

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION**

HEARING CHARTER

Oversight: Low-Level Plutonium Spill at NIST Boulder; Contamination of Lab and Personnel

**Tuesday, July 15, 2008
11:00 a.m. – 1:00 p.m.
2325 Rayburn House Office Building**

I. Purpose

On June 9, 2008, researchers working at the National Institute of Standards and Technology (NIST) facility in Boulder, Colorado were working with a small sample of plutonium when some of the sample spilled from its container and contaminated the lab and personnel. Contamination spread to other areas of the building, and a small amount of the material was washed away in the lab sink. The purpose of this hearing is to examine the causes of the incident and the subsequent response to the situation by NIST employees, and to discuss improvements to environmental, health, and safety practices at NIST.

II. Witnesses

Dr. James Turner is the Acting Director of the National Institute of Standards and Technology (NIST).

Dr. Charles Miller is the Director of the Office of Federal and State Materials and Environmental Management Programs at the U. S. Nuclear Regulatory Commission.

Dr. Kenneth Rogers is one of five independent investigators appointed by NIST to review the June 9, 2008 plutonium spill and a former commissioner of the U.S. Nuclear Regulatory Commission.

Mr. Elmo Collins is the Regional Administrator of the Region IV Office, U.S. Nuclear Regulatory Commission.

III. Brief Overview

- On June 9, 2008, researchers working with a 0.25 gram sample of plutonium noticed that the glass vial had cracked and some of the powder had spilled. Radiological contamination was found on the hands of two people, the shoes of 20 others, and the hallway and office space near the lab. The individuals were decontaminated and given medical tests to determine if any plutonium had been ingested or inhaled. The major

- health risk posed by the plutonium in this case is an increased long-term cancer risk from internal exposure. The area around the lab was cleaned and the lab itself sealed.
- Nearly one week following the incident, contamination was discovered in a laboratory sink, indicating that some plutonium had been washed down the drain to the municipal sewer system. Additionally, several new individuals were identified as possibly having been exposed to the plutonium and traces of contamination were discovered in other areas of the NIST facility.
 - On June 27, NIST reported that sensitive medical tests for multiple individuals had returned results positive for internal exposure to plutonium. Under the advice of radiation health physicians, one individual began prophylactic treatment for exposure; the others are awaiting the results of further tests to determine if treatment is necessary. In total, 29 people are receiving these medical tests. However, NIST reports that initial test results show that individuals did not receive medically significant levels of internal radiation exposure.
 - The spill likely could have been prevented had proper safety protocols and handling procedures been followed. Documentation provided to the Committee indicates that two individuals working with the plutonium sample-- including one directly involved with the accident-- had not received the required radiation safety training. Discussions with NIST personnel also revealed that the plutonium was not sealed in its original protective packaging, as it should have been. It is evident from the growing scope of the incident and the inadequate communication between NIST and state and local officials, NIST employees, and others that NIST did not have a comprehensive, practiced emergency response plan in place at the time of the incident.
 - NIST relies on supervisors and lab directors to provide safety training to the researchers in their lab and ensure all work is undertaken safely. This system clearly failed in this case. The FY2006 Visiting Committee on Advanced Technology (VCAT) report noted a lax culture of environmental, health, and safety (EH&S) at NIST and recommended that NIST management devote more effort to engendering safety among the NIST staff. The Committee has asked for extensive documentation on EH&S practices at NIST and proof of current training for all employees to assess whether this incident reveals a larger problem at NIST¹. Thus far, NIST has not provided many of these documents, raising the concern that the lapses in good EH&S practice that contributed to this incident are not isolated.

IV. Issues and Concerns

While a final account of the incident is forthcoming, initial reports that untrained personnel were working with radioactive material are troubling. In February 2007, NIST-Boulder applied to the Nuclear Regulatory Commission (NRC) to amend their materials license for plutonium. As part of the agreement to amend their license, NIST stated that personnel handling and working in the area with the nuclear material would follow strict training procedures. NIST claims that most of the individuals who required the two-hour training received it in 2007, but no documentation has been provided to show that the authorized user on the NRC license received the full eight hours of training required. Also, the NRC license

¹ Letter sent June 19, 2008 requesting these documents is attached.

lists two authorized users for the plutonium, neither of whom were supervising the experiment at the time of the incident.

