July 3, 2011

Dr. K. Jack Kooyoomjian,
Designated Federal Officer (DFO), SAB Staff Office
kooyoomjian.jack@epa.gov

Dr. Kooyoomjian,

The following comments are in response to the June 23, 2011 Federal Register notification (Vol. 76, No. 121, pp. 36918 – 36919) regarding the "Meeting of the SAB Radiation Advisory Committee for the Advisory Review of EPA's Draft Technical Report Pertaining to Uranium and Thorium In-Situ Leach Recovery and Post-Closure Stability Monitoring" and the associated invitation for public comment.

Given the environmental legacy of conventional uranium mining techniques there is obvious advantages to the idea of in-situ extraction approaches. However, there is the obvious need to insure the continued viability of groundwater resources in the vicinity of such extraction operations.

In reviewing the associated June 2011 draft technical report on "Considerations Related to Post-Closure Monitoring of Uranium in-situ Leach / in-situ Recovery (ISL/ISR) Sites" I would like to suggest the following radionuclide monitoring analyte list for consideration by the SAB Radiation Advisory Committee. Most of these radionuclides are the same as included in Table A-1, "Dewey-Burdock Site - Number of Groundwater Samples Collected, Analytical Method, and PQL by Constituent" with some modifications. I feel that the other example radionuclide monitoring analyte lists are too minimal to properly characterize possible changes to the groundwater system.

Analyte	Discussion
Gross Alpha	General measure of dissolved gross alpha activity that can be used insure that all likely progeny contributors are accounted for.
Gross Beta	General measure of dissolved gross beta activity that can be used insure that all likely progeny contributors are accounted for.

Gamma Spectrometry	Table A-1 specifies Gross Gamma. I feel it more appropriate to expect the laboratory to identify and quantitate the specific gamma emissions that would result from NORM. This would involve providing to the laboratory a specific list of NORM isotopes that can be generally quantified using gamma spectrometry. It will also be necessary to provide radionuclide specific PQLs that would drive the required detector, sample geometry and overall count duration. Given varying gamma emission properties between these radionuclides it may not be appropriate to have a single applicable PQL value for the entire list but the suite of values should be low as practical, e.g. ≥ 1 L on a well-shielded high-efficiency detector for 24 hours or more. Candidate NORM radionuclides for such a target list include actinium-228, bismuth-211, bismuth-212, bismuth-214, francium-223, lead-211, lead-212, lead-214, potassium-40, protactinium-231, radium-223, radon-219, thallium-208, and thorium-227.
Radium-223, 224, 226	The indicated EPA method (903.0) actually will measure all three of the mentioned alpha emitting radium isotopes. However, given the much shorter half-life of radium-224 and radium-223 the contribution of these isotopes to the reported value will be dependent on hold time of the sample.
Radon-222	Given that radon is a noble gas its presence is independent of water chemistry but is dependent on ease with which this radium-226 progeny is emanated from the soil matrix into free water. So it may provide information on soil structure.
Lead-210	A useful measure of the extent to which this radon-222 progeny is still present in the free water or has been immobilized in the soil structure.
Polonium-210	A useful measure of the extent to which this radon-222 progeny is still present in the free water or has been immobilized in the soil structure.
Thorium-228, 230, 232	While Table 1 separately addresses thorium-230 and thorium-232 it may be useful to have all three of these natural thorium radionuclides to be analyzed together and reported in units of pCi/L.

I would also like to suggest that if the Committee identifies any needs for standards that may be needed in support of uranium in-situ leach / in-situ recovery community that such information is shared with voluntary consensus standard organizations such as ASTM International. Such a relationship between federal agencies and voluntary consensus standard organizations is contained in the National Technology Transfer and Advancement Act and OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities".

Sincerely yours,

Mr. Donivan Porterfield