ChemRisk
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Mr. Walter Kaczmarek
The Martin Group
6475 Christie Avenue, Suite 500
Emeryville, CA 94608

Subject: Response to comments from Mr. Rafat Shahid of the Alameda County Department of Environmental Health in regard to the Marketplace Site, Emeryville, California.

Dear Mr. Kaczmarek:

This letter presents a response to comments from the Alameda County Department of Environmental Health dated April 12, 1988 on waste characterization and remediation of the Marketplace site. Specifically addressed are those comments raised by the County with respect to which I have been engaged as a consultant by The Martin Company.

Groundwater Contamination 2 and 3/Soil Contamination 6

Woodward-Clyde Consultants (WCC) detected low levels of polynuclear aromatic hydrocarbons (PNAs) in floating product and groundwater samples from Well B5. The floating product on Well B5 is likely similar to that from Well 5M which was sampled and characterized by Aqua Terra Technologies (ATT). A low level of PNAs would be expected to appear as constituents of asphalt or tar mixtures. Of the three PNAs detected by WCC, only chrysene is recognized as potential carcinogen by the U.S. Environmental Protection Agencies (EPA) Carcinogen Assessment Group (CAG). Chrysene is not listed by the State of California as a chemical known to cause cancer or reproductive toxicity (Title 26 California Code of Regulations (CCR) Section 22-12000). The identified PNAs are not listed hazardous waste compounds in Title 22 CCR Section 66680. Chrysene is listed in 40 CFR 261.33 as a hazardous waste.

WCC detected low levels of these PNAs in a groundwater sample from Well B5. The low levels detected in groundwater are at the approximate level of solubility for the individual compounds. The groundwater at the Marketplace site is not a potable water source due to high salinity as defined by the State Water Resources Board definition of the term "sources of drinking water"; therefore there is no expected human exposure to groundwater.

The County's contention that the floating product is "clearly hazardous" because it contains 2% volatile materials in the kerosene boiling range is not supportable. Kerosene is not a listed hazardous waste in Title 22 CCR Section 66680 or in 40 CFR Subchapter I. The floating product sample from Well 5 collected by ATT was shown not to be hazardous according to the toxicity, ignitability, reactivity, and corrosivity criteria in Title 22 CCR Article 11 (ATT report July 11, 1988).

Soil Contamination 8

The comments posed in item 8 are addressed later in this letter under the heading of "Soil Contamination Comments."

Soil Contamination 9

ATT did not collect data to define the chemical characteristics of excavation spoils at the Marketplace Site. Based on data collected by Earth Metrics, there was no available evidence to indicate that there was any constituent in the spoils, other than friable asbestos at concentrations greater than 1%, which would be considered hazardous according to Title 22 CCR Article 11. The ATT report of July 20, 1989 presented guidance on the disposal of excavation spoils.

Soil Contamination Comments

The asphalt-like waste material found on the Marketplace Site was investigated by ATT to evaluate its hazardous waste characteristics in accordance with Title 22 CCR Section 66305 (a). The County raised four issues in regard to that evaluation. These issues are addressed under the following subheadings.

- Evaluations Under Title 22 CCR Article 11

  Relevant criteria in Title 22 CCR Article 11 were reviewed for applicability and all applicable criteria were implemented. The evaluation of hazardous was characteristics was based on concentration data for detected compounds and specific tests for aquatic toxicity, ignitability and corrosivity. No metal was found at concentrations which exceeded its TTLC. The only volatile organic chemicals detected were acetone and methylene chloride [dichloromethane (DCM)]. Since these compounds had not been previously detected, it was suggested that they may be an artifact of laboratory contamination. However, these compounds were included in the waste evaluation. Six semivolatile organic chemicals were detected at measurable concentrations in soil and floating product samples. Methylnaphthalene was the only PNA detected with the GC/MS procedure. None of the semivolatile chemicals are listed hazardous wastes in Title 22 CCR Section 66680 or 40 CFR 261.31-33.

Methylene chloride is a waste listed for its potential toxicity. It was evaluated to assess its acute toxicity associated with oral exposures [Title 22 CCR Section 66696(c)]. An evaluation of dermal toxicity was not undertaken since DCM is not readily absorbed through the skin. In the Health Assessment Document for Methylene Chloride (EPA 600/8-82-004F) it is concluded that "the slow rate of absorption would prevent toxic quantities of DCM from being taken into the body from direct contact with the skin of the hands and forearms." The inhalation toxicity of methylene chloride was not quantitatively evaluated because the measured concentration (800 ppb) of this compound in the soil sample (EM4) was quite low. The OSHA standard for worker exposure to methylene chloride in an 8-hour work day is 500 ppm (in air). The volatilization of a substantial amount of the DCM in soil, therefore, would not produce acutely toxic vapor concentrations.

