RADIOACTIVITY IN METAL SCRAP: WORKING TOGETHER TO SOLVE A PROBLEM

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The first known case in the U.S. of radioactive material in metal scrap being melted occurred in 1983 at the the Auburn Steel Company mill in New York (1st slide). About 25 Curies of Cobalt 60, probably a radiography source was smelted. Over 2.2 million dollars was spent by the mill to decontaminate. Its effect was create an awareness of a potential problem.

In 1984, rebar and iron table legs contaminated with Cobalt-60 were discovered in the U.S. These products were imported from Mexico and the activity was traced to a teletherapy source which has been removed from its place of storage in Juarez, Mexico and dissassembled, including the source. The parts were sold for scrap value and the scrapyard and the scrap therein became contaminated. There were serious exposures of Mexican citizens. This event received wide media coverage and greatly increased sensitivity to the problem.

Some 10 cases of radioactive materials smelted in metal mills are known to have occurred in the U.S. In response a number of protective measures have been taken (2nd slide). The Canadian and U.S. Governments have published warning posters for the scrap user industry (3rd slide). The Institute of Scrap Iron and Steel published a helpful booklet for its members although it is now out of print (4th slide).

More scrap users are monitoring incoming scrap for radioactivity. That has created an awareness that two types of radioactivity in scrap can occur: sealed sources and alloys, and naturally occurring radioactive material or NORM. Research is being conducted to identify where NORM radioactivity is coming from and to find technological controls of its generation or reduce its flow into the scrap system. The government is looking at ways to improve accountability of licensed material and is supporting developing of model State regulations for NORM.

At this point, enough has become known that we can begin identifying areas where we need to focus our attention (5th slide). Despite protective measures smeltings of radioactive material continues to occur in the U.S. - 10 instances in the U.S. are known. Radioactive material continues to be detected in metal scrap feed. When it is found, the finders and government Agencies are faced with significant questions:

- What standards should be used for determining if the scrap shipment can be accepted or should be rejected?

- What are the safest ways to assess the problem and handle the scrap for the purposes of segragation, storage or return?

- What are the appropriate methods for assessing and addressing concerns about worker exposure?

Government efforts to improve accountability of licensed materials are underway. Most everyone agrees additional measures are needed but this effort will take time to complete.

With NRC, EPA and FDA support, and with public and industry participation, the Conference of Radiation Control Program Directors is developing model State rules for controlling NORM. But these are still in the draft stage.

(6th slide). We know of four instances where foreign mills have smelted radioactive material. What standards should there be for exporting or accepting for import contaminated metal?

When radioactive material is discovered in metal scrap, or smelting has occurred, how should the scrap handler, the consultant and the government respond? Will everyone use the same standards?

With the increased use of radiation monitors to detect radioactivity in metal scrap, what performance and testing criteria should be applied to this equipment?

Given the great diversity of the problem and the multiple efforts underway to help control if not solve it, COMMUNICATION and COORDINATION are becoming the most critical needs. Avoidance of multiple standards with their potential for conflict and causing confusion should now be a high priority.

Who's involved? (7th slide). Some of the players are:

- The Institute of Scrap Recycling Industries published, with NRC assistance, an informational booklet, aided NRC in distributing the scrap warning poster, and will be sponsoring a public workshop in Washington, DC on September 12, 1990.

- NRC, with the assistance of Canada published the warning poster, has sponsored a regulatory workshop, is assisting the Institute in planning their workshop and is initiating rulemakings to increase oversight of licensees and enhance accountibility of licensed material.

- The Conference is developing model NORM regulations and is looking at the possibility of serving as a clearinghouse for metal scrap radioactivity incident reports.

o The American Petroleum Institute is one of several trade organizations whose industries generate NORM waste. The Institute has initiated studies of the problem, developed an informational video and is working with the Conference on the model NORM regulations.

o The Health Physics Society and American National Standards Institute (ANSI) through their N43 Committee are working on testing and safety standards for sources used to calibrate and check scrap monitors. The Society and its chapters are providing needed forums for exchange of information.

o The Canadian Atomic Energy Control Board are the authors of the original scrap warning poster.

o OSHA aided NRC in developing and distributing the U.S. warning poster.

o The International Standards Organization is now looking at the problem.

o EPA is supporting the Conference in the development of model MORM regulations and certainly will have a role in setting standards. They also a have role to play in the disposal on wastes from mills that have smelted radioactive materials because of the mixed waste aspects.

o Louisiana has promulgated standards for acceptable levels of NORM in oil and gas field metal scrap and the Gulf coast States plus Oklahoma have formed an Ad Hoc Committee to review the problem.

So the problem is no longer lacking attention (8th slide).

What we do see is a need for improving exchange of information. For many of us, resonding to these kinds of incidents comes first and routire assigned duties comes a close second. Preparation (and obtaining approval) of papers for peer review and publication in journals is a far away 3rd. Increased utilization of newsletters may be an alternative. Both authors of this paper are using this approach and we recommend it to others.

Responding to requests for talks from affected groups, e.g. local organizations of scrap dealers and mill operators can be very effective. Jim Yusko recently addressed the annual meeting of the Elevtric Furnace Steel Makers Guild. We in the health physics community should reach out to these audiences and offer to meet with them.

This problem is going to be around for a while given the inventory of licensed radioactive material and the sources of NORM combined with the still evolving regulatory structure.

As mentioned earlier, the Society at both national and local levels as well as through its joint committees with ANSI can have a significant role. Its role can larger, however, if it also chooses to be proactive and monitor, evaluate and comment upon standards that are

coming to the surface. Industry, government and ad hoc standards are now being developed and will surely proliferate. We could and we should as the experts in radiation protection be more active in this.

The NCRP has, in its over 100 reports, addressed numerous radiation protection subjects, often in very thorough detail. Its reports are greatly respected and carry great weight. We believe the Society should request NCRP to examine this subject.

The problem is an international one. Scrap metal moves across international boundaries in great quantities. (It is one item that the U.S. has a positive trade balance in). Much the same as the Society can serve as a forum domestically, we believe international safety organizations, e.g., IRPA can do the same at the international level.

In summary, there are many important roles for the us to play. Its an opportunity to apply our technical expertese to help solve a practical problem and provide a public service as well. Remember that the majority of the people most directly affected by this problem - NORM waste generators, scrap handlers and mill operators are not experts in radiation protection nor do most of them associate potential radiation problems with their work. They are loking for help. Jim and I and some others have tried to respond. We'd like to have your company and your help. Thank you.