

General

2002-2



**Department of Energy**  
National Nuclear Security Administration  
Albuquerque Operations Office  
Office of Los Alamos Site Operations  
Los Alamos, New Mexico 87544

MAR 14 2002

James Brannon, Chair  
Northern New Mexico Citizens' Advisory Board  
1660 Old Pecos Trail, Suite B  
Santa Fe, New Mexico 87505

Dear Mr. Brannon:

Subject: Northern New Mexico Citizens' Advisory Board Recommendation 2002-2

This letter and its enclosure supplement my partial response to you on March 6, 2002 regarding this recommendation. My staff and the staff of the DOE Albuquerque Operations Office's Environmental Restoration Division will continue to pursue the initiatives described in the enclosure.

My staff will also continue to interact with your Environmental Monitoring and Surveillance Committee regularly on this matter.

Please call me at 505-667-5105 or Ted Taylor of my staff at 505-665-7203 if you have questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Corey A. Cruz".

Corey A. Cruz  
Acting Director

Enclosure: Department of Energy Response to NNM CAB Recommendation 2002-2

- Cc w/ enclosure:  
Martha Crosland, Designated Federal Officer, EM-11, DOE-HQ/FORS  
E. Dennis Martinez, Deputy Director, OLASO  
T. Taylor, DDFO, DIR, OLASO  
M. Johansen, ER, OLASO  
G. Turner, FO, OLASO  
G. Rael, ERD, DOE-AL  
D. Bourne, ERD, DOE-AL  
Menice S. Manzanares, Executive Director, NNM CAB  
CAB File



## Enclosure

### Department of Energy Response to NNM CAB Recommendation 2002-2

The Department of Energy's (DOE) Environmental Restoration Division in the Albuquerque Operations Office (AL) and the DOE's Office of Los Alamos Site Operations (OLASO) have reviewed Recommendation 2002-2 from the Northern New Mexico Citizens' Advisory Board (NNMCAB).

In summary, we share many of the NNM CAB's concerns and certainly share in the NNM CAB's desire for confidence in analytical results. Staff members have been working on actions that address several components of the recommendation. Other components will require resources not yet allocated. Our responses to each of the specific recommendations are included below.

**NNMCAB Recommendation 1.** It is recommended that the Department of Energy Office of Environmental Management investigate techniques to improve the level of confidence in analytical values for those environmental contaminants of interest to the DOE Complex and for which current or proposed action levels are near the method detection limit of frequently used analytical methods.

**DOE Response.** We concur with this recommendation and are currently working to investigate alternative methods where appropriate. All DOE-AL facilities have an ongoing interest in maintaining and improving the level of confidence in all analytical values, particularly those for which action levels are near the analytical detection limit. To this end we have conducted several studies and have recently required laboratories providing analytical data to AL sites to empirically verify all of the method detection limits (MDLs) they have calculated in accordance with 40CFR136.

Errors resulting from calculation of MDLs according to the specifications of 40CFR136 using de-ionized water are well documented by these studies for high explosives, pesticides, and perchlorate. Where appropriate we are investigating new methods to achieve analytical results in which we can have increased confidence. For example, we are currently developing a method efficacy study for a new method (liquid chromatography/mass spectrometry/mass spectrometry or LC/MS/MS) to resolve the perchlorate issue. Development of other alternative methods or techniques will be recommended, if appropriate, as these studies continue.

**NNMCAB Recommendation 2.** It is further recommended that a long-term strategy be adopted which would include determining for which contaminants/environmental media that frequently used analytical methods have detection limits that approach current or proposed action levels.

**DOE Response.** We agree that such an analysis would be valuable, and believe that great care must be taken in defining the parameters of such a study. DOE, Los Alamos National Laboratory (LANL) and the NNM CAB need to have high confidence that the MDLs and

## Response to NNM CAB Recommendation 2002-2

practical quantitation limits (PQLs) are correct. Moreover, the current or proposed action levels must be determined to be relevant and appropriate.

