

COMMENT AND DISPOSITION SHEET

DURHAM/YORK RESIDUAL WASTE ENVIRONMENTAL ASSESSMENT Municipality of Clarington Peer Review

Document Title: Draft Report – Site Specific Human and Ecological Risk Assessment Technical Study Report (No. 1009497)

Rev. May 2009

Note: These comments are draft and subject to further discussion with the Regions consultants before being finalized.

REVIEW DOCUMENT DESCRIPTION

Reviewer's Name & Organization		Harriet Phillips and Mehran Monabbati, SENES Consultants Limited	Date of comments: 09/06/2009 Disposition: 29/06/2009 Reviewer: 06/07/2009
Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
1	General	The comments provided in this assessment are only for the 140,000 tonne scenario as this scenario was the only one provided at the time of the review. Based on discussions with Jacques Whitford at the June 5 th Peer Review Meeting, they are currently in the process of modelling the 400,000 tonne scenario and that will be available sometime around June 15 th . The methodology for carrying out the Air Quality modelling and calculations for the HHERA will be the same as what has been provided in this document therefore the review of the 400,000 tonne scenario will only involve a review of the results and discussion.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> The 400,000 tpy scenario has been incorporated into the report.	
2	General	Based on discussions with Jacques Whitford at the June 5 th Peer Review Meeting, it is our understanding that a number of changes have been made to the document since it was sent out for comment. These changes were made as a result of comments by the peer reviewers for the Durham Region as well as the peer reviewers for the Durham Medical Officer of Health. However, the comments presented here are based on the May 2009 report that was sent out for review.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No It should be noted that a number of sections have been changed in the updated risk assessment which makes the review of the changes very difficult.
		<u>Disposition:</u> Major updates have been incorporated into the report and are summarized after the Executive Summary of the June 12 th draft.	
3	General	The Air Quality peer reviewer noted that generally the air quality assessment appears to have been done in a professional manner and the documentation is comprehensive and complete, save minor textual inconsistencies. There is however a fundamental concern with the generation of the CALMET meteorological wind fields, which if inappropriately represented will introduce bias in the results and potentially over or underestimate impacts at various locations. The review of the HHERA document is based on the fact that the predicted concentrations will not change substantially from those presented in the HHERA document.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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		<p><u>Disposition:</u> Since receipt of these comments the Air Quality team has rerun their models, updated with comments from Senes and the MOE. Overall, this led to minor or insignificant changes in the ground level concentrations or the deposition values used in the risk assessment. These findings will be provided in the final draft but in no way affect the conclusions or findings of the risk assessment.</p>	
4	Section 1.2	<p>The purpose of the report is very weak and does not indicate that the focus of the risk assessment is only related to air emissions.</p> <p><u>Disposition:</u> This Section of the Technical Report has been updated to reflect that the risk assessment was only related to air emissions from the Thermal Treatment Facility.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
5	Section 3.1	<p>Figure 3.4 was missing from the document and was subsequently sent by email, this figure needs to be incorporated in the document.</p> <p><u>Disposition:</u> The figure has been included in the updated Technical Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
6	Section 3.1.1	<p>Minor typographical error – on page 11 Last paragraph in this section is missing a period at the end of the sentence.</p> <p><u>Disposition:</u> Text has been updated.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
7	Section 3.1.1.3	<p>There is no description of the form of ammonia that would be used in the Selective Non Catalytic Reduction System of the facility as well as how it would be shipped to the facility.</p> <p><u>Disposition:</u> Aqueous ammonia would be used in the SNCR system. The method of shipment has not been specified by Covanta. The text has been updated to reflect the form of ammonia used and to provide further comment on how details would be expected to be part of the EPA approval process.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
8	Section 3.1.1.6	<p>Minor typographical error with the spelling of "would" in the first paragraph.</p> <p><u>Disposition:</u> Text has been updated.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

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9	Section 3.2.1	<p>More clarification is needed on the selection of the receptor locations as it is not clear as to how the final group of receptors were selected based on the original Inhalation Receptor groupings provided in Table 3-1.</p> <p><u>Disposition:</u> The Inhalation Receptor Groupings provided Table 3-1 are the final receptor groupings characterized in the risk assessment. Further clarification has been added to the text as follows: "Risk characterization was then performed on the resulting 15 receptor groupings (Table 3-1), which represent the originally selected 309 receptor locations."</p> <p>The text will be further updated to include a discussion of how these receptor locations were selected within the 10 km radius of the Facility in the updated Technical Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
10	Section 3.2.2	<p>No adequate rationale has been provided for the selection of the receptor locations for the multi-pathways assessment.</p> <p><u>Disposition:</u> This Section of the Technical report has been updated to include additional rationale for the selection of the receptor locations for the multi-pathway assessment. The text will be further updated to include a discussion of how these receptor locations were selected within the 10 km radius of the Facility in the final report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
11	Section 3.2.3	<p>No adequate rationale has been provided for the selection of the ecological receptor locations.</p> <p><u>Disposition:</u> Section 8.3.4 provides a full description and rationale for each ecological receptor location. A reference to Section 8.3.4 has been added to this section.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
12	Section 3.3	<p>In Table 3.6 it indicates that the cumulative case was only evaluated qualitatively in the <i>Air Quality Assessment Technical Study Report</i>. Provide a rationale as to why the cumulative case was not evaluated within the HHERA.</p> <p><u>Disposition:</u> The cumulative effects case was not quantitatively assessed during the risk assessment as sufficient details on "other" future projects and emissions rates were not available to the team at the time of the preparation of the Technical Report. This will be investigated further prior to release of the EA to the MOE, however, it is unlikely that this information will be available in a quantitative manner. It should also be noted that the completion of a cumulative effects assessment was not contemplated within the context of the Approved EA TOR.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as a clear statement relating to this disposition is put in the report.</p>

