

TA72

**Young, John, NMENV**

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**From:** Christina B. Behr-Andres [behr-andres@lanl.gov]  
**Sent:** Sunday, September 24, 2006 9:47 PM  
**To:** Bearzi, James, NMENV; Young, John, NMENV; Cobrain, Dave, NMENV  
**Cc:** dewart@lanl.gov; akphelps@lanl.gov; camangeng@lanl.gov; elvis@lanl.gov  
**Subject:** Notification of Hg in LAOI-7

**Attachments:** LAOI-7 Hg.xls



LAOI-7 Hg.xls (23 KB)

James, David, John:

This message is to notify you that LANL staff have received screening measurements of mercury in groundwater samples from well LAOI-7 which samples intermediate groundwater in Los Alamos Canyon (data attached). Subsequent samples analyzed by an independent analytical laboratory did not detect mercury.

The detection limits (by different methods) are 0.05 ug/L to 0.06 ug/L. The early results from borehole screening samples (analyzed by our in-house analytical laboratory, for which data are not validated) range from 1 ug/L to 25 ug/L. An early well sample analyzed at this internal laboratory also produced a result of 2.3 ug/L. The NM Groundwater Limit is 2 ug/L. For the most recent sampling round, four analyses from field duplicate filtered and unfiltered samples by our external analytical laboratory did not detect mercury; the non-detect results have been through secondary validation.

Regarding the analyses by our internal analytical laboratory, we believe there may be shortcomings in the method used to measure mercury; these analyses were for screening purposes only on samples taken during well construction and development. We believe that the results of nondetection provided by our external analytical laboratory used an analytical method appropriate for measuring mercury and that these non-detect results are representative.

We have performed a review of mercury detections across the Laboratory. Our measurements are for total mercury, because this is the regulatory standard. Our database includes 444 mercury detections for groundwater out of 4467 measurements, since 1977. About 81 of these results are incorrectly reported as detections in the database from 1998 (this was a problem in our database, we are working on getting it fixed). These values include field QC sample results. Detections at any particular location are sporadic. Detections tend to cluster around certain dates, suggesting systematic analytical errors.

The origin of any mercury in groundwater samples is likely mainly either as a natural constituent of the rocks and sediments, or from a contribution by atmospheric deposition.

The detect rate for the has fallen over time, perhaps due to method improvement (not including the incorrect 1998 data):

The majority of the detections appear to be in unfiltered samples from boreholes, springs, and alluvial wells; these samples have high turbidity and the mercury is likely associated with the solid fraction and of natural origin.

The largest results are from recent borehole samples, using a method judged inadequate for accurate mercury analysis by our analytical chemists.

Other high values come from alluvial wells in Canon de Valle and Martin Spring Canyon. These results were too low to pass the RFI screening process and are not contaminants of concern for that area's follow-up actions; this result was accepted by NMED.



We will contact you again when we have more information about this matter.  
In accordance with the protocols we have established, we respectfully request that this information not be forwarded to other parties. Thank you.

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Flid	Matrix	Hdr	Zone	Location	Well Class	Port	Depth	Start Date	Flid Prep	Flid Qc	Typ	Lab Samp	Analyte	Anyl Suite	Analyte Dr	Symbol	Std Result	Std Uncer	Std Mdl	Std Mda	Std Uom	Dilution	Flid	Lab Code	Lab Qual	Concat Flid	Concat Ref	Prelim Fla	Anyl Meth	Load Date	Sample Id	Source Org	Code
WG	Upper Los Alamos Cg		LAOI-7	BOREHOL		0	8/23/2005	UF				CS	Hg	METALS	Mercury		1.01	0.03	0.05		ug/L		EES6				Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG		
WG	Upper Los Alamos Cg		LAOI-7	BOREHOL		0	8/29/2005	UF				CS	Hg	METALS	Mercury		5.9	0.3	0.05		ug/L		EES6				Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG		
WG	Upper Los Alamos Cg		LAOI-7	BOREHOL		0	8/29/2005	UF				CS	Hg	METALS	Mercury		16.6	0.7	0.05		ug/L		EES6			Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG			
WG	Upper Los Alamos Cg		LAOI-7	BOREHOL		0	8/30/2005	UF				CS	Hg	METALS	Mercury		8	0.4	0.05		ug/L		EES6			Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG			
WG	Upper Los Alamos Cg		LAOI-7	BOREHOL		0	9/1/2005	UF				CS	Hg	METALS	Mercury		25	1	0.05		ug/L		EES6			Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG			
WG	Upper Los Alamos Cg		LAOI-7	BOREHOL		0	9/8/2005	UF				CS	Hg	METALS	Mercury		5.2	0.1	0.05		ug/L		EES6			Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG			
WG	Upper Los Intermedia		LAOI-7	SINGLE		240	10/3/2005	UF				CS	Hg	METALS	Mercury		2.3	0.1	0.05		ug/L		EES6			Y	EPA:200.8	1/23/2006	EU0507LA	ESH-18HDRG			
WG	Upper Los Intermedia		LAOI-7	SINGLE		240	5/9/2006	F		FD		CS	Hg	METALS	Mercury	<	0.06		0.06		ug/L		1 GELC	U		N	EPA:245.2	6/20/2006	GU06050L	ESH-18HDRG			
WG	Upper Los Intermedia		LAOI-7	SINGLE		240	5/9/2006	F		FD		CS	Hg	METALS	Mercury	<	0.06		0.06		ug/L		1 GELC	U		N	EPA:245.2	6/20/2006	GU06050L	ESH-18HDRG			
WG	Upper Los Intermedia		LAOI-7	SINGLE		240	5/9/2006	UF				CS	Hg	METALS	Mercury	<	0.06		0.06		ug/L		1 GELC	U		N	EPA:245.2	6/20/2006	GU06050L	ESH-18HDRG			