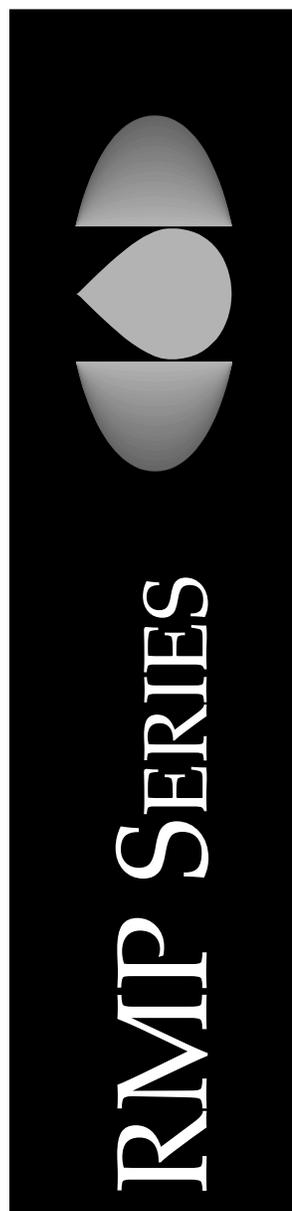




RISK MANAGEMENT PROGRAM GUIDANCE FOR AMMONIA REFRIGERATION (40 CFR PART 68)



This document provides guidance to help owners and operators of stationary sources to determine if their processes are subject to regulation under section 112(r) of the Clean Air Act and 40 CFR part 68 and to comply with regulations. This document does not substitute for EPA's regulations, nor is it a regulation itself. Thus, it cannot impose legally binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon circumstances. This guidance does not represent final agency action, and EPA may change it in the future, as appropriate.

TABLE OF CONTENTS

INTRODUCTION

CHAPTER 1 GENERAL APPLICABILITY

1.1	Introduction	1-1
1.2	General Provisions	1-3
1.3	Regulated Substances and Thresholds	1-4
1.4	What is a Process	1-5
1.5	Threshold Quantity in a Process	1-10
1.6	Stationary Source	1-17
1.7	When You Must Comply	1-18

CHAPTER 2 APPLICABILITY OF PROGRAM LEVELS

2.1	What Are Program Levels	2-1
2.2	Program 1	2-2
2.3	Quick Rules for Determining Program 1 Eligibility	2-8
2.4	Program 3	2-9
2.5	Program 2	2-10
2.6	Dealing with Program Levels	2-11
2.7	Summary of Program Requirements	2-13

CHAPTER 3 FIVE-YEAR ACCIDENT HISTORY

3.1	What Accidents Must Be Reported	3-1
3.2	What Data Must Be Provided	3-1
3.3	Other Accident Reporting Requirements	3-9

CHAPTER 4 OFFSITE CONSEQUENCE ANALYSIS

4.1	Worst-Case Release Scenario Analysis	4-3
4.2	Alternative Release Scenario	4-13
4.3	Defining Offsite Receptors	4-19
4.4	Documentation	4-23
	Appendix 4A Brief Summary of the Various States in Which Ammonia Exists in a Typical Refrigeration Facility	4-25
	Appendix 4B Equations for Log-Log Graphs and Calculations	4-30
	Appendix 4C Information about Accidental Releases of Ammonia	4-34

CHAPTER 5 MANAGEMENT SYSTEM

5.1	General Information	5-1
5.2	How to Meet the Management System Requirements	5-1

CHAPTER 6 PREVENTION PROGRAM (PROGRAM 3)

6.1	Prevention Program 3 and OSHA PSM	6-1
6.2	Process Safety Information (§ 68.65)	6-3
6.3	Process Hazard Analysis (§ 68.67)	6-5
6.4	Operating Procedures (§ 68.69)	6-8
6.5	Training (§ 68.71)	6-10
6.6	Mechanical Integrity (§ 68.73)	6-10
6.7	Management of Change (§ 68.75)	6-13
6.8	Pre-Startup Review (§ 68.77)	6-13
6.9	Compliance Audits (§ 68.79)	6-14
6.10	Incident Investigation (§ 68.81)	6-14
6.11	Employee Participation (§ 68.83)	6-16
6.12	Hot Work Permits (§ 68.85)	6-16
6.13	Contractors (§ 68.87)	6-17
	Appendix 6-A PHA Techniques	6-19

CHAPTER 7 EMERGENCY RESPONSE

7.1	Non-Responding Sources	7-1
7.2	Elements of an Emergency Response Program	7-2
7.3	Developing an Emergency Response Program	7-5
7.4	Integration of Existing Program	7-8
7.5	Have I Met Part 68 Requirements	7-11
7.6	Coordination with Local Emergency Planning Committees	7-14

CHAPTER 8 RISK MANAGEMENT PLAN

8.1	Elements of the RMP	8-1
8.2	RMP Submission	8-2
8.3	Resubmission and Updates	8-3

CHAPTER 9 IMPLEMENTATION

9.1	Implementing Agency	9-1
9.2	Reviews/Audits/Inspections	9-2
9.3	Relationship with Title V Permit Programs	9-4
9.4	Penalties for Non-Compliance	9-4

CHAPTER 10 COMMUNICATION WITH THE PUBLIC

10.1	Basic Rules of Risk Communication	10-1
10.2	Sample Questions for Communicating with the Public	10-4
10.3	Communication Activities and Techniques	10-13
10.4	For More Information	10-19

