

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF FEDERAL AND STATE MATERIALS  
AND ENVIRONMENTAL MANAGEMENT PROGRAMS  
WASHINGTON, D.C. 20555

April 27, 2011

NRC INFORMATION NOTICE 2011-11: REPORTING REQUIREMENT FOR HEAT AND  
SMOKE DETECTOR FAILURES IN 10 CFR PART  
36 IRRADIATORS

**ADDRESSEES**

All holders of irradiator licenses issued by the U.S. Nuclear Regulatory Commission (NRC) under to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 36, "Licensees and Radiation Safety Requirements for Irradiators;" Agreement State Radiation Control Program Directors and State Liaison Officers.

**PURPOSE**

The NRC is issuing this information notice (IN) to inform addressees that reporting may be necessary when the smoke or heat detection systems in panoramic irradiators do not function properly. This IN also reminds licensees that smoke and heat detectors required by 10 CFR 36, are independent systems and the inoperability of either is reportable when there is no redundant equipment available to perform the required safety function. No specific action or written response is required. The NRC is providing this IN to the Agreement States for their information and for distribution to their panoramic irradiator licensees, as appropriate.

**DESCRIPTION OF CIRCUMSTANCES**

In September 2008, a State of Nebraska panoramic irradiator licensee reported that the smoke detector used to detect smoke in the radiation room failed to operate during their quarterly safety maintenance check. The smoke detector was not physically located in the radiation room, but an inlet allows smoke to travel from the radiation room to the smoke detector. The smoke detector failed to sense the smoke from a smoke stick. The licensee discovered that a filter located between the smoke inlet and the smoke detector was clogged with debris and as a result, the smoke detector was unable to detect the sample. The licensee tapped the filter with a hammer, and blew compressed air through it to clear it out. The filter was re-installed and the smoke detector retested successfully.

A State of Nebraska inspector was onsite during the licensee's quarterly test. The licensee informed the inspector that the smoke detector failed the test approximately once a year due to a plugged filter. The licensee had not reported prior failures to the State regulator. From past experiences, the licensee had not reported the prior failures because they thought that the heat and smoke detectors required by the regulations made the two detectors redundant systems since they both served to lower the source rack.

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## DISCUSSION

Both a heat and smoke detector were present, as required by the Agreement State's regulatory equivalent of 10 CFR 36.27; however, as already stated, the smoke detector failed its test. Since this was the only smoke detector the failure required a 24 hour report in accordance with the Agreement State equivalent of 10 CFR 30.50. 10 CFR 30.50(b)(2), which is applicable to 10 CFR Part 36 licensees under 10 CFR 36.1(a), and the equivalent Agreement State regulatory requirements, require notification to the NRC or the Agreement State within 24 hours after discovery of:

An event in which equipment is disabled or fails to function as designed when:

- (i) The equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident
- (ii) The equipment is required to be available and operable when it is disabled or fails to function; and
- (iii) No redundant equipment is available and operable to perform the required safety function.

A similar situation was reported at an NRC regulated facility where a Radiation Safety Officer was unaware that both smoke and heat detectors were required to function and were not redundant systems. Other irradiator licensees may not be aware that smoke detectors and heat detectors are independent requirements and both must be functional at all times. If either system is not available and operable (e.g., disabled) or fails to function as designed, notice of the inoperability or failure must be reported in accordance with 10 CFR 30.50(b)(2).

## CONCLUSION

The Nebraska licensee resolved its problem by replacing the filters every quarter. NRC licensees should check their detectors (and applicable filtration systems) at the interval recommended by the manufacturer of their facility. NRC licensees should also consider whether more frequent checks are necessary based on the cleanliness of their facility.

