Radioactive Waste Management Associates

Memo

To: V Colley, LJ Elliott

From: M Resnikoff

Date: 11/20/2003

Re: NIOSH Dose Reconstruction – Manhattan Project

After reviewing the dose reconstruction conducted by NIOSH at the Bethlehem Steel Corporation plant in Lackawanna, New York (ORAUT-TKBS-0001), the specific analyses conducted for and , and other OCA, there is no question in our mind the dose reconstruction conducted by NIOSH greatly underestimates the radiation dose Manhattan Project received.

This underestimate is due to the following: 1) missing radiation pathways and 2) truncated exposure duration. For the Bethlehem mill, the missing radiation pathways are incidental dust ingestion while the mill was operating, and resuspension of dust, direct gamma and incidental dust ingestion while the rolling mill was not operating.

Incidental dust ingestion is contamination on hands or face that is taken into the mouth when, for example, a worker wipes his brow. Generally the Lackawanna mills were hot so this is a common occurrence. Ingestion of uranium would be much more effective in yielding a radiation dose to the colon and stomach than inhalation. In our view, NIOSH should have taken as a clue the types of cancers incurred.

Further, NIOSH should have taken into account the entire exposure period. Instead, NIOSH calculates uptake of uranium and decay products only while the rolling mill was producing uranium bars, perhaps assuming that the vacuuming removed all surface contamination. That this is not the case can easily be seen by examining the Simonds Saw Mill that was also vacuumed, but where surface contamination persisted through 1979 at least. By limiting exposure to a two or three-year period, NIOSH greatly underestimates the doses to workers.

Finally, without naming names, it is important to point out that NIOSH has contracted with researchers that have customarily defended corporations against personal injury law suits and who may not best represent the interests of Manhattan Project workers.