A comprehensive study to determine which contaminants/environmental media have detection limits that approach action levels will require considerable effort. Analytical results for up to 200 analytes would possibly need to be evaluated with sufficient statistical rigor to ascertain which analytes may be candidates for new, more sensitive analytical techniques. DOE, LANL, and the NNM CAB will need to work closely to establish resources, schedules and priorities to complete this action and implement this recommendation.

**NNM CAB Recommendation 3.** Evaluate the potential for development and implementation of new or improved analytical methods to provide lower detection limits for these contaminants/environmental media.

**DOE Response.** As noted above, DOE and its AL facilities are committed to investigating new or improved analytical methods for analytes where appropriate. Some alternate methods exist, but they may not be published, peer reviewed, or promulgated by the Environmental Protection Agency (EPA). Any proposed departure from established methods must be carefully considered and fully justified as tremendous expense and regulatory ramifications are likely to be involved. A recommendation for departing from conventional regulatory methods must, among other factors, be based on a rigorous statistical analysis of relevant results and recognize that large uncertainties in analytical measurements close to the detection limit are inescapable, regardless of the technique used.

**NNM CAB Recommendation 4.** Evaluate the potential for improving the confidence of results by use of replicate sample analysis and matrix spikes, within and between analytical laboratories, and/or better statistical definition of method detection limits for analytical methods.

**DOE Response.** Within individual analytical laboratories, replicate sample analyses and matrix spikes are already an integral part of our quality control procedures and are analyzed with every batch of samples. Between multiple analytical laboratories, it is not our routine practice to split samples (or spiked samples) among two or more laboratories. That practice is not consistent with modern industry standards for laboratory quality assurance and quality control, and is prohibitively expensive. In either case, we believe replicate and matrix spike data have limited use in determining inter-laboratory and intra-laboratory precision and accuracy. Obtaining multiple analytical results that are near the detection limit from two or more laboratories would be of limited value, and the variations in sample matrix effects will commonly be greater than the analytical variations between laboratories. Our approach to data quality, and the one commonly used by essentially all large environmental programs, is to focus on quality systems within each laboratory, thereby ensuring that the quality of each datum acquired is known and meets project data quality objectives if that is physically possible.

We do believe that the use of promulgated EPA methods provides some measure of confidence in the comparability of results among laboratories. Further, there exist other tools that offer limited ways to compare performance among laboratories.

- The laboratories used by DOE-AL participate in periodic inter-laboratory performance evaluation (PE) studies that cover a variety of matrices and analytes. While we can get some indication of inter-laboratory performance by using the PE studies, these are limited in their usefulness in quantifying inter-laboratory precision because they are infrequent and the samples vary in both composition and concentration.
- In this calendar year, we are initiating an examination of the laboratories' statistical process control results for quality control parameters. In that effort, we hope to identify and rectify any large disparity between laboratories in method implementation, as well as helping to ensure that adequate quality control information is obtained to support analytical results.

Regarding the latter part of NNM CAB Recommendation 4 that refers to better statistical definition of MDLs for analytical methods, please refer to our remarks in the DOE Response to Recommendation 1.

**NNM CAB Recommendation 5.** Examine potential for a national partnership with the Environmental Protection Agency, other DOE offices, other federal agencies, state environmental agencies, and local environmental departments in development and implementation of the investigated techniques.

**DOE Response.** We concur with this recommendation and note that the engagement of the regulatory agencies is critical to the acceptance of any alternative methods developed. We are currently actively engaged with the New Mexico Environment Department on the perchlorate issue, and Lawrence Livermore National Laboratory is conducting a peer review on the method development for LC/MS/MS for perchlorate. We have also evaluated a perchlorate method the Navy is developing. While the matrix and detection limit associated with this Navy method was not consistent with Los Alamos' requirements we will continue to work with other agencies and organizations as appropriate. In addition, the DOE-AL's relationship to the other DOE sites' Analytical Management Programs provide us opportunities to work with other sites as appropriate.