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13	Section 3.3.1.2	<p>This section indicates that the traffic estimates from URS Canada Inc were combined with baseline ambient conditions to produce the baseline traffic case. It is not apparent in the report or appendices as to where these concentrations are presented.</p> <p><u>Disposition:</u> Traffic Data used in the assessment of the Baseline Traffic Case and Traffic Case will be provided in Appendix E of the updated Technical Report and was provided by the Air Quality Modeling Team.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
14	Section 3.3.3.3	<p>Not enough information is provided for The Process Upset Case and therefore it is difficult to understand this Scenario. No rationale is provided for why it was assumed that the facility would run at the Upset Conditions 5% of the year for CACs and metals and 20% of the year for other COPC. Why would Upset Conditions not be the same regardless of the COPC? In addition no rationale has been provided for the use of a factor of 10 for the emission rates of the short term ground level COPC concentrations. As discussed in the June 5th meeting, the Upset Case needs to be clearly defined as it is Upset Conditions and not normal operating conditions that are of most concern for this type of facility.</p> <p><u>Disposition:</u> Section 3.4.3.3. of the Report has been updated to include a better discussion of the Process Upset Cases evaluated in the risk assessment.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
15	Section 3.3.3.4	<p>It is unclear how this Case is different from what was presented in Section 3.3.3.3 as no description of this case is provided.</p> <p><u>Disposition:</u> This Section has been updated in the Report to differentiate it from Section 3.3.3.3.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
16	Section 3.3.3.5	<p>This section describes the Traffic Case. Why was PM₁₀ not evaluated as this constituent is associated with vehicular emissions?</p> <p><u>Disposition:</u> PM₁₀ has been added to the Traffic Case Assessment.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as it is added to the evaluation as it is not present in the June 11 updated document.</p>
17	Section 3.3.3.6	<p>It is unclear how this Section and the Subsections were used in the assessment as in Table 3.6 it indicated that the Future and Existing Conditions Case was evaluated qualitatively in the Air Quality TSD. There are typographical issues with the Subsection numbering. In Section 3.3.3.6.3, no rationale is provided as to why the aggregate transfer station and the GO transit line/station are expected to have little effect on the regional air quality. In addition, no discussion was provided on the St. Mary's, Darlington NGS and 401-407 Eastlink.</p> <p><u>Disposition:</u> Typographical errors with the subsection numbering have been resolved. Additional discussion and clarification has been added throughout this section.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as the typographical errors are corrected and additional statements are added as it is not present in the June 11 updated document.</p>

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18	Section 4.2	<p>Table 4.2 presents the list of COPC that were evaluated in the assessment. Why were acrolein and 1,3-butadiene not evaluated as they are known to be associated with the incineration of garbage?</p> <p><u>Disposition:</u> Section 4.2.2 has been updated to include a discussion on acrolein and 1,3-butadiene.</p> <p>During the peer review process, a question was posed about the exclusion of acrolein and 1,3-butadiene from the COPC list. Acrolein is released to the environment through the incomplete combustion of organic matter. The main combustion source of acrolein is from gas and diesel motor vehicle emissions (CEPA, 1999). It is likely that acrolein would be emitted from a Thermal Treatment Facility, but the Air Quality Team was unable to locate any emission factors for acrolein for incineration facilities during their review of Canadian, US EPA or CalEPA data sources. Given that motor vehicle emissions to the environment far exceed those that would be expected from a Thermal Treatment Facility (CEPA, 1999), it is not anticipated that its exclusion from the HHRA would alter the overall conclusions of the report.</p> <p>Although 1,3-butadiene was identified as a COPC in the <i>Air Quality Assessment Technical Study Report</i> (Jacques Whitford, 2009e), no credible sources of emissions data for this contaminant were found during the extensive literature review performed for the assessment. Therefore, 1,3-butadiene was considered, but not modelled by the Air Quality Team."</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Only acrolein was addressed in the update. A statement needs to be added for 1,3-butadiene.</p>
19	Section 5.1	<p>It seems like a very small sample of forage samples (i.e. 5) were collected in the study area. No rationale was presented to indicate that this small sample was adequate enough to describe baseline conditions in the area. Similarly only 11 browse samples were collected. Provide a rationale in this section to indicate whether the number of samples collected adequately represents baseline conditions.</p> <p><u>Disposition:</u> The text regarding forage samples was incorrect. Text was updated to reflect that 11 forage samples were collected from the 17 sampling locations within the baseline assessment area.</p> <p>Regardless for the purpose of the HHERA the MOE has requested that maximum concentrations be used with the exception of the soil data. This will be updated in the Report. Although it may slightly alter the baseline risk assessment, it will not impact the conclusions or the results of the HHERA.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>As long as it is added to the text as it is not present in the June 11 updated document.</p>
20	Section 5.1.2	<p>Provide a rationale as to why a small sample size (i.e. 5 samples) is adequate enough to evaluate a 95th UCLM.</p> <p><u>Disposition:</u> See response to Comment 19.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
21	Section 6.1	<p>Countor plots have been provided for the ambient exposure point concentrations; however, a table summarizing the air concentrations used in the assessment has not been provided.</p> <p><u>Disposition:</u> A summary table is now provided in Appendix E to the Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

