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Comment On: NRC-2008-0419-0014
Security and Continued Use of Cesium-137 Chloride Sources: Granting Extension of Comment Period

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Government Agency Type: State

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Comment

Attached is a signed letter describing our concerns about the proposed NRC rule change. Dr. Joel
Bedford had significant input into this letter but was unable to sign the document because he was
out of town.

Attachments

NRC-2008-0419-DRAFT-0074.1: Comment on FR Doc # E8-22688

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Add = J. Jankovsky
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Knowledge to Go Places

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October 14, 2008

Michael T. Lesar
Chief, Rulemaking, Directives and Editing Branch
Office of Administration
Mail Stop T-6D59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-001

Dear Mr. Lesar,

We are writing to express our concern about the possibility that CsCl radiation sources will be banned. We are a group of radiation scientists within a university department in a veterinary medicine college (Department of Radiation and Environmental Health Sciences at Colorado State University) and administrative officials that oversee university research operations. The CsCl irradiators within our department are designated by the university as a specialized research facility and are an integral part of our mission to serve our community and nation in university education and scientific research.

Radiation research is absolutely required for our national needs in health care, nuclear power generation, the defense industry, and space sciences. Our programs in radiation heath physics and cancer biology are longstanding, internationally known, and well-funded by a variety of government agencies including the Departments of Energy, Defense, Health and Human Services, and NASA. Perhaps most germane to this discussion are the research contributions that our radiation scientists make to the development of medical countermeasures and physical detection of illegitimate radioactive materials. Our CsCl sources are used in all of these research areas, and therefore these sources are critical for continued success of our programs that broadly contribute to the health and wellbeing of US citizens. The removal of these sources from our facility would have an enormous economic and programmatic impact to the individual scientists, the department, and the university.

One compelling example pertinent to the question of alternative radiation sources, such as X-rays, is an ongoing five year study funded at approximately $2 million per year by NASA focused on risk assessment for radiation induced leukemia in mice. This study includes experimental radiation exposure of mice to high energy ions and protons generated with the linear accelerator at the Brookhaven National Laboratory, and a control group of 800 mice irradiated with a CsCl source here at CSU. Due to the exorbitant costs of housing huge numbers of mice irradiated in a linear accelerator, it is imperative that we do not change any variables during this study, including the irradiation of the control mice.

Another, perhaps even more important use of the CSU irradiators, are studies of low dose effects on cells in culture and small animals. The studies are crucial for understanding the risks of typical

environmental doses and dose-rates, and they cannot be performed with X-ray machines. In fact, a significant amount of the CSU radiation source infrastructure was funded by the DOE low dose program specifically for these types of studies. While it is possible to use X-rays in place of ^{137}Cs irradiation for some of the radiation research at CSU, a large fraction of our ongoing and planned studies would have to be abandoned if the CsCl sources were prohibited. CSU houses one of the few facilities in the world in which small animals can be irradiated at low dose rates for protracted periods of time. This facility can accommodate up to 250 mice at a time and we have performed low dose rate exposures for as long as fifty days. This would not be possible with an X-ray unit. The research done in this facility is funded by NASA and the DOE and is relevant to the low dose rate exposures received by space flight crews and radiation workers. This facility has also been used to test the efficacy a radioprotective agent under development by Cleveland BioLabs under conditions that mimic those expected in a radiological accident or terrorist attack.

The CsCl sources also play a critical role in the very high dose sterilization of bacterial and viral samples used in studies by many groups at CSU and elsewhere, including sterilization of tissue samples for infectious disease studies, and soil samples for agronomy studies. Another example is the irradiation of liver tissue infected with *Mycobacterium leprae*, the causative agent of leprosy, with doses as high as 10,000 Gy. Such high doses sterilize the sample while leaving the mycobacterial proteins amenable to studies directed toward vaccine development and improved therapeutic strategies. These very high doses cannot be achieved with an X-ray source.

After the 2001 terrorist attacks we immediately recognized that the CsCl sources might be a target for terrorists to use in making a 'dirty bomb' and we took aggressive action to secure the facility. Access now requires background checks of all source operators. Entry into the hallway where the sources are housed is monitored by video cameras. Unauthorized entry triggers alarms and an immediate university police response. Entry to individual rooms housing the sources is further controlled for safety and security by a rigorous key distribution system. It is our informed opinion that these radiation sources are sufficiently secure.

Respectfully,

Jac A. Nickoloff, Ph.D.
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