Letter Health Consultation

SWAN MANUFACTURING COMPANY SITE

VANCOUVER, WASHINGTON

JULY 14, 2008

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

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LETTER HEALTH CONSULTATION

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Prepared By:

State of Washington Department of Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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Draft Health Consultation Memorandum

June 18, 2008

TO: Craig Rankine
Washington Department of Ecology

FROM: Barbara Trejo
Washington Department of Health

SUBJECT: Remedial Investigation Report – Technical Document Review
Former Swan Manufacturing Company Site
Vancouver, Clark County, Washington

Background and Statement of Issues

The Swan Manufacturing Company (SMC) site is being investigated and cleaned up by the Port of Vancouver (Port), the current property owner, under Washington Department of Ecology (Ecology) oversight. Releases of trichloroethylene (TCE), which is often contaminated with other chlorinated solvents (e.g., tetrachloroethylene (PCE)), occurred to soil and groundwater at the former SMC property.

The contaminated groundwater has migrated off the property and now underlies some industrial areas and a portion of the Fruit Valley neighborhood (a predominantly residential area), south of Fourth Plain Boulevard. The Fruit Valley neighborhood is connected to city water so the community is not drinking the contaminated groundwater. However, shallow solvent-contaminated groundwater from the former SMC property, along with solvent-contaminated groundwater migrating from the Cadet Manufacturing site (located northeast of the SMC property), has affected indoor air at some Fruit Valley homes via the groundwater to indoor air pathway. The solvent levels found in indoor air, however, are generally low. Ecology will be working with the Port to address the vapor intrusion pathway in the near future.

There is some limited groundwater use in the industrial part of the site. However, where it is used as potable water, groundwater is treated and/or monitored to ensure that solvent levels do not exceed federal drinking water standards. Some indoor air testing has been conducted in some industrial buildings overlying the contaminated groundwater but solvent levels appear to be similar to background levels.

Clark Public Utilities is planning to install a public water supply well east of Vancouver Lake, which is located northwest of the Swan property. Pumping from this well could cause the SMC (and the Cadet) groundwater plume to migrate toward that well and pose a future drinking water threat. The Port is taking steps to prevent the contaminated groundwater from migrating toward that well by installing a groundwater pump and treatment system, which the Port plans to activate in early 2009.

The Port has been conducting remedial investigation work at the site since 1998 to assess the nature and extent of the site contamination. That work included testing soils at the SMC property, installing wells and probes to measure groundwater and soil gas contaminant levels across the site, testing outdoor air, and testing indoor air at homes and industrial buildings overlying the shallow solvent contaminated groundwater. The Port also conducted some interim actions including excavation of some contaminated soil on the SMC property and groundwater treatment to begin reducing contaminant levels. The March 30, 2007 *Final Remedial Investigation (RI) Report, Former Building 2220 Site (a.k.a. Swan Manufacturing Company Site)*, prepared by Parametrix for the Port of Vancouver, summarizes that work, which is the subject of this health consultation.

Discussion

The Washington Department of Health (DOH) has completed its review of the March 30, 2007, *Final Remedial Investigation (RI) Report.* Although DOH has a number of comments on the document, it should be acknowledged that this version of the RI is significantly improved from the previous version. The site background information was expanded and the rationale for investigation work was clarified. In addition, more data interpretation was provided. All this additional information improved the document.

The following numbered comments summarize issues/concerns identified by DOH during its review of this latest version of the RI report.

1. **Section 2.6, Regulatory Framework, paragraph 5** – It is noted that cleanup standards will be established as part of the FS. This is not uncommon. However, without the cleanup standards, the lateral and vertical extent of the contamination cannot be determined. This is an information gap that needs to be addressed before moving into the FS. DOH recommends that the Port work with Ecology (and DOH, if necessary) to resolve cleanup level issues and determine the extent of the contamination prior to starting the FS. Such an approach could save all parties significant time, including time to turn reports around and initiate remedies at the site.

2. **Section 3.3.1, Investigations of Off-Site Impacts to the East and North of Building 2220** – Only a portion of the Port's NFVN 1998 investigation results and QA/QC summary are provided in Appendix A. The remaining results and QA/QC report should be provided.

   The 1998 NFVN results presented in the text do not match with the results presented in Table 3-7. The Port has since sent a revised Table 3-7 (e-mail from Richard Roche, Parametrix, to

Barbara Trejo, DOH, and Craig Rankine, Ecology, May 14, 2008) and the table and text are now consistent. The revised table should be included with the Port's responses.