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22	Section 6.2	<p>It is unclear why the COPC list in Table 6-1 is different from the original list provided in Table 4-2. Provide a rationale for this difference.</p> <p><u>Disposition:</u> Not all COPC presented in Table 4-2 were considered relevant to the Baseline Loading tables due to the physical-chemical properties of the COPC. Specifically not all COPC released from the Thermal Treatment Facility will persist or accumulate in the environment. Chemicals that have the potential to persist and accumulate in the environment were carried forward into the multi-pathway assessment and subsequently included in the Baseline Loading Tables. O-terphenyl was added to the Baseline Loading Tables.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>As long as a rationale is provided in the section to clarify the discrepancy so that the report is transparent.</p>
23	Sections 6.3-6.5	<p>Provide a rationale for why the COPC list in Tables 6.2 to 6.15 differs from the original list provided in Table 4-2.</p> <p><u>Disposition:</u> See response to comment 22.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>See above</p>
24	HHRA, Section 6.3, Table 6.2	<p>While the increased emissions during upset conditions (a factor of 2.8 or 1.45) are reflected in environmental media concentrations (soil, water, etc), the concentrations of majority of chlorinated aromatics in surface water , sediments, small mammals, and fish remained essentially the same for both scenarios despite a sharp increase in emissions during upset conditions. This could not be explained using available information from the HHRA document.</p> <p><u>Disposition:</u> Loading calculations will be reviewed to ensure that the calculation of chlorinated aromatics is appropriate and if so, a rationale for the lack of increase will be provided.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
25	Section 6.6	<p>This Section indicates that only dioxins and furans and PCBs were evaluated in breast milk yet in Table 7-18, hazard quotients have been provided for a larger list of COPC. This discrepancy needs to be resolved.</p> <p><u>Disposition:</u> The Report has been updated to reflect that all organic COPC (except metals) have been evaluated for farmer and resident infants. The metals risk assessment results were provided for dust ingestion.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
26	Section 7.3.3	<p>Sensitive receptors have not been discussed nor characterized. This section should include some discussion of the potentially sensitive subgroups of the population as they will be potentially most affected by the emissions from the facility. Only a daycare/school was discussed what about retirement homes are there any in the area?</p> <p><u>Disposition:</u> A large number of receptors, including retirement homes, were assessed and discussed in the inhalation assessment. The receptors chosen for the multi-pathway assessment were deemed those most sensitive to multi-pathway exposure. This is further described in Section 7.4 (Receptor Characterization). Text in the Report has been updated to clearly reflect this.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

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27	Section 7.3.4.1	<p>A wide range of values are reported in the literature for soil ingestion rates (SIRs). This section does not provide any discussion or recognition of the different SIRs. The Health Canada SIRs used in this section are all lower for the toddler than other SIRs used such as 100 mg/d. In addition the MOE posted the following document in October 2008 to the Environmental Registry "<i>The Rationale for the Development of Generic Soil and Groundwater Standards for Use at Contaminated Sites in Ontario</i>" (http://www.ene.gov.on.ca/environ/env_reg/er/documents/2008/010-4642%203.pdf). This document contains the SIRs the Ministry considers appropriate for use in assessing this exposure pathway which are much higher than the ones used in this assessment. Thus, this section should provide adequate discussion on the SIRs and provide a rationale for the values selected. Based on the June 5th Peer Review meeting, it is our understanding that calculations have been redone using an SIR of 100 mg/d for the toddler. The use of this value needs to be supported by a detailed rationale. In addition provide a rationale as to how the dust ingestion rate was calculated in Appendix G.</p> <p><u>Disposition:</u> The June 12th report has been updated to include the toddler SIR to 100 mg/d.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>While the calculation may reflect an SIR of 100 mg/d, the text still indicates that the SIR is from Health Canada. As indicated in this comment, more discussion and rationale is necessary in this section to support the selection of the SIRs used in the assessment.</p>
28	Section 7.3.4.1	<p>For breast milk ingestion it is indicated that the infant is "assumed to be exclusively breast fed (meaning their intake of all other foods and water is set to zero)"; however in Table 1-1 in Appendix G which has the receptor characteristics there is a value for the water ingestion rate and wild game ingestion rate.</p> <p><u>Disposition:</u> The table has been updated.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
29	Section 7.3.4.1	<p>Skin surface Areas have been obtained from Health Canada 2004 which provides information on total area, arms, hands, legs and feet. However in Appendix G different skin surface areas are provided for Summer and Winter with no rationale as to how these values have been derived.</p> <p><u>Disposition:</u> Skin surface areas for summer include head, legs and arms, while skin surface areas for winter include only the head. Description of this rationale has been added to the appropriate sections of the Report which outline dermal soil/dust exposure.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>As long as it is added to the text as it is not present in the June 11 updated document.</p>
30	Section 7.3.4.1	<p>In Appendix G, the characteristics of a composite receptor have been provided by using a weighted average of the various ingestion rates instead of considering each life stage separately and then considering the exposure. It was acknowledged in the June 5, 2009 meeting that calculations will be provided in the Uncertainty Section. This should be done.</p> <p><u>Disposition:</u> An example of the calculation used to estimate composite receptor properties has been added to Appendix G of the Report.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>At the June 5th meeting, it was agreed that this would be added to the Uncertainty Section of the report to reflect the different ways in calculating the risks to the composite receptor (i.e. weighted average vs calculation for each life stage then summing together).</p>

