

November 4, 1993

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE

PNO-93001A

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Office of Nuclear Material Safety and Safeguards staff on this date.

Facility

Arrow Terminals

Industry, Pennsylvania

Dockets: NA License No: NA

Licensee Emergency Classification

Notification of Unusual Event

Alert

Site Area Emergency

General Emergency

X Not Applicable

SUBJECT: DETECTION OF COBALT-60 IN FERROPHOSPHORUS ALLOY (UPDATE)

This preliminary notification (PN) updates information given in PNO-HQ-93-001.

On October 19, 1993, the Pennsylvania Department of Environmental Resources (PADER) notified NRC that radioactive material had been detected in a shipment of ferrophosphorus alloy at a steel facility in Indiana. Subsequent review by NRC and PADER determined that the ferrophosphorus alloy originated overseas, was contaminated with cobalt-60, and was distributed to four steel facilities in the United States.

On October 26 and 27, 1993, a Region I (King of Prussia, PA) inspector visited the site where the contaminated ferrophosphorus alloy is stored, Arrow Terminals in Industry, PA, and the broker's office in Pittsburgh, PA. The broker, Minerais U.S., Inc., is a representative of a Luxembourg firm, which was importing the ferrophosphorus for a company named Continental Resources, Inc. (CRI), in New York, NY, the owner of the ferrophosphorus alloy.

In response to questions from the Office of Nuclear Material Safety and Safeguards (NMSS) and Region I, CRI and Minerais U.S. provided further information. The ferrophosphorus alloy in the contaminated lot #353 originated from NODFOS, a steel plant in Dzhambul, Kazakhstan. CRI reported that both the Luxembourg broker and NODFOS had been informed of the contamination. In addition to the four previously identified companies, three other companies received ferrophosphorus alloy from lot #353 at Arrow: Miller & Co. in Rosemont, IL, Alloy Services in Cleveland, OH, and Stelco in Hamilton, Ontario, Canada. Finally, CRI noted that two more shipments of material have been shipped to the United States. These shipments consist of ferrophosphorus alloy from Kazakhstan. One has arrived in Baltimore and the other, containing ferrophosphorus alloy from NODFOS and another Kazakhstan plant, is due to arrive in New Orleans on November 8, 1993.

The Region I inspector conducted surveys of the contaminated ferrophosphorus alloy and obtained average exposure rates of 40 to 50 μ R/hr on contact, with a maximum exposure rate of about 80 μ R/hr on contact. These radiation levels are comparable with the results of the PADER survey and the company surveys on sites that had originally received the contaminated material. The inspector collected samples of the material for analysis by the

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regional laboratory. Subsequent analysis by Region I determined that the concentration of cobalt-60 in the ferrophosphorus is an average of $2.2 \times 10^{-5} \mu\text{Ci/g} \pm 25\%$, which is comparable with PADER's preliminary, rough analysis of the concentration.

On October 29, 1993, management of the Division of Industrial and Medical Nuclear Safety (IMNS) contacted the owner of the ferrophosphorus alloy, CRI, to discuss the other two shipments of ferrophosphorus alloy from Kazakhstan. CRI stated that they are making arrangements to survey and analyze the additional shipments at the point of importation. CRI was requested to inform NRC of the results of the surveys. CRI was informed that any ferrophosphorus alloy containing radioactive material may be subject to regulatory control prior to any use or further distribution. IMNS is following up with a letter to CRI.

Region III (Glen Ellyn, IL) notified the six U.S. companies that had originally received the material or informed their Agreement States about the shipments. The Office of International Programs has contacted the Ontario company and is working with the Department of State to advise the Kazakhstan government of our findings. IMNS is also coordinating with the Office of Public Affairs.

Because the Region I and PADER surveys determined that the levels of radiation from the cobalt-60 in the ferrophosphorus alloy are low and because the ferrophosphorus is diluted in the steel production process to a fraction of a percent in the end product, IMNS is not restricting distribution of the ferrophosphorus alloy at Arrow Terminals or preventing its use in steel manufacturing. Based upon the results of the initial and follow up surveys, the contamination does not pose a threat to public health and safety.

This information is current as of 13:00 EDT on November 4, 1993.

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