From:	Roe, Dilan, Env. Health
To:	Jim Roessler; DWP5334@aol.com
Cc:	Detterman, Karel, Env. Health; Mehrdad Javaherian; Browder, Ronald, Env. Health; Sanftner II, Paul W., BOS Dist 4
Subject:	Site Cleanup Case No. RO0002863, Crow Canyon Dry Cleaners, 7272 San Ramon Road, Dublin, Californai
Date:	Thursday, October 29, 2015 4:05:55 PM
Attachments:	image001.png

Dear Mr. Roessler and Mr. Perry:

Alameda County Department of Environmental Health (ACDEH) has received an email correspondence from Mr. Javaherian with Endpoint Consulting, Inc. (Endpoint) dated October 20, 2015 in response to our comments on the human health risk assessment for the subject site presented in the letter report dated July 20, 2015 entitled "Focused Site Reconnaissance and Sampling Activities in Support of Site Closure, Crow Canyon Cleaners" (see email chain below).

As discussed with you and Mr. Javaherian in meeting on April 24, 2015 and October 10, 2015 meeting, ACDEH has been willing to consider a request for closure of the subject site based on a site-specific Human Health Risk Assessment as proposed by Mr. Javaherian. However, as also discussed in these meetings and in ACDEH's correspondence dated April 28, 2015 and October 15, 2015, the Human Health Risk Assessment and evaluation of soil gas data must adhere to guidance documents prepared by the California Department of Toxic Substances control (DTSC), United States Environmental Protection Agency (USEPA), and the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The Johnson & Ettinger (J&E) model utilized by Endpoint for a site-specific risk assessment is a fate and transport model that simulates the transport of soil vapors in the subsurface into indoor air. The model calculates an attenuation factor, alpha (a), which represents the ratio of predicted indoor air concentrations to subsurface soil gas concentrations, and thus by inputting subsurface data, the model estimates an indoor air concentration. In our October 15, 2015 correspondence, ACDEH provided a summary of deviations of various protocols and input parameters including the contaminant concentrations used by Endpoint in the risk assessment model and requested supporting documentation to justify the model inputs and conclusion that the residual environmental impacts remaining beneath the dry cleaner following remediation activities at the site do not pose unacceptable risks to human health and the environment, and that the environmental case for the site should be closed.

Subsequent to ACDEH's October 15, 2015 correspondence, Endpoint sent an email to us providing additional analysis of concentration trends in subslab vapor monitoring well VM-9SS and requesting whether Endpoint's use of a tetrachloroethylene (PCE) concentration of 3,600 ug/m^3 in the J&E model is acceptable. The J&E soil gas model is designed to allow the user to input measured soil gas concentration and sampling depth information as inputs. The soil gas sampling depth input used by Endpoint in the model of 55.9 centimeters (or 22 inches) is not appropriate for soil gas samples collected from subslab monitoring wells installed in the gravel sub-base located directly beneath the slab foundation. ACDEH also is concerned about Endpoint's comparison of soil gas concentrations collected in subslab soil gas monitoring wells to the San Francisco Bay Regional Water Quality Control Board's Environmental Screening Level (ESL) for Soil Gas of 2,100 micrograms per cubic

meter (ug/m^3) for Commercial/Industrial Land Use vapor intrusion concerns. ACDEH notes that the ESLs do not include sub-slab soil gas screening levels and thus the use of the soil gas ESLs is inappropriate for evaluating subslab soil gas concentrations. ACDEH is also concerned about Endpoint's calculation of a 95^{th} percentile value using concentrations of PCE in soil gas collected from both vapor probes installed at a depth of 5 feet below grade and subslab wells for use in the J&E model.