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31	Section 7.3.4.1	The document indicates that ingestion rates for beef, chicken, pork, dairy and eggs were taken from EPA 2005. Appendix G provides the values used in the report. It is difficult to reconcile the ingestion values for these different food groups in Appendix G with the Tables from the EPA 2005 document. A rationale needs to be provided in the Appendix as to how these values were derived for the toddler and composite farmer receptors. The text indicates that the rates are specific to a child and adult farmer receptor. This needs to be corrected.	Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No More information than what is provided here is needed as when the 2005 document was checked, the numbers did not match what was presented in the Appendix. The value selected from the table in the 2005 document is needed and how it was adjusted to be used in the assessment.
		<u>Disposition:</u> Child and adult consumption rates were used as proxies for toddler and adult consumption rates for ingestion of aboveground-exposed, aboveground-protected and belowground produce and agricultural products only. All other relevant consumption rates related to toddler-specific and adult-specific consumption rates. Consumption rates were taken from US EPA HHRAP guidance. Additional rationale and discussion has been added to Appendix G of the Report.	
32	Section 7.4.3	This section is supposed to present the results of the exposure analysis; however no results are presented in this section or in an Appendix. Appendix G only provides a worked example, Appendix B the baseline concentrations and Appendix C the equations used to calculate the exposure. Exposure results are necessary to check the intermediate steps in the risk assessment.	Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No This comment does not relate to EPCs but to the calculations of exposure (i.e. in mg/kg-d) for each pathway that were used to calculate the risk. These have not been provided in the report.
		<u>Disposition:</u> EPCs are now provided in Appendix E of the Report.	
33	General	Overall, the methodology used to calculate the COPC concentrations in the environmental media and point of exposure COPC concentrations is sound. However, some specific clarifications are needed for these calculations within the context of ecological risk assessment.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> Appendix K (Biological Uptake Factors) provides rationale for calculations conducted within the Ecological Risk Assessment surrounding aquatic plants, soil invertebrates and benthic invertebrates. Exposure point concentration calculations for other media, which are common to both the HHRA and ERA are provided in Appendix C of the Report.	

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34	Appendix B, Section 1.1	<p>The US EPA (2005) Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP) provides recommendation for HHRA and does not provide recommendations on how to Develop a site-specific ecological risk assessment. EPA had previously published its recommendations for conducting screening level ecological combustion risk assessments in a separate document, the Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities (SLERAP) Peer Review Draft (U.S. EPA 1999). , is currently undergoing substantial revision. Until revisions are complete, we can't recommend using the SLERAP.</p> <p>The media considered for HHRA in this document were (Figure 1.1 of HHRAP)</p> <ol style="list-style-type: none"> 1. Air for Direct Inhalation 2. Soil 3. Produce 4. Meats, Milk, and Eggs 5. Drinking Water and Fish <p><u>Disposition:</u> SLERAP (1999) was reviewed but was not relied upon to any great degree in the assessment. Guidance from MOE, CCME, Ohio EPA, ORNL and other regulatory bodies was consulted for guidance on conducting the ERA.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>This response does not indicated as to how the document will be changed to respond to the comment.</p>
35	Appendix C, General	<p>It is understood that indoor air, grain, beef, pork, chicken, egg, dairy products, and fruits are also used in calculation of intake by receptors. If this appendix is meant to provide a complete methodology to calculate point of exposure concentrations, it should provide the equations and methodology used to estimate the above exposure media concentrations. They are missing from the document.</p> <p><u>Disposition:</u> Intake via indoor air and grain were not predicted in the HHRA. However, predictive equations for beef, pork, chicken, egg, dairy and fruit have been added to Appendix C of the Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>As long as the report is very clear as to what exposure pathways were considered.</p>
36	Appendix C, Section 1.2.2	<p>Brackets are used incorrectly in the equation. This is the same problem with some other equations as well. It should be ensured that the calculations used the equations with proper location of brackets.</p> <p><u>Disposition:</u> All equations have been reviewed and proper bracketing has been ensured.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
37	Appendix C, Section 1.2.2, Section 1.3.1	<p>The units for Dydv, Dywv, Dydp, and Dywp are incorrect in equations for soil and above ground produce concentration. As such both sides of the equations have different dimensions. Please note that terms are unitized deposition rates not yearly average depositing rates (Q was considered to be 1).</p>	<p>Accepted by Reviewer</p>

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		<p><u>Disposition:</u> The units of these parameters will be reviewed and proper units will be ensured in displaying the calculations and in the model itself.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
38	Appendix C, Section 1.4.1	<p>The equation for calculating the concentration in wild game tissue is incorrect. The $Ba_{wildgame}$ should be multiplied by forage intake as well as soil intake. In addition the equation for calculating $Ba_{wildgame}$ is applicable only for organic compounds. It is not clear, from the document , how $Ba_{wildgame}$ for metals are calculated.</p> <p><u>Disposition:</u> As outlined in Appendix C, the equation for $C_{wildgame}$ includes Q_s, C_s, and B_s, or the quantity of soil eaten by wild game each day, the average soil concentration over exposure duration and the soil bioavailability factor. Soil intake is thus combined with forage intake and multiplied by $Ba_{wildgame}$ to obtain the tissue concentration.</p> <p>The calculation of Ba_{game} for metals is based on Baes et al. (1984), as per US EPA HHRAP. A description of this calculation will be added to Appendix C.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
39	Appendix C, General Section 3.3.3.3 of HHRA	<p>It appears that the upset factor (1.45 or 10 times for 5% of the time for metals and 2.8 or 10 times for 20% of time) used for prediction plant emissions during upset conditions are consistent based on a methodology used by California Air Resources Board (CARB) (1990). This should be referenced in the document.</p> <p><u>Disposition:</u> CARB(1990) is now referenced in the Report.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
40	Appendix C Section 1.5.8	<p>This section should explain the difference between BCF and BAF and their application in calculating fish concentrations. Also, it is not clear why BAF is based on fish fresh weight and BCF is not. Usually both of these factors should be used on a fresh weigh basis.</p> <p><u>Disposition:</u> A paragraph explaining the difference between BCF and BAF has been added to Section 1.5.8. of Appendix C. Units for BAF have also been updated to reflect that the BAF is expressed on a fresh weight basis.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
41	Appendix C Section 1.5.8	<p>The BSAF is not unitless. It is usually expressed as kg sediments/kg fish FW. It is significant to provide the unit, even though the factor is dimensionless, as it make a difference if the fish concentration is calculated on a fresh weight basis.</p> <p><u>Disposition:</u> Appendix C has been updated to reflect the basis of the calculation.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
42	Appendix C Section 1.5.8	<p>While application of BSAF for calculation of concentrations in benthic fish or bottom feeders which spent most of the time at the vicinity of bottom sediments is appropriate, this may not be the case for plagic fish which spent most of the time in water column. There should be a discussion about this.</p>	<p>Accepted by Reviewer</p>

