NORTHERN NEW MEXICO CITIZENS' ADVISORY BOARD (NNMCAB)
Recommendation to the Department of Energy

2008-11
Reducing the Outfall into Sandia Canyon, Relating to Studies and Cleanup of Chromium

Environmental Monitoring, Surveillance and Remediation Committee

Background

As of later 2008, the National Pollutant Discharge Elimination System (NPDES) Outfall 01A-001 releases approximately 400,000 gallons per day of treated sewage water and/or cooling water into Sandia Canyon.

On Dec. 23, 2005, the Los Alamos National Laboratory (LANL) reported the discovery of elevated chromium in the regional groundwater in monitoring well R-28. The results indicate that the chromium in the R-28 groundwater samples exists predominantly in the hexavalent form. Chromium concentrations at that well are approximately 400 µg/L (ppb), exceeding the New Mexico Environment Department (NMED) and Environmental Protection Agency standards of 50 µg/L and 100 µg/L.

Use of chromium water-cooling systems at the Laboratory between the 1950s and 1970s is the most likely source of the chromium contamination at the Laboratory. The Laboratory stopped using chromium in cooling towers in the early 1970s. The cooling-tower system in TA-03 at the head of Sandia Canyon released large volumes (potentially up to 37 lb/day) of chromate. Approximately 70,000 to 160,000 lbs Cr (in Cr3 and Cr6 forms) were released.

Sandia canyon is a complex geologic area with a wetlands near the head of the outfall and various layers beneath the surface which consist of Otowi Member (tuff), basalt, volcanic rock, Puye Formation and Totavi gravels. The subsurface contains alluvial groundwater, perched intermediate groundwater and the regional water table.

LANL studies report that approximately 28% of the Cr released (Cr3 and 2% Cr6) into Sandia Canyon is held in the wetlands biomass downstream from the outfall. Only part of the outfall release is needed to maintain the existing wetland. The excess water migrates through the subsurface, possibly into the area monitored by well R-28 and possibly transporting the Cr.

Intensive studies are underway with oversite and direction from the New Mexico Environment Department (NMED) to characterize the extent of Cr in the ground,

pathways for migration of Cr and remedies for preventing Cr from becoming a hazard in regional water supplies.

A current study is underway to determine how the wetland's Cr3 and Cr6 would change or migrate if NPDES discharged water was totally removed from the canyon and the wetland was altered or disappeared.

Comments and Observations

Over the past 10 years, LANL has greatly reduced the number of outfalls and pollutants that are released into the environment. The Northern New Mexico Citizen's Advisory Board (NNMCAB) would like the outfall into Sandia Canyon to be a candidate for consideration but this consideration must include a broader assessment of the effects on wetlands and existing contaminants. The assessment must also consider the effects of stormwater runoff in Sandia Canyon, and the effects this might have if the nature of the current wetlands was significantly altered.

Recommendation

1. As an interim measure, reduce the amount of outfall into Sandia Canyon so that the amount is sufficient to keep the existing wetland area viable. LANL is to determine the amount of needed water.
2. Continue to study the effects on stored Cr3 and Cr6 if the wetland is not maintained.
3. Divert the excess of the outfall to beneficial uses.

Intent

The intent of this recommendation is to eliminate a possible mechanism for spread of Chromium into the aquifer while other studies and remedies are underway. Later information and remedies may have a different final end state for the Sandia Canyon wetland.

References

1. Groundwater Workshop Chromium Project, presented on February 27 and March 12, 2008 to the NNMCAB and public.
2. Plans and Practices for Groundwater Protection at the Los Alamos National Laboratory34 , National Research Council of the National Academies, Final Report 2007.
3. LANL website http://www.lanl.gov/environment/h2o/chromium.shtml.