



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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OFFICE OF THE  
COMMISSIONER

August 4, 1994

TO: Files  
FROM: Joel Lubenau *Joel Lubenau*  
RE: Minutes - Meeting with Lockheed Representatives

On July 22, 1994, representatives of Lockheed Environmental Systems and Technologies Company met with NRC to discuss their process for decontamination of steel-making furnace dust contaminated by  $^{137}\text{Cs}$ . The meeting was requested by Lockheed following a meeting of their representative with Commissioner de Planque and Kay Whitfield at the LLW conference at Amelia island (enclosure 1). Representing Lockheed were John S. Domenech, Ron May, Dean J. Soderstrom, and Alfred W. Western (see enclosure 2 for titles, etc.) Mr. Western is a consultant to Lockheed. NRC was represented by John Austin and Bill Lahs, WM, Carl Paperiello, IMNS and Joel Lubenau.

I asked what their understandings were of the costs incurred by steel mills that smelt a  $^{137}\text{Cs}$  source? They stated that the cost of decontamination (i.e., excluding disposal cost) is typically \$ 1 million. \$ 0.5 million per day for losses due to shutdown would also be typical. I cited the American Metal Market magazine articles reporting an "extraordinary charge" of \$ 2.5 million incurred by the owner of Newport Steel due to a smelting of a  $^{137}\text{Cs}$  source and asked what their understanding was for this figure. \$ 1.0 million is for decontamination and \$1.5 million was for disposal. This was for the 1992 smelting. Another smelting occurred in 1993 and the company's financial health may be threatened.

Lockheed stated that, based upon their developmental work of a patent pending process, they can guarantee decontamination of furnace dusts to 10 pCi/gm. Decontamination to less than 5 pCi/gm has been repeatedly achieved in pilot tests. While no scale-up difficulties are anticipated, they would prefer not to commit at this time to the lower level. Eighty percent of their experience has been with furnace dust contaminated at levels of 400 to 500 pCi/gm with extreme points of 100 and 2,800 pCi/gm (Keystone Steel). One steel mill's dust is mostly in the range of 60 pCi/gm (Florida Steel) and Lockheed needs to evaluate the consistency of the process in decontaminating dusts at levels below 100 pCi/gm/. Additional details on the process are provided in enclosures 3-5. The process provides an opportunity at the mill site for recovery of Fe and Zn from the furnace dust. Of the original  $^{137}\text{Cs}$ , 99.5% is removed and isolated by ion exchange and converted to a small solid volume for disposal as radioactive waste. The other 0.5 % ends up with the "clean" leach residue.

Lockheed has found that in some cases  $^{137}\text{Cs}$  contamination can be removed by simply washing the dust with water. We suggested that

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the form of the  $^{137}\text{Cs}$  ( $\text{CsCl}_2$ , vs. embedded in ceramic beads) may explain the variation.

Their pathway analysis shows the maximum worker exposure to be 2 mrem/year (direct exposure to a dust stockpile for a year) and 0.006 mrem/year to the public (ingestion of mineral supplements containing contaminated Fe and Zn). Lockheed has not run a "COMPLY" code on the process but intends to do so.

It is unlikely that all mill operators would request a license amendment to permit Lockheed to perform the decontamination because (1) not all affected mill operators have been issued licenses and (2) it is cheaper to store the dust than to process it. Lockheed's options include applying for a license or license amendment (they hold a Nevada license) to authorize operation of the process at temporary job sites, requesting NRC rulemaking, perhaps in the context of NRC efforts to start a recycle rulemaking, application for approval under 10 CFR Part 20.2002, or down-blending of decontaminated dust with clean dust. The key for successful implementation is to ensure that subsequent dispositions of all products of the process are guaranteed, in particular, disposal of the  $^{137}\text{Cs}$  contaminated residues and recycling of the recovered Zn and Fe.

In a telecon on August 4, 1994, with Messrs. Domenech, May and Soderstrom, I was informed that Lockheed will request a license authorization to use the process.