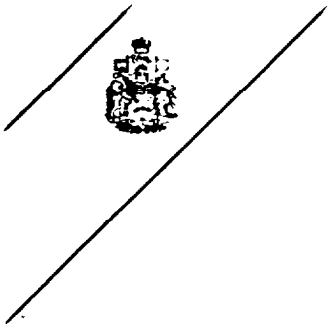

Regulatory Document

Texte de réglementation

Atomic Energy Control Board

Commission de contrôle de l'énergie atomique

REGULATORY DOCUMENT R-85

Regulatory Policy Statement

RADIATION PROTECTION REQUISITES FOR THE EXEMPTION OF CERTAIN RADIOACTIVE MATERIALS FROM FURTHER LICENSING UPON TRANSFERRAL FOR DISPOSAL

Effective Date:

August 1, 1989

Canada

R-85, RADIATION PROTECTION REQUISITES FOR THE EXEMPTION OF CERTAIN RADIOACTIVE MATERIALS FROM FURTHER LICENSING UPON TRANSFERRAL FOR DISPOSAL

A draft of this document was issued for public comment as a Consultative Document (C-85) on May 6, 1985. On completion of the comment review and text revision process, the content was finalized and made effective on August 1, 1989.

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RADIATION PROTECTION PREREQUISITES FOR THE EXEMPTION OF CERTAIN RADIOACTIVE MATERIALS FROM FURTHER LICENSING UPON TRANSFERRAL FOR DISPOSAL

1. PURPOSE AND SCOPE

This document describes the Regulatory Policy under which certain radioactive materials licensed by the Atomic Energy Control Board (AECB) pursuant to the Atomic Energy Control (AEC) Act and Regulations may be considered eligible for exemption from further licensing and regulation. Prerequisites for obtaining the required AECB approval are specified in terms of administrative requirements and compliance with radiation dose criteria.

Section 6 of the Regulations specifies situations in which no licence is required to possess radioactive material, and section 3 allows the AECB to exempt additional practices from licensing under certain circumstances. One of these circumstances is detailed in the Policy Statement of the following section, and relates specifically to instances where material is transferred from a person licensed to possess it to a person who will dispose it. When the circumstances of such disposal are considered to represent a negligible, or de minimis risk, expenditure of additional regulatory resources, or continued licensing of the material, is not justified.

Anticipated benefits from implementation of this Policy include increased efficiency and consistency in the regulation of radioactive wastes, and improved utilization of public resources.

2. REGULATORY CRITERIA

The criteria by which the AECB will determine the acceptability of applications for the exemption of certain radioactive materials from further licensing are expressed in the following Policy Statement:

"The AECB recognizes that persons accepting certain radioactive materials for disposal should be exempted from AECB licensing control. The AECB will use a de minimis dose of radiation to individuals of 0.05 millisievert in a year for deciding such exemptions on a case-by-case basis, provided that the radiological impact will be localized and the potential for exposure of large populations is small. Approval for exemption from further licensing will be given in such instances if it is satisfactorily demonstrated that these criteria are met, using methods and procedures no different from those that would be applied to the corresponding uncontaminated materials."

3. BACKGROUND

In Canada, a wide variety of low-level radioactive wastes is generated during all phases of the nuclear industry, from uranium mining, milling and refining to nuclear reactor operations, and from the use of radioisotopes in many industries, universities, hospitals and consumer products. These wastes vary in physical and chemical form and include contaminated process wastes, equipment, filters, instruments, protective clothing, and cleaning materials.

The bulk of the wastes thus generated is in solid form. Most of this is currently stored in dedicated radioactive waste management facilities. The operation of these facilities, including the production, handling, use and disposal of associated wastes, is regulated by the AECB, under the authority of the Atomic Energy Control (AEC) Act and Regulations, through a comprehensive licensing and inspection system designed to ensure health, safety, security and protection of the environment.

Section 25 of the AEC Regulations requires that any prescribed substances associated with the development, use, application or production of atomic energy shall not be abandoned or disposed of except in accordance with a licence, or written instructions, issued by the AECB. Consequently, a regulatory judgment and response must be made for any proposal to dispose of radioactive materials from nuclear fuel cycle operations or radioisotope operations, no matter how low the concentration, quantity or toxicity of the radionuclides present.

Some of the solid low-level radioactive wastes currently subject to AECB regulation, principally that from radioisotope use, are of such low radiological hazard that the AECB currently permits their disposal in the same manner as conventional garbage. Typically, these wastes are contaminated with trace amounts of radiochemicals and consist of laboratory glassware, syringes, paper and plastic materials.