In response to ACDEH's concerns regarding whether PCE concentrations in soil gas have reached equilibrium conditions, Endpoint presented a linear regression analysis of concentration data and a corresponding graph of PCE concentrations in subslab monitoring well VM-9SS in their October 20, 2015 correspondence. Based on ACDEH review of documents in the case file, the graph of PCE soil gas concentrations in sub-slab monitoring well VM-9SS, and the Focused Site Reconnaissance and Sampling Activities in Support of Site Closure, Crow Canyon Cleaners. ACDEH has the following concerns on the graph presented by Endpoint:

- The line representing the ESL for Soil Gas of 2,100 micrograms per cubic meter (ug/m^3) for Commercial/Industrial Land Use vapor intrusion concerns is not depicted accurately on the graph. The line is drawn above the 5,000 ug/m^3 scale on the PCE Vapor Concentration axis of the graph. This graph should be used to depict concentrations of soil gas collected from soil vapor probes installed at a depth of 5 feet below the foundation and not data collected from the subslab monitoring wells.

- The period of operation of the soil vapor extraction (SVE) system portrayed on the graph shows the system operating from approximately February 2013 to February 2014.The same graph included in Endpoints July 20, 2015 letter report has the 2,100 ug/m^3 ESL line accurately located however, however shows the period of operation of the SVE system from approximately July 2012 to September 2013. A review of the data in the case files indicates the SVE system operated from August 2009 through October 2009 as a pilot test, and then again as a full-scale remedy under the Corrective Action Plan (CAP) from June 28, 2012 until March 29, 2013.

- Sub-slab monitoring well VM-9SS was installed post SVE pilot testing in conjunction with full-scale implementation under the CAP. Thus the first three data points shown on the graph, representing concentrations of 11,000, 14,000 and 7,200 ug/m^3 collected approximately 11 months, 17 months and 34 months, respectively after shutdown of the SVE Pilot Test appear to represent the tail end of rebound concentrations in well VM-9SS after shutdown of the SVE Pilot Test conducted in 2009 . The third data point on the graph represents the baseline PCE concentrations of 7,200 ug/m^3 well VM-9SS one day prior to the start-up of the full-scale implementation of the SVE system on June 28, 2012. Three months after the start-up of the SVE system the PCE soil gas concentration in well VM-9SS had dropped to 280 ug/m^3. Subsequent to shut-down of the full-scale SVE system on March 29, 2013, PCE concentrations in well VM-9SS collected from soil gas samples on August 23, 2013 ug/m^3 1,200 ug/m^3 , November 13, 2013, March 12, 2014, June 4, 2014 and August 27, 2014 have

exhibited an increasing trend indicating that rebound conditions have not reached equilibrium.

Therefore, at this juncture, due to ACDEH's concerns discussed above and in ACDEH's October 15, 2015 email correspondence, ACDEH requests that you have the risk assessment evaluated by an independent third party toxicologist and a letter transmitting their review comments and recommendations on site closure submitted under separate cover concurrently with Endpoint's revised risk assessment.

Depending on the results of the revised risk assessment, and/or recommendations of the toxicologist, it may be prudent to collect additional soil gas samples from both soil vapor probes and subslab monitoring wells in conjunction with indoor air samples in the dry cleaner suite and in the adjacent commerical/retail spaces that historically had detections of PCE in indoor air samples above the ESLs. This data, if deemed necessary, would provide additional lines of evidence to support closure using a risk based approach. ACDEH understands that the Montessori School serving preschool children has since moved out of the adjacent tenant space and that the tenant space has remained unoccupied since February 2013. Please confirm if this space is still vacant and if not please provide information on the current use.

Please contact me if you would like to discuss further.

Dilan Roe, P.E.
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PDF copies of case files can be reviewed/downloaded at:

http://www.acgov.org/aceh/lop/ust.htm

From: Mehrdad Javaherian [mailto:mehrdad@endpoint-inc.com]
Sent: Tuesday, October 20, 2015 5:37 PM
To: Roe, Dilan, Env. Health <Dilan.Roe@acgov.org>; Jim Roessler <jim@roesslerinvestmentgroup.com>
Cc: DWP5334@aol.com; Detterman, Karel, Env. Health <Karel.Detterman@acgov.org>
Subject: Re: Meeting

Dilan

Thanks for forwarding your full set of comments; these are very helpful in laying out the steps necessary to address your remaining concerns relative to the risk assessment and associated site closure.

