

Overview

In recent years, the release of chemicals into our environment and the potential adverse affects these chemicals may have on human health have captured the attention of the public and their representatives at all levels of government. Federal rules and guidelines require that unauthorized releases of chemical compounds to the environment be addressed by the responsible entity. Typically, an assessment of the degree and extent of environmental contamination is required. At the heart of these studies are analytical data from air, soil, ground-water, and surface-water samples. Over the years, numerous analytical methods have been developed and standardized for chemical analysis of water and air samples. However, due to the complexity of the soil matrix and the indirect influence of soil on air, ground-water, and surface-water quality, the development of standard chemical analytical techniques for soil samples has not been pursued aggressively.

Recently, environmental professionals have realized that the contaminated soil can serve as a significant source of contaminants to the air, ground water, and surface water for a number of years. With human health and the quality of our environment at risk, as well as large sums of money being directed toward environmental assessment and remediation activities, accurate and reliable soil analytical data are an increasingly important concern of these professionals.

Over the last few centuries, soil scientists have been developing and refining soil analytical methodologies (soil science was used more than 42 centuries ago to develop a schematic soil map for use as a basis of taxation in China). Currently, however, the chemical and physical characteristics of soil have become the focus of many engineers charged with the design of assessments and remediation efforts for contaminated sites. Certainly, an atmosphere of cooperation between the engineering professionals and soil scientists must be cultivated in order to bring appropriate soil analytical techniques to light. To this end, the American Society for Testing and Materials (ASTM), through its Committee D18 on Soil and Rock, and the Soil Science Society of America co-sponsored a symposium on the Application of Agricultural Analysis in Environmental Studies.

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

1. General Soil Tests
2. Nutrient Status
3. Organic Constituents
4. Heavy Metal Content
5. Liming Requirement

The success of this publication reflects the contributions of many people in addition to that of the authors of the individual papers.

The Symposium Committee worked diligently in soliciting abstract submittals, in selecting promising presentations, and in chairing the sessions. The committee comprised three individuals:

Tracey O'Shay
Keith Hoddinott
Dean Wesley

Texas Water Commission
U.S. Army Environmental Hygiene Agency
Key Agricultural

The continued support of this symposium by the officers of ASTM Committee D18 on Soil and Rock also was vital, since 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. 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 D18 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 industry towards and reliable prediction and quantification of the subject properties.

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