## CONTACT

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

*/RA/ by James G. Luehman for*

Terrence Reis, Acting Director  
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Enclosure:  
List of Recently Issued FSME Generic  
Communications

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OFC	MSSA/LB	MSSA/LB	MSSA	OGC	MSSA	MSSA
NAME	THerrera	JFoster	AMcIntosh	BJones via email	JLuehman	TReis (JLuehman for)
DATE	12/21/11	1/4/11	1/20/11	4/5/11	3/8/11	4/18/11

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List of Recently Issued Office of Federal and State Material and Environmental Management Programs Generic Communications			
Date	GC No.	Subject	Addressees
11/13/09	IN-2009-27	Revised International Nuclear and Radiological Event Scale User's Manual	All holders of an operating license or construction permit for a power reactor, test reactor or research reactor issued under 10 CFR Part 50; holders of or applicants for an early site permit, standard design certification, standard design approval, manufacturing license, or combined license issued under 10 CFR Part 52; holders of a materials license, certificate, approval, or registration issued under 10 CFR Parts 30, 31 through 36, 39, 40, 61, 70, 71, 72, and 76; Agreement State Radiation Control Program Directors and State Liaison Officers.
11/19/2010	IN-2010-24	Notice of Possible Source Leakage During Non-Routine Maintenance on a Gammacell 40 Irradiator	All academic Type A broad scope licensees; all medical institutions; all self shielded irradiators less than or equal to 10,000 cures licensees; all Radiation Control Program Directors and State Liaison Officers.
01/21/10	RIS-2010-02	The Global Threat Reduction Initiative (GTRI) Federally Funded Voluntary Security Enhancements for High-Risk Radiological Material	All holders of operating licenses for nuclear power reactors and research and test reactors under the provisions of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those that have ceased operations and have certified that fuel has been permanently removed from the reactor vessel and have no spent fuel stored on-site. All U.S. Nuclear Regulatory Commission (NRC) fuel cycle facilities licensed under 10 CFR Part 40, "Domestic Licensing of Source Material" or 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material" and gaseous diffusion plants certified under 10 CFR Part 76, "Certification of Gaseous Diffusion Plants." All holders of site-specific licenses for independent spent fuel storage installations (ISFSIs) under the provisions of 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-level Radioactive Waste, and Reactor-related Greater than Class C Waste," and all holders of 10 CFR Part 50 licenses with ISFSIs under the general license provisions of 10 CFR Part 72. All NRC materials licensees authorized to possess Category 1 or Category 2 quantities of radioactive materials, under the provisions of 10 CFR Parts 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," 40, and 70.

List of Recently Issued Office of Federal and State Material and Environmental Management Programs Generic Communications			
Date	GC No.	Subject	Addressees
05/25/10	RIS-2010-04	Monitoring the Status of Regulated Activities During a Pandemic	All holders of operating licenses for nuclear power reactors and research and test reactors under the provisions of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," except those that have ceased operations and have certified that fuel has been permanently removed from the reactor vessel and have no spent fuel stored on-site. All U.S. Nuclear Regulatory Commission (NRC) fuel cycle facilities licensed under 10 CFR Part 40, "Domestic Licensing of Source Material" or 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material" and gaseous diffusion plants certified under 10 CFR Part 76, "Certification of Gaseous Diffusion Plants." All holders of site-specific licenses for independent spent fuel storage installations (ISFSIs) under the provisions of 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-level Radioactive Waste, and Reactor-related Greater than Class C Waste," and all holders of 10 CFR Part 50 licenses with ISFSIs under the general license provisions of 10 CFR Part 72. All NRC materials licensees authorized to possess Category 1 or Category 2 quantities of radioactive materials, under the provisions of 10 CFR Parts 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," 40, and 70.
09/10/10	RIS-2010-09	Radiation Safety Officers For Medical-Use Licenses Under 10 CFR Part 35	All U.S. Nuclear Regulatory Commission (NRC) medical-use licensees, NRC master material licensees, Agreement State Radiation Control Program Directors, and State Liaison Officers.
01/25/11	RIS-2011-01	NRC Policy On Release Of Iodine-131 Therapy Patients Under 10 CFR 35.75 To Locations Other Than Private Residences	All U.S. Nuclear Regulatory Commission (NRC) medical-use licensees, NRC master material licensees, Agreement State Radiation Control Program Directors, and State Liaison Officers.
<p>Note: This list contains the six most recently issued generic communications, issued by the Office of Federal and State Materials and Environmental Management Programs (FSME). A full listing of all generic communications may be viewed at the NRC public website at the following address: <a href="http://www.nrc.gov/reading-rm/doc-collections/gen-comm/index.html">http://www.nrc.gov/reading-rm/doc-collections/gen-comm/index.html</a></p>			