

September 13, 2002

The Honorable Edward J. Markey
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Markey:

I am responding on behalf of the U.S. Nuclear Regulatory Commission to your letter of July 19, 2002, in which you expressed concern about conflicting accounts of a FedEx shipment of iridium-192 from Sweden, via Paris, France, to the United States. You raised a number of specific questions regarding that shipment.

As I noted in my February 19, 2002 letter to you, the Nuclear Regulatory Commission does not have a direct regulatory role in regulating this matter because the shipment was made to an Agreement State. We were available as a resource to the State of Louisiana and the Department of Transportation, and have closely followed the investigation of our Swedish and French regulatory colleagues.

Our responses to your specific questions about these matters are enclosed. If you have further questions, please contact me.

Sincerely,

/RA/

Richard A. Meserve

Enclosures:

1. Responses to questions
2. Preliminary Notifications, PNO-IV-02-001, 001A, 001B

cc: Richard Boyle
Department of Transportation

Michael E. Henry, State Liaison Officer
Department of Environmental Quality

Responses to Questions from Congressman Markey

Question 1: The U.S. Customs response indicates that NRC advised Customs that “it may not be possible to determine the exact point at which the container first became compromised and the rate of exposure/emissions that occurred as the container was transported from Sweden to New Orleans via France.”

Question 1.a: Did NRC make this statement to U.S. Customs? If so, please provide a copy of the document in which this statement was made.

Response: No such statement was made in writing, although U.S. Nuclear Regulatory Commission (NRC) staff may well have made such a comment to U.S. Customs in telephone discussions. The statement is true, as it may not be possible to determine the exact point at which the container first became compromised. The response to Question 1.b will further explain this point. Transportation regulations (both international and U.S.) require shippers to perform radiation surveys of radioactive material packages before shipment to ensure they are properly shielded. The ongoing French biodosimetry investigation of workers at the Paris airport provides some indication that the package was compromised by the time it arrived in Paris (or during its handling at the Paris airport).

Question 1.b: Is the French report that some of the stoppers of the tubes containing the radioactive sources had been unscrewed, and that the sources fell out of the tubes, which was why the package was leaking, true? If so, why wouldn't it be possible to determine the exact point at which the container first became compromised? How could the stoppers have become unscrewed after the package was sealed, unless someone either improperly screwed on the stoppers in Sweden, or, alternatively opened the package, unscrewed the stoppers and then resealed the package? If the French report is true, doesn't this mean that the package was compromised throughout the entire journey?

Response: The French report's description regarding the stoppers and sources is true. When the package was opened, it was discovered that the caps of two of the three capsules inside the inner container (containment vessel) of the package were off, and the iridium-192 wafers were spread throughout the cavity of the package. Although the wafers remained within the containment vessel, they were no longer in a fully shielded configuration, which caused the resulting high radiation levels.

A comparison of the capsule, capsule holder, and inner pot dimensions show that the caps of the capsules had adequate clearance to come off the capsules while inside the package. There may be no way of determining exactly when or how the caps came off of the capsules. However, the tamper-indicating device on the package was not compromised, indicating that the package was not opened during transport.

ENCLOSURE 1

Question 1.c: Why would it not be possible to calculate the rate of exposure/emissions that occurred? Wouldn't this rate be constant throughout the package's journey, and equal to the rate that was measured at the point of the package's arrival? Why or why not?

Response: It is possible to roughly estimate the rate of exposure (dose rates) that occurred. Although the rate probably was not constant throughout the package's journey, a conservative estimate would assume it was equal to the rate that was measured at the point of the package's arrival. The U.S. Department of Transportation (DOT) investigation is ongoing and no report has been issued, but preliminary indications are that the stoppers became loose at some point during transit. Vibrations during transport may have caused the stoppers to work loose and allowed the iridium wafers to gradually vibrate out of their shielded tubes. The French biodosimetry investigation would indicate that this process had resulted in radiation leakage at the time the package was in Paris.

Question 2: The U.S. Customs response indicates that it has not yet received the final findings from the NRC or the Department of Transportation regarding this situation. When will the NRC findings be completed and sent to U.S. Customs? Please provide a copy of these findings if they have been completed. If they have not yet been completed, please provide me with a copy when they are finalized.

