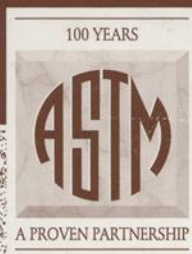


Superfund Risk Assessment in Soil Contamination Studies

T H I R D V O L U M E

KEITH B. HODDINOTT, EDITOR

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Third Volume***

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Peer Review Policy

Each paper published in this volume was evaluated by two peer reviewers and the editor. 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 the peer reviewers. The ASTM Committee on Publications acknowledges with appreciation their dedication and contribution of time and effort on behalf of ASTM.

Foreword

This publication, *Superfund Risk Assessment in Soil Contamination Studies: Third Volume*, contains papers presented at the symposium on Superfund Risk Assessment held in San Diego, California, on 11–16 January 1998. The symposium was sponsored by ASTM Committee D-18 on Soil and Rock. The symposium was chaired by Keith B. Hoddinott, U.S. Army Center for Health Promotion and Preventive Medicine. He also served as STP editor of this publication.

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Overview

Since the beginning, there have been two schools of thought surrounding environmental risk assessment. One looked at the evaluation as an estimate of a true measure of risk an exposure would have on a population; the other viewed it as one of many tools that could be used to determine if exposure to a site and its chemicals posed an acute or long time risk to the health of the human and non-human receptors that would potentially use the site. Both schools have their advantages and drawbacks. The "true measure" school links the exposure to an effect that they believe is an estimate of reality, but they can get caught up in the Pandora's box of defending each value in the exposure model as how they describe reality at this site. The "one of many tools" school defends the exposure model as the standard measure for each site, but runs into controversy when evaluating one site against a set "safe" standard. Both schools suffer from the perception that they have to accept some level of adverse health effect. Both have merit in that if one has to make decisions concerning safety, a public health basis is an excellent place to start.

Public health has always been a science that attempts to keep ahead of the next problem. Refining techniques to detect problems earlier, make diagnoses more accurate, and get to the final solution quicker. Risk assessment is no different. From its inception, researchers have been looking closely at every facet of the risk assessment paradigm, ever tightening the uncertainty surrounding each parameter in the model. 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 symposium on risk assessment, 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 pro-active organizations combined their talents and resources. The American Society of 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 United States Army Environmental Hygiene Agency) cosponsored the third 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 which this STP has adopted to organize the paper topics. However, this STP does not pretend to be an instructional device for the basic EPA method. Although 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 which 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 which 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 undergo peer review and most were extensively revised between presentation and publication.

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, in selecting promising presentations, and in chairing the sessions. The continued support of this symposium by the officers of ASTM Committee D-18 on Soil and Rock also was vital, as time from a more than full committee meeting schedule needed to be allocated for this endeavor.

Critical to maintaining the technical 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 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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