

# CHAPTER

# 1

# Introduction

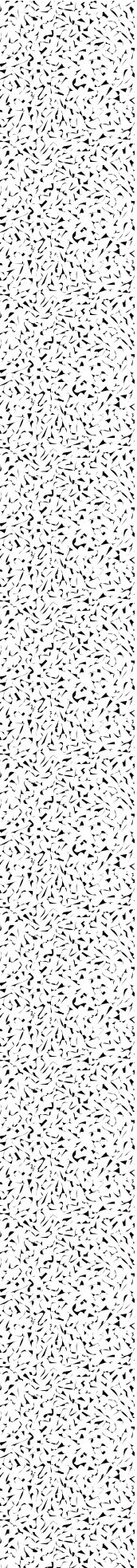
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This primer is designed to provide environmental health professionals with a general understanding of landfill gases and to help them in responding to community concerns that may be related to landfill gas issues. It provides basic information about the composition, formation, and movement of landfill gas. The primer also discusses health and safety issues related to landfill gas, and it provides information about landfill gas monitoring methods and control measures. Finally, the primer presents some basic guidance on how to communicate information about landfill gas issues.

This document incorporates information on landfills and landfill gases from a variety of sources, such as the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers, the California Air Resources Board, the Solid Waste Association of North America (SWANA), the Missouri Department of Natural Resources, and many professional publications. Among these, a valuable source of information is the insight and experience of the environmental health professionals working for the Agency for Toxic Substances and Disease Registry (ATSDR) and its state partners, such as the Connecticut Department of Health, the Minnesota Department of Health, and the New Hampshire Department of Health. Since 1985, environmental health scientists and engineers of ATSDR and state agencies have investigated hundreds of closed and operating landfills listed on EPA's National Priorities List (Superfund site list) or otherwise identified as a result of community concern.

This document was prepared in response to the many inquiries from environmental health professionals about landfill gas issues. Residents, local officials, and environmental regulators frequently request the assistance of ATSDR and local and state health departments in evaluating landfill gas problems. The following chapters cover many of the topics and issues that environmental health professionals are often called upon to address.

- **Chapter Two** contains basic information about landfill gas—what it is composed of, how it is formed, and the conditions that affect its production. It also provides information about how landfill gas moves and travels away from the landfill site.
- **Chapter Three** provides information about the health and safety issues associated with landfill gas—specifically, issues related to possible explosion and asphyxiation hazards, odors, and low-level chemical emissions. It also contains information about health and safety issues associated with landfill fires (which may or may not be the direct result of landfill gas).

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- **Chapter Four** provides an overview of landfill gas monitoring, which may be conducted to fulfill regulatory requirements or to investigate environmental or health concerns. The chapter provides information about landfill gas sampling and monitoring program design, sampling and monitoring equipment, and interpretation of sampling and monitoring results.
  - **Chapter Five** contains some information about landfill gas control technologies that might be employed to meet regulatory requirements, abate odor problems, or address potential health or safety concerns. The chapter describes regulatory requirements for landfill gas control, components of a landfill gas control plan, and options available to collect and treat or reuse landfill gas.
  - **Chapter Six** presents some general guidelines on communicating landfill gas issues to people who live or work near a landfill. Information in the chapter can help environmental health professionals respond to questions and concerns about landfill gas and develop a proactive approach to informing and involving all who have a stake in addressing landfill gas issues.

**Appendix A** provides a list of the acronyms used throughout this document. This primer also includes appendices that provide ATSDR guidelines (**Appendix B**), summarize several health studies of exposure to landfill gas (**Appendix C**), describe a case study in which people were exposed to landfill gases (**Appendix D**), and provide examples of landfill gas fact sheets and a landfill gas sampling protocol (**Appendix E**).

Throughout the primer, references to supplementary sources of information can be found—such as Web sites, technical guidance documents, and scientific studies. These sources offer additional guidance at a greater level of detail. Experienced users of Internet resources are familiar with the problems of Web site references. Web site content and addresses change rapidly, making it very difficult to provide permanent references to this information. Therefore, the Web site references in this document are only as accurate as the date of the latest revision of the document.

The primer also refers the reader to applicable federal environment laws and regulations such as the Resource Conservation and Recovery Act (RCRA) and the Clean Air Act. However, the primer is not intended as a resource or reference for environmental regulations. Environmental laws, regulations, and guidelines change with legislative actions, court interpretations, and executive orders. Environmental health professionals are encouraged to contact the appropriate state or EPA staff to discuss the most up-to-date environmental laws and regulations applicable to landfill gas issues.

Mention of trade names, or commercial sources in this primer is for identification only and does not imply endorsement or recommendation for use by ATSDR or the U.S. Department of Health and Human Services.