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Reviewer's Name & Organization		Harriet Phillips and Mehran Monabbati, SENES Consultants Limited	Date of comments: 09/06/2009 Disposition: 29/06/2009 Reviewer: 06/07/2009
Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
		<p><u>Disposition:</u></p> <p>As outlined in Appendix C, the BSAF calculation was applied only to extremely hydrophobic chemicals such as dioxins, furans and PCBs. This use of the BSAF factor takes into account the highest possible exposure (expected to occur in sediment) to any fish (including pelagic). By using this conservative approach the pelagic fish population is expected to be protected.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
43	Appendix C, 1.5.8	<p>US EPA document says:</p> <p><i>"The MF presented above for BEHP applies only to mammalian species, including beef cattle, dairy cattle, and pigs. It does not relate to metabolism in produce, chicken, or fish. In addition, since exposures evaluated in this guidance are intake driven, using an MF applies only to estimating COPC concentrations in food sources used in evaluating indirect human exposure, including ingestion of beef, milk, and pork. In summary, an MF is not applicable for direct exposures to air, soil, or water, or to ingestion of produce, chicken, or fish."</i></p> <p>However MF was used to calculate the fish concentration. It may underestimate the fish concentrations by a factor of 100 for PAH compounds.</p> <p><u>Disposition:</u></p> <p>The use of a MF in the calculation of concentrations of PAHs in media such as fish, beef, milk, pork, poultry and eggs, is based on rationale from Hofelt et al. (2001). This rationale is described in Section 1.4.1 of Appendix C. A reference to this section has been added to Section 1.5.8.</p> <p>Briefly, Hofelt et al. states that the assumption of a MF of 1 for PAHs can result in an overestimation of the tissue concentration that, in turn, results in an overestimation of risk. The article also states that the USEPA has recommended a reduction in the fish bioaccumulation factors provided in HHRAP by three orders of magnitude – equivalent to a fish metabolic factor of 0.001 – based on empirically derived fish bioconcentration factors. The Report documents the use of a metabolic factor of 0.01 – which incorporates a conservative safety factor of 10%.</p>	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
44	Appendix D, General	<p>It should be clear that all the transfer factors provided for all COPC is on the FW or DW basis. There is a significant difference between calculations based on FW and calculations based on DW. The unitless numbers provided does not indicate which basis was used.</p> <p><u>Disposition:</u></p> <p>Appendix D has been modified to specify the basis for all unitless biotransfer factors.</p>	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
45	Appendix D, General	<p>Based on the methodology provided in Appendix C, Section 1.4.1, the transfer factor (Ba) for wild game was calculated using Ba for beef. The transfer factor (Ba) for beef was also calculated using Ba for fat. However, in Appendix D, numerical values (cited from EPA 2005) were provided for both. It should be clear which method was used to calculate the tissue concentration of wild game.</p> <p>Generally, there may be cases where both empirical values and equations were provided for a parameter. In those cases the document should be clear which method was used.</p>	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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		<p><u>Disposition:</u> Where a COPC is present, the HHRAP database provides Ba_{beef}. The HHRAP details that this value is based on Ba_{fat} as described in Appendix C. For all COPC, Ba_{game} has been calculated from Ba_{beef}. All Ba_{beef} and Ba_{game} values are correctly cited as having been obtained from HHRAP (if the COPC is included in the HHRAP database), or as having been calculated based on an equation from HHRAP (as described in Appendix C).</p>	
46	Appendix E, General	<p>The point of exposure concentrations for Project Case (Baseline + Project) and Process Upset Project Case (Baseline+ Upset Conditions) were not provided.</p> <p><u>Disposition:</u> Project Case and Process Upset Project Case risk estimates were calculated by taking the sum of the Baseline Case and Project Alone Case/Process Upset Case risk estimates.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as the report is clear about the approach.</p>
47	Appendix E, General	<p>Calculated Indoor air concentrations should be provided for receptor clusters where appropriate.</p> <p><u>Disposition:</u> Appendix E has been updated to provide separate inhalation (i.e. air) and multi-pathway exposure point concentrations. As inhalation is assessed separately, air concentrations have been removed from the multi-pathway exposure point concentration tables.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
48	Section 7.5 General	<p>This Section provides all the toxicity reference values (TRVs) that were used in the assessment. There are a number of inconsistencies in this Section. Based on discussions at the June 5th peer review meeting it is our understanding that this section and the TRVs have been updated. Nonetheless, a few comments relating to issues with the TRVs will be provided.</p> <p><u>Disposition:</u> The Toxicological Profiles have been updated.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No The toxicity Profiles have not been updated to reflect the WHO guidelines that were used as discussed by JWEL in response to comment 51.</p>
49	Section 7.5 General	<p>The TRVs taken from Health Canada were referenced to a 2004 document. The HHRA should note, however, that the literature cut-off date for these TRVs was 1992. Similarly, when referencing TRVs taken from USEPA IRIS, the year that the TRV was published, in addition to the year that IRIS was accessed to get the TRV, should be indicated</p> <p><u>Disposition:</u> Jacques Whitford is aware of the cut off dates used for the Health Canada 2004 document.</p> <p>The references to US EPA are all properly documented in the Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
50	Section 7.5 General	<p>Not all of the values presented in the table as TRVs are actually TRVs. For example, the reliance on air guidelines as sources of TRVs may not be appropriate. Air guidelines may not be based on health effects and thus concentration ratios obtained using these values would not be considered valid. The values used to assess health risks in the HHRA must all be actual TRVs.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

