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""2 Biosolids Management""; ""FEDERAL BIOSOLIDS REGULATIONS AND CURRENT STATE OF PROGRAM""; ""History""; ""Federal Policy""; ""Proposed Regulation""; ""Final Regulations""; ""Pollutant Concentrations""; ""Pathogen Control""; ""Class A Pathogen Requirements""; ""Class B Pathogen Requirements""; ""Reduction of Vector Attraction""; ""Treatment Design Standards""; ""Rule Modifications""; ""Revision of Regulations""; ""Public Issue Forums""; ""EPA Resources""; ""State Programs""; ""EUROPEAN BIOSOLIDS MANAGEMENT""; ""PATHOGEN ISSUES AND TREATMENT CONTROLS""; ""PATHOGEN EQUIVALENCY COMMITTEE""; ""IMPLEMENTATION AND END-USE PRACTICES""; ""Overview""; ""Management Practices""; ""End-Use Practices""; ""CHARACTERIZATION OF BIOSOLIDS""; ""COMPLIANCE ASSISTANCE AND ENFORCEMENT""; ""FINDINGS AND RECOMMENDATIONS""; ""REFERENCES""; ""3 Epidemiological Evidence of Health Effects Associated with Biosolids Production and Application""; ""DESCRIPTION OF THE LITERATURE""; ""Exposed Populations""; ""Observed Health Outcomes""; ""Assessment of Causality""; ""FINDINGS AND RECOMMENDATIONS""; ""Response Studies""; ""Preplanned Studies""; ""REFERENCES""; ""4 Advances in Risk Assessment Since the Establishment of the Part 503 Rule""; ""THE RISK-ASSESSMENT PROCESS""; ""Components of the Risk-Analysis Process""; ""Confronting Uncertainty and Variability""; ""NEW APPROACHES AND CONSIDERATIONS IN RISK ASSESSMENT""; ""Recent Reports Define New Directions in Risk Assessment""; ""Advances in Hazard Identification""; ""Advances in the Dose-Response Characterization Process""; ""Changes in Dose-Response Methods""; ""EPA's Proposed 1996 Carcinogen Risk-Assessment Guidelines""; ""Time-to-Tumor Models""; ""Use of Subjective Statistics: Bayesian Methods""; ""Use of Meta-Analysis in Place of Single-Species Data Sets""; ""Assessment of Mixtures""; ""Advances in the Exposure Characterization Process""; ""Increased Focus on Indoor and Residential Environments""; ""Methods for Monitoring Biological Agents in Exposure Media""; ""Explicit Treatment of Uncertainty and Variability""; ""Multimedia and Multiple-Pathway Exposure Assessments""; ""Biological Markers""; ""Challenges to the Risk-Characterization Process for Biosolids""; ""Characterizing Exposures to Children as a Subpopulation""; ""Participation of the Affected Populations""; ""Link Between Risk Assessment and Management of Land-Application Sites""

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## Sommario/riassunto

The 1993 regulation (Part 503 Rule) governing the land application of biosolids was established to protect public health and the environment from reasonably anticipated adverse effects. Included in the regulation are chemical pollutant limits, operational standards designed to reduce pathogens and the attraction of disease vectors, and management practices. This report from the Board on Environmental Studies and Toxicology evaluates the technical methods and approaches used by EPA to establish those standards and practices, focusing specifically on human health protection. The report examines improvements in risk-assessment practices and advances in the scientific database since promulgation of the regulation, and makes recommendations for addressing public health concerns, uncertainties, and data gaps about the technical basis of the biosolids standards.

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