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Activities of Protection against Ionizing Radiation in Niger

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INTRODUCTION

Niger, sahelian country of Western Africa, is limited to North by Libya and Algeria, to the South by Nigeria and the Benin, to the East by Chad and the West by Mali and Burkina Faso. It covers a surface of 1 267 000 km² and has a population of approximately 12 000 000 inhabitants. Niger is a large uranium producer with two extraction and treatment development companies of uranium ore which are the company of the mines of Aïr (SOMAIR) created in 1971 and the mining company of Akouta (COMINAK) created in 1978.

Beyond the mining sector, ionizing radiation sources are used in the fields of industry, health, teaching and research.

The first lawful text of protection against ionizing radiation was signed on December 5, 1979 and specifically related to the mining activities of uranium. With the multiform assistance of International Atomic Energy Agency (IAEA) protection against radiation knew a significant evolution. A national centre of protection against radiation was created in 1998, two laws relating to the field were adopted in June 2006 and three lawful texts of application of these laws are in the process of finalization.

NATIONAL SITUATION BEFORE THE CREATION OF THE NATIONAL CENTER OF PROTECTION AGAINST IONIZING RADIATION

Before the creation of the National Centre of Protection against ionizing radiation (CNRP), only the sector of the uranium mining had a lawful follow-up in protection against radiation by the Ministries in charge of health and Mines and Energy, in particular through the decree n°31/MMH of 5 December 1979, fixing the particular rules of safety and hygiene to which the building sites of research or exploitation of the radioactive substances are subjected. It was based on the recommendations of publication 28 of the International Commission of Radiological Protection (ICRP).

Pursuant to this decree n°31/MMH, the uranium mining companies drew up and sent to the concerned authorities' annual reports on the dosimetric monitoring of the workers and the environment. But unfortunately, these reports reached them late, and also were not always analyzed because of the lack of competence.

The insufficiencies related to this text and, inter alia, the need for regulating the whole fields of application of ionizing radiations led Niger to require and obtain the assistance of the IAEA for the creation of a national centre of protection against ionizing radiation, its equipment and the training of human resources in radiation protection, through the project of technical assistance NER 007 and other models projects.

CURRENT SITUATION WITH THE CREATION OF CNRP

The CNRP started to function in 1997 before even the adoption of the law n°98-011 adopted on 7 May 1998 regarding the creation of the Centre National Protection against radiation (CNRP). An exhaustive inventory of the installations, ionizing radiation sources and exposed workers were carried out and the first lawful texts were elaborated and adopted.

In 1999, the external equipment of dosimetry provided by the IAEA was installed and the dosimetric monitoring of the workers of the medical sector started. During the same time the activities of quality control in diagnostic radiology were undertaken. In July 2005, the radiological analysis laboratory by GAMMA spectrometry is made operational with the support of the IAEA.

1 Legislation and Regulation:

Some missions of evaluation of the lawful infrastructure of Radiation Protection conducted by the Agency raised several insufficiencies of the lawful texts, which led Niger to engage in their revision since 2002.

The legislative framework was reinforced in 2006 with the adoption of two laws which are:

- the law n°2006-17 of bearing 21 June 2006 safety and nuclear safety and protection against the dangers of the ionizing radiations;
- the law n°2006-18 of 21 June 2006 amending the law n°98-011 adopted on 7 May 1998, regarding the creation of a publicly-owned establishment called National Centre of Radiation Protection (CNRP).

The law n°2006-17 of June 21, 2006 lays out: "The responsibilities and the capacities to apply and make respect the law, the regulation and the regulations relating to protection against radiation, safety and nuclear security on all the extent of the own territory come under the responsibility of the CNRP. The CNRP has an effective independence in the achievement of its mission. "

Three application texts are at the stage of finalization:

- the project of bearing decree modes of enforcement of the law n°2006-17 of June 21, 2006;
- the decree on project concerning approbation of the statutes of the CNRP;
- the decree on project concerning of radioactive waste management.

Some complementary texts will be elaborated concerning:

- declaration, authorization, control and inspection of the practices and the sources;
- transport of radioactive materials.

2 Authorizations – inspections:

The CNRP delivers authorizations of importation and use of radiation sources in all the fields of utilisation and it carries out inspections in mining uranium companies, Institute of the Radioisotopes (IRI) which has a department of nuclear medicine and other users of the medical sector.

All the apparatuses of diagnostic radiology have benefited of quality control activity once per annum.

3 Dosimetric Monitoring:

Since 1999, the CNRP ensures the dosimetric monitoring of the workers exposed to the ionizing radiations in the sector of Health and Research.

From 2003, on request of the mining uranium companies, the centre takes part in the monitoring of the environment of the zone of Arlit.

4 Radiological Analysis by GAMMA spectrometry:

Since 2005, the CNRP carries out some radiological analyses by GAMMA spectrometry. These analyses which currently concern water will be extended soon to the foodstuffs. The CNRP also plans to carry out the analysis of the samples taken in the environment close the uranium mines.

5 Information - sensitizing:

During the two last years, the CNRP organized four seminars of formation including one for its personnel, one for the manipulators of diagnostic radiology and two to the attention of the bodies of customs, police force and civil security forces. The agents in service at the frontier stations had profited, at the end of their second formation, some radiations detector instruments in order to fight more effectively against the illicit traffic of the radioactive sources.

The centre also brought its technical support to the network of members of Parliament for the fight against the turning into a desert and the safeguarding of the environment like to the National Commission of the Humans right and of Fundamental Freedoms, at the time of their respective missions in the region of uranium mining.

6 Intervention:

Following accidents of trucks transporting of Uranus salt, the centre supervised the operations of intervention intended for the recovery of the product, the decontamination and the restoration of the places.

PERSPECTIVE FOR PROTECTION AGAINST RADIATION IN NIGER

A third company of extraction and treatment of uranium ores will open its doors in the next years as well as a national centre of radiotherapy. Consequently the workload of the CNRP will increase. Indeed, the centre required the support of the IAEA through a national project in order to set up an internal laboratory of dosimetry to ensure the monitoring of the internal exposure of the workers of the mining uranium companies. This monitoring until is there carried out partly abroad, which does not make it possible to lay out in time results in order to better follow the professional exposures.

CONCLUSION

In one decade, protection against ionizing radiation knew a considerable evolution in Niger with the creation of a National Centre of Protection against radiation fully operational and the adoption of two laws in the field.

The internal dosimetry of the workers of the uranium mines, currently realized abroad, is an alarming subject for the CNRP and it counts on the support of the IAEA to find solution quickly there.