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**Soil quality — Vocabulary**  
**AMENDMENT 1**

*Qualité du sol — Vocabulaire*  
*AMENDEMENT 1*

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CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
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This document was prepared by Technical Committee ISO/TC 190, *Soil quality*.

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# Soil quality — Vocabulary

## AMENDMENT 1

### Subclause 2.2

Add the following new terms and definitions and renumber the following terms accordingly:

#### 2.2.1

##### **anthropogenic ground**

deposits which have accumulated through human activity

Note 1 to entry: These could consist of natural materials placed/replaced by man, e.g. clay, or man-made materials, e.g. refuse.

#### 2.2.3

##### **deep soils**

soils in which plants can achieve a rooting depth of 50 cm or more

#### 2.2.9

##### **fill**

*anthropogenic ground* (2.2.1) in which the material has been selected, placed and compacted in accordance with an engineering specification

Note 1 to entry: The material can be natural in origin or comprise wastes or other artificial materials.

#### 2.2.10

##### **made ground**

*anthropogenic ground* (2.2.1) comprising material placed without engineering control and/or manufactured by man in some way, such as through crushing or washing, or arising from an industrial process

Note 1 to entry: Can comprise mixed natural soil materials and/or wastes such as building rubble, timber, refuse and industrial wastes.

#### 2.2.17

##### **shallow soil**

soil in which plants can achieve a rooting depth of less than 50 cm.

### Subclause 3.4

Add the following new term and definition and renumber the following terms accordingly:

#### 3.4.7

##### **dense non-aqueous phase liquid**

##### **DNAPL**

*NAPL* (3.6.11) denser than water

EXAMPLE Trichloroethene.

Note 1 to entry: For LNAPL, see 3.6.8.

*Subclause 3.6*

Replace definitions 3.6.5 and 3.6.7 with the following:

**3.6.5**

**gas migration**

movement of gas from the source through the ground to the adjoining strata or to emit to atmosphere

Note 1 to entry: EXAMPLES of sources include wastes within a landfill or spill of hydrocarbons.

**3.6.7**

**gas sampling**

collection of a volume of soil gas contained in the pore space of the soil

Add the following new terms definitions:

**3.6.8**

**light non-aqueous phase liquid**

**LNAPL**

NAPL (3.6.11) less dense than water

Note 1 to entry: For DNAPL, see 3.4.7.

Replace definition 3.6.9 with the following:

**3.6.9**

**lower explosive limit**

**LEL**

lowest volume fraction of a mixture of flammable gas with air which will propagate an explosion in a confined space at 25°C and atmospheric pressure

Note 1 to entry: LEL can be expressed as a percentage or in mg/l or similar units.

Note 2 to entry: For UEL, see 3.6.22.

Add the following new terms definitions:

**3.6.10**

**monitoring installation**

permanent or temporary device used for soil gas sampling

EXAMPLE Sub-slab, soil gas probe.

**3.6.11**

**non-aqueous phase liquid**

**NAPL**

liquid organic substance which is relatively insoluble in water

Note 1 to entry: For DNAPL, see 3.4.7.

Note 2 to entry: For LNAPL, see 3.6.8.

Replace definitions 3.6.10 and 3.6.12 with the following, considering the new numbering:

**3.6.13****passive soil-gas sampling**

sampling based on the adsorption of gases of the ground on an adsorbent placed in the ground, without using artificially reduced pressure

**3.6.14****soil gas monitoring device****soil gas monitoring installation**

borehole finished with suitable material for stabilisation of the borehole wall and/or for limiting the sampling area

Note 1 to entry: Depending on the type and stability of fitting, a distinction is made between temporary (for single or short-term repeated soil sampling) and stationary and semi-permanent or permanent soil gas monitoring points (for long-term observation).

Add the following new terms and definitions and renumber accordingly:

**3.6.17****soil gas sample volume**

volume of soil gas taken to form the sample

**3.6.19****sub-slab sampling location**

soil gas sampling location just below the foundation slab of a building, within the unsaturated zone

**3.6.20****subsoil**

<soil gas> layer of soil beneath the surface soil and overlying the bedrock

Note 1 to entry: Subsoil is also known as “undersoil”.

**3.6.22****upper explosive limit****UEL**

uppermost volume fraction of a mixture of flammable gas with air which will propagate an explosion in a confined space at 25 °C and atmospheric pressure

Note 1 to entry: UEL can be expressed as a percentage or in mg/l or similar units.

Note 2 to entry: For LEL, see 3.6.9.

*Subclause 4.1*

Replace definition 4.1.8 with the following:

**4.1.8****increment**

material forming part of a composite sample obtained by a single operation of a sampling device

EXAMPLE The filling of a scoop or auger.