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Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
		<p><u>Disposition:</u> It is stated in Section 7.5 of the Report under Benchmark (Inhalation), "for this assessment only health-based benchmarks were used". We acknowledge, however, that for benchmarks related to particulate matter, values are often derived based on policy and not only health.</p> <p>It is recognized that these are benchmark values, however, when these values were used there was a lack of toxicological information from any of the reliable agencies that provide RfCs.</p>	As long as this is discussed in the Uncertainty Section that the use of the Concentration ratios based on AAQCs may not be fully protective of all health effects.
51	Section 7.6 Table 7.2	<p>It is curious to note that WHO guideline values were uses for the CACs in the generic risk assessment and they have not been used in this assessment. No rationale has been provided as to why these values were not used in this assessment. Based on the June 5th discussion, it is our understanding that the WHO values will be used.</p> <p><u>Disposition:</u> The WHO guideline values for PM₁₀, PM_{2.5}, NO₂ and SO₂ have been added to the inhalation assessment documented in the Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>However, the toxicity profiles in Appendix H need to be updated – see Comment 48</p>
52	Section 7.6 Table 7.2	<p>Similarly, why was the value for hydrogen fluoride changed from the original value that was used in the generic HHRA?</p> <p><u>Disposition:</u> As outlined in the toxicity profile for hydrogen fluoride, the Texas Commission on Environmental Quality recently updated its 1-hour value for hydrogen fluoride to 25 µg/m³. Further details regarding the derivation of this value are found in the toxicity profile.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
53	Section 7.6 Table 7.2	<p>The values presented for particulate matter PM10 and PM2.5 do not reflect the current science on particulate matter. The National Ambient Air Quality Objective for Particulate Matter has reference levels for health based values of 15 µg/m³ for 24-h PM2.5 and 25 ug/m³ for 24-h PM10. In addition the California Air Resources Board (2008) provides a summary of the latest research on PM2.5. It should be noted that in some cases scientists think that there is no threshold that is safe for exposure to PM2.5 and others think ranges from 3 µg/m³ to 7 µg/m³ are protective of health for PM2.5. The discussion in Appendix H is inadequate as it does not reflect the latest literature on particulate matter.</p> <p><u>Disposition:</u> The PM_{2.5} values have been updated with the WHO criteria. That being said it is acknowledged that there is considerable debate in the literature and by regulatory agencies from around the world on appropriate PM2.5 values. It should be noted that the addition of PM2.5 at the MGLC from the Facility itself will be lower than the values cited above.</p> <p>Regardless the Report has been updated with a further discussion on this matter.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>This is inadequate and as discussed in the original comment a proper discussion on the science relating to PM2.5 is requested. The WHO criteria are not protective of health and the WHO in their document indicate a level of 3 to 5 µg/m³ where health effects have been observed. All of this should be discussed and an appropriate value selected.</p>

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Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
54	Section 7.6 Table 7.3	<p>CalEPA 2003, considers naphthalene to have carcinogenic properties. Therefore, the toxicity profile for naphthalene should be more detailed, particularly in light of the potential mutagenicity and carcinogenicity of naphthalene.</p> <p><u>Disposition:</u> There is considerable debate in the scientific community on the potential carcinogenic nature of naphthalene. Text from CalEPA (2003) has been added to the discussion on the carcinogenicity and mutagenicity of naphthalene, but since IARC, Health Canada and US EPA only consider naphthalene as a possible carcinogen to humans and US EPA considers the current data to be inadequate to derive carcinogenic inhalation or oral TRVs, naphthalene has been evaluated as a non-carcinogenic substance in this risk assessment.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>As long as this is done as it is not in the June 11 document.</p>
55	Section 7.6 Table 7.3 and 7.4	<p>For lead, rationale needs to be provided as to why the MOE values which have been derived from a blood lead level have not been used.</p> <p><u>Disposition:</u> The oral TRV for lead has been updated to the MOE value in the final version of the risk assessment.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
56	Section 7.6 Table 7.3	<p>The annual average for beryllium was cited as 0.0007 µg/m³ (CalEPA REL, 2008) in the report but the value was found to be 0.007 µg/m³ (CalEPA REL, 2008).</p> <p><u>Disposition:</u> This is a typographical error in Table 7-3. The table has been updated.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
57	Section 7.6 Table 7.3 and 7.4	<p>Even though it was stated in appendix H that naphthalene was used as a surrogate for 1-methynaphthalene and 2-methylnaphthalene it should be stated in the chart as well.</p> <p><u>Disposition:</u> Tables 7.3 and 7.4 have been updated to reflect that that naphthalene was used as a surrogate for 1-methynaphthalene and 2-methylnaphthalene</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>As long as this is done as it is not in the June 11 document.</p>
58	Section 7.6 Table 7.3	<p>We were unable to find the Cadmium annual average of 0.005 ug/m³ (MOE AAQC) in the MOE AAQC 2008 document, where did the number from?</p> <p><u>Disposition:</u> The MOE AAQC 2008 documents lists an annual average of 0.005 µg/m³ for Cadmium (and Cadmium Compounds), list #51.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>The MOE February 2008 Air Quality Standards does not have an annual average value for Cadmium. It is not #51 in the list. #51 in the list is Butyl-benzene sulphonamide. Cadmium and Cadmium compounds in #53 and no annual value is presented.</p>
59	Section 7.6 Table 7.3	<p>Benzene: an acute value of 0.009ppm was used which does not match the given critical effects description. Also an acute value is inappropriate for a 24 hour duration. The more appropriate value would be an intermediate duration value of 0.006ppm, which also matches the given critical effects description.</p>	<p>Accepted by Reviewer</p>

