

## Managing soil quality in changing times

by Frank Kortstee, Secretary of ISO/TC 190, Soil quality, and Frank Lamé, Chair of ISO/TC 190

**S**oil is a dynamic resource that supports plant life. It regulates the distribution of rain and irrigation water, stores nutrients and other elements, and acts as a filter to protect the quality of water, air and other resources. It is made up of different sized mineral particles (sand, silt, and clay), organic matter and numerous species of living organisms.

Thus, soil has biological, chemical and physical properties, some of which are dynamic and can change in response to how the soil is managed.

Soil quality is the capacity of a specific kind of soil to function – within natural or managed ecosystem boundaries – to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

**“Soil will become more integrated into the overall environmental standardization.”**

Management that enhances soil quality will benefit cropland, rangeland and woodland productivity. Enhanced soil quality can help reduce on-site and off-site costs of soil erosion, improve water and nutrient use efficiencies, and ensure that the resource is sustained for future use. It also benefits water quality, air quality and wildlife habitat.

Two years ago *ISO Focus* (June 2004) published an article on the significance of standard development by ISO technical committee ISO/TC 190, *Soil quality*, in relation to the protection of health or boosting agricultural

production. As mentioned in the article, the important driving forces behind the development of reliable environmental measurement methods are:

- National and international legislation;
- The need to obtain reliable results;
- Correspondence with (inter)national threshold values.

However, continual change has resulted in two main developments for ISO/TC 190: the evolving soil policy in Europe and the integration of soil in more general environmental assessments.

### Benefits of collaboration

As a follow-up on other environmental fields, for which European policy has existed for years, the European Commission (EC) is working on soil legislation. In 2002, it adopted the Soil Protection Communication<sup>1)</sup>. This comprehensive strategy document is the basis for further development of a European Soil Framework Directive, which is expected in early summer this year.

The EC relies on the European Committee for Standardization (CEN) to develop standards that meet the technical requirements for its legislation.

In 2002, in order to actively respond to an anticipated request by the EC, CEN established technical committee CEN/TC 345, *Characterization of soils*. To avoid overlap and divergence between ISO and CEN stand-

1) Towards a Thematic Strategy for Soil Protection COM (2002) p. 179.

2) For an explanation of the relation between ISO/TC 190 and CEN/TC 345 in the light of the development of European legislation on soil, a brochure is available from the NEN secretariat (see information at the end of this article).

3) Soil threat as defined in the Thematic Strategy for Soil Protection are: Local and diffuse contamination (including uncontaminated soils), erosion, organic matter, sealing, compaction, bio-diversity and salinization.





## Environmental sustainability



## Soil as part of the environmental standardization

ISO/TC 190 is also involved in the European project HORIZONTAL that started in 2003. The project aims to develop standards covering several environmental fields of similar nature. The need for this so-called horizontal approach can be easily seen in the following example :

**“ISO has developed over 90 standards for soil, with another 30 underway.”**

A soil sample is analyzed for contaminant concentrations. One or more of the concentrations found exceeds the threshold values in force. As a consequence the soil sample becomes a waste sample. However, for waste other chemical standards apply that are referred to in legislation, so the analysis must be repeated. As long as the matrices are comparable and thus the analysis could be identical, this is clearly a waste of valuable time and money.

Horizontal standards are defined as standards aimed at a particular aspect regardless of the matrix, over a field as wide as possible. In the environmental field, horizontal standards are possible because different technical committees are working on similar or identical issues.

Project HORIZONTAL covers the topics of sludge, soil and treated biowaste. Where possible, certain standards will also incorporate characterization of waste. Therefore several CEN technical committees are involved in the process including CEN/TC 345 and thus ISO/TC 190. This means that some aspects of soil standardization will be integrated in other environmental fields and vice versa, further enforcing the relation between other

ards, close collaboration between the two technical committees has been established, with ISO/TC 190 taking the lead in developing soil standards for European use<sup>2)</sup>.

Awaiting the outcome of the Soil Framework Directive and the resulting European need for soil standards, CEN/TC 345 has already started using ISO knowledge as a basis for European standards. During the last two years, existing ISO/TC 190 standards were identified as possible European standards. Most of the standards were used as input for the European project called HORIZONTAL.

In other words, European needs following the Soil Framework Directive strongly boosted the advancement of ISO standards on soil.

The close collaboration between the two standardization organizations has resulted in informal participation of non-CEN members, mainly from Asia and Australia, in CEN standardization. This committee has always strongly supported receiving constructive comments and input from non-CEN members in European standardization. This also ensures that ISO will accept European standards to be developed into International Standards.

## The broader context

After its establishment in 1985, ISO/TC 190 first dealt with the methods for determining the chemical, physical and later biological characteristics of soil. These standards are used for fertilization and soil protection. Currently the committee has developed over 90 standards and nowadays focuses more on local and diffusive soil contamination. In addition, another 30 standards are currently being developed and are expected to be finalized in the near future.

In 2002, the scope of ISO/TC 190 was widened to bring it in line with scope of CEN/TC 345. This led to the incorporation of the main threats to soil<sup>3)</sup> as defined in the European Soil Protection Communication<sup>1)</sup>. The broader scope brings ISO/TC 190 a wider range of environmentally-linked issues like agriculture production, farming and forestry practices, waste issues (sewage sludge, treatment of wastewater), quality of irrigation water and spatial planning strategies. It is therefore reasonable to expect that this will also reinforce the relation between other ISO and CEN technical committees.

## About the authors



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geo-hydrology. He is a standardization consultant within the department of environment at the Netherlands Standardization Institute (NEN), where he is mainly involved in issues related to soil and the use of standards as policy instruments. Mr. Kortstee is also the Secretary of the European counterpart CEN/TC 345, *Characterization of soils*.



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in the field of soil quality, contamination and protection. He is a technical expert in the field of sampling strategies, where not only sampling strategies for soil are developed, but also for building materials and waste. As an expert, he is actively involved in national and international standardization for sampling soil and waste materials. He is also the Chair of the counterpart for CEN/TC 345, *Characterization of soils*.

technical committees of both organizations. Soil will become more integrated into the overall environmental standardization.

In recent meetings of the HORIZONTAL project leader in Australia, Japan and the USA, the project's concept has been welcomed as a valuable new approach.

Non-CEN members of ISO/TC 190 are able to actively work on this European project via the technical committee by commenting on the draft standards.

### Reflection on the future

ISO/TC 190 is at a crossroads for future standardization and must deal with a variety of challenges as part of an integrating environmental world.

Members of ISO and CEN committees realize this and initiated a discussion last year on the future development of the committees. This includes the challenging incorporating topics such as erosion, organic matter, sealing, compaction, bio-diversity and salinization, as well as broadening the participation of users and stakeholders in standards development.

**“Future development of the committees includes broadening the participation of users and stakeholders in standards development.”**

A major challenge for 2006 is to make an outline together for the future on how to respond to global and European requests for soil standards, which consider the integrating environment.

A brochure explaining the relationship between ISO/TC 190 and CEN/TC 345 in the light of the development of European legislation on soil, entitled Characterization of soils – the essential role of standardization in the characterization of soils, is available from the secretariat.

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