To this end and in reviewing your full set of comments, we recognize your comment regarding demonstration of steady-state conditions and a declining overall concentration trend at WM-9SS as being the most critical to getting a County-approved risk assessment completed. The remainder of your comments are clear and represent additional information we can pull together per your direction.

In response to your comment about demonstrating the declining trend, the graph attached below shows the concentration hydrograph of PCE concentrations at VM-9SS (the only well with a concentration above the ESL), with a linear regression line added which clearly shows the declining trend of the data throughout the period of record. I have added the original Excel file with the raw data and the linear regression line so you may duplicate the linear regression as you see fit. As with nearly all SVE remediation applications, some level of rebound is not uncommon, but the data here show that some two years after termination of the SVE system. the PCE levels have largely equilibriated in the low to mid 3000 ug/m3 range (which is far lower than pre-remediation levels) and that use of this value as a conservative source term is appropriate (especially when we are basing the entire exposure on the location of the maximum detection, thereby ignoring all of the other data which show significantly lower concentrations). Moreover, the concentrations in all surrounding wells remain at well below these levels.

Please let us know if the regression analysis and associated declining trend is acceptable in response to your comment, and more specifically, that the use of the 3,600 ug/m3 concentration detected during the most recent round of sampling as the steady-state source concentration in the J&E model (as we already did in at least one of the risk calculation scenarios in the letter report) is acceptable. With your input on this comment in advance, we can move forward to address the remaining information you have requested.

Thanks in advance for your input.

Regards,
Mehrdad

Endpoint.
Strategy. Science. Sustainability.

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MBE/WBE/CPUC-Certified

On 10/15/2015 7:44 PM, Roe, Dilan, Env. Health wrote:

Hi Jim:

ACDEH scheduled the meeting with you and your consultant today to discuss our review comments on Endpoint's vapor intrusion risk assessment included in their letter report dated July 20, 2015 entitled "Focused Site Reconnaissance and Sampling Activities in Support of Site Closure, Crow Canyon Cleaners". However, during my attempt to discuss ACDEH's review comments on the risk assessment including the model inputs and the lack of adherence to the model guidance documents, Mr. Javaherian became argumentative and thus I ended the meeting.

As discussed in the April 24, 2015 meeting with you and Endpoint, and in Alameda County Department of Environmental Health's (ACDEH) email correspondence dated Aril 28, 2015, ACDEH is willing to consider a request for closure of the subject site based on the data and results of a site-specific Human Risk Assessment in lieu of indoor air sampling. However, the risk assessment must adhere to the model guidance documents prepared by the California Department of Toxic Substances Control (DTSC), and the United States Environmental Protection Agency (USEPA).

The model selected by Endpoint for the risk assessment is the USEPA's Johnson and Ettinger Model (J&E Model), as modified by the DTSC. This model is one of the more commonly used models for evaluating indoor air exposure and the DTSC has selected the J&E model as the recommended approach to evaluate vapor intrusion in California. As stated in the DTSC's Vapor Intrusion Model guidance document, the model should be used in conjunction with the DTSC's 2011 guidance document entitled "Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" and the USEPA's 2004 "User Guide for Evaluating Subsurface Vapor Intrusion into Buildings".

ACDEH's review of the J&E model presented in the July 20, 2015 Endpoint report indicates deviations from various protocols and input parameters discussed in the above referenced guidance documents. Therefore, at this juncture, ACDEH requests you submit a revised vapor intrusion risk assessment addressing the following items in accordance with the model guidance documents and DTSC recommendations:

Sensitivity analysis of model input parameters - A sensitivity analysis was not presented in the July 20, 2015 . Per the DTSC, the J&E model is generally considered to have a precision no greater than an order of magnitude, hence it is important to understand the sensitivity of the model to various input parameters by performing a sensitivity analysis. This analysis should be presented in a table with inputs (range of values, basis/reference for site-specific parameter or default parameter), outputs, and should be supported by screen shots of all pages for each model run (including the intermediate calculations sheet).

Use of site-specific soil input parameters - The July 20, 2015 reports states that soil input parameters were based on visual description of subsurface soil as annotated on boring logs, however DTSC guidance states that this is not an appropriate approach for selection of model input parameters. Site-specific soil parameters should be obtained using laboratory testing in accordance with the DTSC guidance criteria and standard

geotechnical and geophysical methods for measuring or estimating theses values.

