



International
Standard

ISO 23882

**Sludge recovery, recycling,
treatment and disposal —
Beneficial use of biosolids land
application — Guidelines for risk
communication and management of
public perception**

**First edition
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*Valorisation, recyclage, traitement et élimination des boues —
Utilisation bénéfique des biosolides (boues) sur les terres —
Lignes directrices pour la communication des risques et la gestion
de la perception du public*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 275, *Sludge recovery, recycling, treatment and disposal*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The World Health Organization (WHO) describes risk communication as the “exchange of real-time information, advice and opinions between experts and people facing threats to their health, economic or social well-being”.^[1] This definition highlights the importance of timely, transparent, and two-way communication between technical experts and affected stakeholders and Indigenous Peoples¹⁾ in situations involving potential or perceived risks.

The beneficial use of biosolids²⁾ produced from industrial and municipal sludge, as well as biosolids-derived products (e.g. composts and growing media), is widely practiced across many jurisdictions as part of resource recovery. International standards, including ISO 19698, provide guidance on the safe and sustainable use of biosolids. These standards support consistent approaches to biosolids management by addressing key aspects such as characterization, handling, treatment, and land application.

Beneficial uses of biosolids are associated with varying levels of public interest and concern. Public perception in this context is shaped by multiple interacting factors, including levels of understanding, prior experience, trust in responsible authorities, and broader social and cultural values.

Effective risk communication is therefore an essential component in supporting transparency, informed decision-making, and meaningful stakeholder and Indigenous Peoples engagement. It plays a key role in addressing concerns, contextualizing risks and benefits, and strengthening confidence in the safe and responsible use of biosolids.

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1) In some jurisdictions such as Australia the term “Aboriginal Peoples” or “First Nations” is used to refer to residents of an area prior first contact. In Canada, Latin America, the Philippines and Africa the term “Indigenous Peoples” is used in various contexts. The same term is used by the United Nations. In this document, the term “Indigenous Peoples” is used for consistency with the United Nations and international law and standards. In parts of the world “Indigenous Peoples, First Nations or Aboriginal Peoples” are not considered stakeholders, as they have jurisdiction over their territory and engage with provincial government in a government-to-government level and are co-decision makers alongside government.

2) Beneficial uses of biosolids can include land application to produce food and feed crops, energy crops, forestry crops and for the remediation of disturbed sites. Some jurisdictions have identified the criteria for beneficial use based on regulations, policies and regional and geographical situations pertaining to the jurisdiction and have differentiated disposal and beneficial use.

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Sludge recovery, recycling, treatment and disposal — Beneficial use of biosolids land application — Guidelines for risk communication and management of public perception

1 Scope

This document provides guidance for communicating the risks related to the beneficial use of biosolids produced from industrial and municipal sludge and municipal biosolids derived products (e.g. composts, growing medium) and for managing public perception related to their use.

This document:

- defines key concepts related to risk and risk communication;
- provides context for risk in relation to the beneficial use of biosolids;
- describes public perceptions and responses to the beneficial use of biosolids at a global scale;
- outlines risk communication principles, methods, and tools;
- includes case studies and examples of communication strategies.

This document can also be used to support the development of biosolids management plans, particularly in relation to community consultation, engagement, and communication activities.

In addition, it can be applied, where appropriate, to risk communication associated with other beneficial uses of biosolids or similar materials.

This document does not apply to communication regarding hazardous sludge originating from wastewater that, due to its physical, chemical, or infectious properties, can pose significant risks to human health or the environment during use, handling, storage, or transportation, and requires specialized disposal methods.

The definition of “beneficial use of biosolids” is outside the scope of this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

acceptable risk

level of *risk* (3.9) that an individual or society accepts to secure certain benefits

[SOURCE: ISO 13824:2020, 3.1]

3.2

biosolids

organic products used in agriculture, which include sewage sludge, compost, manure and some industrial wastes

Note 1 to entry: Major sources of biosolids are municipal wastewater treatment plants.

[SOURCE: ISO 15685:2012, 3.2, modified — Note 1 to entry added.]

3.3

consequence

outcome of an *event* ([3.4](#)) affecting objectives

Note 1 to entry: An event can lead to a range of consequences.

Note 2 to entry: A consequence can be certain or uncertain and can have positive or negative effects on objectives.

Note 3 to entry: Consequences can be expressed qualitatively or quantitatively.

Note 4 to entry: Initial consequences can escalate through knock-on effects.

[SOURCE: ISO 31000:2018, 3.6, modified — Note 1 to entry was added and other notes were renumbered.]

3.4

event

occurrence or change of a particular set of circumstances

Note 1 to entry: occurrence or change of a particular set of circumstances

Note 2 to entry: An event can have one or more occurrences, and can have several causes and several *consequences* ([3.3](#)).

Note 3 to entry: An event can also be something that is expected which does not happen, or something that is not expected which does happen.

Note 4 to entry: An event can be a *risk* ([3.9](#)) source.

[SOURCE: ISO 31073:2022, 3.3.11]

3.5

exposure

extent to which an organization and/or *interested party* ([3.14](#)) is subject to an *event* ([3.4](#))

[SOURCE: ISO 31073:2022, 3.3.17]

3.6

growing medium

material, other than soils in situ, in which plants are grown

[SOURCE: ISO 8157:2022, 3.2.8.11]

3.7

hazard

substance or mixture which has the potential to cause harm to either an individual or the environment

[SOURCE: ISO 13043:2011, 3.6.1, modified — the word “event” was replaced with the words “substance or mixture”]

3.8

likelihood

chance of something happening

Note 1 to entry: In *risk management* (3.12) terminology, the word “likelihood” is used to refer to the chance of something happening, whether defined, measured or determined objectively or subjectively, qualitatively or quantitatively, and described using general terms or mathematically (such as a probability or a frequency).

Note 2 to entry: The English term “likelihood” does not have a direct equivalent in some languages; instead, the equivalent of the term “probability” is often used. However, in English, “probability” is often narrowly interpreted as a mathematical term. Therefore, in risk management terminology, “likelihood” is used with the intent that it should have the same broad interpretation as the term “probability” has in many languages other than English.

[SOURCE: ISO 31073:2022, 3.3.16]

3.9

risk

effect of uncertainty on objectives

Note 1 to entry: An effect is a deviation from the expected – positive or negative.

Note 2 to entry: Uncertainty is the state, even partial, of deficiency of information related to understanding or knowledge of an *event* (3.4), its *consequence* (3.3), or *likelihood* (3.8).

Note 3 to entry: Risk is often characterized by reference to potential events (as defined in ISO 31073) and consequences (as defined in ISO 31073), or a combination of these.

Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood (as defined in ISO 31073) of occurrence.

[SOURCE: ISO 55000:2024, 3.3.8]

3.10

risk assessment

overall process of *risk* (3.9) identification, risk analysis and risk evaluation

[SOURCE: ISO 31073:2022, 3.3.8]

3.11

risk communication

exchange or sharing of information about *risk* (3.9) between decision-maker and other individuals, groups or organizations who can affect, be affected by, or perceive themselves to be affected by the risk

[SOURCE: ISO 16732-1:2012, 3.23]

3.12

risk management

systematic and iterative optimisation of the project resources, performed according to the established project risk management policy

[SOURCE: ISO 17666:2025, 3.5]

3.13

risk perception

interested party's view on *risk* (3.9)

Note 1 to entry: Risk perception reflects the interested party's needs, issues, knowledge, beliefs and values.

[SOURCE: ISO 31073:2022, 3.3.3]