

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**

April 2012

The Department of Toxic Substances Control (DTSC), in conjunction with the Los Angeles Regional Water Quality Control Board (LARWQCB) and the San Francisco Regional Water Quality Control Board (SFRWQCB), issued the revised *Advisory – Active Soil Gas Investigations* in April 2012. The Advisory will assist stakeholders in collecting soil gas samples that are representative of subsurface conditions. *Advisory – Active Soil Gas Investigations*, originally released in 2003, was revised and a draft version released for public comment in March 2010. More than 440 public comments were received on the 2010 draft Advisory. Every comment was considered and the Advisory rewritten in response to those comments. The Advisory was also changed to address recent developments in the field of soil gas collection.

Additions to the 2012 Advisory

- 1) Interim Guidance for Active Soil Gas Investigations. All pertinent information from the LARWQCB's 1997 *Interim Guidance for Active Soil Gas Investigations* was integrated into 2012 Advisory (see Appendix F and H).
- 2) Data Quality Objectives. The concept of data quality objectives (DQOs) is integrated into the 2012 Advisory. The DQO process is a systematic planning tool based on the scientific method for establishing criteria for data quality and for developing data collection procedures (see Section 2.1).
- 3) Additional Sampling Information. Information is provided on the following topics:
 - a) Collection of passive soil gas samples (see Appendix A);
 - b) Sample collection in low permeability soil (see Appendix D);
 - c) Sample collection methods for naphthalene in soil gas (see Appendix E);
 - d) Sample collection using a shroud (see Appendix C); and
 - e) Overview of soil gas analytical methods (see Appendix F).
- 4) Conceptual Site Model. The elements for a conceptual site model are included in the 2012 Advisory (see Section 2.2.2).
- 5) Shut-In Testing. Prior to vapor probe sampling, shut-in tests are now recommended to confirm that leaks are not present in the sampling system prior to leak testing (see Section 4.2.1).

- 6) Gaseous Leak Check Compounds. Practitioners now have two options for leak checking; gaseous tracer with shrouding (quantitative) or liquid tracers without shrouding (qualitative). (see Section 4.2.2.2 and Appendix C).

Changes to the 2012 Advisory from the 2003 Version

- 1) Vapor Probe Tubing Type. The use of low-density polyethylene tubing for probe construction is no longer recommended (see Section 3.2.3 and Appendix B).
- 2) Drive Point Methods. Drive point methods, such as the post-run tubing method, are allowed in the 2012 Advisory. The method should be used only with an understanding of its limitations and ability to meet the project-specific DQOs (see Section 3.2.4).
- 3) Well Decommissioning. Recommended well decommissioning methods were added to prevent the well and associated borehole from becoming a conduit for preferential contaminant migration (see Section 3.4).
- 4) Sub-Slab Probes. Sub-slab probe construction diagram was added (see Section 3.6 and Figure 2).
- 5) Vapor Probe Equilibration Times. The recommended duration of equilibration time after probe installation was increased from thirty minutes, as follows (see Section 4.1):
 - a) Direct push installations: two hours;
 - b) Hand auger installations: two days;
 - c) Hollow-stem auger installations: two days; and
 - d) Air rotary and roto-sonic installations: two weeks.
- 6) Purge Volume Testing. The recommended final purge volume when conducting a purge volume test has been changed from seven volumes to ten volumes (see Section 4.2.3).
- 7) Liquid Leak Check Compounds. The laboratories should quantify and annotate all detections of the liquid leak check compound at the reporting limit of the target analytes rather than at an arbitrary detection limit of 10 micrograms per liter. If the concentration of the leak check compound is greater than or equal to 10 times the reporting limit for the target analytes, then corrective action is necessary (see Section 4.2.2.1).
- 8) Purging and Sampling Rate. Purging and sampling rates greater than 200 milliliters per minute can be used as long as a vacuum of 100 inches of water or less is maintained whenever a higher flow rate is used (see Section 4.3).

- 9) Sampling Containers. The following guidance is provided concerning sampling containers (see Section 5.1):
- a) Plastic syringes are not recommended for sample collection;
 - b) Polymer gas sample bags, such as Tedlar bags, may be used as long as the holding time is less than six hours;
 - c) When sampling with glass bulbs, surrogates should be added to the sample; and
 - d) Other sampling containers may be used pursuant to project-specific DQOs.
- 10) Field Conditions. Soil gas sampling should not be conducted during or within five days of a significant rainfall event of a half inch or greater. Also, sampling should be delayed until after the passage of frontal systems (see Section 5.2 and Appendix G).
- 11) Holding Times. The holding time for passivated stainless steel canisters was increased from three days to thirty days, in accordance with the TO-15 method (see Section 6.4).
- 12) Analytical Detection Limits. Detection limits should be based on project-specific DQOs; hence, the 2012 Advisory provides no recommendations on detection limits (see Section 6.2).

Certification of Laboratory Methods for Soil Gas Analysis

As of the date of this document, the development of a laboratory certification program for soil gas analysis is in progress in California. The California Department of Public Health, Environmental Laboratory Accreditation Program (ELAP), will offer certification for soil gas analysis by USEPA Methods 8015B, 8021B, 8260B, TO-15 and TO-17. Accreditation under National Environmental Laboratory Accreditation Program (NELAP) for USEPA Methods TO-13A, TO-15 and TO-17 for ambient air testing is acceptable as certification for soil gas testing. Once a certification program is available by the California Department of Public Health, laboratories should undertake certification.