Superfund Risk Assessment in Soil Contamination Studies

SECOND VOLUME

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Superfund Risk Assessment in Soil Contamination Studies: Second Volume

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Each paper published in this volume was evaluated by three peer reviewers. The authors addressed all of the reviewers' comments to the satisfaction of both the technical editor(s) and the ASTM Committee on Publications.

To make technical information available as quickly as possible, the peer-reviewed papers in this publication were prepared "camera-ready" as submitted by the authors.

The quality of the papers in this publication reflects not only the obvious efforts of the authors and the technical editor(s), but also the work of these peer reviewers. The ASTM Committee on Publications acknowledges with appreciation their dedication and contribution to time and effort on behalf of ASTM.

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Foreword

This publication, *Superfund Risk Assessment in Soil Contamination Studies: Second Volume,* contains papers presented at the symposium of the same name, held in Phoenix, AZ on 26-27 Jan. 1995. The symposium was sponsored by ASTM Committee D-18 on Soil and Rock. Keith Hoddinott of the U.S. Army Environmental Hygiene Agency in Aberdeen Proving Ground, MD presided as symposium chairman and editor of the resulting publication.

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Overview

Since 1976, the release of chemicals to our environment and the potential adverse effects these chemicals may have on human health has captured the attention of the public and their representatives in all levels of government. Federal rules and guidelines require that releases of chemical compounds to the environment be evaluated to determine their effect on human health and the environment in general. One of the largest parts of the evaluation is the health risk assessment. This is a process by which an environmental professional converts data from the various environmental media into a measure of the probability of a health effect. This process originated in the field of industrial hygiene and is used extensively by the Occupational Safety and Health Agency to make the workplace more hospitable. The risk assessment process attempts not only to quantify the concentrations of various chemicals, but also the exposure parameters that would describe how and how long a person would be exposed to the chemicals. Over the years, numerous improvements and modifications have been made to the basic process. Keeping current with the changes is one of the more challenging parts of being a risk assessor.

The purpose of the Second Symposium on Superfund Risk Assessment in Soil Contamination Studies, which generated this Special Technical Publication (STP), was to collate the current modifications of the EPA's basic risk assessment methodology in a series of symposia and technical publications. We hope this type of symposium will serve both research and practical needs.

To produce this STP, two proactive organizations combined their talents and resources. The American Society for Testing and Materials (ASTM), through its Committee D-18 on Soil and Rock, and the United States Army Center for Health Promotion and Preventive Medicine (formerly the U.S. Army Environmental Hygiene Agency) cosponsored the second of a series of symposia on this type of risk assessment.

The evaluation of these risks should follow the EPA's booklet entitled, "Risk Assessment Guidance for Superfund (RAGS)." This booklet outlines the general process of risk assessment that has been adopted in this STP to organize the paper topics. However, we do not pretend this STP is an instructional device for the basic EPA method. While beginners can benefit greatly from the papers presented here, this collection finds its best use in the hands of the experienced risk assessor. The papers contained in the STP present modifications of the basic EPA methodology that have been acceptable to regulators at specific sites. This should not be construed to mean that these methods will be acceptable at all sites, in all situations, or to all regulators. Rather, it is a state-of-the-art laundry list of methods that may be helpful for complex issues at your site.

Papers in this STP were selected from the symposium submittals based upon pertinency, originality, and technical quality. All have undergone peer review, and most were extensively revised between presentation and publication. In this STP, papers were selected in the following categories:

- background determination,
- data collection validation,
- exposure assessment, and
- ecological assessment.

In addition to the authors of the individual papers, any success of this publication reflects the contributions of many people. The Symposium Committee worked diligently in soliciting abstract submittals, selecting promising presentations, and chairing the sessions.

The continued support of this symposium by the officers of ASTM Committee D-18 also was vital since time from a more than full committee meeting schedule needed to be allocated for this endeavor.

Critical to maintaining the techincal quality of this STP was the diligent work of the reviewers of the technical papers. At least three reviewers were obtained for each paper to help ensure that the work reported was accurate, reproducible, and meaningful.

Considerable staff support was also required for the completion of this effort. The help of the Symposium Committee, the ASTM Committee D-18 officers, the paper reviewers, and the ASTM staff is most appreciated. We trust that the papers in this STP, which the contributors labored hard to develop, will aid the efforts of environmental professionals towards the reliable prediction and quantification of risk.

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