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RECORD #53

TITLE: Assessment of Intakes of Radioactive Material by Workers

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IN 82-18

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

June 11, 1982

IE INFORMATION NOTICE NO. 82-18: ASSESSMENT OF INTAKES OF RADIOACTIVE
MATERIAL BY WORKERS

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or construction permit (CP), research and test reactors, fuel facilities, and Priority I material licensees.

Purpose:

This information notice is provided to clarify the Nuclear Regulatory Commission (NRC) position on the use of ICRP-30 methodology for use in assessing intakes of radioactive materials by workers. No specific action or response is required at this time.

Description of Circumstances:

Routine operations and unusual events at facilities handling radioactive material require, in some cases, the use of bioassay data to determine if an exposure exceeded NRC regulatory limits. In 1979, the International Commission on Radiation Protection (ICRP) issued Publication 30, "Limits for Intakes of Radionuclides by Workers"; this publication described dosimetric methods for evaluating the uptake of radionuclides and the associated dose commitment. New information on the uptake, deposition, and retention of radioactive material in the body, effect of radiation on the body, and decay schemes of radionuclides, led the ICRP Committee II to publish this 1979 revision to its earlier recommendations. These earlier recommendations were contained in ICRP-2, "Report of ICRP Committee II on Permissible Dose for Internal Radiation" (1959). Since the publication of ICRP-30, licensees have been concerned about which models, equations, and assumptions the NRC considers acceptable in determining from bioassay data the quantity of radioactive material inhaled and the resulting dose commitment. This information notice is being issued to clarify the NRC position.

Discussion:

The present limits on exposure of individuals to concentrations of radioactive materials in the air in restricted areas (10 CFR 20.103) are based on concepts, models, equations, and assumptions adopted by the ICRP and published in ICRP-2. Since 1959, other ICRP publications have been issued supplementing ICRP-2 or applying the methods to particular exposure situations (ICRP-6, 9, 10, 10A, and 12). The NRC issued regulatory guidance on assessment of individual intakes of radioactive material in Regulatory Guide 8.9, "Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program." In addition, other

regulatory guides have been issued providing guidance for the application of bioassay for specific radionuclides or operations (Regulatory Guide 8.11 for uranium, Regulatory Guide 8.26 for fission and activation products, Regulatory Guide 8.20 for iodine-125 and iodine-131, and Regulatory Guide 8.22 for bioassay at uranium mills). The basic internal dosimetry concepts of the ICRP and the models, equations, and assumptions from these concepts in ICRP-2, 5, 9, 10, 10A, and 12 were used as the bases for each regulatory guide and are used by the NRC to evaluate bioassay data to determine compliance with regulatory requirements. The organ burdens, deposition fractions, retention functions, dose rates, and dose commitments obtained are based on ICRP-2 and data contained in ICRP-23, "Report of the Task Group on Reference Man."

Since the ICRP issued the report of Committee II in 1959, ICRP-2 has been used as a guide for the control of intake of radioactive material in the body to meet the basic standards of the ICRP. However, ICRP Committee II in ICRP-30 (1979) stated that new information on the effects of radiation on the body, on the deposition, uptake, and retention of radioactive matter in body tissue, and better data on radioactive decay schemes have accumulated in the 20-year intervening period since the publication of ICRP-2. Those factors and changes in the basic recommendations of the ICRP described in ICRP-26 (1977) made it necessary for the committee to publish a new report.

Although the NRC has not yet incorporated by rule change the recommendations of the ICRP contained in ICRP-26 or in ICRP-30, 10 CFR 20 is currently being revised and if adopted, would embrace (in whole or in part) the new recommendations and methods of the ICRP. Until the regulations are changed, ICRP-2 remains the basis for the requirements in 10 CFR 20. Therefore, licensees must be able to demonstrate compliance using the ICRP-2 methodology.

NRC Position:

The NRC will continue to use the ICRP-2 methodology in determining compliance with 10 CFR 20 until the revision of 10 CFR 20 has been published as a final rule.

If you have any questions regarding this matter, please contact the Regional Administrator of the appropriate NRC Regional Office, or this office.

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Technical Contact: J. E. Wigginton
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Attachment:
List of Recently Issued IE Information Notices

Attachment
IN 82-18
June 11, 1982

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
82-17	Overpressurization of Reactor Coolant System	6/10/82	All power reactor facilities holding an OL or CP
82-16	HPCI/RCIC High Steam Flow Setpoints	5/28/82	All power reactor facilities holding an OL or CP
82-15	Notification of the Nuclear Regulatory Commission (NRC)	5/28/82	All NRC licensees and all power reactor facilities holding a CP
82-14	TMI-1 Steam Generator/Reactor Coolant System Chemistry/Corrosion Problem	5/12/82	All power reactor facilities holding an OL or CP
82-13	Failures of General Electric Type HFA Relays	5/10/82	All power reactor facilities holding an OL or CP
82-12	Surveillance of Hydraulic Snubbers	4/21/82	All power reactor facilities holding an OL or CP
82-11	Potential Inaccuracies in Wide Range Pressure Instruments used in Westinghouse Designed Plants	04/09/82	All power reactor facilities holding an OL or CP
82-10	Following up Symptomatic Repairs to Assure Resolution of the Problem	04/09/82	All power reactor facilities holding an OL or CP
82-09	Cracking in Piping of Makeup Coolant Lines at B&W Plants	03/31/82	All power reactor facilities holding an OL or CP
82-08	Check Valve Failures on Diesel Generator Engine Cooling System	03/26/82	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit