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**Title: THE PROCEDURES OF SEIZURE SYSTEM FOR RADIOACTIVE
MATERIALS IN THE CZECH REPUBLIC**

Abstract. The State Office for Nuclear Safety in the Czech Republic deal with prevention, regulation and inspection based on the national system of prevention of the loss of control of radiation sources. The system includes co-operation with other state authorities (Integrated Rescue System) and facilitating the exchange of information with other countries. The State Office issued a recommendation that specifies the rules for the procedure in cases of seizure of radioactive materials. This document is mainly intended for customs officers, fire fighters, policemen and the persons who handle secondary raw materials and municipal waste.

Introduction

The national system of preventing the loss of control of radiation sources should be based on prevention, detection system of seizures, captures, response to seizures and co-operation with other state authorities (Integrated Rescue System consisting of Police, Fire Brigades, Custom Service, Emergency Health Care). Internationally, it should also include suitable information exchange.

Prevention includes the existence of an independent Regulatory Authority with the legal obligation to authorize, register and license the practices of accounting for nuclear materials, the national register of radiation source and the legal system of supervision, inspection and enforcement of the law.

The detection system involves methodological support, support in training custom staff and supervising detection and subsequent processes.

Situation in the Czech Republic

The State Office for Nuclear Safety performs state administration and supervision of the utilization of nuclear energy and ionizing radiation and the supervision of radiation protection. Competencies of the State Office for Nuclear Safety are defined by Act no. 18/1997 Coll. on Peaceful Utilization of Nuclear Energy and Ionizing Radiation (Atomic Act) and also include the duty of keeping a national system of registration and control of nuclear materials, a national registration system of licensees and ionizing radiation sources. The Atomic Act classifies sources as follows:

(exempted)	-	no provision
insignificant	-	free use but production must be licensed
minor	-	notified use

simple - licensed all types of practise
significant - more sophisticated licensing procedures
very significant - EIA, holding, decommissioning

All data concerning radiation sources from industry, medicine and research are registered and continually updated. Users are obliged to inform the State Office for Nuclear Safety about changes in sources inventory.

The main goals of the national register are:

- to provide a tool for the central registration of sources, to monitor the changes of registered items
- to register each licensee having any relation to the registered source
- the registration of reports from licensees
- to provide an effective tool for inspectors of the State Office for Nuclear Safety
- to provide an overview of sources in the country and their actual status
- to provide information on the movement of sources
- to provide information for identification in the case of abandoned sources

The application of this registration has been in routine operation since 2000. Currently the central register of sources contains approximately 5800 individual sealed radionuclide sources and about 600 facilities containing such sources.

In recent years, the number of radioactive material seizures has increased (i.e. the materials that contain one or more radionuclides and whose activities or mass activities from the point of view of radiation protection are not negligible). This is mainly due to newly installed technical equipment (i.e. more sensitive detection systems) that monitors metal scrap during its collection and its entry to metallurgical plants and iron works, waste that enters incinerators, and the means of transport at state border crossings (regular measurements to May 2004). Our experience suggests that the majority of events are related to either handling (i.e. collection, sorting and transportation) secondary (metal) raw material or the use of the machines and equipment that are produced from the contaminated metal materials. The minority of events relate to illegal discharge (either intentional or unintentional) of ionizing radiation sources (i.e. import, export and distribution).

The goal of the recommendation for the procedure of radioactive material seizure issued by the State Office for Nuclear Safety is to specify the rules for the procedure in the above-mentioned cases. The Recommendation is not a legally binding document. This Recommendation is mainly intended for customs' officers, fire fighters, policemen, persons who handle secondary raw materials and municipal waste. However, the principles of this Recommendation can be applied to all other cases of seizure of radionuclide contaminated materials. In the Annex of this Recommendation, Figures are enclosed. Its purpose is to help the workers of the above-mentioned institutions to recognize the objects which might contain suspicious radionuclide content.

The types of operating and transport containers most often used for radionuclide sources, system components and the subjects that relate to the application of radionuclides are described.

In the year 2004 there were 90 confirmed events in the Czech Republic, from these :

- 38 cases of contaminated metal scrap captured in steelworks (14 cases natural radionuclides Ra^{226} , 4 cases Co^{60} and Sr^{90} , 19 cases returned abroad)
- 6 cases of suspected lost sources

In the year 2005 there were 52 confirmed events, from these :

- 19 cases of contaminated metal scrap captured in steelworks (12 cases natural radionuclide Ra²²⁶, 3 cases Co⁶⁰, in 4 cases the metal scrap was returned abroad)
- 4 cases of suspected lost sources

All of these events were evaluated as level 1, since they were not significant from the point of view of radiation protection (ie: they were off the INES scale).

Conclusions:

The main problems connected with seizures based upon experience are:

- financial support in solving cases of inadvertent movement of radioactive material (scrap, chemical agents, ...)
- lack of licensed persons for performing radioactive material (source) localization, unloading, separation from the load, identification and analysis
- readiness of licensed persons to serve non – stop
- radioactive source in military and defence programmes

There are two levels on which to work to solve these problems – the national and international levels. On the national level it is necessary to establish:

- adequate measuring systems at the border,
- a system of notification of the responsible authorities and persons,
- a decision making scheme for different types of illicit trafficking.

On the international level it would be necessary to establish a system of information exchange about events and other important data.

REFERENCES

- [1]ACT no 18/1997 Coll., on Peaceful Utilization of Nuclear Energy and Ionizing Radiation (Atomic Act).
- [2]REGULATION no.307/2002 Coll., on Radiation Protection
- [3]INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Material, Safety Standards Series No. ST-1, IAEA, Vienna (1966).
- [4]THE STATE OFFICE FOR NUCLEAR SAFETY, Annual Report of the SONS, SÚJB, Prague (2002).
- [5]THE STATE OFFICE FOR NUCLEAR SAFETY, Recommendation : Procedure for radioactive material seizure, SÚJB, Prague 2002.
- [6]INTERNATIONAL ATOMIC ENERGY AGENCY, International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No. 115, IAEA, Vienna (1996).

An example of a decision scheme :

The chart of the radioactive material seizure procedure at the entrypoint to metallurgical works and a plant that handles the secondary raw material and waste

