CONTENTS

1 INTRODUCTION

1.1 Engineering Design for Process Safety Throughout the Life Cycle of the Facility

1.2 Regulatory Reviews / Impact on Process Safety

1.3 Who Will Benefit from These Guidelines?

1.4 Organizations with This Book

1.5 Other CEPIS Resources

1.6 References

2 FOUNDATIONAL CONCEPTS

2.1 Understanding the Hazard

2.1.1 Unwanted Reaction of Process Materials

2.1.2 Process Conditions

2.1.3 Inventory

2.2 Risk-Based Design

2.2.1 The Concept of Risk

2.2.2 Selection of Design Bases for Process Safety Systems

2.3 Unintentional Unsteady State Conditions

2.3.1 Instability Reactions Systems

2.4 Unintentional Unsteady State Issues

2.4.1 Unsteady Conditions

2.4.2 Deviating from the Design Basis

2.5 Plausibility of the Design Basis

2.6 References
6 REQUIREMENTS DEVELOPMENT

6.1 Versus

6.1.1 Platform

6.1.2 Facilities Scenarios and Design Solutions

6.1.3 Design Considerations

6.1.4 References

6.2 Work

6.2.1 Platform

6.2.2 Facilities Scenarios and Design Solutions

6.2.3 Design Considerations

6.2.4 References

6.3 Latest "Trends" Equipment

6.3.1 Platform

6.3.2 Facilities Scenarios and Design Solutions

6.3.3 Design Considerations

6.3.4 References

6.4 Latest "Trends" Equipment

6.4.1 Platform

6.4.2 Facilities Scenarios and Design Solutions

6.4.3 Design Considerations

6.4.4 References

6.5 "Trends"

6.5.1 Platform

6.5.2 Facilities Scenarios and Design Solutions

6.5.3 Design Considerations

6.5.4 References

6.6 "Trends" Equipment

6.6.1 Platform

6.6.2 Facilities Scenarios and Design Solutions

6.6.3 Design Considerations

6.6.4 References

6.7 Subdivisional Scenarios

6.7.1 Platform

6.7.2 Facilities Scenarios and Design Solutions

6.7.3 Design Considerations

6.7.4 References

6.8 Subdivisional "Trends" Equipment

6.8.1 Platform

6.8.2 Facilities Scenarios and Design Solutions
6.9.4 Refrigeration

6.10 Piping and Piping Components
6.10.1 Piping Insulation
6.10.2 Piping Sizing and Design Solutions
6.10.3 Piping Code Considerations
6.10.4 References

6.11 Process Unloading and Weighing
6.11.1 Process Insulation
6.11.2 Process Sizing and Design Solutions
6.11.3 Process Code Considerations
6.11.4 References

6.12 Utility Systems
6.12.1 Piping Insulation
6.12.2 Piping Sizing and Design Solutions
6.12.3 References

7 PRODUCTION SYSTEMS
7.1 Expedition Control
7.1.1 Material Handling Classification
7.1.2 Material Handling Equipment
7.1.3 Low Energy Material Handling Equipment for Hazardous Locations
7.1.4 Ventilation / Exhaust
7.1.5 Static Electricity
7.1.6 Lightning

7.2 Instrumentation Safety Systems
7.2.1 Safety Instrumented Systems
7.2.2 Engineering Aspects of Instrumented Safety Systems

7.3 Process / Vacuum Safety Systems
7.3.1 Basic Design Requirements
7.3.2 Pressure Relief Devices
7.3.3 Selection of Pressure Relief Systems
7.3.4 Sizing of Relief Devices
7.3.5 Other Considerations
7.3.6 Sizing of Process Expansion

7.4 Equipment Insulation / Instrumentation

7.5 Equipment Insulation / Instrumentation