

IMPROVING THE EDUCATION SYSTEM OF SPECIALISTS IN THE RADIOACTIVE WASTE MANAGEMENT

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ABSTRACT

The paper presents the experience of SIA "Radon" on preparation of specialists in the radioactive waste management and environmental protection as well as on further directions of the improving educated system. The role of IAEA is also discussed in the establishment of the Regional Demonstration and Training Centre in the Russian Federation for the demonstration of predisposal waste management methods and procedures for newly independent countries of the former USSR and East Europe countries. This Centre is created on the basis of two organisations: Moscow SIA "Radon" and State Scientific Centre VNIINM named after A.A. Bochvar under the guidance of the Ministry of Atomic Energy of Russian Federation.

INTRODUCTION

Socio-political factors call for new requirements for the education system of specialists operating in the area of radioactive waste management. During recent years essential modifications occurred in the radioactive waste management system as well as in other spheres of industry. This is connected with introduction of new technologies, automation of the majority of technological processes and also to the serious requirements concerning operational safety of hazardous radiation activities including those of regional disposal centres. The circle of the specialists involved in this area has enlarged and demands on already working specialists are increasing, compelling them constantly to improve their qualifications.

The increase of a personnel competence level in radioactive waste management is an important problem for society. However other essential problems are growing in public interest as to the specificity of production radiation hazardous materials in particular at the administrative staff level (economists, accountants, and design departments, etc.). The staff responsibility and the common safety culture at the radioactive waste treatment enterprises has also increased.

HISTORY

The existing high school personnel training system for the enterprises connected with radioisotopes utilisation is in compliance with the problems facing it as a whole. Primary only Scientific and Industrial Association (SIA) "Radon" was completed with qualified staff having a certain experience in radioactive materials area and as well as a high level of special education. As for the Soviet regional specialised facilities of the system "Radon" they were in many cases staffed by personnel without special knowledge and professional experience. In the created conditions SIA "Radon" was compelled to go on a way of expansion of own system of education and improvement of professional skill of personnel for the regional specialised facilities of the system "Radon". That

is why “State Education and Personnel Qualification Improvement Courses” were founded in 1983 on the basis of the Moscow State University named after M.V. Lomonosov (Chemical Department) and Moscow SIA “Radon” as agreed with the USSR State Committee on Use of Atomic Energy. These courses are held every year [1] A special department concerned with education and improvement of professional skill in the area of radioactive waste management was organised in 1997 at SIA “Radon”. Organisation functions of all kinds of training in the radioactive waste management were assigned to this department.

CURRENT STATE

For past period the accents in the organisation of training were varying. First of all orientation of the educational programs to practical activity has amplified. An orientation of educational process and its organisations essentially was reconsidered. The main attention becomes to be given to preparation and improvement of professional skill of the department chiefs as a most active group of the personnel.

The growth of efficiency of educational procedures directed on increase of safety culture for radioactive waste management is promoted by the increased sharing of the specialists directly connected to technological processes of radioactive waste treatment.

Main quota of Courses is given to the chiefs and specialists of the regional specialised facilities “Radon ” (in Russian Federation there are 16 such centres), then to young specialists of departments and organisations which work to the certain extent is concerned with radioactive wastes. Among those organisations there are Ministry of Health Protection, State Atomic Supervision Board, Ecology Agency etc.

The personnel training is carried out on the base of a special elaborated program (about 120 hours) accordingly with modern requirements to training of personnel and by using progressive technical means and information computing systems. System approach to education is the distinctive peculiarity of the given training procedures. Theoretical scientific disciplines, such as atomic nucleus structure and interaction of radiation with the matter are close connected with specific methods and technological processes of radioactive waste conditioning. The program foresees extensive presentations of modern information on special questions in the technology field of the radioactive waste management: dosimetry, radiation protection and safety assessment, economic evaluations, standardisation, quality assurance, metrology etc. The personnel training is carried out on the real technological equipment under leadership of highly skilled experts, using the SIA “Radon” industrial opportunities of technical and material base.