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		<p><u>Disposition:</u></p> <p>The critical endpoint matches are provided in the ATSDR document, Compendium of Papers on MRLs and Health Effects: Health effects classification and its role in the derivation of minimal risk levels: Immunological effects (http://www.atsdr.cdc.gov/mrls/articles/health_effects_classification_and_its_role_in_the_derivation_of_mrls_inmunological_effects.pdf).</p> <p>In respect to the benzene acute 24-hour inhalation value, we believe the acute value of 0.009 ppm is more appropriate as a 24-hour value than the intermediate MRL for benzene given that this dose reflects a 1-14 day time period, as compared to >14-365 days for the intermediate dose (i.e., a subchronic dose).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
60	Section 7.6 Table 7.3	<p>Where did the acetaldehyde carcinogenic annual average value come from, the compound could not be found in the Health Canada 2004 report listed in the references.</p> <p><u>Disposition:</u></p> <p>As stated in the toxicity profile for Acetaldehyde, the Health Canada reference for this value is: Health Canada. 2004. Health-based Guidance Values for Substances on the Second Priority Substances List. http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/contaminants/psl2-lsp2/acetaldehyde/acetaldehyde_fin-eng.pdf.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
61	Section 7.6 Table 7.3	<p>Where did the formaldehyde annual average of 3 µg/m³ (CaEPA REI. 2008) come from, the value and the description are not consistent with the given description in the 2009 report.</p> <p><u>Disposition:</u></p> <p>This value has been updated in the Report. CaEPA recently re-evaluated its chronic formaldehyde REL to 9 µg/m³; therefore, the updated CaLEPA was selected for use in this assessment</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
62	Section 7.6 Table 7.3	<p>Where did the 1,1,1-trichloroethane number come from as there is not a an entry for 1,1,1-trichloroethane in the US EPA IRIS database.</p> <p><u>Disposition:</u></p> <p>Values are from the IRIS profile for 1,1,1-trichloroethane, under the subheading: "I.B.1.1. Acute Inhalation RfC Summary", http://www.epa.gov/iris/subst/0197.htm#refinhal</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
63	Section 7.6 Table 7.3	<p>Why was the annual average for 1,1,1-trichloroethylene listed as no value when there is an annual average value of 54 µg/m³ (TCEQ REL. 2008).</p> <p><u>Disposition:</u></p> <p>This value has been added to the inhalation assessment in the Report.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
64	Section 7.6 Table 7.3 and 7.4	<p>Where did the TEF for benzo(e) pyrene and dibenzo(a,c) anthracene come from as relative potency factors could not be found in IPCS 1998.</p> <p><u>Disposition:</u></p> <p>The TEF factors used for the abovementioned PAHS are from Table A1.9. Relative potencies of indicator polycyclic aromatic hydrocarbons.</p>	<p>Accepted by Reviewer</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
65	Section 7.6 Table 7.4	Why were dioxin-like PCBs not considered in the assessment?	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as information is presented in the Uncertainty Section.
		<u>Disposition:</u> Section 4.4 has been updated to include a discussion on dioxin-like PCBs. Further information on dioxin-like PCBs will also be added to the Report in the section regarding uncertainty.	
66	Section 7.6 Table 7.4	Why was the methyl mercury value of 2×10^{-4} mg/kg-d (Heath Canada 2004) used instead of the more conservative value of 1×10^{-4} mg/kg-d (IRIS 2001).	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> The Health Canada value of 2×10^{-4} mg/kg-d was selected for use in this assessment because it is the provisional tolerable daily intake for pregnant women and toddlers in Canada and is consistent with WHO/FAO Expert Committee on Food Additives (JECFA) recommended provisional tolerable weekly intake for methylmercury of 0.00016 mg/kg bw/week (equivalent to 0.00023 mg methylmercury/kg bw/day) in order to sufficiently protect the developing fetus. We believe this value to be more applicable to the current risk assessment.	
67	Section 7.6 Table 7.4	Why is perylene listed with a TEF value if it is not considered a carcinogen	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> Perylene is considered a carcinogenic according to WHO, as stated in Environmental Health Criteria document 202 (IPCS, 1998), Table A1.9. Relative potencies of indicator polycyclic aromatic hydrocarbons.	
68	Section 7.6 Table 7.4	Acenaphthene has a non-carcinogen value of 6×10^{-2} mg/kg-d (IRIS 1994) which was not included.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as added to the report as not in the June 11 version
		<u>Disposition:</u> This has been updated in the Report.	
69	Section 7.8.1.1	As discussed Comment 50, ambient air quality standards were used for comparison for the metals and CAC. As these AAQC may not be true health-based values, the limitations of this approach should be discussed.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as this is discussed in the Uncertainty Section that the use of the Concentration ratios based on AAQCs may not be fully protective of all health effects
		<u>Disposition:</u> Please see response to comment #50 above.	
70	Section 7.8.1.1	The evaluation of health-based effects from particulate matter is not appropriate and needs to be revisited.	Accepted by Reviewer

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Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
		<u>Disposition:</u> Please see response to comment #53 above.	<input type="checkbox"/> Yes <input type="checkbox"/> No
71	Section 7.8.3.1	The use of the lower WHO values will result in exceedances in the baseline case and thus a frequency analysis will need to be presented for the Project Case. <u>Disposition:</u> A full discussion of all WHO results has been provided in the report and where relevant frequency analysis has been provided for discussion.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
72	Section 7.10	There is a discussion on transfer factors used to calculate concentrations in various media under food chain effects. The following statement is provided "Typically these assumptions are conservative and tend to overestimate rather than underestimate risks". Caution needs to be exercised in using this statement because for a number of chemicals this statement is not correct. The Analysis of this should be neutral and not overestimate. In addition food chain uptakes have no relation to the Toxicity Assessment and this row should be moved to the Exposure Assessment Section. <u>Disposition:</u> The Report has been updated accordingly.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as in final report as not in June 11 Report.
73	Section 7.10	There is no discussion on the assumptions used in deriving the Upset Conditions. <u>Disposition:</u> Discussion of Upset Conditions have been added to the list of assumptions provided in Table 7-84 in the Report.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as in final report as not in June 11 Report.
74	Section 7.10	There is no discussion on the use of AAQCs as TRVs rather than health based numbers. The use of AAQCs underestimate the risk. <u>Disposition:</u> Section 7.5 under benchmark (inhalation) discussed the use of air benchmarks as TRVs. We do not believe the use of AAQCs will underestimate risk as they are all health-based (with the exception of those used for particulate matter). This has been updated in the Report.	Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No The use of AAQC values do underestimate risk as shown for PM2.5 for example, health effects are seen at values that are below the WHO values. This should be reflected in the report.
75	Section 8.3.2.21	Generally mallards are considered to be present in the aquatic environment and consume aquatic plants and invertebrates. It is interesting to not that in this assessment mallards were assumed to consume terrestrial vegetation and soil.	Accepted by Reviewer

