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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1990 N. CALIFORNIA BOULEVARD
SUITE 202, WALNUT CREEK PLAZA
WALNUT CREEK, CALIFORNIA 94596

June 24, 1980

Docket No. 50-224

University of California
Department of Nuclear Engineering
Berkeley, California 94720

Attn: Virgil Schrock
Reactor Administrator

Gentlemen:

The enclosed IE Circular No. 80-14 is forwarded to you for information. If there are any questions related to your understanding of the suggested actions, please contact this office.

Sincerely,

for R. H. Engelken
Director

Enclosures:
1. IE Circular No. 80-14
2. List of IE Circulars Recently Issued

8007180 259

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

June 24, 1980

IE Circular No. 80-14

RADIOACTIVE CONTAMINATION OF PLANT DEMINERALIZED WATER SYSTEM AND RESULTANT INTERNAL CONTAMINATION OF PERSONNEL

This circular describes an event which occurred at a nuclear power facility; however, the generic implications may be applicable to research reactors, and fuel cycle facilities.

On March 17, 1980, a licensee informed the NRC resident inspector that portions of the plant demineralized water (DW) system were found to be radioactively contaminated. A temporary hose used to add demineralized water to the spent fuel pool was the pathway for the cross-contamination. After this fuel pool makeup was completed on March 14, the temporary DW line (still connected to the DW header) was inadvertently left submerged in the fuel pool. Since the DW header pressure at the point of supply was relatively low (a DW booster pump had been secured), a siphoning action occurred, resulting in radioactive contamination of portions of the DW header.

On March 17, 1980, while performing routine secondary system chemical analyses, the licensee discovered that the demineralized water tap in the chemistry lab contained high levels of boron and had activity of 1.5×10^{-4} uCi/ml (mainly Cs-134, Cs-137, Co-58, Co-60 and Mn-54). It was subsequently discovered that demineralized water from the chemistry laboratory supply tap had been used to make five (5) pots of coffee. The remaining coffee was confiscated and the twenty-three (23) individuals who had consumed this coffee were whole-body counted. All involved individuals showed no intake greater than an equivalent 0.01 MPC-HRS. Analysis performed by the licensee's radiation consultant, based on the maximum concentration of radioactivity found in the coffee, indicated that the resultant 50-year dose commitment to an individual drinking eight ounces of this coffee would be less than 1 millirem.

Further licensee investigation revealed that the non-radiological chemistry DW supply tap was the only DW supply point outside the Auxiliary Building controlled area. This DW supply tap was tagged prohibiting human consumption to prevent a similar event in the future.

It is recommended that you review your facilities use of demineralized water (DW) via temporary connections and give attention to the following:

1. Provisions should be made to assure that radioactive materials are not inadvertently introduced into your facility's DW system via the improper use of temporary connections. A temporary cross connection between contaminated systems and the DW system without adequate physical controls to prevent cross-contamination should be prohibited.

2. In addition to some physical means of preventing backflow into the DW system, appropriate administrative controls should be established to ensure that the DW supply valve is secured and temporary hosing is disconnected from the DW supply header after use.

3. Use of plant-supplied DW for human consumption should be prohibited. The potable water system should be the only authorized source of water for human consumption.

4. Examine potable and demineralized water systems to determine if pathways exist allowing or having the potential to allow contamination of these systems including temporary connections whereby siphons could cause situations described above.

No written response to this Circular is required. Your review of this matter to determine its applicability to your facility and any corrective and preventive actions taken or planned, as appropriate, will be reviewed during a subsequent NRC inspection. If you desire additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

IE Circular No. 80-14
June 24, 1980

Enclosure

RECENTLY ISSUED
IE CIRCULARS

Circular No.	Subject	Date of Issue	Issued to
80-13	Grid Strap Damage in Westinghouse Fuel Assemblies	5/18/80	All holders of Reactor OLs and CPs
80-12	Valve-Shaft-To-Actuator Key May Fall Out of Place When Mounted Below Horizontal Axis	5/14/80	All holders of Reactor OLs and CPs
80-11	Emergency Diesel Generator Lube Oil Cooler Failures	5/13/80	All holders of a power reactor OL or CP
80-10	Failure to Maintain Environmental Qualification of Equipment	4/29/80	All holders of Reactor OLs and CPs
80-09	Problems With Plant Internal Communications Systems	4/28/80	All holders of a power reactor OL or CP
80-08	BWR Technical Specification Inconsistency - RPS Response Time	4/18/80	All General Electric BWR's holding a power reactor OL
80-07	Problems with HPCI Turbine Oil System	4/3/80	All holders of a power reactor OL or CP
80-06	Control and Accountability Systems for Implant Therapy Sources	4/14/80	Medical licensees in Categories G and G1
80-05	Emergency Diesel-Generator Lubricating Oil Addition and Onsite Supply	4/1/80	All holders of a power reactor OL or CP
80-04	Securing of Threaded Locking Devices on Safety-Related Equipment	3/14/80	All holders of a power reactor OL or CP
80-03	Protection from Toxic Gas Hazards	3/6/80	All holders of a power reactor OL
80-02	Nuclear Power Plant Staff Work Hours	2/1/80	All holders of Reactor OLs, including research and test reactors, and CPs