December 1996

RADIOACTIVE MATERIALS SECTION
Bureau of Radiation Control
Information Notice 96-6

Procedures for Incident Reporting Requirements.

This information notice is applicable to all licensees.

Enclosed you will find a copy of the U.S. Nuclear Regulatory Commission Information Notice 96-57 entitled, “INCIDENT-REPORTING REQUIREMENTS INVOLVING INTAKES, DURING A 24-HOUR PERIOD THAT MAY CAUSE A TOTAL EFFECTIVE DOSE EQUIVALENT IN EXCESS OF 0.05 Sv (5 rem).” This particular incident involved the ingestion of phosphorus-32 where a worker received or was likely to receive a total effective dose equivalent in excess of 5 rem (0.05 sievert).

Section 10D-91.481, Florida Administrative Code requires licensees to notify the department within *twenty-four hours* of the discovery of an event that may cause an individual to receive a total effective dose equivalent exceeding 5 rem (0.05 sievert) The reporting requirements are for all doses received from radioactive materials that may be ingested, inhaled or due to an external exposure. This notification may be by telephone, telegram, mailgram or facsimile to the department. In addition, the licensee must prepare and submit a report to the department about the incident. This report needs to name the involved individuals in a separate and detachable portion of the report.

It is expected that you will review this information for applicability to your facility and consider appropriate actions.

No specific actions nor written response is required. If you have any questions or need additional information, please contact us.

Enclosures

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, DC 20555

October 30, 1996

NRC INFORMATION NOTICE 96-57: INCIDENT-REPORTING REQUIREMENTS INVOLVING INTAKES, DURING A 24-HOUR PERIOD THAT MAY CAUSE A TOTAL EFFECTIVE DOSE EQUIVALENT IN EXCESS OF 0.05 Sv (5 rem)

Addressees

All U.S. Nuclear Regulatory Commission licensees.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to remind recipients of certain incident notification requirements found in 10 CFR 20.2202(b)(1)(i) relating to intakes received during a 24-hour period that may cause a Total Effective Dose Equivalent (TEDE) in excess of 0.05 Sv (5 rem). It is expected that recipients will review the information for applicability to their facilities, to ensure that this information is considered when making a decision about the reporting of a radiation exposure incident. However, this information notice does not contain NRC requirements; therefore, no specific action nor written response is required.

Description of Circumstances

Recently, NRC was informed of, and responded to, two incidents involving phosphorus-32 (P-32) and the resulting internal contamination of individuals at biomedical research facilities. P-32 is a radioisotope widely used in research institutions, as are many other radionuclides. Although only one of these events raised a question associated with reporting requirements and is discussed below, our concerns regarding reporting of incidents involving internal exposure extend to all facilities using licensed material.

On October 16, 1995, a licensee informed the NRC that an incident involving internal contamination of a researcher had occurred at its facility almost two months earlier. The licensee's final evaluation of the TEDE received by the individual was 0.048 Sv (4.8 rem) which was within 5 percent of the annual limit of 0.05 Sv (5 rem). An NRC Incident Investigation Team analysis (NUREG-1535, "Ingestion of Phosphorus-32 at Massachusetts Institute of Technology, Cambridge, Massachusetts, Identified on August 19, 1996") concluded that the licensee's final dose assessment was appropriate, but further concluded that data available within the first week was sufficient to indicate that the event *threatened to cause* an individual to receive a TEDE in excess of 0.05 Sv (5 rem). Licensee officials told NRC staff that they had not reported the incident earlier because their analysis indicated that the researcher's TEDE *received during the first 24 hours* did not require reporting, pursuant to 10 CFR 20.2202(b)(1)(i).

The pertinent rule, 10 CFR 20.2202(b)(1)(i), states "...each licensee shall, within 24 hours of discovery of the event, report any event involving loss of control of licensed material possessed by the licensee that may have caused, or threatens to cause, any of the following conditions:

(1) An individual to receive, in a period of 24 hours--
(i) A total effective dose equivalent exceeding 5 rem (0.05 Sv);or..."

The licensee had interpreted this to mean that the dose actually received by the individual during the particular 24 hours following the event had to exceed 0.05 Sv (5 rem) before the 24–hour notification was required. This interpretation is not consistent with the definitions of TEDE, committed effective dose equivalent (CEDE), and committed dose equivalent (CDE) in 10 CFR 20.1003.

Discussion

As noted above 10 CFR 20.2202(b)(1)(i) requires 24-hour notification if a loss of control of licensed material may have caused, or threatens to cause, an individual to receive, in a period of 24 hours, a TEDE exceeding 0.05 Sv (5 rems). NRC's interpretation of the rule is derived from the definitions in 10 CFR 20.1003 as follows: TEDE is defined as the sum of the deep-dose equivalent (for external exposures) *and* the CEDE (for internal exposures), CEDE is the sum of the products of the weighing factors applicable to each of the body organs or tissues that are irradiated and the CDE to these organs or tissues, and CDE means the dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

Licensees are required by 10 CFR 20.2202(b)(1)(i) to report the TEDE received by an individual that is based on all doses received during the 24-hour period, including committed doses (i.e., the CEDE) and not just the doses delivered during the 24-hour period. For internal doses, the 24-hour period specified in 10 CFR 20.2202(b)(1) refers to the period of intake and not the period of dose delivery. In the case described above, the CEDE from the intake received during the event (in a period of 24 hours) threatened to exceed 0.05 Sv (5 rem). Because this case does not involve external exposure (rather, only ingestion), CEDE is equal to TEDE. In such a case, a licensee would be required by 10 CFR 20.2202(b)(1)(i) to notify NRC within 24 hours of discovery of the event.

This information notice requires no specific action nor written response. If you have any questions about the information in this notice, please contact the technical contacts listed below or the appropriate regional office.

signed by

Thomas T. Martin, Director
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Office of Nuclear Reactor Regulation

signed by

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