,510	272
107-01-7	2-Butene	10,000		
25167-67-3	Butene	10,000		
590-18-1	2-Butene-cis	10,000	65,230	259
624-64-6	2-Butene-trans	10,000	65,245	267
463-58-1	Carbon oxysulfide	10,000	280,266	574



CAS #	Regulated Substance - Toxics	TQ (Lbs.)	TQ (CF)	TQ (Gal.)
7791-21-1	Chlorine monoxide	10,000		
557-98-2	2-Chloropropylene	10,000		1,279
590-21-6	1-Chloropropylene	10,000		1,279
460-19-5	Cyanogen	10,000	241,082	
75-19-4	Cyclopropane	10,000	100,762	1,673
4109-96-0	Dichlorosilane	10,000	464,441	
75-37-6	Difluoroethane	10,000	57,400	502
124-40-3	Dimethylamine	10,000	86,000	1,772
463-82-1	2,2-Dimethylpropane	10,000	78,875	
74-84-0	Ethane	10,000	125,151	2,677
107-00-6	Ethyl acetylene	10,000	72,000	1,792
75-04-7	Ethylamine	10,000		1,754
75-00-3	Ethyl chloride	10,000	44,042	1,310
74-85-1	Ethylene	10,000	127,000	2,114
60-29-7	Ethyl ether	10,000		1,697
75-08-1	Ethyl mercaptan	10,000		
109-95-5	Ethyl nitrite	10,000		
1333-74-0	Hydrogen	10,000	1,920,000	16,900
75-28-5	Isobutane	10,000	63,355	2,077
78-78-4	Isopentane	10,000		1,943
78-79-5	Isoprene	10,000		1,769
75-31-0	Isopropylamine	10,000		1,746
75-29-6	Isopropyl chloride	10,000		1,398
74-82-8	Methane	10,000	236,113	2,175
74-89-5	Methylamine	10,000	121,000	1,336
563-45-1	3-Methyl-1-butene	10,000	83,706	879
563-46-2	2-Methyl-1-butene	10,000		
115-10-6	Methyl ether	10,000	88,217	1,823
107-31-3	Methyl formate	10,000		1,229
115-11-7	2-Methylpropene	10,000	80,076	2,000
504-60-9	1,3-Pentadiene	10,000		1,828
109-66-0	Pentane	10,000		1,923
109-67-1	1-Pentene	10,000		1,883
646-04-8	2-Pentene, (E)-	10,000		1,883
627-20-3	2-Pentene, (Z)-	10,000		1,883
463-49-0	Propadiene	10,000		
74-98-6	Propane	10,000	84,515	2,358
115-07-1	Propylene	10,000	88,750	2,362
74-99-7	Propyne	10,000	97,000	
7803-62-5	Silane	10,000	120,000	1,772
116-14-3	Tetrafluoroethylene	10,000		
75-76-3	Tetramethylsilane	10,000		1,859
10025-78-2	Trichlorosilane	10,000		1,012
79-38-9	Trifluorochloroethylene	10,000	174,165	898
75-50-3	Trimethylamine	10,000	64,000	1,812
689-97-4	Vinyl acetylene	10,000	91,647	1,939

<b>CAS #</b>	<b>Regulated Substance - Toxics</b>	<b>TQ (Lbs.)</b>	<b>TQ (CF)</b>	<b>TQ (Gal.)</b>
75-01-4	Vinyl chloride	10,000	62,500	1,316
109-92-2	Vinyl ethyl ether	10,000		1,321
75-02-5	Vinyl fluoride	10,000		1,557
75-35-4	Vinylidene chloride	10,000		
75-38-7	Vinylidene fluoride	10,000	82,345	1,946
107-25-5	Vinyl methyl ether	10,000	100,095	1,600

# Relevant Resources and Contact Information

## Internet Resources

### EPA Resources

#### EPA Region 10 RMP

**Homepage** [www.epa.gov/r10earth/112r.htm](http://www.epa.gov/r10earth/112r.htm)

- Training
- RMP News
- RMP Program Development

#### EPA Office of Emergency

**Management** [www.epa.gov/emergencies/index.htm](http://www.epa.gov/emergencies/index.htm)

- CAMEO
- EPCRA
- Tier2 Submit
- List of Lists

### OSHA PSM Resources

#### National OSHA PSM website

[www.osha.gov/SLTC/processsafetymanagement/index.html](http://www.osha.gov/SLTC/processsafetymanagement/index.html)

- [Safety and Health Topics](#)
- [Process Safety Management](#)

#### Region 10 OSHA PSM website

[www.osha.gov/oshdir/r10.html](http://www.osha.gov/oshdir/r10.html)

#### State OSHA Websites:

- AK - [labor.state.ak.us/lss/oshhome.htm](http://labor.state.ak.us/lss/oshhome.htm)
- ID - [www.osha.gov/oshdir/id.html](http://www.osha.gov/oshdir/id.html)
- OR - [www.cbs.state.or.us/osha/aboutus.html](http://www.cbs.state.or.us/osha/aboutus.html)
- WA - [www.lni.wa.gov/Safety/Basics/About/OSHAAndWISHA.asp](http://www.lni.wa.gov/Safety/Basics/About/OSHAAndWISHA.asp)

### Chemical Information -

**The Chlorine Institute -**  
[www.cl2.com/index.html](http://www.cl2.com/index.html)

**OSHA PSM -**  
[www.osha-slc.gov/SLTCprocesssafetymanagement/index.html](http://www.osha-slc.gov/SLTCprocesssafetymanagement/index.html)

**TOXNET -** A database of toxic chemicals and relevant resources. A good resource for industry, community members and emergency planners.  
[toxnet.nlm.nih.gov/](http://toxnet.nlm.nih.gov/)

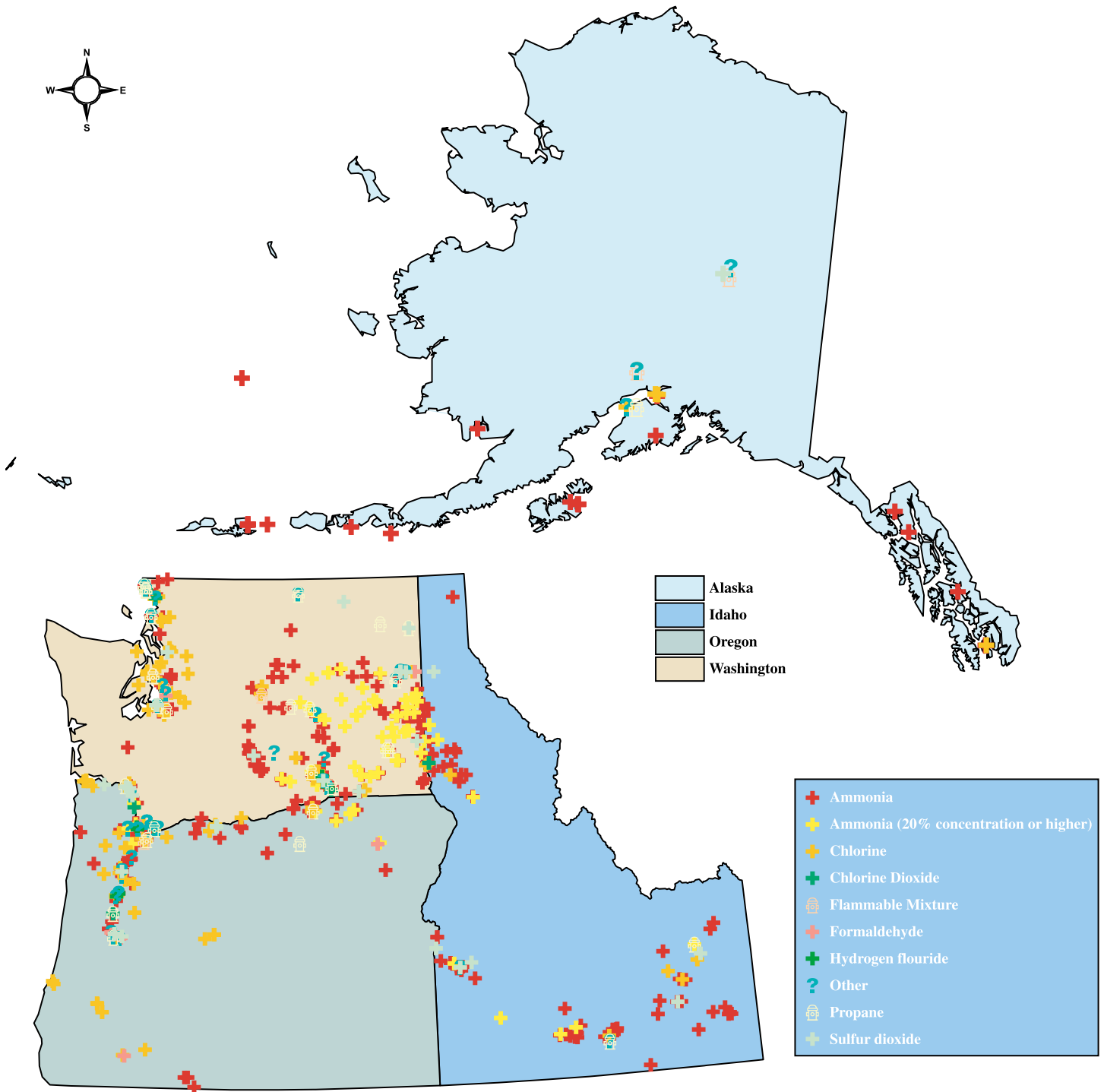
**The Water-Wastewater Web -**  
[www.w-ww.com/](http://www.w-ww.com/)

### Hazardous Materials Training -

**Federal Emergency Management Association Training**  
[www.usfa.fema.gov](http://www.usfa.fema.gov)

**HazMat Classes offered through the Hammer Training Facility**  
[www.hammertraining.com](http://www.hammertraining.com)

# Chemical Distribution Maps



## Acknowledgements And Methodology

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All information about the risk management program came from the regulations and guidance documents. The data used for both the graphs and data sheets came from information in EPA's RMP\* Info and RMP\* Review databases. These databases can be accessed and/or downloaded from the CEPPPO homepage (see Appendix D). I used both the total number of processes(873) and the total number of facilities (513) depending on applicability to the information being presented.

Pictures and maps for this booklet were provided by Harry Bell of the EPA, Mark Ligman of the Washington Department of Emergency Management, Tam Brine student at the University of Washington Extension, J.R. Simplot and Pioneer Americas, Inc.

If you have any questions or comments about this booklet or its contents please contact Lisa McArthur (see Appendix D).

Elissa Bennett  
NNEMS Fellow





