Water quality - Guidance standard for the identification, enumeration and interpretation of benthic diatom samples from running waters

Water quality - Guidance standard for the identification, enumeration and interpretation of benthic diatom samples from running waters

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 14407:2004 sisaldab Euroopa standardi EN 14407:2004 ingliskeelset teksti. Käesolev dokument on jõustatud 26.10.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 14407:2004 consists of the English text of the European standard EN 14407:2004. This document is endorsed on 26.10.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This Guidance Standard establishes methods for the identification and enumeration of relative proportions of diatom taxa on prepared slides and of data interpretation relevant to assessments of water quality in rivers and streams. It is suitable for use with indices and assessment methods based on the relative abundance of taxa. The methods for identification and enumeration can also be applied to the study of benthic diatoms in other habitats provided that data interpretation methods appropriate to these habitats are used.	**Scope:** This Guidance Standard establishes methods for the identification and enumeration of relative proportions of diatom taxa on prepared slides and of data interpretation relevant to assessments of water quality in rivers and streams. It is suitable for use with indices and assessment methods based on the relative abundance of taxa. The methods for identification and enumeration can also be applied to the study of benthic diatoms in other habitats provided that data interpretation methods appropriate to these habitats are used.

ICS 13.060.70

Võtmesõnad: bacteria count, microbiological analysis, microorganisms, micro-organisms, organisms, quality, rivers, running waters, sampling, sampling methods, taxonomy, testing, water, water analysis, water pollution, water practice, water quality, water testing

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14407

August 2004

ICS 13.060.70

English version

Water quality - Guidance standard for the identification, enumeration and interpretation of benthic diatom samples from running waters

Qualité de l'eau - Guide pour l'identification et le dénombrement des échantillons de diatomées benthiques de rivières, et leur interprétation

Wasserbeschaffenheit - Anleitung zur Bestimmung, Zählung und Interpretation von benthischen Kieselalgen in Fließgewässern

This European Standard was approved by CEN on 21 May 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 14407:2004: E

Contents

Page

Foreword 3
Introduction 4
1 Scope 5
2 Normative references 5
3 Terms and definitions 5
4 Principle 6
5 Requirements 6
6 Preliminary stages 7
7 Analytical procedures 9
8 Archiving data, slides and samples 10
9 Note on health and safety 10
10 Quality assurance 10
11 Data interpretation 10
Bibliography 12

Foreword

This document (EN 14407:2004) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard : Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

WARNING — Persons using this standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any national regulatory conditions.

Diatoms are an important component of aquatic ecosystems and constitute a water quality monitoring tool where the primary objective is either a measure of general water quality or specific components of water quality (e.g. eutrophication, acidification). The requirement for the monitoring of such processes is inherent in the Urban Wastewater Treatment Directive (91/271/EEC) and the Water Framework Directive (2000/60/EC) in addition to other EU Directives and international agreements. This standard covers aspects of identification and enumeration of the relative abundance of diatom taxa on prepared slides and of data interpretation relevant to assessment of water quality.

The use of diatoms as indicators of the quality of river waters is widely accepted both in Europe and the USA. The methodology is based on the fact that all diatom species have optima with respect to their tolerance (or preference) for environmental conditions such as nutrients, organic pollution, pH etc. Polluted waters will tend to support an increased abundance of those species whose optima correspond with the levels of the pollutant in question.

Methods using diatoms to assess water quality have been developed in several European countries (recent work is summarised in the proceedings of three symposia (references [1] to [3]).

According to the precise usage to which this standard is to be put it is essential for specifiers and users to mutually agree on any necessary variations or optional procedural details prior to use. It should be noted that some indices and national methodologies have particular requirements whilst this document embraces the full range of valid options. Under such circumstances, the requirements of a particular index should take priority.

1 Scope

This document establishes methods for the identification and enumeration of relative proportions of diatom taxa on prepared slides and of data interpretation relevant to assessments of water quality in rivers and streams. It is suitable for use with indices and assessment methods based on the relative abundance of taxa. The methods for identification and enumeration can also be applied to the study of benthic diatoms in other habitats provided that data interpretation methods appropriate to these habitats are used.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13946, *Water quality - Guidance standard for the routine sampling and pretreatment of benthic diatoms from rivers*

3 Terms and definitions

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

3.1
benthic diatoms
diatoms living on natural or artificial substrata (rather than suspended in the water column)

3.2
expected natural community
community present at a site when only natural stresses (e.g. floods) occur and man-made stress is not significant

3.3
eyepiece graticule
measuring device, inserted into one eyepiece of a microscope, permitting absolute measurements of the size of objects. The relationship between each division on the eyepiece graticule and the actual size of the object will depend upon the magnification of the microscope

3.4
frustule
cell wall of diatoms, composed of silica and consisting of two valves linked by two or more girdle bands

3.5
habitat
specific environment in which an organism lives

3.6
prepared slide
slide plus coverslip on which has been mounted a sub-sample of diatoms in accordance with criteria outlined in EN 13946

3.7
stage micrometer
slide on which is inscribed a known distance, typically divided into sub-divisions, against which an eyepiece graticule can be calibrated