EPA/832/R-93/003
September 1994

A Plain English Guide to the EPA Part 503 Biosolids Rule

U.S. Environmental Protection Agency
Office of Wastewater Management
Washington, DC

Notice

This document has been reviewed by the U.S. Environmental Protection Agency and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Foreword

The U.S. Environmental Protection Agency's (EPA's) Part 503 rule provides comprehensive requirements for the management of biosolids generated during the process of treating municipal wastewater. The final rule benefited greatly from the substantial input received from the regulated and environmental communities, and especially the group of scientific experts who worked closely with EPA in revising the proposed rule. Hence, the final rule is the result of a very effective combination of public comment, scientific risk assessment, and informed risk management.

The Part 503 rule creates incentives for beneficial use of biosolids. EPA believes that biosolids are an important resource that can and should be safely used (e.g., to condition soils and provide nutrients for agricultural, horticultural, and forest crops and vegetation, and for reclaiming and revegetating areas disturbed by mining, construction, and waste disposal activities).

This guide to the final rule for the use or disposal of sewage sludge biosolids was developed to help make the Part 503 rule more understandable. While the guide is not a substitute for the actual rule, we believe that it can be a very helpful tool for the rule's interpretation and implementation. Throughout the document sewage sludge is referred to as biosolids to emphasize the beneficial nature of this valuable recyclable resource.

While this guide is consistent with the content of the Part 503 rule, it is structured in a manner intended to make information more understandable. After presenting an overview of the rule, the document provides separate, complete descriptions of the requirements associated with land application, surface disposal, incineration, pathogen and vector attraction reduction, and sampling and analysis. The guide also raises questions and provides answers that should help you interpret the rule. It also refers to additional sources of information.

We hope that you find this type of interpretative guidance useful, and we welcome your comments on how to make such information more useful as well as your suggestions about other needed materials. A tear-out comment sheet is provided for this purpose in the back of the document.

Michael B. Cook, Director
Office of Wastewater Management

Acknowledgments

This document represents the efforts of several individuals. Gratitude is extended to each person involved in preparing and reviewing this guide.

The authors are John Walker, Municipal Technology Branch, U.S. EPA Office of Wastewater Management; and Lynn Knight and Linda Stein of Eastern Research Group, Inc. Special thanks goes to Robert M. Southworth, Ross Brennan, Ruth Miller, Wendy Bell, and Cris Gaines of U.S. EPA for their technical review of this guide.

Contents

	Page
Chapter One—Use or Disposal of Sewage Sludge Biosolids	**1**
Background on the Part 503 Rule	1
Risk Assessment Basis of the Part 503 Rule	3
Purpose of This Document	4
What Are Sewage Sludge Biosolids?	4
Overview of the Rule	5
Subpart A—General Provisions	6
Subpart B—Requirements for Land Application	6
Subpart C—Requirements for Sewage Sludge Placed on a Surface Disposal Site	9
Subpart D—Requirements for Pathogen and Vector Attraction Reduction	10
Subpart E—Requirements for Sewage Sludge Fired in a Sewage Sludge Incinerator	10
To Whom the Rule Applies	10
Exclusions from the Rule	11
Permits	11
Self-Implementing Nature of the Rule	11
Who Must Apply for a Permit	11
Site-Specific Permit Limits	13
Who Issues the Permit	14

Unless Otherwise Specified by the Permitting Authority 14
Compliance with, and Enforcement of, the Rule 14
Who Must Report 15
Relationship of the Federal Requirements to State Requirements 16
Assistance with Technical, Permitting, and Compliance Issues 16
Common Questions and Answers 19

Chapter Two—Land Application of Biosolids 25

What Is Land Application? 25
To Whom the Land Application Requirements Apply 28
Land Application Requirements 28
Pollutant Limits, Pathogen and Vector Attraction Reduction Requirements 29
Options for Meeting Land Application Requirements 30
General Requirements and Management Practices 40
Frequency of Monitoring Requirements 47
Recordkeeping and Reporting Requirements 49
Domestic Septage 51
Landowner and Leaseholder Responsibilities 51
Liability Issues and Enforcement Oversight 52
Common Questions and Answers 54

Chapter Three—Surface Disposal of Biosolids 57

What Is Surface Disposal? 57
Differentiation Among Surface Disposal, Storage, Land Application, and Treatment 58
Regulatory Requirements for Surface Disposal of Biosolids 59
General Requirements for Surface Disposal Sites 60
Pollutant Limits for Biosolids Placed on Surface Disposal Sites 61
Management Practices for Surface Disposal of Biosolids 63
Pathogen and Vector Attraction Reduction Requirements for Surface Disposal Sites 71
Frequency of Monitoring Requirements for Surface Disposal Sites 72

Recordkeeping Requirements for Surface Disposal Sites 73
Reporting Requirements for Surface Disposal Sites 75
Regulatory Requirements for Surface Disposal of Domestic Septage 75
Common Questions and Answers 77
Chapter Four—Incineration of Biosolids 81
What Is Biosolids Incineration? 81
Pollutant Limits for Biosolids Fired in a Biosolids Incinerator 83
Beryllium and Mercury Pollutant Limits 83
Control Efficiency, Dispersion Factor, Feed Rate, and Pollutant Limit Calculations for Lead 85
Arsenic, Cadmium, Chromium, and Nickel Pollutant Limits 90
Limit Exceedance 92
Total Hydrocarbons 92
Delay and Stay of Requirements for Total Hydrocarbon Measurement 93
Total Hydrocarbon and Carbon Monoxide Measurement 93
Correction for 0 Percent Moisture 95
Correction to 7 Percent Oxygen 95
Management Practices for Biosolids Incineration 95
Instrument Operation and Maintenance 97
Temperature Requirements 98
Air Pollution Control Devices 99
Protection of Threatened or Endangered Species 101
Frequency of Monitoring Requirements for Biosolids Incineration 101
Monitoring for Metals 102
Continuous Monitoring 102
Monitoring Conditions in Air Pollution Control Devices 103
Recordkeeping Requirements for Biosolids Incineration 103
Reporting Requirements for Biosolids Incineration 103
Common Questions and Answers 105