A more detailed discussion about the distribution of soil and groundwater contamination found in 1998 in the NFVN is necessary. However, that could be included in the upcoming Cadet RI report rather than in a revised Swan RI report.

3. **Section 3.3.2, Vertical Distribution of VOCs in Groundwater, last paragraph, third bullet** – It is noted that a deep zone of moderately contaminated groundwater is located between 140 feet and 200 feet below ground surface (bgs). However, the referenced data summary table indicates that the moderately contaminated groundwater extends to 220 feet bgs. The table and/or text should be revised so they are consistent.

4. **Sections 4 through 4.5.5** – There are numerous references throughout these sections about the past MTCA Method A soil cleanup for TCE (500 ug/kg or 0.5 mg/kg). It should be noted that the current MTCA Method A soil cleanup level for TCE is 30 ug/kg or 0.03 mg/kg. This level is intended to be protective of groundwater. This change should be noted.

5. **Section 4.1.1, Interim Action Rationale, Source Control, Bullet 1** – It is noted that TCE was detected in soil in the vicinity of Building 2220 to depths of approximately 17 feet bgs during the first soil interim action, which is true. However, it should also be noted that no soil samples were collected beyond 17 feet during that work (this is confirmed in Section 4.2.4.1, which discusses verification sampling and indicates that this sampling could not be done on the floor of the excavation because it was below the groundwater table) and that many of the 17 foot samples contained TCE well above the cleanup level (see Tables 3-2 and 3-4). Consequently, the vertical extent of the soil contamination likely extends beyond 17 feet bgs and is possibly an on-going source of groundwater contamination. This bullet should be revised to reflect these facts. [Note: DOH understands that the Port subsequently conducted a fine-grained sand study in September 2004 because residual contamination was believed to exist in this unit. Elevated levels of TCE and PCE were found in soil up to 30 feet bgs and sometimes in the medium to coarse sand unit that underlies the fine-grained sand unit (see Figures 5-6 and 5-7). This contaminated soil could be an ongoing source of groundwater contamination]. Further study of the vertical extent of soil contamination might be necessary.

6. **Section 4.1.1, Groundwater Resource Protection, Potential Concern for Public Health, Bullet 2** – It is noted in the report that groundwater in the vicinity of the Building 2220 site is used by the Port as a potable drinking water source. However, the specific location was not identified in the report. The Port should identify the location of this well, the well uses, and possible receptors.

7. **Section 4.3, Extent of TCE-Impacted Soil Remaining After Excavation, paragraph 1** – The report notes that all TCE contaminated soil above 500 ug/kg associated with the SMC site, except a small area to the south of the soil excavation, was removed during the soil interim action. However, the investigation work conducted prior to the interim action

suggests that TCE contaminated soil exists below the maximum depth of the excavation and no verification sampling was conducted at the bottom of the excavation to suggest otherwise (see Section 4.2.4.1). This information should be noted.

8. **Section 5.1, Contaminants of Potential Concern** – The discussion about chemicals of potential concern (COPCs) precedes the discussion about the RI results. However, decisions about COPCs cannot be made prior to understanding the RI results.

9. **Section 5.1, Contaminants of Potential Concern, Groundwater –** Vinyl chloride is not considered a COPC although it is a breakdown product of TCE and PCE. It appears that this decision was made because the vinyl chloride detection frequency above the cleanup level was less than 5%. However, when spot checking the vinyl chloride analytical results presented in the laboratory data sheets, it appears that the reporting limits for vinyl chloride often exceed the MTCA Method A groundwater cleanup level (0.2 ug/l) and Method B groundwater cleanup level (0.029 ug/l). Given these facts, vinyl chloride should be retained as a COPC. A similar evaluation of the data should be completed to see if other chemicals should be retained as COPC for groundwater as well as the other media. Also, non-detected chemical results like those associated with vinyl chloride should be added to Table 5-3 so there is a complete summary of the data results.

10. **Section 5.2, Remedial Investigation Work Plan** – It is unclear why no further soil characterization was conducted during the RI because the vertical extent of soil contamination was not determined during the pre-RI phases. The remaining contaminated soil is an ongoing source of groundwater contamination. The rationale for no further soil characterization should be provided.

11. **Section 5.3.1.3, Deep Wells** – The three deep wells were installed just above the Troutdale Gravel Aquifer (TGA) during the Phase 1 RI. The report indicates that they are shown on Figure 5-1. However, only one well (MW12d) is shown. The other deep wells (MW2d and MW4d) should be added to the figure.

