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U.S. Environmental Protection Agency
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Washington, DC 20460-0001

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Attn: TSCA §8(e) Coordinator

Re: Unanticipated environmental & safety risks arising from degradation of "neat" ethanol plume

Chevron Environmental Management Company (on behalf of Chevron Products Company) is submitting this notice pursuant to Section 8(e) of the Toxic Substances Control Act (TSCA). The submittal is for an environmental risk arising from a spill of neat (undiluted) ethanol. The following information summarizes the event & recent findings.

Ethanol Release

On March 20, 1999, a release of neat ethanol was identified from Tank 58 at Chevron Products Company's Willbridge Terminal in Portland, OR. A review of inventory records indicates a release of 19,000 gallons occurred over a period of at least ten days. The release was caused by a subsurface piping failure at the tank base. No release to the surface occurred. Facility personnel notified the National Response Center and Oregon DEQ of the release. The tank was immediately emptied and taken out of service. Tank 58 was razed in 2000, with only the tank base remaining.

Historical groundwater monitoring data were available from existing monitoring wells used to delineate a pre-existing dissolved hydrocarbon plume, which are part of the ongoing Remedial Investigation being conducted at the site. On March 30, 1999, Wells CR-6, CR-7, CR-8, and CR-10 (the nearest wells to Tank 58) were sampled. Ethanol was not detected in any of the samples at the laboratory detection limit of 10 milligrams per liter (mg/L).

Subsurface Investigation

The release of neat ethanol at the Willbridge Terminal provided an opportunity to study the effects of ethanol at an active terminal. Ethanol is completely miscible in water and at high concentrations (>20,000 mg/L) can enhance the solubilization of benzene, toluene, ethylbenzene, and xylenes (BTEX) from NAPL. Ethanol can be degraded in both aerobic and anaerobic environments. There is some evidence that the presence of ethanol can inhibit BTEX biodegradation.

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In June and July of 1999, nine additional monitoring wells were installed to delineate ethanol and hydrocarbons in the subsurface (CR-12 through CR-20). Selected soil samples from the borings were analyzed for total petroleum hydrocarbons (TPH) by DEQ Methods NWTPH-Gx and NWTPH-Dx, BTEX by EPA Methods 8021B and 8260, and fuel oxygenates by ASTM Method D4815.

In December 2000, eight additional monitoring wells (CR-21A/B, CR-22B, CR-23A/B, CR-24 A/B and CR-25) were installed to investigate the vertical extent of impact from the release of ethanol to groundwater. The new wells and three existing wells (GPW-1, GPW-3, and GPW-6 [renamed CR-22A]) were included in the ethanol investigation groundwater sampling program. The monitoring wells were sampled eight times between June 1999 and July 2001. Since May 2000, the groundwater sampling protocol has included analytes for in-situ bioremediation.

The results of the subsurface investigations and groundwater sampling indicated that the impacts of the ethanol release were limited to on-site in the vicinity of the release. The ethanol appeared to be degrading with time and distance from the source.

The data collected during groundwater sampling were consistent with the expected impact to groundwater for an ethanol release to a shallow aquifer. The ethanol was only detected in groundwater in the vicinity of the release, the effects of the ethanol on separate phase hydrocarbon was limited to areas with very high concentrations of ethanol, and the size of the ethanol plume in groundwater reduced rapidly.

Methane

Methane in groundwater was first analyzed in May 2000. In April 2001, an increase in methane concentration was noted in several wells. Recalculation of the December 2000 analytical results, performed recently, indicates that the methane concentration in groundwater was also elevated in December 2000.

Soil gas investigations were conducted in June 2001 and July 2001 to define the extent and magnitude of methane in the vadose zone. The results of the investigations indicate that a methane plume is associated with the former ethanol release. Concentrations of methane in soil gas from shallow borings have been detected as high as 33% (330,000 ppmv). Methane has been detected in soil and groundwater in the vicinity and down-gradient of the ethanol release and covers a larger area than the ethanol plume.

This methane appears to have been generated by the degradation of the ethanol in an oxygen deficient environment.

Future Actions

Site personnel have been notified of the potential for accumulation of methane in structures and vaults. Venting systems are being installed in structures to prevent methane accumulation.

The City of Portland storm sewer has been identified as a potential off-site migration pathway for methane. The sewer discharges into the Willamette River approximately one-quarter mile from the area of the methane plume. Chevron has notified the City of

Portland Bureau of Environmental Services of the ethanol release and the location of the methane plume.

A soil vapor extraction system is being designed to remediate the elevated methane concentrations. Pilot testing is scheduled for week of July 30, 2001.

If you have any questions, please direct them to Mr. C. W. Till, Chevron's TSCA Coordinator. Mr. Till can be reached via phone at (925) 242-8722 or via e-mail at cwti@chevron.com.

Sincerely,

A handwritten signature in cursive script that reads "Allan Vance". The signature is written in black ink and is positioned above the typed name.

Allan H. Vance

CWT:cwt

Cc: C. W. Till – Chevron Research & Technology Company/Richmond, CA