The main science and methodical aspects of specialists’ education are being worked out at the training courses with the purpose of studying and effective assimilation of theoretical and practical information. Testing of the participants by specially developed test-forms with the questions of theoretical base and practical demonstration, studying methods, administrative procedures etc., permits assessment the learning efficiency and upgrade of personnel preparation level. Use of the computer programs for the current control of information mastering allows flexibly to react to individual features of training personnel group. Upon termination of Courses the

personnel is examined and receives the document of a prescribed form. 360 personnel have received certificate since the beginning of Courses establishment

There is also an additional fact-finding program on radioactivity and radioactive waste management for the public and schoolboys. This program is useful to increase general education of the people, which have been not concerned to those questions professionally especially in places, and zones of radioactive pollution. Such social-and-information activity allows overcoming radiological fears among the population, which has, arisen in result of Chernobyle accident [2].

The experience of training and improvement of professional skill of the personnel of regional specialised facilities “Radon” is evaluated positively by a chefs of supervising bodies from the point of view of training program quality, experts level and level of the personnel past retraining.

THE ROLE OF IAEA

The Waste Management Section of IAEA launched the project on demonstration of radioactive waste management methods and procedures in 1995. The main objective is to demonstrate to Member States one or more of the waste management methods and procedures which are documented in IAEA Technical Reports and which are in agreement with internationally accepted standards and criteria. Courses should be organised and to be conducted on the basis of inter-regional Training Centre. This demonstration supplements theoretical knowledge and practical experience by providing the possibility to work with real radioactive wastes in real conditions. There are two such Centres at present time. The first facility is the Cekmece Nuclear Research and Training Centre (Istanbul, Turkey) for Member States from western Europe and west Asia. The second facility is Chilean Centre of Nuclear Research in Lo Aguirre (Santiago, Chile) for countries of the Latin America. The training programs developed by the IAEA are effective means of strengthening of concern both specialists and control organisations chiefs and persons responsible for radioactive waste management safety.

In connection with creation of the New Independent States (NIS) of the former USSR the centralised system of waste management specialists education was lost. The role of IAEA significantly increases as united co-ordinating centre. Recently it was agreed upon establishing of a Regional Demonstration and Training Centre in the Russian Federation for the demonstration of predisposal waste management methods and procedures for the waste management staff from NIS and East European Member States. This Centre is created on the basis of Moscow SIA “Radon” with participation of State Scientific Centre VNIINM named after A.A. Bochvar under the guidance of the Ministry of Atomic Energy of Russian Federation and IAEA [3].