Add the following new term and definition and renumber the following ones accordingly:

#### 4.1.13

##### **population**

<soil sampling> entirety of a soil volume or mass about which information is to be sought via sampling

EXAMPLE The entirety could be e.g. particular site, in situ volume of soil, stockpile, truck load.

Replace definition 4.1.34 with the following considering the new numbering:

#### 4.1.35

##### **subsample**

selected part of a sample

Note 1 to entry: The subsample can be selected by the same method as was used in selecting the original sample, but need not be so.

[SOURCE: ISO 3534-2:2006, 1.2.19]

#### *Subclause 4.2*

Add the following new terms and definitions:

#### 4.2.1

##### **above-ground sampling**

process of taking samples from material that has been deposited on the ground surface

EXAMPLE Samples are taken from a stockpile (including bulk volumes of excavated soils), deposit of waste or embankment.

#### 4.2.2

##### **in-ground sampling**

process of taking samples from the ground surface and/or within the ground beneath the surface

Replace definition 4.2.1 with the following considering the new numbering:

#### 4.2.3

##### **cluster sample**

composite sample for which the increments are taken over a small area around a predefined sampling point

Note 1 to entry: Sampled area is typically about 0,5 m<sup>2</sup> to 1,0 m<sup>2</sup>.

Note 2 to entry: Material sampled is taken from within the same stratum or from material with the same characteristics.

Add the following new terms and definitions and renumber the following accordingly:

#### 4.2.4

##### **composite sample**

<field> sample made of a number of increments

Note 1 to entry: See *cluster sample* (4.2.3) or *spatial composite sample* (4.2.28).

**4.2.6****convenience sampling**

process of taking samples based on accessibility, expediency, cost, efficiency, or other reason not directly concerned with sampling parameters

Note 1 to entry: The samples can be taken to a predetermined plan (locations, depths etc.) or taken from locations and/or depths decided on site (the term “ad hoc sampling” is sometimes applied to this type of sampling).

Replace definition 4.2.4 with the following considering the new numbering:

**4.2.8****judgemental sampling**

process of taking samples from particular zones or features of a site taking into account existing knowledge.

Note 1 to entry: Judgemental sampling could be required, for example, around underground storage tanks or pipelines where there might have been leaks, above ground storage tanks where there might have been spills, and for areas where raw materials or wastes have been stored or deposited.

Note 2 to entry: Sampling locations are usually predetermined based on what is known about the target area but some locations can be selected in the field in response to on-site observations.

Add the following new term and definition:

**4.2.9****kubiēna tin**

metal box with removable top and base which can be forced into the surface of the ground to obtain an *undisturbed sample* ([4.4.33](#))

Note 1 to entry: Usually made to desired size from aluminium, galvanized steel, or stainless steel sheet. Size varies, but a typical example might have an area of about 55 mm × 75 mm with a depth of 40 mm. The sample, once obtained, can be used to determine bulk density or can be impregnated with resin prior to the production of thin sections for microscopic examination.

**4.2.15****principal sampling situation**

one of four sampling situations characterised by a combination of whether information is required on spatial distribution or average properties, with whether *in-ground sampling* ([4.2.2](#)) or *above-ground sampling* ([4.2.1](#)) is required.

Note 1 to entry: The concept is illustrated in ISO 18400-104: 2018, Table 2.

Replace definition 4.2.10 with the following considering the new numbering:

**4.2.16****probabilistic sampling**

sampling to ensure that each particle or element in the population has an equal chance of being part of the sample

Note 1 to entry: This means it is easy to obtain a quantifiable level of reliability (or uncertainty) in the estimated mean value and enables estimation of variability of the results for the population being tested.

Add the following new terms and definitions considering the new numbering:

**4.2.17****regular sampling**

process of taking samples at the nodes of a regular pattern, such as a square or triangular grid, i.e. the sampling locations are evenly spaced

**4.2.19**

**sample division**

<bulk material> activity in sample preparation whereby a sample of bulk material is divided by such means as riffing, mechanical division, or quartering into separate parts, one or more of which is retained

[SOURCE: ISO 3534-2:2006, 5.3.8]

Replace definitions 4.2.15 and 4.2.16 with the following considering the new numbering:

**4.2.23**

**sampling pattern**

set of predetermined sampling points

**4.2.24**

**selective sample**

sample deliberately chosen or formed, based on some specific characteristic(s) of the material to be sampled

EXAMPLE Appearance, odour, particle sizes.

