INTERNATIONAL STANDARD

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Water quality — Determination of selected phenoxyalkanoic herbicides, including bentazones and hydroxybenzonitriles by gas chromatography and mass spectrometry after solid phase extraction and derivatization

Qualité de l'eau — Dosage de certains herbicides phénoxyalcanoïques, y compris bentazones et hydroxybenzonitriles, par chromatographie en phase gazeuse et spectrométrie de masse après extraction en phase solide et dérivatisation

Reference number
ISO 15913:2000(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15913 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

Annexes A, B, C and D of this International Standard are for information only.

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WARNING — Diazomethane is explosive, extremely toxic and severely irritating, causing pulmonary oedema when inhaled in high concentrations. Long-term, low-level exposure may lead to sensibilization, resulting in asthma-like symptoms. Also, diazomethane and several of its chemical precursors have been cited as carcinogens.

1 Scope

This International Standard specifies a method for the determination of phenoxyalkanoic acids in ground and drinking water in mass concentrations $\geqslant$ 50 ng/l (detailed information is given in Table A.1 of annex A). Examples of phenoxyalkanoic acids which can be determined by this method are given in Table 1.

This method may be applicable to compounds not mentioned in Table 1 or to other types of water. However, it is necessary to verify the applicability of this method for these special cases (see annex B).

Table 1 — Plant treatment agents determined by this method

Name	Molecular formula	Relative molecular mass	CAS registry No.
(2,4-Dichlorophenoxy) acetic acid	$C_8H_6Cl_2O_3$	221,0	94-75-7
Mecoprop	$C_{10}H_{11}ClO_3$	214,65	93-65-2
Dichlorprop	$C_9H_8Cl_2O_3$	235,06	120-36-5
MCPA	$C_9H_9ClO_3$	200,6	94-74-6
MCPB	$C_{11}H_{13}ClO_3$	228,67	94-81-5
(2,4,5-Trichlorophenoxy)acetic acid	$C_8H_5Cl_3O_3$	255,5	93-76-5
Bentazone	$C_{10}H_{12}N_2O_3S$	240,3	25057-89-0
Bromoxynil	$C_7H_3Br_2NO$	276,9	1689-84-5
4-(2,4-Dichlorophenoxy)-butanoic acid	$C_{10}H_{10}Cl_2O_3$	249,1	94-82-6
Fenoprop	$C_9H_7Cl_3O_3$	269,51	93-72-1

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2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5667-1:1980, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes.*

ISO 5667-2:1991, *Water quality — Sampling — Part 2: Guidance on sampling techniques*.

ISO 5667-3:1994, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of samples*.

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3 Term, definition, abbreviations and subscripts

3.1 Term and definition

For the purposes of this International Standard, the following term and definition applies.

3.1.1
phenoxyalkanoic herbicides
herbicides which undergo derivatization with diazomethane and which may subsequently be determined by gas chromatography

EXAMPLE Typical phenoxyalkanoic herbicides include alkylhalogenated phenoxy acids, hydroxybenzonitriles and bentazone.

3.2 Abbreviations

2,4-D (2,4-dichlorophenoxy) acetic acid

2,4-DB 4-(2,4-dichlorophenoxy) butanoic acid

2,4-DP dichlorprop

MCPP mecoprop

2,4,5-T (2,4,5-trichlorophenoxy) acetic acid

2,4-TP fenoprop

3.3 Subscripts

c calibration step using an external standard

g overall procedure

i identity of the substance *i*

is internal standard

j consecutive figure *j* for pairs of values

sam sample

sol solvent

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