On the NRC license amendment application, NIST references an emergency response plan and a contamination minimization program. NIST has not provided these documents to the Committee, but the handling of this incident shows poor implementation of both of these aspects of proper incident response. It is unclear from the training materials provided to the Committee what specific instructions employees received to minimize the extent of contamination and what specific steps they were to take in an emergency. The fact that radioactive material was discharged to the municipal sewer system-- though the amount was later determined to be insignificant-- and was undiscovered until nearly a week after the initial incident illustrates that personnel did not appreciate the basics of contamination minimization. Similarly, it appears that NIST-Boulder does not have a comprehensive, well practiced emergency plan. Communication with state and local officials was lax, and the lack of communication with employees working at an adjacent National Oceanic and Atmospheric Administration (NOAA) facility created unnecessary anxiety for those individuals.

The FY2006 VCAT report stated:

NIST has made solid improvements over the years to improve its laboratory safety. . . . However, there are still inconsistencies in application of safety procedures across the laboratories. Safety is a leadership activity that the senior NIST leadership must be actively involved in.

Although not associated with high-energy radiation, the nuclear material involved in this incident still poses a serious health risk, as illustrated by the treatment measures currently being taken by at least one individual involved. Given that NIST researchers also work with material more hazardous than plutonium, health and safety practices should not be taken for granted by NIST management. The Safety Office at NIST has seen inadequate funding in recent years and the safety officers have little authority to enforce safety procedures. The lack of oversight of safety by NIST management contributed to this incident, and while NIST has engaged outside experts to investigate the incident, they must commission an external panel to evaluate EH&S practices across all of the NIST laboratories and programs. This is a necessary step to ensure safety for NIST employees and the surrounding communities.

V. Background

The small plutonium sample was being used in a research project to develop improved radiation detectors for use in applications such as anti-nuclear proliferation enforcement, homeland security, and basic research. The work was being done in collaboration with Los Alamos National Laboratories.

The spilled plutonium weighed approximately 0.25 g and was used as a reference material of known radioactivity. The type of radiation emitted by this sample is primarily alpha particles, which are easily shielded but have significant risks from internal exposure.

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June 19, 2008

Dr. James Turner
Acting Director
National Institute of Standards and Technology
100 Bureau Drive, Stop 1070
Gaithersburg, MD 20899-1070

Dear Dr. Turner,

We are writing this letter to express our concern over the accidental release of plutonium at NIST's Boulder Laboratory on June, 9. We are relieved to learn there were no immediate injuries due to the incident, however we are troubled by changing information, that health and safety protocols were not strictly followed, and that clear and accurate information regarding this incident is still not available.

NIST congressional affairs staff and other agency personnel have updated Science and Technology Committee staff with new information on the incident as it is available. We are concerned that the scope of the incident has changed over the course of a week, from one where the contamination was contained and procedures followed, to one where contamination escaped the lab and procedures were not followed. NIST researchers are renowned for their exemplary scientific work. It is disappointing to learn that this leadership does not appear to extend to laboratory health and safety issues.

As we continue to oversee this incident, we request that NIST make available to Committee staff the following information:

- Copies of the radiation and chemical safety protocols followed by NIST employees, and verification of the status of training and refresher training for all current employees;
- Information regarding how NIST's radioactive substance handling and clean up protocols align with those followed by the Department of Energy (DOE) and Los Alamos National Laboratory;
- A summary of NIST environmental, health, and safety (EHS) incident reports for the past year, focusing specifically on chemical EHS incidents;
- Copies of notices sent to NIST employees regarding the incident;
- Copies of correspondences with the Nuclear Regulatory Commission (NRC) and the DOE;

- Copies of communications with Boulder, Colorado city officials and the appropriate county and state officials;
- Copies of any external safety audits done for NIST laboratories;
- And the completed reports on the incident by NIST's review team and the Independent Review Board.

NIST researchers handle radioactive substances and other, equally dangerous chemicals. Given both the real hazards of these materials, and the public's perception of danger, we want assurances that NIST personnel are taking all possible precautions when handling hazardous substances and that a culture of safety is evident and respected at all levels of NIST.

The Committee looks forward to receiving a full report of this incident in as timely a manner as possible.


Sincerely,



BART GORDON
Chairman
Committee on Science & Technology



DAVID WU
Chairman
Subcommittee on Technology & Innovation



MARK UDALL
Chairman
Subcommittee on Space & Aeronautics