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Water quality — Isolation and identification of *Cryptosporidium* oocysts and *Giardia* cysts from water

Qualité de l'eau — Isolement et identification des oocystes de Cryptosporidium et des kystes de Giardia



Reference number ISO 15553:2006(E)

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Foreword

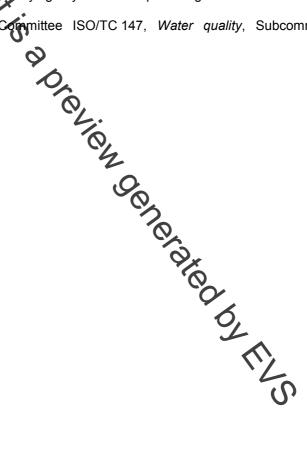
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ISO 15553 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 4, *Microbiological methods*.



Introduction

Cryptosporidium and Giardia are protozoan parasites that can cause enteric illness in humans. Both organisms are characterized by an ability to survive in the aquatic environment. Cryptosporidium in particular bigains are characterized by an ability to surve in the adjustic environment. Or prospondum in particular is resistant to chorine at the concentrations used in the reatment of diriking and swimming pool waters. Consequently the absence of vegetative bacteria as indicators of faecal contamination does not necessarily indicate the absence of vegetative bacteria as indicators of faecal contamination does not necessarily indicate the absence of vegetative bacteria as indicators of faecal contamination does not necessarily indicate the absence of vegetative bacteria as indicators of faecal contamination does not necessarily indicate the absence of vegetative bacteria as indicators of faecal contamination does not necessarily indicate the absence of vegetative bacteria as indicators of faecal contamination does not necessarily indicate the absence of vegetative bacteria as indicators of faecal contamination does not necessarily thus obtained. They are selected to give comparable recoveries of the methods or reagents used in the isolation of the organistic with the organistic and the method of the organistic and the organis is resistant to chlorine at the concentrations used in the treatment of drinking and swimming pool waters. Consequently the absence of vegetative bacteria as indicators of faecal contamination does not necessarily

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Water quality — Isolation and identification of *Cryptosporidium* oocysts and *Giardia* cysts from water

1 Scope

This International specifies a method that is applicable for the detection and enumeration of *Cryptosporidium* oocysts and *Giardia* cysts in water. It is applicable for the examination of surface and ground waters, treated waters mineral waters, swimming pool and recreational waters.

This method does not allow identification to species level, the host species of origin or the determination of viability or infectivity of any *Cryptosporidium* oocyst or *Giardia* cyst which may be present. These procedures are for use by experienced analysts who have successfully completed competency tests prior to commencing analysis. In addition, such analysts should continue to demonstrate competency by examining seeded samples at regular intervals and taking part in external quality assurance schemes.

NOTE Bodies resembling *Cryptosporidium* or *Giardia* in morphology can be present and these may be mistaken for oocysts or cysts. Results should be interpreted with care. Where there is doubt about the identity of oocysts or cysts or where an unusually high result is obtained, it is advisable to have the slides examined by experts from other laboratories to confirm or refute the findings.

2 Terms and definitions

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

2.1

Cryptosporidium

protozoan parasite, concentrated and selected from water samples with the methods described, which reacts with specific anti-*Cryptosporidium* antibodies and exhibits the pical morphological characteristics described in 7.4 of this International Standard

NOTE A more complete definition of the parasite and the different geogrees and species is given in Annex G.

2.2

Giardia

protozoan parasite, concentrated and selected from water samples with the methods described, which reacts with specific anti-*Giardia* antibodies and exhibits the typical morphological characteristics described in 7.4 of this International Standard

NOTE A more complete definition of the parasite and the different species is given in Annex G.

3 Principle

3.1 Concentration from water

The isolation of *Cryptosporidium* and *Giardia* from water requires the use of a procedure which allows the volume of the sample to be reduced whilst retaining any oocysts and cysts. The concentration procedure used however, is dependent upon the water type which is to be analysed, the volume of sample and the amount of particulate material in the sample. This document describes the use of two concentration techniques for varying volumes of water using cartridge filtration and elution followed by low speed centrifugation (7.1). Additional methods for the recovery of oocysts and cysts from small volumes of water or very turbid waters are given in Annex B. Some examples of recovery data for these techniques are given in Annex E.