



**THE PREVENTING OF ILLICIT TRAFFICKING OF RADIOACTIVE MATERIALS
IN ESTONIA**

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Abstract

This paper explains the situation of legislation, practical border-control and equipment of different relevant authorities dealing with the control of radioactive materials in Estonia. The overview of legislation concerning radiation and radiation protection is given. The roles of Estonian Customs Authority, Estonian Border Guard, National Rescue Board and Police Authority in the preventing of illicit trafficking of radioactive materials are shown. The incidents of illicit trafficking of radioactive materials are listed. Also the most important border-crossing points and the types of equipment used there are shown. Finally the problems of controlling the borders in Estonia and the future plans in order to make the controlling system more efficient are discussed.

1. Legislation concerning radiation and radiation protection

Estonian radiation protection act was adopted by Estonian Government on the 23rd of April 1997 and it entered into force on the 16th of May in 1997. The main task of this act is to protect public and environment against the hazards of radiation. At present there are 4 ordinances implemented in Estonia for the application of Estonian radiation protection act. Two ordinances are just in draft. One of them is the ordinance establishing the order of transportation of radioactive substances, devices containing radioactive substances and radioactive waste. These all must be implemented in Estonia helping to regulate the rules of transportation of radioactive materials.

According to radiation protection act Estonian Radiation Protection Centre (ERPC) is the competent authority in filling the tasks regarding radiation practices and protection. In relation to radiation protection the state is responsible for:

- Issuing authorizations for any practice involving radiation and type approvals
- Keeping of the Dose Register and the Source Register
- Safety assessment of radiation level and radiation monitoring
- Notification on radiation accidents/incidents
- Implementation of international conventions and agreements
- State supervision.

2. Co-operation between the ERPC and other relevant authorities, which are responsible for the security of radioactive materials

The ERPC does co-operation with Estonian Customs Authority (ECA), Estonian Border Guard (EBG), National Rescue Board (NRB) and Police Authority (PA). The ECA and the EBG are responsible for the controlling of transport and people on the borders of Estonia.

According to Estonian customs act the ECA manages radiation source as one of the special goods requiring the authorization. In case of breaching the regulations established by the ECA the person must pay penalties or when it is considered a criminal act, then the person is given to the PA. The inspectors of the ECA are checking mainly hardware-metalcargoes, other goods are checked occasionally. The inspector must carry radiation dose rate meter with him while checking.

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Figure no 1 The map of Estonia

Also there are carried out checks of some other suspicious packages, but it depends on the inspector. According to instructions given by Board of the EBG it is obligatory to check all the incoming traffic, especially on eastern border. As there are no legally regulated normatives of radiation safety in Estonia, in the practical work the inspector must arrest these shipments, which the radiation level on the outer surface is $0,3 \mu\text{Sv/h}$ or higher. When such high radiation level is discovered the inspector has to inform quickly the NRB, who is responsible for the further operations to avoid hazards of radioactive source or sources. The NRB must arrange the identification of source and the transport of source if necessary. Mainly the NRB is obliged to arrange the safe transport and storage of radioactive sources, if any is discovered on the border-crossing point or in any other place of the country. The trafficker is arrested and is given to the PA, who must decide whether there's a need for criminal act or not. The cases of illicit trafficking of radioactive materials are listed in table no I. Last year (1997) only one case of illicit trafficking was reported.

3. Estonian border-crossing points and equipment used by the ECA and the EBG.

The most important border-crossing points as it is seen on the map are provided with stationary dose rate meters. In smaller places portable dose rate meters are used. The map of Estonia is shown on figure no 1.

