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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

February 5, 1992

NRC INFORMATION NOTICE 92-11: SOIL AND WATER CONTAMINATION AT FUEL
CYCLE FACILITIES

Addressees

All uranium fuel fabrication and conversion facilities.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to inform uranium fuel fabrication and conversion facilities of recent problems with solutions of uranium and other chemicals contaminating the soil and ground water. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not new NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

In August 1990, uranium-contaminated soil and water were noted during excavation work near the solvent-extraction building at a fuel-conversion facility. Further investigation determined that the floor and sump of the solvent-extraction building were damaged, and solutions containing uranium and chemical contaminants had leaked through the damaged floor and sump. As a result of these findings, NRC issued an Order Modifying License, in which the licensee was required to: (1) repair and ensure the integrity of the floor and sump; (2) characterize and quantify the contaminants under the building; (3) identify potential migration pathways; (4) examine present and past monitoring-well data for evidence of contaminants; (5) determine whether contaminants had been released beyond the restricted area; and (6) develop a plan to identify and characterize other locations where past or present operations could have resulted in contaminating the environment.

In November 1991, uranium and chemical contaminants were reported below the main process building at a fuel-fabrication facility. After a spill of approximately 200 gallons of nitric acid, the licensee noted damage to the floor and determined that uranium and other chemical contaminants were in the soil and surficial water aquifer. Presently, the licensee has removed soil from an area of about 8 feet by 30 feet by 5 feet deep. In addition, the licensee has installed a dewatering system at the interface between the permeable and impermeable soil layers. Because of the geological formation, the contaminants are not expected to have penetrated the impermeable soil

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layer. Because of this problem, the licensee has placed a portion of its operations on standby.

In December 1991, at another fuel-fabrication facility, 5300 gallons of liquid waste containing uranium and an ammonia compound leaked from an underground plastic pipe when a coupling ruptured. This occurred during the transfer of the waste from an onsite storage lagoon to the municipal sewer system. The incident was detected when water was observed percolating up from the soil in the vicinity of the discharge line. The licensee is taking soil and ground-water samples to characterize and quantify the contaminants.

Discussion

The events described in this information notice emphasize the need for uranium fuel-fabrication and conversion facilities to examine their floors, sumps, and underground pipes, to prevent solutions containing uranium and other chemical contaminants from leaking into and contaminating the soil and water. In addition, operating practices should be reviewed to ensure that the potential for leaks and spills is minimized.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below, or the appropriate NRC regional office.

Richard E. Cunningham

Richard E. Cunningham, Director
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards

Technical contacts: Edwin D. Flack, NMSS
(301) 504-2405

George Bidinger, NMSS
(301) 504-2683

Attachments:

1. List of Recently Issued NMSS Information Notices
2. List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED
NMSS INFORMATION NOTICES

| Information Notice No. | Subject | Date of Issuance | Issued to |
|------------------------|--|------------------|--|
| 92-10 | Brachytherapy Incidents Involving Iridium-192 Wire Used in Endobronchial Treatments | 01/31/92 | All Nuclear Regulatory Commission (NRC) licensees authorized to use iridium-192 for brachytherapy; manufacturers and distributors of iridium-192 wire for use in brachytherapy. |
| 92-08 | Revised Protective Action Guidance for Nuclear Incidents | 01/23/92 | All fuel cycle and materials licensees authorized to possess large quantities of radioactive material. |
| 91-86 | New Reporting Requirements for Contamination Events at Medical Facilities (10 CFR 30.50) | 12/27/91 | All licensees authorized to use byproduct materials for human use. |
| 91-84 | Problems with Criticality Alarm Components/Systems | 12/26/91 | All Nuclear Regulatory Commission (NRC) fuel cycle licensees, interim spent fuel storage licensees, and critical mass licensees. |
| 91-71 | Training and Supervision of Individuals Supervised by an Authorized User | 11/12/91 | All NRC medical licensees. |
| 91-66 | (1) Erroneous Data in "Nuclear Safety Guide, TID-7016, Revision 2," (NUREG/CR-0095, ORNL/NUREG/CSD-6 (1978)) and (2) Thermal Scattering Data Limitation in the Cross-Section Sets Provided with the KENO and SCALE Codes | 10/18/91 | All fuel cycle licensees, critical mass licensees, interim spent fuel storage licensees, and all holders of operating licenses or construction permits for test, research, and nuclear power reactors. |

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| 92-09 | Overloading and Subsequent Lock Out of Electrical Buses During Accident Conditions | 01/30/92 | All holders of OLs or CPs for nuclear power reactors. |
| 92-08 | Revised Protective Action Guidance for Nuclear Incidents | 01/23/92 | All fuel cycle and materials licensees authorized to possess large quantities of radioactive material. |
| 92-07 | Rapid Flow-Induced Erosion/Corrosion of Feedwater Piping | 01/09/92 | All holders of OLs or CPs for pressurized water reactors. |
| 92-06 | Reliability of ATWS Mitigation System and Other NRC Required Equipment Not Controlled by Plant Technical Specifications | 01/15/92 | All holders of OLs or CPs for nuclear power reactors. |
| 92-05 | Potential Coil Insulation Breakdown in ABB RXM2 Relays | 01/08/92 | All holders of OLs or CPs for nuclear power reactors. |
| 92-04 | Potter & Brumfield Model MDR Rotary Relay Failures | 01/06/92 | All holders of OLs or CPs for nuclear power reactors. |
| 92-03 | Remote Trip Function Failures in General Electric F-Frame Molded-Case Circuit Breakers | 01/06/92 | All holders of OLs or CPs for nuclear power reactors. |

OL = Operating License
CP = Construction Permit

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In December 1991, at another fuel-fabrication facility, 5300 gallons of liquid waste containing uranium and an ammonia compound leaked from an underground plastic pipe when a coupling ruptured. This occurred during the transfer of the waste from an onsite storage lagoon to the municipal sewer system. The incident was detected when water was observed percolating up from the soil in the vicinity of the discharge line. The licensee is taking soil and ground-water samples to characterize and quantify the contaminants.

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