SUMMARY OF CHANGES

Advisory - Active Soil Gas Investigations

California Environmental Protection Agency
Department of Toxic Substances Control
Los Angeles Regional Water Quality Control Board
San Francisco Regional Water Quality Control Board

August 2015

The Department of Toxic Substances Control (DTSC), in conjunction with the Los Angeles Regional Water Quality Control Board and the San Francisco Regional Water Quality Control Board, issued the revised Advisory – Active Soil Gas Investigations (ASGI) in July 2015. The Advisory will assist stakeholders in collecting soil gas samples that are representative of subsurface conditions. The Advisory, originally released in 2003, was rewritten in April 2012 in response to more than 440 public comments. Developments in the field of soil gas collection necessitated the July 2015 revisions to the Advisory.

The following is a summary of the revisions to the 2015 Advisory.

1) Work Plans and Sampling and Analysis Plans. Section 2.3 and Section 2.3.3 were modified to further clarify the recommended elements for a work plan and sampling and analysis plan.

2) Minimum Sampling Depth. Section 3.1.3 was revised to state that soil gas samples are not typically collected from depths of less than five feet due to barometric pressure and temperature effects.

3) Soil Gas Sampling for Vapor Intrusion. Section 3.1.3 states that soil vapor concentrations representative of source conditions should be used for preliminary vapor intrusion screening evaluations. A five foot deep soil gas sample is not appropriate for vapor intrusion screening if deeper contaminant sources exist. This aligns the ASGI with DTSC's vapor intrusion guidance.

4) Annular Seals for Soil Gas Wells. Section 3.2.1 adopts recommendations from the Nebraska Grout Study[1] concerning the composition of annular seals. The composition of the annular seal is now a function of the long-term use of the soil gas well. For temporary wells that will be used for less than a year, the annular can be hydrated bentonite. For permanent wells that will be used for longer than one year, the annular seal should be neat cement with one to five percent bentonite. The Nebraska Grout Study indicates that bentonite annular seals

[1] Lackey, S. O., W. F. Myers, T. C. Christopherson, and J. J. Gottula. In-Situ Study of Grout Materials 2001 – 2006 and 2007 Dye Tests, Nebraska Grout Task Force, October 2009.

in the vadose zone desiccate readily and will not rehydrate once damaged, which will impact the ability to obtain soil gas samples representative of depth-specific conditions.

5) Probe Construction Diagram. Figure 1 was modified to integrate the recommendations from the Nebraska Grout Study.

6) Soil Gas Probe Tubing. In Sections 3.2.2 and 5.2.2, for sites where soil moisture is high and/or finer-grained materials are present, larger diameter tubing, up to 3/4-inch, may also be used. Using larger diameter tubing is less susceptible to plugging by high soil moisture and fine-grained materials.

7) Equipment Cleanliness. In Section 3.2.2, prior to sampling, an assembled soil gas probe, tip and tubing, should be blank tested at a frequency of one analysis per new batch of tubing or material used. Demonstration of equipment cleanliness enhances the quality of soil gas data. New text describes procedures for sampling stock coiled tubing, an assembled soil gas probe and probe tips.

8) Decommissioning Soil Gas Probes. In Section 3.4, decommissioning procedures for soil gas vapor wells were modified to ensure that probes will not be conduits for the migration of contaminants.

9) Sub-Slab Probe Installation and Sampling. Section 3.6 was expanded to describe sub-slab probe design and installation, along with probe spacing and sampling frequency. This aligns the ASGI with DTSC's vapor intrusion guidance.

10) High Purge Volume Sub-Slab Sampling. Section 3.6.1 discusses the collection of high purge volume sub-slab samples. Extracting a large volume of soil gas from beneath a foundation may provide representative average concentrations that minimize spatial variability and can reduce the possibility of missing an area of elevated concentrations when using multiple discrete sampling points. Issues and protocols to be considered when employing high purge volume sampling are also provided.

11) Purge Volume Testing. The recommendation that an optimal purge volume should be determined prior to sampling by conducting a purge test has been removed from the Advisory. The previous one, three and ten purge volume testing was replaced with a default three volume purge. The Agency's experience over the last ten years of soil gas purge volume testing in a variety of subsurface conditions indicate that three purge volume was the predominant volume used. See Section 4.2.3.