12. **Section 5.3.2, Monitoring Well Sampling** – The five deep wells sampled during the Phase I RI in April 1999 are all screened at the base of the USA. TCE levels ranged from <0.5 to 26.7 ug/l. MW-1d contained the highest TCE level. In February 2007, MW-1d contained 34 ug/l. MW-5d contained 5.22 ug/l TCE in April 1999. The TCE levels in MW-5d have fluctuated since then ranging from 8.9 to 8,700 ug/l through November 2006. MW-5d was subsequently decommissioned by the Port because of concerns that shallow groundwater appeared to be leaking into the well. MW-5d was replaced with MW-5dR. MW-12d contained 12.8 ug/l TCE in April 1999 with levels ranging from 14 to 20.8 ug/ through February 2007. MW-2d and MW-4d contained no TCE above detection limits during any sampling event. This strongly suggests that a portion of the TGA in the vicinity of MW-1d and MW-12d could contain TCE levels above the MCL. No TGA wells have been installed to date to determine the extent of contamination in the TGA. Because the TGA is a potential future groundwater source, this data gap should be addressed.

13. **Section 5.3.3.2, 1,1,1 TCA** – 1,1,1-trichloroethane (1,1,1-TCA) samples were collected from sample locations TCA-1 through TCA-3 at the SMC site and the report indicates that no 1,1,1 TCA was detected. Based on review of the analytical reports, this appears to be the case. However, the 1,1,1-TCA reporting limit for TCA-1 is 5000 ug/l so it is possible that 1,1,1-TCA exists at the Swan site but was not found because of elevated reporting limits. Reporting limits for 1,1,1-TCA at TCA-2 and TCA-3 are 1 ug/l. However, the reporting limits for all the other VOCs range from 100 to 2000 ug/l. This makes the 1,1,1-TCA reporting limits for TCA-2 and TCA-3 suspect especially when reviewing the lab data sheets, which indicates 1,1,1-TCA was analyzed separately from the other VOCs. How such a low reporting limit was achieved for 1,1,1-TCA when reporting levels for all other chemicals were high should be explained.

14. **Section 5.3.4.2, Groundwater/Surface Water Interconnectivity Study** – The results of the study suggest that contaminated groundwater could discharge into the Columbia River. Therefore, surface water is a possible exposure pathway and should be included in the RI report.

15. **Section 5.4.1.3, Deep Wells** - MW-14d, which was installed during the Phase II RI, is screened at the base of the USA. Since November 2000 TCE levels have ranged from 7.17 to 15.1 ug/l in that well. In February 2007, TCE was detected at 14.4 ug/l. This suggests that a portion of the TGA in the vicinity of MW-14d could have TCE levels above the MCL. This issue should be addressed.

16. **Section 5.6.4, Indoor Air Investigation – SFVN** – Table 5-15 referred to throughout this section of the report contains MTCA Method B cleanup levels and "site-specific screening levels." Ecology has determined that the screening levels are inconsistent with the MTCA cleanup regulation.

17. **Section 5.6.4.3, September 2006 Sampling Event** – This section of the report includes a discussion about a 5 ug/m3 TCE "mitigation level." Ecology has determined that mitigation levels are inconsistent with MTCA cleanup regulation.

18. **Section 6.1, Groundwater Containment and Treatment at GWM** – It is noted that the historical operation of the GWM production wells provided containment of the plume and prevented the plume from entering the Columbia River. Please explain how this was determined.

19. **Section 7.2.2, Hydrogeologic Conditions** – This section describes the hydrogeologic conditions, including groundwater flow direction, for the Unconsolidated Sedimentary Aquifer (USA) and the Troutdale Gravel Aquifer (TGA). However, no data are provided to support the conclusion. For example, no groundwater flow maps (or the data used to construct these types of maps) are provided in the report although it appears that some maps might have been constructed (see page 7-7, Shallow USA Zone, third paragraph). Groundwater flow direction also appears to have been determined via modeling and

contaminant distribution. However, the modeling and contaminant distribution discussion does not occur until Sections 8 and 10, respectively.

20. **Section 7.3, Groundwater Flow Analysis** - The report indicates that groundwater flow determinations for the project might not be accurate based on single sets of groundwater level data due to fluctuation of the Columbia River. As a result, the Port conducted a transducer study in late 2006. However, the transducer study was only completed for the intermediate zone of the USA, which has been noted to be different than the shallow and deep USA and the TGA. Flow in the shallow and deep zones of the USA appears to be similar to the intermediate zone. Based on previous versions of the RI, flow direction in the TGA was unknown and it appears to continue to be unknown because there is no mention of it in the revised report. These issues need to be addressed.