Table no I Incidents of illicit trafficking of radioactive materials in Estonia

No	Date	Location	Object	Quantity
1	1993/03/29	Kohtla-Järve	Caesium-137	0,17 TBq
2	1993/04/01	Narva	Caesium-137	0,26 TBq
3	1993/07/02	Tallinn	Caesium-137	66 GBq
4	1994/01/14	Tallinn	Caesium-137	1,6 TBq
5	1994/08/17	Põlva	Low enriched uranium-235	
6	1994/09/28	Tallinn	Caesium-137	66 GBq
7	1994/11/18	Kiisa	Caesium-137	1,8 TBq
8	1995/01/14	Valgejõe	Caesium-137	3,1 TBq
9	1995/05/10	Tallinn	Depleted uranium	
10	1995/07/07	Tallinn	Caesium-137	34 GBq
11	1995/07/24	Tallinn	Radium-226	3,4 MBq

Table no II The main border-crossing points and the equipment of the ECA in these points

Name of place	Type of radiation dose rate meter
Narva road	PRM-470A, portable
Narva pavilion for foot passengers	RDA-31, 1 portable is reconstructed to stationary one-Geiger-Mueller type
Narva railway	RM-5303-01, stationary
Orava railway	RM-5303-01, stationary
Koidula road	RM-5303-01, stationary
Valga pavilion for foot passengers	TSA VM-250, stationary
Valga road	RDA-31, 1 portable is reconstructed to stationary one- Geiger-Mueller type
Ikla road	RM-5303-01, stationary

The ECA has 37 portable dose rate meters and 5 stationary radiation monitoring systems: 4 of type RM-5303-01 and 1 of type TSA VM-250. Nine portable dose rate meters, named PRM-470A are able to detect nuclear materials from neutron radiation. The main border-crossing points and the equipment of the ECA used there are listed in table no II.

The EBG is equipped with radiation dose rate meters as follows:

- portable Micro R Meter Ludlum Model 12SA: 50 pieces
- stationary Radiation Monitoring Systems designed for heavy vehicles:
 - Ludlum Model 3500-23 1 system on the road to Narva
 - Ludlum Model 3523 1 system on Luhamaa road

These radiation dose rate meters are presented on the borders of Estonia as follows:

1. Eastern border with Russia: 22 portable radiation dose rate meters
2 stationary radiation monitoring systems
2. Southern border with Latvia: 10 portable radiation dose rate meters
3. Northern coast and border checking points of Tallinn: 11 portable radiation dose rate meters
4. Border Guard regions on Saaremaa and Hiiumaa: 5 portable radiation dose rate meters
5. Border Guard training centres: 2 portable radiation dose rate meters.

One stationary radiation monitoring system named BICRON belongs to EMEX Ltd., which is the largest enterprise dealing with scrap metal transportation in Paldiski southern port.

It is planned to provide Tallinn Airport with complete radiation monitoring system during the reconstruction using the help of Finland and especially Finnish Radiation and Nuclear Safety Authority (STUK), who gave financial and technical support.

4. The future plans for better control of illicit trafficking of radioactive materials

There is no legitimate procedures for the prevention of illicit trafficking of radioactive materials in Estonia. For example accepted radiation level for vehicles crossing the border, division of labour on the border etc. So there is a need for a legal act establishing the radiation level higher from which to punish or to start a criminal act. At present in Estonia any trafficker is not yet punished due to the absence of legal act.

Currently used portable Geiger-Mueller type dose rate meters have to be changed with more sensitive and neutron radiation detectors. There is insufficient control of foot-passengers in Estonia. There is a need for stationary radiation monitoring system for checking foot passengers and their luggage. Some of the currently used portable dose rate meters are uncomfortable due to their large size and weight. In future there are plans to change some radiation dose rate meters and to install to some border-crossing points new ones. For example in ports the control of radioactivity is insufficient.

One problem is the insufficient qualification and poor knowledge of personnel today concerning to radioactivity, techniques and checking. The inspectors of the ECA have to pass only one training course regarding radiation protection. It is about theoretical bases of radiation, applicable regulations and the use of radiation dose rate meters. The ECA has also two radiation sources for training purposes.