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| 1. Record Nr.           | UNINA9910830448703321                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Titolo                  | Guidelines for pressure relief and effluent handling systems [[electronic resource] /] / Center for Chemical Process Safety of the American Institute of Chemical Engineers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Disciplina              | 620.106<br>660.0286<br>660/.028/6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Soggetti                | Chemical plants - Waste disposal<br>Hazardous wastes - Management<br>Relief valves<br>Sewage disposal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| Nota di bibliografia    | Includes bibliographical references and index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Nota di contenuto       | Guidelines for Pressure Relief and Effluent Handling Systems; Contents; Preface; Acknowledgments; Acronyms and Abbreviations; 1 Introduction; 1.1. Objective; 1.2. Scope; 1.3. Design Codes and Regulations, and Sources of Information; 1.4. Organization of This Book; 1.5. General Pressure Relief System Design Criteria; 1.5.1 Process Hazards Analysis; 1.5.2 Process Safety Information; 1.5.3 Problems Inherent in Pressure Relief and Effluent Handling System Design; 2 Relief Design Criteria and Strategy; 2.1. Limitations of the Technology; 2.2. General Pressure Relief Strategy<br>2.2.1 Mechanism of Pressure Relief2.2.2 Approach to Design; 2.2.3 Limitations of Systems Actuated by Pressure; 2.2.4 Consideration of Consequences; 2.3. Codes, Standards, and Guidelines; 2.3.1 Scope of Principal USA Documents; 2.3.2 General Provisions; 2.3.3 Protection by System Design; 2.4. Relief Device Types and Operation; 2.4.1 General |

Terminology; 2.4.2 Pressure Relief Valves; 2.4.3 Rupture Disk Devices; 2.4.4 Devices in Combination; 2.4.5 Miscellaneous Nonreclosing Devices; 2.4.6 Miscellaneous Low-Pressure Devices; 2.4.7 Miscellaneous Relief System Components 2.4.8 Selection of Pressure Relief Devices 2.5. Relief System Layout; 2.5.1 General Code Requirements; 2.5.2 Pressure Relief Valves; 2.5.3 Rupture Disk Devices; 2.5.4 Low-Pressure Devices; 2.5.5 Series/Parallel Devices; 2.5.6 Header Systems; 2.5.7 Mechanical Integrity; 2.5.8 Material Selection; 2.5.9 Drainage and Freeze-up Provisions; 2.5.10 Noise; 2.6. Design Flows and Code Provisions; 2.6.1 Safety Valves; 2.6.2 Relief Valves; 2.6.3 Low Pressure Devices; 2.6.4 Rupture Disk Devices; 2.6.5 Devices in Combination; 2.6.6 Miscellaneous Nonreclosing Devices; 2.7. Scenario Selection Considerations 2.7.1 Events Requiring Relief Due to Overpressure 2.7.2 Design Scenarios; 2.8. Fluid Properties and System Characterization; 2.8.1 Data Sources/Determination/Estimation; 2.8.2 Pure-Component Properties; 2.8.3 Mixture Properties; 2.8.4 Phase Behavior; 2.8.5 Chemical Reaction; 2.8.6 Miscellaneous Fluid Characteristics; 2.9. Fluid Behavior in Vessel; 2.9.1 Accounting for Chemical Reaction; 2.9.2 Two-Phase Venting Conditions and Effects; 2.10. Flow of Fluids through Relief Systems; 2.10.1 Conditions for Two-Phase Flow; 2.10.2 Nature of Compressible Flow 2.10.3 Stagnation Pressure and Critical Pressure Ratio 2.10.4 Flow Rate to Effluent Handling System; 2.11. Relief System Reliability; 2.11.1 Relief Device Reliability; 2.11.2 System Reliability; Appendix 2A. International Codes and Standards; Appendix 2B. Property Mixing Rules; Appendix 2C. Code Case: Protection by System Design; 3 Relief System Design and Rating Computations; 3.1. Introduction; 3.1.1 Purpose and Scope; 3.1.2 Required Background; 3.2. Vessel Venting Background; 3.2.1 General; 3.2.2 Material and Energy Balances; 3.2.3 Phase Behavior; 3.2.4 Two-Phase Venting Technology 3.2.5 Methods of Solution

## Sommario/riassunto

Current industry, government and public emphasis on containment of hazardous materials makes it essential for each plant to reduce and control accidental releases to the atmosphere. Guidelines for Pressure Relief and Effluent Handling Systems meets the need for information on selecting and sizing pressure relief devices and effluent handling systems that will maintain process integrity and avoid discharge of potentially harmful materials to the atmosphere. With a CD-ROM enclosed containing programs for calculating flow through relief devices, effluent handling systems, and associated piping, t