

EXPERIENCE AND RESULTS OF COOPERATION IN RADIATION PROTECTION BETWEEN SWEDEN AND EAST EUROPE COUNTRIES

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INTRODUCTION

From 1991/92 until July 1995 the Swedish Government has allocated SEK 55.1 million (about 10 M \$) for cooperation in radiation protection with countries in Central and Eastern Europe, particularly the Baltic states (Estonia, Latvia, Lithuania) and Russia but also to less extent so far Byelorussia, Poland, Ukraine and others. The Swedish Radiation Protection Institute (SSI) is in charge of this program, which is often referred to as Project Radiation Protection East. In addition, SEK 8 million have been reserved for SSI activities promoting safety during decommissioning of the former Soviet naval reactors training center at Paldiski, Estonia and the subsequent transfer of responsibility for the site from Russia to Estonia (the PIERG project).

Radiation protection covers a broad area of the society. Already at an early stage it was realized that supporting cooperation was necessary and of interest over the whole area. Therefore extensive discussions on priorities between parties concerned have been and are necessary. The choice of projects is based on a "Protocol", that is the eventual result of priority discussions signed by representatives of both countries (bilateral agreements).

Most of the projects within "Radiation Protection East" mean a longterm build-up of radiation protection in a broad sense. Some projects concern new problems, other projects concern problems that the country inherited from the earlier Soviet Union. Other projects may concern acute problems as e.g. lost strong radioactive sources, radioactive contaminations etc.

Even if most of the projects within Radiation Protection East are bilateral there is a substantial international input and cooperation. There are many projects that are run in cooperation with the IAEA, OECD/NEA, EU and together with other countries particularly the Nordic countries.

There is an increasing need of financial support as the many preparatory phases are passed and the follow up efforts are more expensive. The other party will also gradually be more susceptible for more advanced cooperation.

THE OBJECTIVES AND TERMS OF REFERENCE

The idea of activities within the Project Radiation Protection East is the following:

Efforts adjusted to the need of the country to improve the radiation protection and make it more effective and to solve acute radiation protection problems.

The cooperation means support to these countries but it is also of mutual interest. Uncontrolled releases of radioactive material and bad handling of radioactive sources in a cooperation country might in some circumstances mean a potential risk to health and environment also in Sweden. Therefore, a successful cooperation within this project might have a positive influence on radiation protection in Sweden as well. Furthermore, the cooperation is instructive for both parties and is very stimulating and productive for development of mutual understanding and future cooperation.

A condition that is to be fulfilled in the choice of a project is that it comes up to one or several of the following requirements:

- it is fundamentally important for the cooperation country
- it is expected to lead to decreasing unnecessary radiation doses in that country
- it is of interest for Sweden and the Baltic Sea region
- it means education and training of relevant persons of the cooperation country
- it has a common interest for the two countries in the areas of research or information.

Requirements are set on both parties - both Sweden and the cooperation country as e.g. preparatory domestic work, to inform, motivate, engage and fill concerned persons with enthusiasm. Share of the costs of the project is another way to show interest and create partnership.

SOME PREREQUISITES FOR COOPERATION

The cooperation is individually decided for each country after discussions and negotiations, the results of which are manifested in the Protocol. There are some components of the infrastructure of the cooperation country that are essential for continued cooperation in radiation protection and therefore have the highest priority in the first phases of the cooperation.

They are:

- radiation protection law and legislation that define the national actors, devide responsibilities between them and defines their duties and rights
- radiation protection authority(ies) with functioning organisation, competent personnel and modern equipment
- a national strategy for handling, storage and disposal of radioactive waste
- a national monitoring system with measurement stations as a part of an early warning system, coordinated with other countries
- a laboratory for measurements on environmental samples and a national program and strategy for environmental control in general for the purpose of radiation protection.

During the few years of cooperation within the Project Radiation Protection East some of the important components mentioned above have now been established largely as a result of the cooperation. Points of contact have been established, problems common for several countries have been identified and can be treated in a more rational and costeffective way.

Completed laws need directions, equipped laboratories need supplementary training of personnel and programs for sampling; when the strategies for radioactive waste are decided there is a need to realize the strategies, etc. There are many examples of continued and expanded cooperation e.g. concerning the radioactive waste management and disposal in Russia and the Baltic states, the decommissioning and dismantling of the earlier Paldiski submarine training center, the Sillamäe tailing ponds in Estonia and the emergency preparedness plans and training.

THE PROJECT MANAGEMENT

The projects are devided into the following main categories:

- 1 *Upgrading of national authorities, 18 projects*
Legislation, organization, information, computer support, etc.
- 2 *Emergency preparedness, early warning, 7 projects*
Organization, education, dose predictions, gamma monitoring, communication etc.

- 3 *Nuclear power and research reactors, 4 projects*
Safety at work, releases, organization and other plant related issues not dealt with elsewhere.
- 4 *Instrumentation, 12 projects*
Laboratories, mobile and stationary measurement equipment, education etc.
- 5 *Decommissioning, waste, environmental control, 24 projects*
National waste strategies, plant specific programs (i.e. Paldiski, Sillamäe), radiological clean-up, measurement programs, education etc.
6. *General radiation protection, 40 projects*
Medicine, radiological protection of workers, dosimetry, radioactive lighthouses, radon, non-ionizing radiation etc including research support.
7. *Other project costs*
Projects not covered by any of the categories above.
8. *Project management and administrative support*
Includes resources needed to plan, organize and report on the various projects.

That means more than 100 projects since 1992. Some have been finished and some are still in the planning stage. Normally, radiation protection specialists of the staff of SSI are project leaders and also take active part in the projects. The management manpower of the Project Radiation Protection East is in total about 2 personyears per year.

Two examples of cooperation projects are given.

Emergency preparedness, early warning

Automatic gamma stations

Expansion of the Early Warning System in Estonia, Latvia and Lithuania with a central unit and four automatic gamma stations in each country. The expansion was made during December 1993 by Finnish ALNOR (RADOS). During 1994 the system was tested and found to function properly (although some stations had problems with the telecommunications). The test period is thus finalized and the one year warranty period started in 1994-12-01. Bilateral agreements were made during Jan-Feb 1994. The systems were formally handed over during 1995.

Decommissioning, waste, environmental control

National waste strategy (in Lithuania)

A study is made to present a background for decisions on a national waste strategy for handling all kinds of radioactive waste - from the Ignalina NPP, from hospitals, research establishments, industries etc. Parties involved are identified and their roles, mandates and liabilities are assessed together with the legal framework. Available methods for transport, conditioning and intermediate and final storage of the waste are assessed. Problems around the Ignalina waste are specially considered. The report is presented to the Lithuanian Minister of Energy. Additional follow-up projects with high priority are expected.

CONCLUSIONS

The cooperation between Sweden and the countries in the eastern part of Europe has developed well. Good contacts and exchange of information with other western countries as regards planned and ongoing cooperation with the countries in eastern Europe is essential to avoid duplication and gaps. The cooperation has already lead to some improvements of the conditions for good radiation protection in these countries but there is still much to do. The cooperation has also a mutual, stimulating effect upon those persons and organisations involved in it and it opens channels for further contacts and cooperation. It will therefore continue.