21. **Section 8, Groundwater Modeling Summary** – DOH is relying on Ecology to determine whether the groundwater modeling is adequate for determining groundwater flow and contaminant transport at the site. DOH understands that the model is still being modified and that Ecology staff are working with the Port so they can complete the model review.

22. **Section 10.1, Analytical Data, paragraph 2** – The RI report states that "[t]he data collected during the RI, and RI activities completed for Cadet and Swan sites, are sufficient to define the nature and extent of contamination at the SMC site and in the project area." The report goes on to say that "[t]herefore, the RI activities are determined to be complete and sufficient for a Feasibility Study and selection of a site remedy." First, the Swan RI only addresses the Swan site so the statement about the Cadet site cannot be evaluated. Second, as noted above and below, the lateral and vertical extent of soil contamination in the source area has not been determined. Third, no determination about the nature and extent of contamination can be made for the Swan site until cleanup levels have been determined. The report, however, indicates that the Port plans to address cleanup levels as part of the feasibility study. Given these facts, the RI activities for determining the nature and extent of contamination at the two sites are not complete.

23. **Section 10.4 Distribution of Contamination in Soil** – The report indicates that the maximum concentration of TCE in soil in the vicinity of the SMC site was 17,000 ug/kg and that that soil was excavated and cleaned up. However, according to Figures 5-6 and 5-7, higher levels of TCE (from <100 ug/kg up to 33,600 ug/kg) were detected in the fine sand layer at the Swan site. TCE was also detected up to 13,307 ug/kg TCE in the sand and gravel unit that underlies the fine sand unit at the Swan site. The current MTCA TCE soil cleanup levels is 30 ug/kg, which is intended to be protective of groundwater. Consequently, contaminated soil that can affect groundwater quality remains at the site. The lateral and vertical extent of that contamination is unknown (see Figure 5-5).

24. **Section 10.5, Distribution of Contamination in Groundwater** – The first sentence indicates that the analytical data collected during the RI are sufficient to define the chlorinated solvent plume. However, such a determination cannot be completed until cleanup levels have been determined.

25. **Section 10.5.1, Migration of TCE** –Figures 10-1 and 10-2 show TCE isoconcentrations in the project area for February 2007 for the shallow and intermediate part of the USA. Figure 10-7 shows TCE isoconcentrations for the deep USA but results are presented differently than for Figures 10-1 and 10-2. So different in fact, that at first is appears that there really is little contamination in the deep USA. However, when looking more closely at Figure 10-7 (which required a hand lens to read the very tiny print), it becomes apparent that TCE levels in the deep USA are above 5 ug/l across much of the NFVN and extends south of the SMC site. Because there is no data provided on the three maps the accuracy of the isoconcentrations could not be determined. First, Figure 10-7 should be revised to look similar to Figures 10-1 and 10-2, using text size that is readable without a hand lens. Second, the TCE levels for each well should be provided on the maps. This might require generating larger maps that are readable.

    It is noted in the report that the plume configuration has not changed and the concentrations are dropping. However, no contours maps that include earlier TCE concentrations for the shallow, intermediate, and deep USA and the TGA are included in the RI to support this conclusion. Those figures should be provided.

26. **Section 10.5.1.1, Contaminants in the USA, Shallow and Intermediate USA Zones** – According to information presented in Section 5, three intermediate depth wells were installed during the Phase 1 RI – MW4i, MW5i, and MW8i. Depth specific sampling occurred at MW4i and MW8i when the wells were being drilled. During that that one time sampling, TCE was detected from 40 to 60 feet bgs. However, the well screen was installed from 90 to 100 feet bgs at a depth where no contamination was detected. During RI Phases II and III intermediate wells appear to have been screened in contaminated zones. However, in most cases these zones did not appear to represent the zones with the highest TCE levels based on the data provided in the RI report. During Phase IV, intermediate wells were screened in the portion of the aquifer where the highest levels were detected (see Section 5.6.1.2) All these intermediate depth wells are then used to define the extent of the TCE contamination in the intermediate zone (see Figure 10-2). Given the way the wells were historically screened, it does not appear that Figure 10-2 accurately reflects the highest contaminant levels in the intermediate zone. It should be noted that the placement of the intermediate depth groundwater monitoring well screens could affect site cleanup decisions and long-term monitoring of the plume. This should be addressed.

