

Kieling, John, NMENV

From: joken@valornet.com
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To: Kieling, John, NMENV
Subject: Remedy Selection for MDA-H

John E. Kieling, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
E-mail: john.kieling@state.nm.us

Ref: LANL Remedy Selection for MDA-H

January 15, 2008

First, to recap the present situation:

LANL has suggested the following five possible remedies[1] for MDA-H,

- 1) site contouring;
- 2) installation of an engineered cover;
- 3) complete encapsulation of each of the nine shafts, plus an engineered cover;
- 4) excavation and removal of entire contents offsite;
- 5) excavation and reburial of entire contents onsite;

and LANL has expressed its preference for remedy #2.

But, NMED has selected instead remedy #3.

NMED's primary reason[1] for selecting remedy #3, seems to be that the Volatile Organic Contaminant (VOC) trichloroethylene (TCE), a carcinogen, has been detected by LANL in pore gas beneath MDA-H[2]. The concentration at which TCE was detected in pore gas (2600 micrograms/cubic meter) is such that, if solvation of the vapor into surrounding percolating water were to occur according to Henry's Law, then the concentration of TCE dissolved in surrounding percolating water would exceed the EPA standard for groundwater known as the Maximum Contaminant Level (MCL) of 5 micrograms/liter.

Consistent with their view, NMED would also require prolonged vacuum pumping to be performed beneath the site, in order to reduce the concentration of vaporized TCE, and other VOC's which may be present in the region below the site but, presumably, above the underground aquifer.

The remedy selected by NMED appears to be an conservative one, as they themselves admit.

Furthermore, if remedy #3 were to be accepted by LANL for MDA-H, then such a remedy might also have to be mandated for MDA-L, a much larger neighboring disposal site, into which volatile organic liquids have been dumped routinely. Recall that volatile organic liquids were never dumped into MDA-H; i.e., at least insofar as we know. Indeed, monitoring of the ground beneath MDA-L for VOC's has already revealed large concentrations of TCE and 1,1,1-trichloroethane (TCA) in pore gas[3].

Also, a similar situation exists within a neighboring Technical Area (TA-50), where MDA-B underground VOC concentrations have recently been shown to be very large[4].

However, new data has emerged which greatly changes the picture at MDA-H.

In particular, the older (2003) LANL data[2] for VOC concentrations in pore gas at MDA-H has been shown to be badly defective[5].

In a new LANL data summary of VOC concentrations measured at MDA-H all during 2007 and a part of 2006, the maximum TCE concentration in pore gas has been determined to be only 10 micrograms/cubic meter[5].

Therefore, there is reason now to think that the VOC concentration below MDA-H may be vary small. Nevertheless, it appears that the profile of that underground contamination is still only poorly defined.

This may not seem to be a serious matter, because of the rather low VOC concentrations now being measured at MDA-H. However, if a reliable methodology of underground VOC profile mapping could first be developed and proven in the relatively unchallenging environment of little MDA-H, then this same methodology might be transferable to other larger MDA's.

After all, I imagine that there is little doubt that the poorly defined plumes of contaminants lying beneath MDA-L and below MDA-B will soon have to be mapped, since in both cases, the concentration of VOC contaminants has been found to be very large[3,4].

Similar questions have been raised by Bob Gilkeson[6] about the adequacy of the procedures used by LANL in obtaining the new data from MDA-H.

In conclusion, therefore, in the light of LANL's new data[5] on VOC concentrations in pore gas at MDA-H, it seems at least incumbent upon NMED to reconsider its selection of remedy #3 for MDA-H.

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[1] NMED has stated its views in a public "Fact Sheet/Statement of Basis", dated Nov. 5, 2007.

[2] The LANL data to which NMED has referred appears in the LANL publication "Corrective Measures Study Report for MDA-H, SWMU 54-004, at TA-54, Revision 1", dated June, 2005, by John Hopkins. This is a revision of LA-UR-03-3354, the original CMS report for MDA-H, dated May, 2003.

[3] LA-UR-07-5460, John Hopkins, Aug., 2007.

[4] LA-UR-07-2581, Mark Rich, April, 2007.

[5] "Periodic Monitoring Report for Vapor sampling Activities at MDA-H, SWMU 54-004, at TA-54,Fiscal Year 2007", LA-UR-07-7803, John Hopkins, Nov., 2007.

[6] see Bob Gilkeson's memo to the NNM CAB dated 1-8-08, entitled "Comment by Registered Geologist Robert H. Gilkeson on the Remedy Selected by NMED for Closure of MDA-H at the Los Alamos National Laboratory - Revision 2 of the Draft Version Presented to the NNM CAB on 12-19-07".

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Ken LaGattuta
163 Lower San Pedro
Española, NM 87532
505-747-1574

joken@valornet.com

