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LANL Permit
TA-16 OB 388,399

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January 13, 2010

DCN: NMED-2010-03

Mr. James Bearzi
Mr. Dave Cobrain
Hazardous Waste Bureau
2905 Rodeo Park Dr. E/Bldg 1
Santa Fe, NM 87505

RE: Draft Evaluation of the Transmittal of the Human-Health and Ecological Screening Assessment for the Technical Area 16 Burn Ground, Revision 1, January 8, 2010

Dear Mr. Bearzi and Mr. Cobrain:

This letter addresses Los Alamos National Laboratory's (LANL) Revision 1 to the Human Health and Ecological Risk Assessments conducted to support the permitting of the Open Burning Treatment Units at Technical Area 16 (TA-16-388 and TA-16-399). As part of this review, it was assumed that all the data collected to support this evaluation have been reviewed, validated, and deemed acceptable for use in a risk assessment.

LANL concluded that there are no potential unacceptable risks to human and ecological receptors at the TA-16 burn ground due to past site activities. This conclusion was reached through an assessment of surface soil data (31 samples for inorganic chemicals and 36 soil samples for organic chemicals) and following a screening level approach. The following comments outline concerns with the assessment and conclusions.

1. In the previous version of the LANL assessment, a map showing the analytical results for metals detected above background reference values was not provided. In Revision 1, maps for the constituents of potential concern (COPCs) barium, cadmium, and silver were provided, in addition to the map presenting the soil results for 2,3,7,8-TCDD equivalent (dioxin/furan congeners TEQs). The maps for barium, silver, and 2,3,7,8-TCDD TEQ indicate higher depositional concentrations to the north and to the east/southeast of both TA-16-388 and TA-16-399. Cadmium concentrations appeared to be more evenly dispersed across the site than the other COPCs. In order to understand these soil data distributions, a review of LANL's air dispersion modeling was conducted (Los Alamos National Laboratory Technical Area 16 Burn Ground Air Pathway Assessment Report, Revision 0, August 2007). The LANL air modeling appears to have focused on TA-16-388. In reviewing the maximum lofting and depositional flux maps contained within this report, there is a clear pattern of dominant lofting and deposition: the model predicted primary deposition would occur to the north and east/southeast of TA-16-388. Given the close proximity of TA-16-399 to TA-16-388 and location in



similar terrain, it could be assumed that the depositional patterns from historical burning activities at TA-16-399 would mimic those for TA-16-388. The data from the soil sampling conducted by LANL confirms the depositional predictions of their modeling.

LANL indicates in the summary of the risk assessment that elevated concentrations at the site (the TA-16 burn ground) could likely be due to historic operations at the site. LANL also indicates that the higher levels of 2,3,7,8-TCDD TEQ may be due to other sources (solid waste management units and/or areas of concern) to the east of the burn ground. Given that predicted depositional areas from the LANL air modeling were confirmed with actual soil data, it appears that the TA-16 burn ground has been impacted by historical burning activities and potential soil contamination from other sources is not likely.

2. An analysis of the potential impacts of 2,3,7,8-TCDD TEQ on avian receptors was included as requested in Revision 1 of the assessment. No comments were noted with this analysis.
3. In order to assess ecological risks associated with contamination detected in soil, the site was divided into two distinct areas: 1) an area immediately around TA-16-399 that encompassed the elevated COPC concentrations (approximately 0.1 hectares) and 2) the rest of the site (approximately 2.5 hectares). A map was not provided in the report defining the two areas, which would be helpful in understanding the data. However, the maximum 2,3,7,8-TCDD TEQ was used to represent the TA-16-399 area, which is a conservative approach.

In looking at risk to the deer mouse using the 95 percent upper confidence level of the mean (95% UCL) of all 2,3,7,8-TCDD TEQ across the entire site (2.6 hectares), the resulting hazard quotient (HQ) was 10. This is indicative of moderate risk. LANL has been conducting small animal biota studies to include potential impacts of 2,3,7,8-TCDD TEQ in Los Alamos, Pueblo, and Pajarito Canyons. LANL indicates that similar 2,3,7,8-TCDD TEQs are present in these other canyons where the conclusions from these biota studies are that no adverse impacts have been observed in small animals. LANL further states that while the risk assessment may indicate moderate risk, biota studies indicate no observable adverse impact.

The results for the screening level ecological assessment indicated that the primary risk driver was 2,3,7,8-TCDD TEQ. An HQ of 1.9 was calculated for the deer mouse for 2,3,7,8-TCDD TEQ in the area immediately next to TA-16-399, and for the area comprising the rest of the burn site, an HQ of 1.7 was estimated.

Given the uncertainties associated with a screening level ecological risk assessment coupled with LANL's use of toxicity reference values (TRVs) based on no-observed adverse effect levels (NOAELs), which add another level of conservatism in evaluating potential impacts to a population, the resulting HQs, while above the target level of 1.0, are not greatly elevated and are indicative of the potential for low/moderate risk.

However, actual conclusions on whether there is potential for an effect on ecological could not be drawn based on the screening approach provided.

Results of the air modeling conducted by NMED (OBODM model) indicated that the 10-year soil concentrations (using a propane fuel source) would result in elevated ecological risk. Thus, there is uncertainty on how future burning operations at TA-16 could potentially impact ecological receptors.

Given the additional analysis provided by LANL in the Revision 1 of the screening assessment, data indicate that there is minimal to risk ecological receptors, and in particular, to small animals (deer mouse). This risk is most likely due to past burning activities at the TA-16 burn ground. Given the localized nature of elevated 2,3,7,8-TCDD TEQ levels and the conservatism built into the assessment, the overall risk to the deer mouse population would most likely be minimal across the site with some localized pockets of moderate risk. A more detailed analysis would be needed to confirm this assumption.

It is noted that if the TA-16 burn unit is permitted, the volume and type of waste streams will be decreased from past operations and donor material (fuel) will be cleaner burning (propane versus kerosene). These changes will result in changes in chemical emissions and subsequently changes in the amount and type of chemicals ultimately deposited on soil. It is recommended that if the unit is permitted, an aggressive soil monitoring program be in place to evaluate annual conditions from operation of the TA-16 burn units. An annual update to the human health and ecological risk assessments should be conducted using soil compliance data. In addition, a trend analysis is also recommended to see if there are detectable increases in soil concentrations and risk. It is also recommended that permit conditions be in place that allow for immediate termination of the TA-16 burn unit by NMED and initiation of closure activities and corrective action in the event that compliance monitoring indicates increasing contaminant trends in soil and/or adverse impacts to human health or the environment.

If you or any of your staff have questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,



Paige Walton
AQS Senior Scientist and Project Lead

cc: Joel Workman, AQS (electronic)