None of the other organic compounds detected are listed as hazardous due to toxicity. However, acetone toxicity was evaluated according to oral and dermal criteria in Title 22 Section 66696(c). The calculated oral and dermal LD50 values for acetone are 3.9×10^{-11} and 8.0×10^{-11}, respectively. These values are greater than the critical criteria values, therefore, the acetone in the sample does not meet the toxic and hazardous waste criteria specified in Title 22 CCR Section 66696(c).

There was inadequate toxicity data to evaluate the toxic nature of other detected organic constituents. The level of halogenated volatile organic compounds was assessed in accordance with Title 22 CCR Section 66900(e). The concentration of total halogenated volatile organic compounds was below the hazardous level.

An acute aquatic bioassay was performed to evaluate the toxicity criterion in Title 22 CCR Section 66696(a)(4). The samples were not toxic to fish at the 500 mg/l criteria concentration.

The persistent and bioaccumalative toxic substances were evaluated in accordance with Title 22 CCR Section 66699. None of the detected metals exceeded TTLC criteria.

Ignitability was evaluated in accordance with Title 22 CCR Section 66702. The samples were not hazardous according to the ignitability criteria.

Reactivity was evaluated in accordance with the provisions of Title 22 CCR Section 66705. The samples were not reactive according to the criteria.

Corrosivity was assessed as specified in Title 22 CCR Section 66708. The samples were not corrosive according to the specified criteria.

- Corrosivity

Alameda County comments questioned the applicability of the corrosivity evaluation based on County data on KOH equivalents. County data on KOH equivalents do not, in fact, indicate a significant acid content or potential corrosivity and this approach is not part of the Title 22 CCR Section 66708 criteria for assessing corrosivity.

The corrosivity evaluation was performed in accordance with Title 22 CCR Section 66708. The asphalt-like material is highly insoluble in water and for this reason does not require corrosivity characterization. The pH test however, was performed and clearly demonstrates that the asphalt-like material does not significantly influence pH and is therefore not corrosive.

- PNA Toxicity

The toxicity criteria evaluation was limited to those compounds identified in sample analyses. No PNA compound for which toxicity information exists were detected. Due perhaps to interferences, relatively high method detection limits for the PNAs were reported from GC/MS analyses. However, the detection of PNAs in the asphalt-like waste material as that found at the Marketplace Site is not unexpected. There are mg/kg (ppm) concentrations of PNAs in asphalt pavement and asphalt roofing and flooring materials. There are moderate concentrations of PNAs in consumer products such as shampoo. There are also low levels of PNAs in ambient air, drinking water and food (EPA Ambient Water Quality Criteria for Polynuclear Aromatic Hydrocarbons). The PNA compounds are ubiquitous in our environment.

Using a more specific and sensitive GC analytical technique, Earth Metrics measured low mg/kg concentrations of 12 PNAs in soil samples collect from the Marketplace Site (Earth Metrics, January 28, 1988). Of the compounds detected, 6 are classified as possible or potential carcinogens. These include benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (a) pyrene, dibenz (a,h) anthracene and idenopyrene. None of these compounds is a listed waste in Title 22 CCR Section 66680. Five of the six potential carcinogens are on the lists of hazardous wastes in 40 CFR Section 261.33.

The Department of Health Services (DHS) has no formal criteria or policy in regard to waste classification according to PNA concentrations (personal communication Mr. Norman Riley, DHS Alternative Technologies Group). Because PNAs at levels similar to those measured in the asphalt-like waste material are also found in asphalt and tar products (asphalt pavement, roofing and flooring materials, other consumer products), it is unlikely that low levels of PNA compounds in soil would make it hazardous. Concentrations of selected PNAs in asphalt pavement and in soil samples containing an asphalt-like material found at the Marketplace site are compared in the attached table. The concentrations of PNAs in soil are similar to those in asphalt pavement. One would typically expect to find PNAs at these values in connection with asphalt parking lots and driveways. Asphalt pavement is generally not handled as a hazardous waste.

- Fish Toxicity

The fish toxicity test was conducted in accordance with the procedures specified in Title 22 CCR Section 66696 (a) (4) and within the guidance provided by DHS and the California Department of Fish and Game as laboratory certifying agent for DHS. Samples were prepared in accordance with Title 22 CCR Section 66700 for tarry materials. The sample materials were added as received to test water. Test guideline specify that the sample not be amended for the aquatic toxicity test (hazardous waste bioassay protocol and personal communication Mr. Jim Polisini, State Department of Fish and Game Water Pollution Control Laboratory). The bioassay result meet proper quality assurance criteria and are therefore valid. The waste samples do not meet the criteria for toxicity under Title 22 CCR Section 66696 (a) (4).

Please do not hesitate to contact me should you have any further questions.

Sincerely,

Patrick Sheehan, Ph.D.
Supervising Toxicologist
ChemRisk Division
McLaren

Enclosure

copy: Robert Wyatt

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