EBASCO

Date: Sept. 23, 1995 REF: TERC-009.001-95-054

To: Steve Pullen
New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
2044 Galisteo Street
Santa Fe, New Mexico 87505

Subject: Proposed Borehole Locations for SWMUs 114, 117, and AOCs WWII Cantonment Site, Domestic Waste Burial Site, and Helicopter Pad Burn Pit

Dear Mr. Pullen:
Enclosed are proposed borehole locations for the referenced sites. The preliminary site maps, generated during the geophysical surveys and showing the soil gas sampling points and the proposed borehole locations, are plotted on mylar overlays to register on the geophysical data plots for the total magnetic field (enclosed), using the arbitrary geophysical grid coordinates. I have also included copies of the preliminary soil gas data reports.

We are scheduling the borehole UXO clearance work at these locations beginning Sept. 27, and I have also sent copies of these plots to Rick Mayer at EPA.

Sincerely Yours,

Jim Bush

JAB/jb
Enclosures

cc: R. Mayer - EPA, Region VI, Dallas, TX
K. Mulhern - USACE, Omaha, NE
J. Lowrey
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Project File

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from: Harry O'Neill

date: September 18, 1995

pages: 8 (including this page)

Jim-

Following please find preliminary results from the EMFLUX® Soil-Gas Survey conducted at SWMU 114 on Melrose AFR, NM. Provided are tabular results in emission flux rates and a base map of sample locations.

To establish correlations between reported emission flux rates and actual subsurface contaminant concentrations, Quadrel recommends follow-on intrusive sampling at sample points with the highest measured flux rates and, if necessary, those with low flux rates. Results from such sampling should be used to determine which flux-rate values represent significant subsurface contamination beneath SWMU 114.

FINDINGS

As the Emission Flux Rates Table shows, five of the compounds or compound groups targeted in this Survey were detected in the soils and/or groundwater beneath this sampling site.

In general, compound detections were reported at only 20 of the 107 sample locations. The table below summarizes the detections at SWMU 114.

Compounds	Number of Detections	Range of Detections ($\mu g/m^2$ min)
Total Aliphatic Hydrocarbons	3	43.1 to 104.6
Acetone	17	3.9 and 9.2
Chloromethane	1	1.9

Styrene	3	0.7 to 1.3
Xylenes (tot	3	to 2.3

Acetone was the most frequently detected compound, being found at 17 sample locations. While Acetone is found in cleaning solvents, paint removers, and varnish removers and is used in the manufacturing of adhesives, explosives, and dyes, it is also a naturally occurring compound -- a product of aerobic bacterial biodegradation -- and, therefore, tends to be ubiquitous.

Aliphatic Hydrocarbons, typically associated with petroleum-related compounds, were detected at adjacent points 27 and 38 at emission flux rates of 43.1 and 104.6 ng m^{-2} min^{-1}, respectively. The only other Aliphatic Hydrocarbon detection was reported at a flux rate of 70.5 ng m^{-2} min^{-1} at point 76. Styrene, which is used in manufacturing packaging materials, synthetic rubber, resins, plastics, and storage tanks and can be found in petroleum products, was also detected at each of these three sample points at low emission rates ranging from 0.7 to 1.3 ng m^{-2} min^{-1}.

Xylenes (which are found in, among other things, petroleum-related products and solvents) were reported at points 38, 76, and 102 at emission rates of 0.9, 2.3, and 0.6 ng m^{-2} min^{-1}, respectively.

Chloromethane, the only other detection, was reported at an emission rate of 1.9 ng m^{-2} min^{-1} at point 82.

EMISSION FLUX RATE CALCULATION

Our contract laboratory, Maryland Spectral Services, Inc. (MSS), analyzed each of the EMFLUX® samples for the VOCs targeted in this Survey. Laboratory results for each compound identified were reported to Quadrel in nanograms per cartridge, with a reported quantitation level of 25 or 50 ng depending on the compound (with the exception of total aliphatic hydrocarbons which has a quantitation level of 250 ng).

Laboratory results were then converted by Quadrel to emission flux rates, the average rates at which the compounds identified were emanating from the surface

of the ground. (Field emission rates vary widely and rapidly in response to geophysical phenomena, of which the dominant are the earth-tidal effects of gravitation.) Flux rates, in nanograms per square meter per minute (ng m^{-2} min^{-1}), are calculated using the following formula:

$$F = W/ATR$$

where:
- F = Emission flux rate, ng m^{-2} min^{-1}
- W = Contaminant mass, ng
- A = Subtended area of EMFLUX® collector shell, m^2
- T = Time of collection, min
- R = Adsorbent recovery factor, decimal fraction.

Emission flux rates for each compound identified by MSS were computed by substituting in the above formula the actual collection area (6.2×10^{-3} m^2), specific collection times, and the adsorbent recovery factors for specific contaminants.

If you have any questions or comments concerning this facsimile or the data from the Survey of SWMU 114, please give me a call.

-Harry

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