FUTURE PLANNING

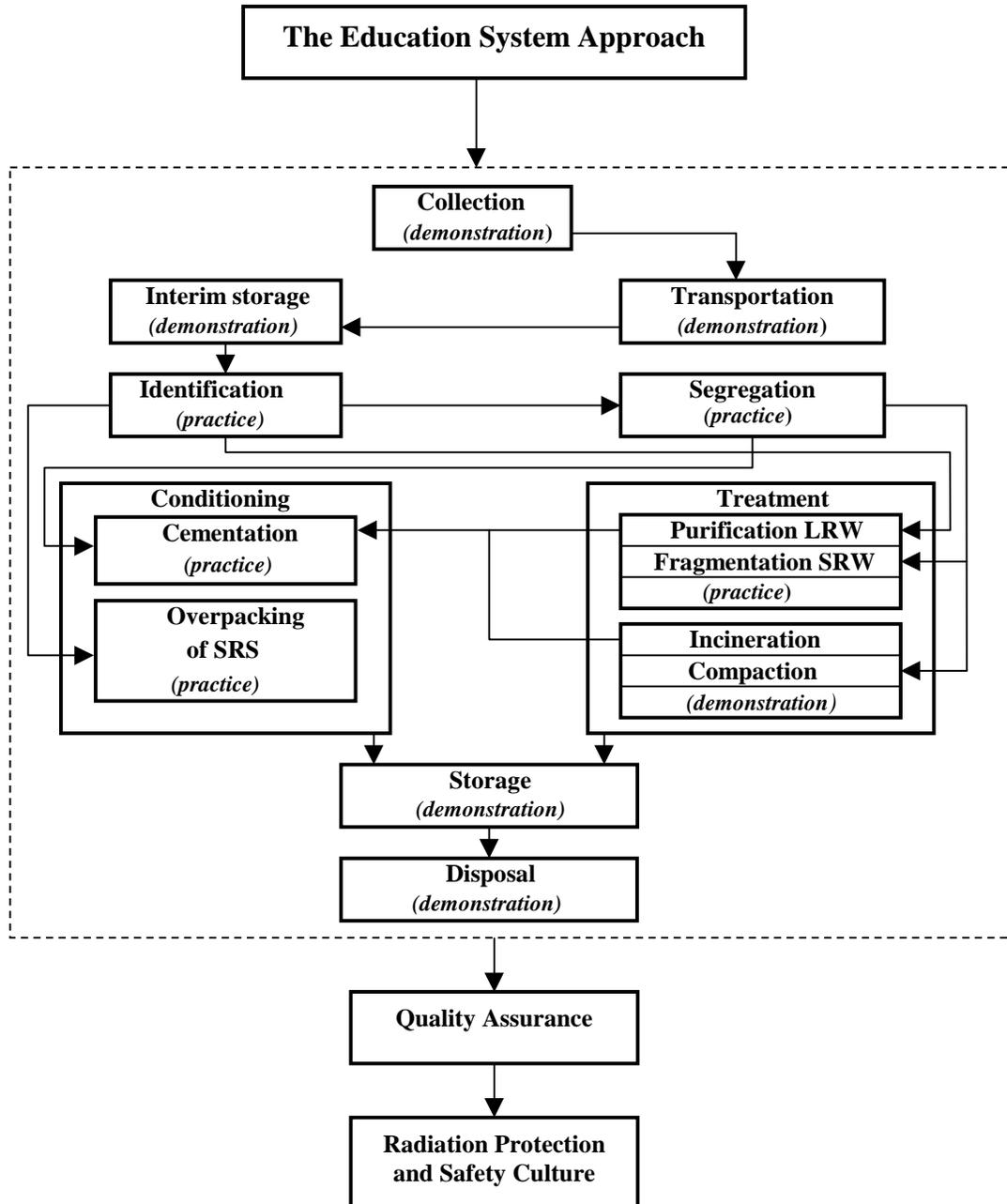
At present time a three-week training program was elaborated and approved by the IAEA. The participants of Demonstration Courses will be selected by the IAEA. They will study the management of solid and liquid radioactive waste and spent sealed sources in the real facilities. Concrete modules of the program are schematically submitted in the figure.

Since these courses are specifically designed for countries with developing nuclear programs the methods and technologies intended for training should be simple enough and internationally acknowledged as safe and economic.

IAEA experience of establishment similar Centres allows to hope that the Centre creation plans in Russian Federation will be realised successfully. The first Course will be held in April 1999.

CONCLUSIONS

It is possible to make a number of conclusions about directions of training perfection and improvement of staff professional skill in the radioactive waste management on the base of our experience. First, it is important to direct the educational process on the deep understanding of necessity to increase the safety culture in radioactive waste management. Second, it is necessary to practice widely participation of the qualified experts both for training realisation and for the control of a knowledge level. And third, it is necessary to expand experience exchange between the experts concerned with training process.



The modular program of Training Courses IAEA in Russian Federation under the radioactive waste management

Long term experience in specialists' education and use of well-developed instrumental base of the SIA "Radon" makes it reasonable to extend our possibilities under IAEA and others interested organisations support.

LITERATURE

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