Table of Contents

Preface	V
Acknowledgments	vii
Chapter One: Introduction	1
Chapter Two: Landfill Gas Basics	3
What is landfill gas composed of?	3
How is landfill gas produced?	3
What conditions affect landfill gas production?	6
How does landfill gas move?	7
What conditions affect landfill gas migration?	9
How far can landfill gas travel?	10
How does landfill gas enter buildings and homes?	10
What types of landfills might be found in communities?	10
Are landfill gas emissions regulated?	11
Additional Resources	14
References	14
Chapter Three: Landfill Gas Safety and Health Issues	15
How are people exposed to landfill gas?	15
Explosion Hazards	15
When does landfill gas pose an explosion hazard?	16
What types of gases can pose an explosion hazard?	17
How can I assess whether a landfill in my community poses an explosion hazard?	18
Asphyxiation Hazards	19
Heath Issues Associated with Landfill Gas Emissions	20

Can the presence of odors trigger symptoms?	20
What do we know about the potential health effects of exposure to landfill gas?	24
How can environmental health professionals assess whether landfill gas emissions may be posing a health threat?	27
Landfill Fires	28
Additional Resources	29
References	29
Chapter Four: Monitoring of Landfill Gases	31
Landfill Gas Sampling Approaches: An Overview	31
Soil Gas Monitoring	34
What is soil gas monitoring?	34
Why is soil gas monitored at landfills?	34
How are soil gas samples collected?	35
What do soil gas monitoring data tell you?	35
Where can I get more information about soil gas monitoring?	38
Near Surface Gas Monitoring	38
What is near surface gas monitoring?	38
Why is near surface monitoring performed at landfills?	38
How is near surface gas monitoring performed?	38
What do near surface gas monitoring data tell you?	39
Where can I get more information about near surface gas monitoring?	40
Emissions Monitoring	40
What is emissions monitoring?	40
Why are emissions monitored at landfills?	40
How are emissions measured?	42
What do emissions monitoring data tell you?	43
Where can I get more information about emissions monitoring?	43
Ambient Air Monitoring	44
What is ambient air monitoring?	44
Why is ambient air monitored at or near landfills?	44
How are ambient air concentrations measured?	44
What do ambient air monitoring data tell you?	46
Where can I get more information about ambient air monitoring?	48

Indoor Air Monitoring	49
What is indoor air monitoring?	49
Why is indoor air sampled at or near landfills?	49
How are indoor air concentrations measured?	50
What do indoor air monitoring data tell you?	50
Where can I get more information about indoor air monitoring?	50
Air Modeling	51
What is air modeling?	51
How can models be used at landfill sites?	51
What factors should be considered when reviewing models?	51
Where can I get more information about models?	52
Additional Resources	52
Chapter Five: Landfill Gas Control Measures	53
Why would control measures be implemented at a landfill?	53
What are the components of a landfill gas control plan?	53
How is landfill gas collected?	55
What methods are available to treat landfill gas after collection?	57
What methods are available to control landfill gas if it reaches nearby structures?	59
Are there any beneficial uses for collected landfill gas?	61
What landfills can be used for gas recovery and how is energy generated from landfill gas?	61
Additional Resources	64
References	64
Chapter Six: Communication	65
Basic Guidelines for Health Risk Communication	65
How can you best communicate scientific information?	69
What if you don't know the answer?	70
Additional Resources	73
References	74
Appendix A: Acronyms	A-1
Appendix B: ATSDR Guidelines	B-1
ATSDR Guidelines for Public Health Actions in Response to Landfill Fires	B-1
ATSDR Guidelines for Evaluating Gases Migrating from Landfills	B-6

Appendix C: Health Studies Related to Landfill Gas Exposures Appendix D: Wright-Patterson Air Force Base—A Case Study Appendix E: Examples	(-)
	D -1
	E-1