2/17/99 recommend 4 sample & 2 depths & sampling events

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Time Transmitted: 1:40 PM **Operator:** JMP

Comments/Special Instructions:

Susan –

Attached please find a description of the methodology that will be followed for soil-gas sampling at the former Standard Brands Paint Store and adjacent properties in Emeryville, California. Please call me at (510) 420-2544 if you have any questions.

- John Pekala

PLEASE CALL IMMEDIATELY IF THE FAX YOU RECEIVE IS INCOMPLETE OR ILLEGIBLE

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Methodology for Soil-gas Sampling
Former Standard Brands Paint Store and Adjacent Properties
Emeryville, California

Introduction

Soil-vapor sampling is planned to be conducted at the former Standard Brands Paint Store and adjacent properties in Emeryville, California by ENVIRON. The following is an outline of the equipment to be used and the techniques to be followed. This document is intended to serve two purposes; 1) to provide background information regarding the sampling equipment and techniques, and 2) to be an easily followed guideline for the sampling event.

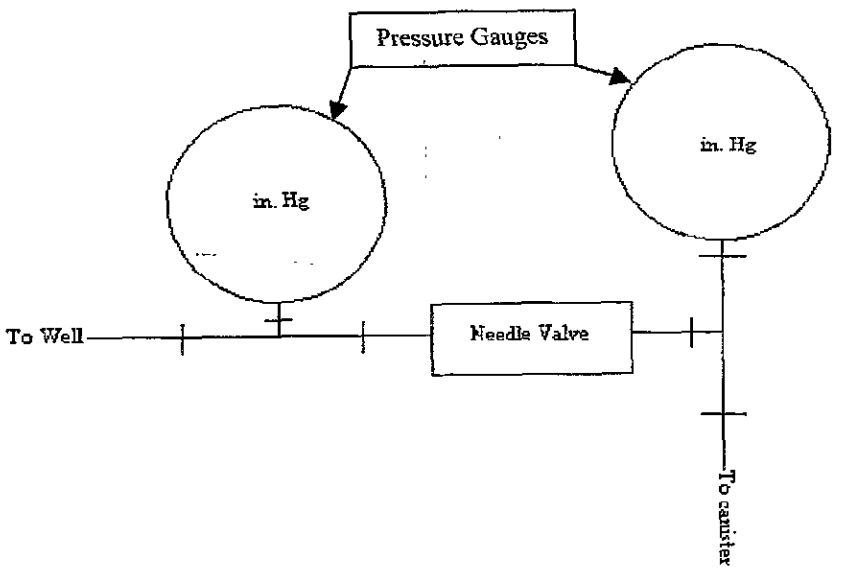
Equipment

Vapor samples are collected for select analyses by EPA method TO-14. The select analytes are listed below:

TO-14 volatile gases select analytes:

Total Petroleum Hydrocarbons (TPH) as mineral spirits; hexane; and benzene, toluene, ethylbenzene, and xylene (BTEX). Depending on analytical results, further speciation analyses of compounds may be requested.

The vapor samples will be collected in 3.2-liter SUMMA canisters and analyzed by Environmental Analytical Services in San Luis Obisbo, California. A sampling apparatus was created to allow the canisters to fill at a minimal flow rate, thus insuring a representative sample. If a measurable vacuum is pulled on the tubing, vapor may be pulled through the formation to quickly to allow for sampling to be conducted in equilibrium conditions. The apparatus is diagrammed below:



The pressure gauge on the right indicates the vacuum induced by the SUMMA canister, which should initially be 28 inches of mercury (Hg), as established by the

laboratory. When this gauge reads zero, the sampling will be terminated (the canister is at ambient pressure indicating that the gas in the canister is in equilibrium with the soil gas). The gauge on the left indicates vacuum being applied to the well. Using this apparatus, the sampler can regulate flow such that the vacuum in the well is minimized. For this sampling event, with a gauge reading from 1 to 30 inches Hg, "minimal" vacuum is defined as vacuum sufficient to be detected by the gauge.

The sampling apparatus attached to the SUMMA canister using a swage-lock attachment, and attaches to the well using ¼" Tygon tubing. All of the tubing and the apparatus itself are purged with 200 cubic centimeters (cc) of zero air prior to sampling and between each sample collection.

Procedures

The following are step by step instructions detailing sample collection:

1. Purge the tubing in the boring in order to establish representative concentrations throughout the soil-vapor probe/boring. The protocol is to *slowly* purge two volumes using the 50cc glass syringe. Attach the glass syringe to the ball valve at the wellhead. Open the ball valve. Then, pull on the syringe. If more than 50cc is to be purged, close ball valve while evacuating the syringe, then start again.
2. Purge the sampling apparatus with zero air to remove any influence from previous sampling. Open the needle valve. Attach the syringe to the tubing end of the apparatus. Attach the zero air valve to the other end. Open the valve and the air pressure will push out the inner part of the syringe. When the syringe has been fully pushed out, repeat the entire process until 200cc have been purged.
3. Connect the tubing end of the apparatus to the wellhead ball valve, *which should be closed.* Connect the other end of the apparatus to the SUMMA canister.
4. Ensure that *all valves* are closed (ball valve at wellhead, needle valve, and canister valve.
5. Open canister valve one turn. Right gauge should read greater than 28 inches of Hg. If it reads lower than 26 in. Hg, the vacuum has been compromised and the canister should be rejected.
6. Open the ball valve at the wellhead.
7. Note the time, and begin sample collection by slightly opening the needle valve.
8. Continue adjusting the needle valve to maintain minimal vacuum on the well while the SUMMA canister gauge value decreases to zero.
9. When the SUMMA canister gauge reads zero inches of Hg, note the time, and close all valves (starting with the SUMMA canister).
10. Sampling is complete. Start at step one for the next soil boring.