27. **Section 10.5.1.1, Contaminants in the USA, Shallow and Intermediate USA Zones** – It is noted that Figure 10-4 shows how Great Western Malting (GWM) wells are capturing the plume. However, there is no data provided to support that the plume is captured as shown on the figure.

28. **Section 10.5.1.1, Contaminants in the USA, Deep USA Zones** – The text indicates that the level of TCE in the deep USA wells is slightly higher than 30 ug/l at some locations. However, when looking at Figure 10-8, some deep USA wells (e.g. MW-1d) appear to be approximately 50 ug/l. The text and figure should be consistent.

29. **Section 10.5.1.2, Contaminants in the TGA** – It is noted in the text that MW-15i is the only SMC TGA well were TCE and 1,2 cis-DCE were detected. It is also noted that VOCs were not generally detected in depth specific samples from the TGA, which were collected when the wells were drilled in 1998 to 2001, 2003, and 2004 (see Table 10-1) so some of the TGA results are old. When looking at the cross sections shown on Figures 10-4 and 10-5, which only contains some of the SMC wells, there are many instances where TCE has been found in the TGA during well drilling – see MW-16d, MW-31i, MW-32i, MW-33i, MW-35i, MW36i, MW-19i, and MW-12d. This suggests that a contaminant plume exists in the TGA. The report notes that the lower permeability of the TGA along with the pumping that occurs above the Troutdale serves to limit the extent of the plume. This could be true. However, there is no information or data about pumping and the effect on the TGA to support that conclusion. Consequently, it is unknown whether the plume in the TGA is expanding (in concentration and lateral/vertical extent) because there are only a few TGA wells installed at the SMC site and groundwater flow direction in the TGA has not been determined.

30. **Section 10.7, Distribution of Contamination in Indoor Air and Section 10.8, Distribution of Contamination in Outdoor Air** – The information obtained in these sections are summaries of the information that the Port presented in the draft comprehensive air monitoring plan (CAMP). DOH's comments on the draft CAMP should be considered when revising this section of the RI report and the Risk Assessment (Appendix I).

31. **Section 11, Risk Assessment Summary** – This section only contains a risk assessment summary. See comments below on the actual risk assessment, which is presented in Appendix I.

32. **Section 12, Conclusions and Section 13, Recommendations** – The conclusions and recommendations should be modified to reflect the comments on the RI report.

33. **Appendix E, Boring Logs** - A number of the water levels recorded on some of the borings logs for the second phase of the RI are reported as elevations when it appears that they are actually water levels - see for example the log for MW-5 and MW-13. A similar situation exists for other boring logs. This does not appear to be a significant problem because the more recent water levels seem correct (Table 5-22, for example).

34. **Appendix I, Risk Assessment** – DOH's review of the risk assessment is not intended to determine compliance with MTCA but was done to assess if the potential health risks associated with the site have been adequately assessed.

35. **Appendix I, Section 1.1, Site Background, page 1-2** – It is noted that the data and information collected during the RI supports five conclusions. However, based on review of the RI report, those conclusions are questionable. The first two conclusions (first and second bullets) are inaccurate. The lateral and vertical extent of contamination originating from the SMC is still uncertain and solvent contamination originating at the SMC site appears to have affected at least the upper TGA. The third one appears reasonable. The fourth bullet indicates that the GWM wells are capturing the plume. However, this is appears to be based

on modeling results (one monitoring well is supposed to lie between the river and the GWM wells but no information about the well (e.g., depth, screen interval) or the sampling results are provided in the RI report). The fifth bullet incorrectly states that the soils in the saturated zone have successfully been treated except for one small area. However, the information provided in the RI report suggests that the soil contamination is more extensive. In fact, the lateral and vertical extent of that contamination appears to be unknown.

36. **Appendix I, Section 2.1.2, Residual Soil Data** – It is noted that soil sample results obtained from samples collected in the saturated zone (deeper than 17 feet bgs) were not used in the risk assessment because it was thought to be impacted by contaminated groundwater and not representative of soil contamination. However, there is no information provided to support that conclusion. Given that this site had a chlorinated solvent release, it is also possible that the contaminant levels found in the saturated zone soils are real and represent solvents that have migrated downward through the soil column and ongoing source of groundwater contamination. This needs to be addressed and will an important consideration for the feasibility study.

