

**NORTHERN NEW MEXICO CITIZENS' ADVISORY BOARD  
Recommendation to the Department of Energy  
No. 2010-05**

**Recommendation for Interim Measure for Volatile Organic Constituent Contaminant  
Source Removal in MDA-L and MDA-G**

**Drafted by the Combined Environmental Monitoring, Surveillance and Remediation and  
Waste Management Committees**

**Background:**

The Los Alamos National Laboratory (LANL) has utilized Material Disposal Area L at Technical Area 54 (MDA-L) to dispose of non-radioactive liquid chemical wastes in pits and shafts for many years. The waste liquids included Volatile Organic Compounds (VOC) which have infiltrated deep into the subsurface soil and rock. LANL has used the larger MDA-G for disposal of Mixed Low-Level Waste (MLLW) consisting of radiologic and hazardous waste constituents co-disposed in unlined pits over approximately 60 acres. More recent disposal in Material Disposal Area G (MDA-G) has been limited to Low Level Waste (LLW) consisting of radiologic waste.

LANL has conducted site investigation studies of MDA-L in accordance with the Consent Order with the New Mexico Environment Department (NMED) signed in March 2005. The results of the site characterization studies are summarized in a LANL Report dated September 2005 together with reports of supplemental investigations. In 1993 and 1994, passive gas monitors placed on the surface around MDA-G and MDA-L identified hot spots with VOC contamination. The site characterization studies also included a pilot test at MDA-L to evaluate the ability and efficiency of removing the VOCs in the ground using a Soil Vapor Extraction (SVE) process where a vacuum is applied to open boreholes into the ground and the volatile organic vapors are withdrawn and filtered onto activated carbon at the ground surface. The activated carbon together with the VOCs are contained in vessels at the ground surface for later regeneration and disposal of the waste VOCs. This short-term pilot test demonstrated the efficiency of removing several hundred pounds of VOC contaminants from the ground in about three weeks. Such a removal of the VOC contaminant source material from MDA-L is consistent with good practice prior to constructing the final remedy at MDA-L. A similar SVE pilot test is planned for MDA-G in the next year.

The Corrective Measures Evaluations (CME) to develop alternatives for remediation and closure of MDA-L and MDA-G, are expected to include SVE treatment to remove the source of these VOCs from the environment and potential future migration to receptors. The SVE treatment may be one component of the final remedy.

**Comments and Observations:**

The pilot study for soil vapor extraction of VOCs from the ground at MDA-L demonstrated the effectiveness and cost-efficiency of removing much of the VOCs remaining in the subsurface at MDA-L. The results of the Soil Vapor Extraction Pilot Test have been presented to the CAB. Such source removal prior to a final remedy is consistent with good practice and have been completed by DOE at other facilities, including facilities in New Mexico.

An Interim Measure, in accordance with the Consent Order, could consist of a Soil Vapor Extraction System optimized to safely remove and dispose of large amounts of the waste liquid

VOCs from the ground over the next several years prior to implementation of the final remedy at MDA-L. Such a source removal effort would improve any final remedy and reduce the possibility of contaminant migration into the groundwater or into the atmosphere near MDA-L. If the SVE pilot test at MDA-G provides similar positive results to remove substantial amounts of VOCs from the subsurface, an Interim Measure to continue the treatment and removal of VOCs from the subsurface may be a cost-effective and appropriate measure to implement prior to the final remedy at MDA-G.

**Recommendations:**

**No. 1.** The NNMCAB recommends that DOE initiate an Interim Measure for source removal of VOCs from the subsurface of MDA-L prior to the implementation of a final remedy at the site.

**No. 2.** The NNMCAB recommends that DOE consider initiating or maintaining as an Interim Measure the SVE system at MDA-G if the pilot test confirms the ability to remove substantial quantities of VOCs from the subsurface at MDA-G.

**No. 3.** The NNMCAB recommends that implementation of a soil vapor extraction system should include appropriate criteria for terminating system operation in the event that the quantity of VOCs removed over time no longer meets the intent and cost effective goals of this recommendation.

**No. 4.** The NNMCAB recommends that DOE consider immediately implementing these Interim Measures for MDA-L and MDA-G in accordance with the 2005 Consent Order. Provisions are available in the Consent Order for DOE to implement such proven technologies for cleanup even without a final approval for the remedy from the NMED.

**Intent:**

The intent of this recommendation is to remove large volumes of liquid waste VOCs from the ground and to prevent these contaminants from moving into the groundwater or to the atmosphere. The NNMCAB recognizes it will take additional time and studies for the NMED and DOE to develop final remedies for these MDAs. Therefore, an Interim Measure will provide immediate treatment and removal of source material to reduce further contamination of the site.

**Effect:**

The effect of implementing an Interim Measure for source removal of VOCs at MDA-L and MDA-G will be to improve the expected performance of the final remedies for MDA-L and MDA-G. Removal of the source VOCs in the subsurface will reduce the potential for migration of contaminants from MDA-L into the groundwater or the atmosphere.

**References:**

1. Quadrel (Quadrel Services, Inc.), September 1993. "EMFLUX Soil-Gas Survey of Technical Area 54 (MDA G) Los Alamos National Laboratory," Quadrel Report Number QS1135, Maryland Spectral Services, Inc., Forest Hill, Maryland. (Quadrel 1993, 63868).
2. Quadrel (Quadrel Services, Inc.), September 1994. "EMFLUX Soil-Gas Survey of Technical Area 54, Los Alamos National Laboratory," Quadrel Report Number QS1190, Maryland Spectral Services, Inc., Forest Hill, Maryland. (Quadrel 1993, 63869).
3. Investigation Report for Material Disposal Area G, Consolidated Unit 54-013(b)-99, at Technical Area 54, LA-UR-05-6398, September 2005, ER2005-0626.