

Oct. 6, 2011

Dr. Richard J. Abitz Follow-up to October 5, 2011 Public Conference Call Oct. 6, 2011 8:48 pm

Jack:

Did not get a response from EPA on my forwarding of this follow up. Sending to you to ensure that someone understands that I did follow up with the request from Mary to forward info on excursion limits.

Regards,

Rich

----- Forwarded message -----

From: **richard abitz** Date: Wed, Oct 5, 2011 at 7:36 PM

Subject: follow up to Oct 5 conf call

To: UraniumReview@epa.gov

My thanks to Dr. Jack Kooyoomjian and the RAC for allowing me to comment on the Oct 5 call. I am providing the follow-up information in response to comments by Mary Clark and Oscar Paulson.

I believe Mary Clark asked about the reference material that supports my statement that the excursion upper control limit is presently set using the max value from the ore zone plus an additional 5 mg/L for uranium. The below information is taken directly from TCEQ Permit No. UR02827-001, which is for ISL mining at Kingsville Dome TX. (I can email the PDF files of the permit if Mary would like to see them).

Production Area	Ore Zone max value	Excursion limit	Monitor Well Ring
	U (mg/L)	U (mg/L)	Avg. U (mg/L)
PAA1	0.927	5.927	0.057
PAA2	3.75	8.75	0.019
PAA3	1.54	6.54	0.023

As I stated in my previous comment, the invalid use of the max value and an arbitrary adder of 5 mg/L allows legal pollution of groundwater that meets the EPA MCL for uranium at PAA2 and PAA3 MWRs. That is, a mining company would not have to report an excursion at the monitor well ring (MWR) until the excursion limit was exceeded! Also, note that the mining company reports an average value for the MWR. This is not acceptable unless the data from the wells are shown to follow a normal or lognormal distribution. Many times, the trend of the ore is such that one or more of the MWR wells may intersect part of the ore deposit trend, and the high value of U at that well (anthropogenic oxidation) results in biasing the average value to a high value (e.g., PAA1). If the median values were reported for the MWR, it would be unusual to see a median value over 0.03 mg/L.

Note that the wide range in U concentrations observed between the ore zone and MWR is due to the anthropogenic induced oxidation of the ore zone during drilling and well development. Oscar Paulson noted that there is a large range in U concentrations in ore deposits, but most of this is due to oxidation of the ore when improper drilling fluids are used and the wells are developed with air purging. After development, if left undisturbed, the uranium levels will decrease as reducing conditions set back in. However, once radium has been released from the oxidation of the ore, it remains elevated and true baseline conditions for radium cannot be established. The above scenario is well documented in the Uranium Energy Corporation's Permit Application to TCEQ (UEC, 2007, Goliad Project, Goliad County TX, Application to Conduct In Situ Uranium Recovery). The following data ranges for U and Ra-226 are for three sample rounds collected from 14 Goliad ore zone wells in April 2008, July 2009 and Nov 2009.

U (mg/L)	Ra-226 (pCi/L)
April 2008: 0.005 to 0.804	10 to 1,680
July 2009: <0.003 to 0.090	17 to 2,000
November 2009: <0.003 to 0.010	10 to 1,590

The above example indicates why reducing fluids must be used to drill exploration boreholes and monitoring wells, and baseline groundwater quality needs to be determined during the early stages of the exploration process before thousands of holes penetrate the ore zone.