37. **Appendix I, Section 2.2, Selection of Contaminants of Concern, Groundwater** – Table 1 reportedly contains a summary of the groundwater data from 2002 to 2006. However, it only contains the groundwater results obtained from the USA. No TGA groundwater results are presented although elevated solvent levels have been found in the TGA. The TGA data should be added to this table and chemicals of potential concern (COPCs) selected as appropriate because the TGA is a potential potable groundwater source.

38. **Appendix I, Section 2.2, Selection of Contaminants of Concern (COPC), Soil** – The MTCA Method B cleanup levels used during the COPC selection process for soils only addressed soil results obtained above the water table. It appears that the selected MTCA Method B level might not be protective of the soil to groundwater pathway. Consequently, DOH could not complete its review of the Port's proposed COPCs for soils. The Port needs to conduct further evaluation to select COPCs.

39. **Appendix I, Section 3.1.4.1, Exposure Point Concentrations** – EPA ProUCL software was used to evaluate data distribution for all media and calculate exposure point concentrations. The results are summarized in tables. However, there is no indication exactly what data was used or how the Port used the software so it is impossible to assess if the Port's approach is reasonable. Given that this is a MTCA site, the rationale for using the EPA software rather than the MTCA Stat software is not discussed. These issues should be addressed before revising the RI report.

40. **Appendix I, Section 3.1.4.1, Exposure Point Concentrations, Soil –** It appears that all the soil data were lumped together to determine exposure point concentrations. This seems inconsistent with Ecology's Guidance on Sampling and Data Analysis Methods.

41. **Appendix I, Section 3.1.4.1, Exposure Point Concentrations, Soil Gas and Indoor Air** – Modeling was used to try to estimate risk to workers and residents via indoor air. It is

unclear why modeling was done when actual data are available to assess indoor air exposures and risk. Consequently, DOH did not review the model. The modeling results should be removed unless there is a clear reason why this adds to the risk assessment.

42. **Appendix I, Section 3.1.4.1, Exposure Point Concentrations, Outdoor Air** – Some of the outdoor air data collected by the Port might not be appropriate for developing exposure point concentrations.

43. **Appendix I, Section 3.1.4.2, Receptor Intake Assumptions** – Some of the exposure factors were selected based on "professional judgment" (see Appendix I, Table 10). The rationale for those professional judgment selections should be provided in the risk assessment.

44. **Appendix I, Section 3.2, Toxicity Assessment** - Table 11 provides a summary of toxicity values. However, some of the referenced values are old. For example, when comparing the toxicity values for the chemicals presented in the table, except chloroethane, to the 2007 EPA Region 6 Human Health Medium-Specific Screening Levels Summary of Toxicity Values, it was noted that a number of inhalation reference doses and some inhalation reference concentrations provided in Table 11 were inaccurate. EPA Region 6 did not have toxicity values for chloroethane but EPA Region 3 did in its 2006 risk based concentration table. The chloroethane toxicity values presented in Table 11 are all different than the EPA Region 3 values. Table 11 should be modified using the appropriate current toxicity values.

45. **Appendix I, Sections 3.3 – Sections 3.3.6** – The risk characterization cannot be evaluated until the risk assessment comments presented here, as well as the comments on the comprehensive air monitoring plan, have been resolved.

46. **Appendix I, Section 3.3.1, Risk Potential from Groundwater** - It is noted in the report that a well-by-well risk analysis was requested by DOH, which is true. However, a well-by-well analysis is also required under MTCA for compliance monitoring (see WAC 173-340-720).

47. **Appendix I, Section 5, Conclusions and Section 6, Recommendations**– The risk assessment conclusions and recommendations cannot be evaluated until the issues raised above have been addressed.

Conclusions

Significant investigation of the nature and extent of contamination has been completed by the Port of Vancouver at the SMC site. This work has enhanced the understanding of site conditions. However, additional work is needed to complete the investigation. This will provide the necessary information for assessing the health risk posed by the site now and in the future. It will also be important for evaluating cleanup options that will reduce the public's possible exposures at the site. DOH will further assess exposures once the additional information and data is provided.

Recommendations

The Port of Vancouver should address DOH's comments as summarized in the discussion section above.

Cc: Lisa Pearson, Ecology
Rod Schmall, Ecology
Laura Klasner, Ecology

The Washington State Department of Health prepared this Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and procedures existing at the time the health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.

Jeff Kellam
Technical Project Officer, CAPEB, DHAC
Agency for Toxic Substances & Disease Registry

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

Alan W. Yarbrough
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