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Nota di contenuto	Guidelines for Safe Handling of Powders and Bulk Solids; Contents; 6.8 Blast Resistant (Damage-Limiting) Construction of Buildings; Acknowledgments; 1 - Introduction and Overview; 1.1 Purpose of Book; 1.2 Particulate Hazards; 1.2.1 Combustibility Hazards; 1.2.2 Instability Hazards; 1.2.3 Reactivity Hazards; 1.2.4 Toxicity Hazards; 1.3 Accident Data and Case Histories; 1.3.1 Dust Explosion Data and Case Histories; 1.3.2 Other Particulate Incident Databases; 1.3.3 Sample Case Histories for Particulate Instability, and Reactivity Incidents; 1.3.4 Sample Case Histories for Asphyxia Incidents 1.4 Particulate Handling and Storage Equipment Hazard Overview1.5 Historical and Regulatory Perspective; References; 2 - Particulate Characteristics and Properties; 2.1 How Particulate Characteristics and Properties Affect Hazards; 2.2 Particulate Physical Characteristics; 2.2.1 Size Measurement Methods; 2.2.2 Particle Size Distribution; 2.2.3 Fiber Characteristics; 2.2.4 Flake Characteristics and Specific Surface Area;

2.2.5 Abrasiveness; 2.2.6 Hardness and Friability; 2.2.7 Agglomeration; 2.2.8 Particle Size Changes due to Friability and Agglomeration
2.2.9 Bulk Density Measurements and Characterizations2.2.10 Dust Cloud Concentration Measurements; 2.2.11 Bulk Powder Moisture Measurements; 2.2.12 Fluidity and Dispersibility; 2.2.13 Electrical Resistivity; 2.3 Overview of Particulate Chemical Characteristics; 2.3.1 Flammability and Explosibility; 2.3.2 Thermal Degradation and Insfability; 2.3.3 Chemical Reactivity: Incompatible Chemical Groups; 2.3.4 Corrosivity; 2.4 Overview of Particulate Toxicity; 2.4.1 Particulate Properties Pertinent to Respiratory Hazards; 2.4.2 Allergenic and Irritant Materials
2.4.3 Systemic and Single Exposure Toxicity2.4.4 Carcinogenic Classifications; References; 3 - Particulate Hazard Scenarios and Examples; 3.1 Thermal and Shock Instability Scenarios; 3.1.1 Exothermic Decomposition Explosions; 3.1.2 Shock/Friction Sensitive Instability Scenarios; 3.1.3 Self-Heating Hazard Scenarios; 3.2 Decision Trees for Assessing Thermal Instability Hazard Scenarios; 3.3 Chemical Incompatibility Hazard Scenarios; 3.3.1 Contamination Hazard Scenarios; 3.3.2 Wafer Entry Scenarios; 3.3.3 Container/Packaging Incompatibility Scenarios; 3.3.4 Air Access to Pyrophoric Particulates
3.4 Chemical Compatibility Charts for Assessing Hazards3.5 Particulate Fire Scenarios; 3.5.1 Smoldering Fires in Storage Piles and Dust Collectors; 3.5.2 Dust Layer Fires; 3.5.3 Warehouse Storage Fires; 3.5.4 Particulate Flash Fires; 3.6 Decision Trees for Assessing Particulate Fire Scenarios; 3.7 Dust Explosion Scenarios; 3.7.1 Primary Dust Explosions in Process Equipment; 3.7.2 Hybrid Explosion Scenarios; 3.7.3 Explosion Propagation to Connected Equipment; 3.7.4 Secondary Dust Explosions in Buildings; 3.8 Dust Explosion Decision Trees and Protection Flow Charts
3.9 Toxic Material Exposure Scenarios

Sommario/riassunto

Powders and bulk solids, handled widely in the chemical, pharmaceutical, agriculture, smelting, and other industries present unique fire, explosion, and toxicity hazards. Indeed, substances which are practically inert in consolidated form may become quite hazardous when converted to powders and granules. The U.S. Chemical Safety and Hazard Investigation Board is currently investigating dust explosions that occured in 2003 at WestPharma, CTA Acoustics, and Hayes-Lemmerz, and is likely to recommend that companies that handle powders or whose operations produce dust pay more attention to understa