First edition
2004-06-01

Monitoring for inadvertent movement and illicit trafficking of radioactive material

Surveillance des mouvements non déclarés et des trafics illicites de matière radioactive

Reference number
ISO 22188:2004(E)

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Published in Switzerland

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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.

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ISO 22188 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 2, *Radiation protection*.

Introduction

Inadvertent movement and illicit trafficking in radioactive materials[1)] are not a new phenomenon. However, concern has increased remarkably in the last decade. A few percent of these incidents involve so-called “special nuclear materials”, which may be used for nuclear weapons and therefore cause a threat of nuclear proliferation. The vast majority of these incidents, however, involve radioactive sources, low-enriched, natural and depleted uranium, which are not usable for weapons. In the case of inadvertent movements, there have been instances in which loss of control over radioactive materials has led to serious, even fatal, consequences to persons. Examples include unintentional incorporation of radioactive materials into recycled steel, recovery of lost radioactive sources by unsuspecting individuals, and deliberate purloining of radioactive material.

The potential radiological hazard to workers, the general public and the environment, caused by such radioactive materials adds an additional threat to inadvertent movement and illicit trafficking, so both the proliferation threat and the radiological hazard shall be considered. Detection of radioactive materials at border crossings as well as inside countries, i.e. at check points, is therefore an important issue.

This International Standard addresses both the procedural aspects of detecting radioactive materials as well as the minimum requirements regarding instrumentation used in the process. The procedural aspects cover the techniques to search, locate and possibly identify radioactive substances and may be summarized under response activities. Guidelines for appropriate training programs might also be considered a relevant aspect. Instruments used in the process might comprise stationary monitors, portable or hand-held detectors’ and these need to be characterized with respect to minimum requirements in order to make the recommended procedures applicable. Based on the results of an extensive testing program on such detection systems, undertaken in cooperation with the International Atomic Energy Agency (IAEA), test procedures are recommended for routine operation (to ensure operability of equipment) and also for acceptance testing (to verify minimum requirements).

It is assumed that such an International Standard will allow more efficient use and operation of existing equipment, will enhance communication across borders and encourage activities to detect and counteract illicit trafficking in radioactive materials. The benefits thus gained contribute towards the efforts in counter-proliferation and radiation protection. On the contrary, a lack of standardization will delay implementation of intended activities, specifically because certain questions (e.g. investigation level, action threshold) shall be agreed upon internationally. Technical documents published by the IAEA in this subject area are a first step in recommending justifiable and agreed specifications and procedures, see [2], [3] and [4].

1) Since nuclear materials are also radioactive, in this International Standard the term “radioactive materials” always includes nuclear materials.