

SAFE AND ENVIRONMENTALLY SOUND MANAGEMENT OF RADIOACTIVE WASTE

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Contents

1. Introduction
 2. Definition and classification
 - 2.1 The definition
 - 2.2. The classification
 3. Principles, legal framework and infrastructure
 - 3.1 . The Principles
 - 3.2. Legal framework
 - 3.3. Basic Policy
 - 3.4. Organization
 4. Treatment and storage
 - 4.1. Nuclear industrial wastes
 - 4.2. Applications and radiation research nuclear technology
 5. Disposal of radioactive wastes
 - 5.1. The Northwest Repository
 - 5.2. Guangdong Beilong Repository
 - 5.3. Hydraulic fracturing press of LILW
 6. High-level radioactive waste
- Glossary
Bibliography
Biographical Sketches

Summary

It's necessary to enhance the management of radioactive wastes in order to reduce the risk to the environment and avoid radiological accidents. Therefore, on the basis of complying with certain principles and policies, whether international or internal, we are establishing measurements for treatment and storage of nuclear industrial wastes and disposal of radioactive wastes.

Treatment and storage include being stored in carbon steel containers for solidification of liquid radioactive waste, and being stored in repositories of different types after being packed under different categories. There are two repositories, of which one has been completed and the other is under construction.

With full approval of the government, Everclean Environmental Engineering Corporation (EEEC) is the organization specially engaged in final disposal and transport of radioactive waste and materials.

1. Introduction

The development of the nuclear industry in China was initiated in the mid 1950s and a relatively full-scale system was formed in the 1960s on a step-by-step expansion basis . Need for national economic development is very urgent in China. Coal-fueled power plants constitute one of the major environmental pollution sources, and transport of coal is another major constraint factor. As a result of nuclear power being officially selected as one of the energy resources to be developed in China, since the early 1990s, three units have been put into service, with an installed capacity amounting to 2100 MW(e). Eight units are being constructed with a total installed capacity of 6700 MW(e). The total installed capacity by the year 2005 is estimated at around 9000 MW(e). While developing nuclear power plants, China has witnessed a rapid development of nuclear technologies and radioisotope applications. Such applications are now continuing to spread at high speed. The breakdown of radiation sources for these purposes is shown in Table 1.

Types		Number(rounded)
Gamma radiation installation	production	70
	scientific research	30
Nuclear medical community		6×10^2
Gamma-ray therapy machinery		4.4×10^2
Gamma-radiograph detector		3.8×10^2
Isotope apparatus		1×10^4
Sealed source		3×10^4
Industrial electron irradiation accelerator		28
Accelerator for therapy		1.2×10^2

Table 1. Irradiation sources in applications of nuclear technology and radioisotopes

As indicated in the Radiation Environmental Impact Assessment for the Nuclear Industry in China over the past thirty years, the impacts of nuclear facilities upon their surrounding environment are negligibly small. However, the wastes, in particular radioactive liquid waste, accumulated during this period and stored in nuclear facilities would have the potentials to pose a risk to the environment. The safe management of wastes produced in nuclear power plants necessarily causes major problem of public concern. Though the amount of wastes arising from the application of nuclear technology and radioisotopes is very small, problems do exist, especially in administration and management of spent radiation sources, which could lead to radiological accidents. Therefore, how to enhance the management of radioactive wastes has now become a top priority problem in our future work.

2. Definition and classification

2.1 The definition

For legal and regulatory purpose, radioactive waste may be defined as material, whatever its physical form, remaining from practices or interventions and for which no further use is foreseen (i) that contains or is contaminated with radioactive substances and has an activity or activity concentration higher than the level for clearance from regulatory requirements, and (ii) exposure to which is not excluded from the standards. It should be recognized that this definition is purely for regulatory purposes, and that material with activity concentrations equal to or less than clearance levels is radioactive from a physical viewpoint—although the associated radiological hazards are negligible. The term ‘radioactive waste management’ covers all activities, administrative and operational, that are involved in the handling, pretreatment, treatment, conditioning, transportation, storage and disposal of waste from a nuclear and radioisotope facility.

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Biographical Sketches

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