Air Permeability – The DTSC guidance states that if air permeability measurements are not available and existing buildings are larger than the default size of 100 square meters, the soil gas advection rate (Q_{soil}) of 5 liters per minute should be proportionally increased in a linear fashion as a function of the spatial footprint of the building. The soil gas advection rate input value should be supported with data on the square footage of the building at the site.

Steady state conditions – The July 20, 2015 report states that the PCE concentration in well VM-9SS is slightly above the commercial/industrial environmental screening level (ESL) of 2,100 micrograms per cubic meter (ug/m^3) and that the concentrations show a general stable trend relative to the overall concentration trend in the well. However, a review of the data for this well indicates that there is an increasing PCE concentration trend since remediation was terminated in July 2012 and a concentration of 3,600 ug/m^3 reported in the last sample collected in June 2015. The J&E model assumes steady state contaminant conditions exist in the subsurface, therefore, the revised risk assessment must include an analysis (trend lines, Mann-Kendall, etc.) to support the assertion that the PCE concentrations in well VM-9SS are stable.

Statistical approximations versus maximum concentrations – Per the DTSC guidance, maximum contaminant concentrations should be used for modeling, however if extensive environmental media data have been collected, the input value for contaminant concentration into the J&E model may be a statistical approximation of the dataset. However, a robust dataset is needed for statistical approximation, which usually implies the collection of at least eight samples within the building footprint, both spatially and temporally. The July 20, 2015 report presents results of simulated risk calculations using the 95% UCL concentrations of PCE throughout the period of record at VM-9SS, and the 95% UCL using the latest round of sampling results from all source area monitoring wells at or immediately adjacent to the dry cleaner building. A review of the 95% UCL calculations presented in the report indicates that the calculations for VM-9SS used 6 samples and resulted in a warning that the methods used on the data sets and resulting calculations may not be reliable enough to draw conclusions, and that bootstrap methods should be used on data sets having more than 10-15 observations. Additionally, there has been an increasing trend in the concentration of PCE in this well as noted above, thus use of a 95% UCL for this well is not appropriate. Although 11 sampling data points were used to calculate the 95% UCL of the "latest round of sampling results" it is not clear what data set this is referring to and whether the sample locations were inside to the building footprint. Data must be presented in the revised risk assessment to support the use of these statistical approximations.

Cumulative risk assessment – The July 20, 2015 report presents a risk analysis of vapor intrusion to indoor air for PCE only. The revised risk assessment must also present cumulative risk calculations for all contaminants detected in the wells located within

the building footprint (PCE, TCE, cis-1,2-DCE, etc.) in accordance with DTSC guidance.

Building details – The revised risk assessment must provide details on the existing building at the site including the square footage of the building footprint, foundation details, tenant spaces to support model inputs and assumptions.

J&E Model assumptions – Use of the J&E Model as a screening tool to identify sites needing further assessment requires careful evaluation of the assumptions listed in the model guidance documents to determine whether any conditions exist that would render the J&E Model inappropriate for the site. A discussion of the appropriateness of the model assumptions must be included in the revised risk assessment.

Please work with your consultant to submit a revised risk assessment addressing the above listed comments.

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http://www.acgov.org/aceh/lop/ust.htm

From: Jim Roessler [mailto:jim@roesslerinvestmentgroup.com]
Sent: Thursday, October 15, 2015 3:27 PM
To: Roe, Dilan, Env. Health <Dilan.Roe@acgov.org>
Cc: 'Mehrdad Javaherian' <mehrdad@endpoint-inc.com>; DWP5334@aol.com
Subject: Meeting

Dilan ,

I won't make the 4PM meeting although Mehrdad and Dwight should be there. I left my office at 2:30PM in downtown San Francisco and sat in dead lock traffic going 4 blocks in a half hour and turned around since I could not even get across Market Street. There must be an accident or fire that completely stopped traffic in downtown San Francisco. Hopefully the meeting will be fruitful. My apologies.

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