Chapter Five—Pathogen and Vector Attraction Reduction Requirements **107**

Why Are There Pathogen and Vector Attraction Reduction Requirements? 107

To Whom Do These Requirements Apply? 108

Pathogen Reduction Alternatives 109

Class A Pathogen Requirements 110

Class B Pathogen Requirements 118

Requirements for Reducing Vector Attraction 121

Common Questions and Answers 126

Chapter 6—Sampling and Analysis **129**

Guidance for Sampling Biosolids 129

Who Must Sample? 130

How Often Should Sampling Be Done? 130

How Many Samples Should Be Taken? 133

How Is Sampling Done? 136

When Should Samples Be Taken? 139

Where Should the Samples Be Taken? 140

What Types of Sampling Equipment Should Be Used? 142

How Large a Sample Is Needed? How Long Can the Sample Be Stored? 142

What If a Test Result Does Not Meet the Part 503 Requirements? 142

Other Sampling Considerations 144

Sampling Emissions for Biosolids Incineration 145

Analytical Methods for Biosolids Samples 146

Sources of Additional Information on Sampling and Analysis of Biosolids 146

Common Questions and Answers 148

References **153**

Appendix A—Permit Application Requirements **157**

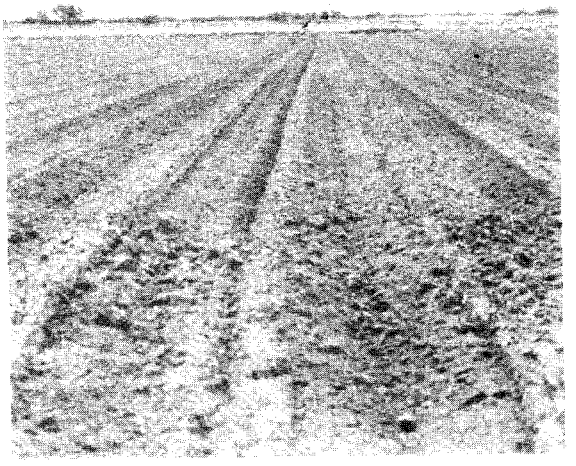
Appendix B—Federal and State Biosolids Contacts **163**

Appendix C—U.S. Department of the Interior, Fish and Wildlife Service Regional Contacts **175**

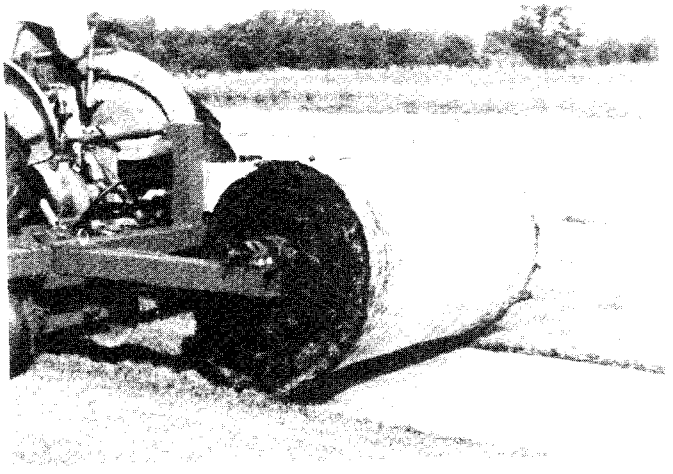
(Comments are requested on this Part 503 rule guidance. See tear-out sheet at end of document.)

Biosolids Are Used Beneficially in Many Ways

Pasture in Albany, Georgia.

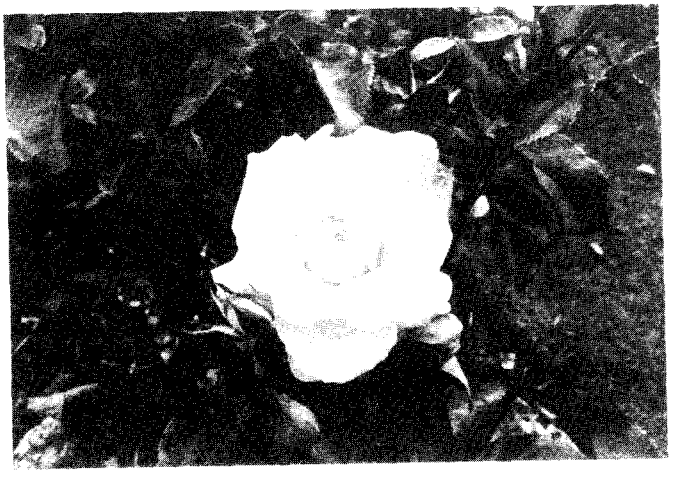


Row crops in Arizona.



Lightweight sod in Columbus, Ohio.

Ornamental garden in Denver, Colorado.



Flowers worldwide.