Los Alamos
NATIONAL LABORATORY
memorandum
Environment, Safety, and Health Division
ESH-17 Air Quality Group

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RADIONUCLIDE OUTLIER CALCULATIONS

I have completed the radionuclide outlier calculations, which are attached to this memo. When I started this part of the project, I started out using the DataQuest program to identify outliers. As I discovered when calculating the number of outliers with the tritium data, the program did not always accurately calculate the number of outliers. Another problem that I encountered when calculating outliers is that around half of the sites did not have enough radionuclide data to use Rosner's method, so I had to use an alternative method called Dixon's method for those sites. Rosner's method is only applicable with 25 or more samples, whereas Dixon's method is applicable from three to 25 samples. In general, the Rosner and Dixon methods either identified more outliers, or the same numbers as the method that we developed. There was only one instance where our method identified more outliers. I also removed low outliers in the data, which actually lowered the overall value (x+3s). Sites where I did remove at least one low outlier are represented with their values underlined.

Attached to this memo are three different tables, with each representing the results of a different radionuclide. In each table, the columns are labeled the same. The columns are represented as such:

"# pts"- The number of quarterly samples since 1990 that have been collected and validated.

"L x"- The calculated mean of the method developed by the group with all outliers removed.

"L x+3s"- The x+3s of the method developed by the group calculated with all outliers removed.

"# Out"- The number of outliers found in the data using the method directly to the left.

"Last Out"- The least extreme value outlier, which included negative numbers as well.

"D x"- The calculated mean using the Dixon's method with all outliers removed.

"D x+3s"- The x+3s calculated using the Dixon's method with all outliers removed.

"R x"- The calculated mean of the data using the Rosner's method with all outliers removed.

"R+3s"- The x+3s calculated using the Rosner's method with all outliers removed.

"Air conc > uncer"- The values of the outliers where the air concentration is higher than the uncertainty.

Also, I would just like to add a reminder about the action level meeting this Thursday April 29 at 10:00 in the conference room. If there are any comments about the data, including needing more information or corrections, feel free to talk to me about them.

DJD/db

Att: a/s

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