Add the following new terms and definitions considering the new numbering:

**4.2.25**

**selective subsampling**

separation of part of a sample on the basis of grading (i.e. above or below a defined particle size), appearance or some other attribute

**4.2.27**

**simple random sampling**

<soil sampling> sampling locations are selected arbitrarily within the area to be investigated

Note 1 to entry: The coordinates of the intended sampling locations are derived using pseudo-random or quasi-random numbers which can be found in tables included in manuals on statistics or which can be generated by computer programs.

Replace definitions 4.2.19 and 4.2.20 with the following considering the new numbering:

**4.2.28**

**spatial composite sample**

**spatial sample**

composite sample formed from small incremental point samples taken over an area (such as a field)

Note 1 to entry: The general premise is that the distribution of soil constituents is relatively homogeneous. The increments may be located according to a regular grid, random, or other pattern. In agricultural/horticultural land investigations "N", "S", "W" and "X" sampling patterns are commonly used. Along the outline of such a pattern, a number of samples or increments are taken which are bulked and mixed to provide one [composite] sample for analysis.

**4.2.29**

**spot sample**

sample from a discrete location

Note 1 to entry: Sample can be formed from one or more contiguous portions of material.

Note 2 to entry: Can be a *disturbed sample* (4.4.9) or *undisturbed sample* (4.4.33).

Add the following new terms definitions:

**4.2.30****stratified random sampling**

process in which the area to be sampled is divided into a number of identical grid cells (strata) and samples taken randomly in each cell

Replace definition 4.2.24 with the following considering the new numbering:

**4.2.34****systematic sampling**

process of taking samples from locations that have been pre-designated according to a geometric or other statistically-derived pattern

Note 1 to entry: Systematic sampling can include a random positioning component.

Note 2 to entry: Some systematic sampling patterns are regarded as “probabilistic” (see 4.2.16).

Note 3 to entry: This definition is wider than the usual definition found in the literature, where systematic sampling commonly means regular sampling.

Add the following new term and definition:

**4.2.35****systematic unaligned sampling**

process of taking samples using a sampling pattern intermediate between a regular grid and stratified random sampling, where each row (respectively, column) of the grid shows a similar pattern of unaligned points

Note 1 to entry: See ISO 18400-104: 2018, Figure B.8.

*Subclause 4.3*

Replace definition 4.3.4 with the following:

**4.3.4****concentration method****adsorption method**

method in which substances to be determined are concentrated adsorptively on an adsorbent, subsequently desorbed and analysed

EXAMPLE Adsorbent: e.g. activated charcoal or XAD 4 resin.

*Subclause 4.4*

Add the following new terms and definitions:

**4.4.7****cutting cylinder**

cylindrical device with removable top and base forced into the surface of (the ground/exposed soil) to obtain an *undisturbed sample*

Replace definition 4.4.8 with the following considering the new numbering:

**4.4.9****disturbed sample**

sample obtained from the ground without any attempt to preserve the soil structure

EXAMPLE Sample obtained by using a hand auger.

Replace definitions 4.4.17 and 4.4.31 with the following considering the new numbering:

**4.4.19**

**profile description**

description of the features of a soil exposed in a pit or section and its environment, and described according to a specified system or terminology

Note 1 to entry: See ISO 25177.

**4.4.33**

**undisturbed sample**

sample obtained from the ground with soil structure unaltered during sampling procedure

Note 1 to entry: Special sampling equipment is used so that the soil particles and voids cannot change from the distribution which exists in the ground before sampling (these can provide volume-proportional or mass-proportional results).

*Subclause 4.6*

Replace definition 4.6.8 with the following:

**4.6.8**

**subsampling**

process of selecting one or more subsamples from a sample of a population

*Subclause 6.1*

Replace definitions 6.1.9 and 6.1.10 with the following:

**6.1.9**

**landfill**

deposition of waste into or onto the land

Note 1 to entry: It can eventually provide land which can be used for another purpose.

**6.1.10**

**landfill gas**

mixture of permanent gases (main components), dominated by methane and carbon dioxide, formed by the decomposition of degradable wastes within landfill sites

Note 1 to entry: It can also include a large number of VOCs (trace components).

Add the following new term and definition:

**6.1.22**

**remediation technology**

technology that pre-processes, processes or post-processes the ground or contaminant as part of risk management

Replace the definition 6.1.24 with the following considering the new numbering:

**6.1.25**

**volatile organic compound**

**VOC**

organic compound that is volatile under normal environmental/atmospheric conditions, although it can be found in the ground in the solid, liquid and dissolved phase form as well as in gaseous phase

Note 1 to entry: Examples include single-ring aromatic hydrocarbons and other low boiling halogenated hydrocarbons, which are used as solvents or fuels, and some degradation products.