APPENDICES

APPENDIX A	PART 68
APPENDIX B	SELECTED NAICS CODES
APPENDIX C	EPA REGIONAL CONTACTS

APPENDIX D
APPENDIX E
APPENDIX F
APPENDIX G

OSHA CONTACTS
TECHNICAL ASSISTANCE
OSHA GUIDANCE ON PSM
HAZARD ALERT

LIST OF BOXES AND EXHIBITS IN RMP GUIDANCE

LIST OF EXHIBITS

CHAPTER 1

- Exhibit 1-1 Evaluate Facility to Identify Covered Processes
- Exhibit 1-2 Process
- Exhibit 1-3 Stationary Source

CHAPTER 2

- Exhibit 2-1 Program Level Criteria
- Exhibit 2-2 Comparison of Program Requirements

CHAPTER 3

- Exhibit 3-1 Atmospheric Stability Classes

CHAPTER 4

- Exhibit 4-1 Steps for an Offsite Consequence Analysis
- Exhibit 4-2 Required Parameters for Modeling
- Exhibit 4-3 Ten-Minute Building Release Attenuation Factors for Prolonged Releases
- Exhibit 4-4 Distances to Toxic Endpoint for Anhydrous Ammonia Liquefied Under Pressure
- Exhibit 4-5 Distances to Toxic Endpoint for Anhydrous Ammonia
- Exhibit 4-6 Release Rates and Distances to Toxic Endpoints for Leaks of Anhydrous Ammonia (Alternative Scenario)
- Exhibit 4-28 Ten-Minute Building Release Attenuation Factors for Prolonged Releases of Chlorine and Sulfur Dioxide
- Figure 4-1 Guidance on Effectiveness of Building Mitigation for Worst-Case Scenarios
- Figure 4-2 Worst-Case Scenario — Predicted Distances to Toxic Endpoint for Anhydrous Ammonia
- Figure 4-3 Alternative Case Scenario — Predicted Distances to Toxic Endpoint for Anhydrous Ammonia
- Figure 4-4 Guidance on Effectiveness of Building Mitigation for Alternative Scenarios
- Figure 4-5 Simplified Presentation of Worst Case and Alternative Scenario on a Local Map
- Two Stage Ammonia System
- Single Stage Ammonia System
- Figure 4-A.1 Vapor Pressure of Ammonia as a Function of Temperature

CHAPTER 5

- Exhibit 5-1 Sample Management Documentation

CHAPTER 6

- Exhibit 6-1 Comparable EPA and OSHA Terms
- Exhibit 6-2 Summary of Program 3 Prevention Program
- Exhibit 6-3 Process Safety Information Requirements
- Exhibit 6-4 Process Hazard Analysis Requirements
- Exhibit 6-5 Operating Procedures Requirements
- Exhibit 6-6 Mechanical Integrity Chart
- Exhibit 6-7 Management of Change Requirements
- Exhibit 6-8 Pre-startup Review Requirements
- Exhibit 6-9 Incident Investigation Requirements
- Exhibit 6-10 Employee Participation Requirements
- Exhibit 6-11 Hot Work Permits Requirements
- Exhibit 6-12 Contractors Chart

- Exhibit 6a-1 Applicability of PHA Techniques
- Exhibit 6a-2 Time and Staffing for PHA Techniques

CHAPTER 7

- Exhibit 7-1 Federal Guidance on Emergency Planning and Response
- Exhibit 7-2 Federal Emergency Planning Regulations
- Exhibit 7-3 Integrated Contingency Plan Outline

CHAPTER 8

- Exhibit 8-1 RMP Updates

CHAPTER 10

- Exhibit 10-1 Seven Cardinal Rules of Risk Communication

LIST OF BOXES

INTRODUCTION

- Guidance for Industry-specific Risk Management Programs
- State Programs
- If You Are New to Regulations
- What Is a Local Emergency Planning Committee?

CHAPTER 1

- State Programs
- Qs and As: Stationary Source
- Qs and As: Process
- Aggregation of Substances
- Q and A: Changing Inventories
- Qs and As: Compliance Dates

CHAPTER 2

- Q and A: Process and Program Level
- Qs and As: Public Receptors
- Q and A: Determining Distances
- Q and A: Environmental Receptors
- Qs and As: Accident History
- Qs and As: OSHA

CHAPTER 3

- Qs and As: Property Damage
- Qs and As: Accident History

CHAPTER 4

- RMP*Comp
- Qs and As: Worst-case and Mitigation
- How to Obtain Census Data and LandView
- How to Obtain USGS Maps

CHAPTER 6

- Qs and As: Implementation and Program Level
- Qs and As: Process Safety Information
- Qs and As: Offsite Consequences

CHAPTER 7

- What Is a Response

What Is a Local Emergency Planning Committee?
How Does the Emergency Response Program Apply?

CHAPTER 8

Q and A: Revising a PHA

CHAPTER 9

Qs and As: Delegation

Qs and As: Audits

CHAPTER 10

What Does Your Worst-case Distance Mean?

What Does It Mean That We Could Be Exposed If We Live/Work/Shop/Go to School X Miles Away?

If There Is An Accident, Will Everyone Within That Distance Be Hurt? What About Property Damage?

How Sure Are You of Your Distances?

What Are You Doing to Prevent Releases?

What Are You Doing to Prepare for Releases?

Why Are Your Distances Different from the Distances in the EPA Lookup Tables?

How Likely Are the Worst-case and Alternative Release Scenarios?

Is the Worst-case Release You Reported Really the Worst Accident You Can Have?

What about the Accident at the [Name of Similar Facility] That Happened Last Month?

What Actions Have You Taken to Involve the Community in Your Accident Prevention and Emergency Planning Efforts?

Can We See the Documentation You Keep on Site?