Response: NRC contracted with Oak Ridge National Laboratory (ORNL) to perform an examination of the transportation packaging after the radioactive material was removed. The examination is to provide sufficient information for a determination regarding the physical condition of the packaging itself, and whether the packaging was fabricated according to the approved design. A final report is expected shortly and it will be publicly available.

Question 3: The U.S. Customs response states that NRC "informed the U.S. Customs Radiation Safety Office (RSO) that no Customs personnel were exposed."

Question 3.a: Is this true? What is the basis for such a finding? Please provide a copy of the document in which this finding is conveyed and all supporting analysis used to reach this conclusion.

Response: No such statement was made in writing to U.S. Customs. NRC and U.S. Customs staff did have several conference calls about the incident and discussed potential exposure of Customs personnel. Based on those discussions, someone may have concluded that Customs personnel were not exposed or not significantly exposed. That conclusion would have been based on electronic dosimetry readings and efforts to estimate possible doses to Customs personnel, taking into account their physical relationship to the package. Louisiana (as an NRC Agreement State) has regulatory authority for the investigation in New Orleans and may have more information.

Question 3.b: Do you still believe that no Customs officials were exposed, in light of the French report that FedEx officials were exposed in France? Why wouldn't Customs officials have been exposed?

Response: Any conclusion that Customs officials were or were not exposed would be based on electronic dosimetry readings and efforts to estimate possible doses to Customs personnel. If the Customs personnel did not come close to the package and did not enter the pathway in which the radiation was streaming, no exposure would have occurred.

Question 4: Were NRC officials present when the package was opened in Louisiana? If so, please provide a copy of those officials' report/description of the incident.

Response: NRC officials were present, at the invitation of DOT and the State of Louisiana, to see the package opened. Because NRC is not the regulatory authority for the shipment or the State receiving the shipment, no report was issued. Attached is a Preliminary Notification of Event or Unusual Occurrence (PNO), dated February 8, 2002, which captured the NRC officials' observations of the incident. We also are including the two earlier PNOs on this incident, dated January 3 and 7, 2002, for your information.

Question 5: Please provide me a complete list of measures the NRC has taken since September 11 to ensure that radioactive materials are better controlled both within this country and in shipments to this country. For each such measure, please indicate whether it is intended to be a permanent or temporary change to NRC procedures.

Response: With respect to transportation, NRC issued two security advisories, in November and December 2001, relating to the transportation of spent fuel and large quantities of radioactive material. The NRC also issued an Order in December 2001 to a licensee to ensure that a particular research reactor spent fuel shipment would be carried out consistent with our advisories. Because of the continuing current threat environment, NRC is in the process of issuing Orders that would impose legally binding requirements [Interim Compensatory Measures (ICMs)] on licensees, for the transportation of spent fuel and large quantities of radioactive material. These Orders would also apply to imports, exports, and transshipments (i.e., shipments that pass through the U.S.). The ICMs include requirements associated with items contained in the previously issued security advisories and additional requirements that NRC subsequently identified.

NRC is currently working to finalize and issue these Orders and ICMs. NRC is coordinating these actions with other key Federal agencies, such as DOT and the U.S. Department of Energy (DOE). These Orders and ICMs will remain in place until NRC can complete vulnerability studies and evaluate and develop necessary changes to its transportation security regulations. NRC is also working with DOT on the need for conforming changes to DOT's regulations.

NRC has also established a joint working group with the Department of Energy to evaluate for “cradle-to-grave” control of radioactive sources which might be used in a radiological dispersal device. As part of the evaluation, the NRC is working with the Agreement States to establish a consolidated listing of higher-risk materials licensees that may be subject to additional requirements for enhanced security measures. The NRC is also reexamining its import and export licensing for these isotopes and is working with the International Atomic Energy Agency on establishing a code of conduct for licensing such materials. The NRC is also working with the Office of Homeland security and other agencies to ensure that the Federal Government is prepared to respond to an event involving a radiological dispersal device.