

April 30, 2001

To: Technical Committee

From: Melissa Strait, Department of Chemistry, Alma College

Re: Evaluation of Radiological Report

The report prepared by SCIENTECH NES, Inc. does an historical assessment and a site characterization of the Breckenridge Disposal Site. The primary conclusion of the report is that quantities of radioactive materials documented by Michigan Chemical Company seem to match the activity that is present at the time of the report (August 1999). Except for a few notes below, the report seems to be able to justify this conclusion.

The report notes a discrepancy between the activity of the materials going into the extraction process and the combined activity of the products and wastes. This is not well accounted for and the conclusion that it may not be a "significant matter" is probably not justified. (page 11)

All three of the site surveys [Oak Ridge (1982), NRC (1996) and NES (1999)] seem to be rather cursory. The data provided for the two earlier assessments would be enhanced with the inclusion of maps that would allow comparison between the three assessments. The 1996 work was particularly sketchy, with few samples collected. The 1999 work did what seems to be a reasonable job of collecting samples on the site, but a rather limited set of samples was collected off the site. There is a particular concern in that many of the boreholes showed water at the bottom, yet the bottom was at about or above the level at which the waste was supposedly disposed. This leads to concerns that any leakage from the disposal containers would easily get into the groundwater and move offsite. The offsite samples were not done in a way to detect this.

In general, at the level at which the work was done there does not seem to be an immediate concern. There does not seem to be massive amounts of surface expression of radiation leakage. There does not seem to be any leakage of material off the site. However, I have one primary concern after reading this report. As best as can be determined from the information in the report, the radioactive filtercake was disposed of by placing the waste into fiberboard drums with metal top, bottom and ring clamps. A trench was excavated with a backhoe to approximately 9 feet, the barrels placed into the trench and then covered with soil. (Although there seems to be some confusion here - page 9).

My concern is that the fiberboard barrels will breakdown, releasing the material in them into the soil. (Penetration of the barrels seems to be a concern in several places when holes are being drilled for sampling.) As far as I can tell the site has no other protection, and once the material is released, it is free to move off the site in the ground water. Unless some other report shows that the whole site is lined or otherwise isolated, this would mean that although the material was disposed of properly in the first place and

now shows no evidence of movement, something needs to be done to prevent future movement.

Although I am not usually a proponent of digging up buried waste just to dig it up, in this case it seems that something needs to be done. There are not good records of where on the site the material is actually disposed of, and there does not seem to be adequate protection in place to isolate the material onto the site in a long term manner once the fiberboard barrels begin to decompose. The radiation levels are low, but there is enough material there to warrant concern if it starts moving around.