AS 4439.3:2019

Australian STANDARD®

# Wastes, sediments and contaminated soils

# Part 3: Preparation of leachates — Bottle leaching procedure



STANDARDS Australia

AS 4439.3:2019

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Australasian Land and Groundwater Association
Australian Contaminated Land Consultants Association
Environmental Laboratory Industry Group
Griffith University
National Association of Testing Authorities Australia
National Measurement Institute
NSW Environment Protection Authority
Soil Science Australia

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# Part 3: Preparation of leachates — Bottle leaching procedure

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# Preface

This Standard was prepared by the Standards Australia Committee CH-035, Examination of Wastes, to supersede AS 4439.3—1997.

The objective of this Standard is to provide a standardized method to determine the contamination potential of groundwater with inorganic and semi-volatile organic materials from liquid and solid wastes, soils, sediments and sludges.

The major changes in this edition are as follows:

(a) Additional information on the use of this method for Per- and Polyfluoroalkyl Substances (PFAS).

(b) Additional options for determination of percentage solids.

(c) Modified reporting requirements.

(d) Further guidance on the toxicity characteristic leaching procedure (TCLP) approach.

The terms "normative" and "informative" are used in Standards to define the application of the appendices to which they apply. A "normative" appendix or annex is an integral part of a Standard, whereas an "informative" appendix or annex is only for information and guidance.

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### 1 Scope

This Standard provides a method for the preparation of leachates from liquid and solid wastes, sediments, sludges and soils for assessing the potential of non-volatile inorganic and semi-volatile organic contamination of groundwater, in a variety of disposal-to-land scenarios.

This Standard deals only with the preparation of the leachate.

This Standard excludes procedures prior to submitting samples to the laboratory for analysis or sub-sampling.

The range of analyte compounds includes those compounds with a vapour pressure <10 Pa at 20 °C and with a boiling point greater than 150 °C at one standard atmosphere.

NOTE A list of analyte compounds is given in Appendix A.

The procedure is not applicable to encapsulated wastes which cannot be reduced to the specified maximum particle size without breaking the integrity of encapsulation.

The pH and the oxidation-reduction (redox) potential, or $E_h$, of a leaching fluid may vary with each disposal environment and is known to affect the leaching of metals and possibly some organic species. No provision is made in this procedure, however, to control pH and $E_h$ during leaching.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1289.2.1.1, *Methods of testing soils for engineering purposes — Method 2.1.1: Soil moisture content tests — Determination of the moisture content of a soil — Oven drying method (standard method)*

AS 2162.1, *Verification and use of volumetric apparatus, Part 1: General — Volumetric glassware*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310-2, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 3819, *Laboratory glassware — Beakers*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders*

US EPA SW-846 Test Method 1313, *Liquid-solid partitioning as a function of extract pH using a parallel batch extraction procedure*. Revision 1, July 2017, Proposed Update VI to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, U.S. Environmental Protection Agency

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.