Pursuant to Section 25 of the AEC Regulations, the AECB has in some circumstances issued general authorizations permitting the disposal in landfills of such consumer products as domestic ionization chamber smoke detectors. In other instances, AECB has endorsed on a case-by-case basis the disposal by commercial incineration of organic liquids contaminated with minor amounts of radionuclides, the disposal in industrial waste sites of certain process wastes containing naturally occurring radionuclides, and the recycling or reuse for non-nuclear purposes of equipment or tools contaminated to a minor degree with radionuclides. In each of these cases, the AECB has assessed the potential radiation exposures to workers and the general public as a consequence of the proposed disposal or recycling, and concluded that those exposures were insignificant relative to the radiation dose limits of the AEC Regulations.

In May, 1985, the AECB issued for public review and comment Consultative Document C-85, "The Basis for Exempting the Disposal of Certain Radioactive Materials From Licensing". That document considered the fact that most materials in common usage within and outside the nuclear industry contain some quantity of radionuclides, and correspondingly proposed that there exists a level of radioactivity that does not warrant the application of regulatory controls and the associated expenditure of public resources. C-85 further proposed the establishment and application of a de minimis dose criterion for exempting from AECB licensing the disposal of certain radioactive materials.

This Regulatory Policy Statement supercedes Consultative Document C-85.

Various past and current instances where regulatory approvals for disposal of low-level radioactive wastes have been granted by the AECB have been examined, and the associated exposures from these activities calculated to be well below the de minimis dose criterion (0.05 millisievert per year) of this document. These conclusions are supported by the results of similar studies and research completed by other national and international agencies.

4. DERIVATION OF REGULATORY CRITERIA

The primary de minimis dose criterion of 0.05 millisievert per year follows from the acceptance of a corresponding de mininis health risk. Various possible bases for the derivation of a de minimis dose criterion were examined by AECB staff and the concept of the existence of a negligible, or de minimis, level of risk was identified as fundamental and broadly applicable to all situations, including exposure to ionizing radiation. The choice of a de minimis dose criterion of 0.05 millisievert to an individual per year represents an extrapolation from a fatality risk of from cancer "10^{-6}". The secondary requirement of section 2, that the potential for exposure of large populations be small, is intended to restrict undue reliance on dilution as a means of attaining compliance with the de minimis dose criterion.

5. APPLICATION OF REGULATORY POLICY AND CRITERIA

This Regulatory Policy is applicable principally to the disposal of solid low-level radioactive wastes. In accordance with this Policy, and subject to the requirements and criteria of the same, the AECB will also consider on a case-by-case basis, applications for exemption from further licensing of certain miscellaneous liquid wastes. This Policy does not apply to those liquid or gaseous emissions currently designated as effluent discharges in the operating licences issued by the AECB for various nuclear facilities.

The introduction of this Policy will not affect the licensing of those operations currently designated as Waste Management facilities since they contain radioactive materials, or involve operations, for which AECB regulation will continue to be necessary. However, some wastes presently being sent to licensed waste management facilities may be eligible under the Policy for exemption from further AECB regulatory control.

In the initial application of this Regulatory Policy, the AECB will entertain applications from proponents wishing to have the disposal of wastes exempted from continued AECB regulation. Such applications must be supported by appropriate analyses and documentation demonstrating that the criteria of section 2 are satisfied. The rigour and comprehensiveness of the required predictive analyses should be commensurate with the scale of the potential hazard and the analyses should employ credible calculations and models based on realistic assumptions and data. The information provided to the AECB in support of an application must include such of the following information as appropriate:

(a) a detailed description of the materials for disposal, including their origin, chemical composition, radiological characteristics, physical state, volume and mass. The description of radiological characteristics should include identification of the radionuclides present and their respective concentrations, quantities, half-lives, and toxicity;

(b) details of the proposed disposal or recycling method and an assessment of the associated impact on workers and members of the general public. Where long-lived radionuclides are present, exposure pathways over the longer-term should be taken into account and the potential consequence of re-use of the site examined;

(c) identification of the planned destination of the waste material upon release from the nuclear facility or premises and any additional information regarding its ultimate destination;

(d) details of the monitoring, analytical and decontamination procedures undertaken at the nuclear facility or premises to characterize the waste material and to minimize the presence of removable radioactive contamination on internal and external surfaces; and

(e) in cases where it is considered necessary to ensure that the waste materials are disposed of, or recycled, as proposed, details of the administrative procedures that could be implemented to achieve this assurance.

In reviewing applications pursuant to this Regulatory Policy, AECB will consider the potential consequences, in terms of radiation exposure, to the critical group and to larger populations. If a critical group is already receiving some dose contribution from an existing "exempt" disposal practice, this will be taken into account in approving the exemption of any additional practice likely to add to this exposure. Furthermore, the AECB will periodically review the approvals issued to date in order to ensure that the relevant parameters of the situation have not changed significantly.

Application of this Regulatory Policy, and any exemption of the disposal of radioactive materials from AECB regulatory control, does not absolve the possessor or owner of such wastes from responsibility for complying with other pertinent federal, provincial or municipal requirements.