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		<p><u>Disposition:</u> Mallards are indeed known to be closely associated with the aquatic environment, and, as reflected in this ERA, consume foods primarily associated with this habitat (approximately 88%). However, it is also known that mallards are not exclusively aquatic species and will frequent terrestrial habitats to forage (seeds, tubers, stems of terrestrial plants), which is also reflected in the assessment (terrestrial forage accounting for approximately 12% of their diet). Sediment (and soil) ingestion rates were estimated based on dietary intake of these foods, assuming that each dietary component was associated with a fixed percentage of soil/sediment. Please refer to Appendix L, Section 4.1, for more information.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
76	Section 8.3.2.21	The food intake for the muskrat seems low based on the allometric equations provided in Appendix L.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<p><u>Disposition:</u> The food intake rate for the muskrat was verified to be correct, based on the allometric equation for rodents provided in Appendix L ($FI = 0.621 Wt^{0.564}$), and incorporating a dry weight to wet weight conversion factor.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
77	Appendix L	In general, the ecological profiles appear reasonable although there are some parameters that we could not verify in the Appendix such as the body weight for the shrew seems to be low, the food intake for the muskrat is low compared to the body weight, the body weight seems low for the white-tailed deer. No references are cited in the Tables in Appendix L and these should be provided.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<p><u>Disposition:</u> All receptor parameters were verified as correct. Section 8.3.5 of the main report details receptor characteristics and sources of information.</p>	
78	Section 8.4 Table 8-4	Inhalation is not considered in the ERA and thus the checkmark should be removed from this table.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<p><u>Disposition:</u> Inhalation is considered in the ERA, albeit qualitatively based on inferences from the HHRA. Please refer to Section 8.8 for the inhalation risk characterization discussion.</p>	
79	Section 8.4 Figure 8.3	Small mammals were not broken up into various groups so it was difficult to determine what small mammals the predatory species were consuming. In addition in Appendix L there is no breakdown of the prey either. This is needed to improve transparency of the report.	Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		<p><u>Disposition:</u> Dietary information for each receptor is discussed in Section 8.3.5 of the Report.</p>	This is not discussed in this section. For example for fox it says that they consume small mammals and there is no breakdown as to what makes up small mammals – is it all voles, is it a mixture of voles and shrews?

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80	Section 8.5	<p>There is a discussion of scaling in this section; however an acknowledgement should be provided to indicate that while scaling is still being used in ERAs that there is a movement away from scaling and what the potential effect of this would be on the results. In addition the MOE has indicated that they do not support allometric scaling.</p> <p><u>Disposition:</u> Text has been added to the Report to address the use of the allometric scaling. In addition, alternate approaches to allometric scaling in the section regarding uncertainty will be provided and a discussion on how this would not affect the overall conclusions contained in the Report will be provided.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
81	Section 8.5	<p>We do not support the use of AAQC's for the evaluation of vegetation effects from exposure to NO₂ and SO₂. The WHO values should be used.</p> <p><u>Disposition:</u> As stated in Section 8.5.8.5: "... the Maximum Acceptable Level was used as the threshold for conducting the risk assessment of sulphur dioxide and nitrogen dioxide on vegetation.", where: "the Maximum Acceptable Level is intended to provide adequate protection against effects on soil, water, <i>vegetation</i>, materials, animals, visibility, personal comfort and well-being;" (second bullet in Section 8.5.8.5). WHO benchmarks have been included in the Report.</p>	<p>Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
82	Section 8.6	<p>No intakes to the ecological receptors were provided so it is difficult to verify the results presented.</p> <p><u>Disposition:</u> Intakes for all non community-based ecological receptors assessed in the ERA are provided in Appendix L. Exposure point concentrations used in the ERA for all assessment scenarios are provided in Appendix M. A worked example, detailing the risk characterization process using information found in each of Appendix L and M, is provided in Appendix O.</p>	<p>Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>This comment relates to the fact that concentrations of the average daily dose were not provided in the report. These are intermediate steps in the risk assessment and without these values it is difficult to check the calculations.</p>

REVIEW DOCUMENT DESCRIPTION

Reviewer's Name & Organization		Harriet Phillips and Mehran Monabbati, SENES Consultants Limited	Date of comments: 09/06/2009 Disposition: 29/06/2009 Reviewer: 06/07/2009
Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
83	Section 8.9 and Table 8-19	There is an extensive discussion on uncertainty and a table summarizing the assumptions. However the discussion and the table do not discuss the effect of these uncertainties on the assessment.	Accepted by Reviewer <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No The information provided in Table 8.10 is not adequate. For example, the TRV discussion provides no indication whether the TRVs selected, overestimate, underestimate, or are neutral to the risks. Similarly no discussion as to how allometric scaling affects the uncertainty. This table should be similar to the one for the human health assessment. In addition, the Table in Section 8.10 does not discuss all of the assumptions.
		<u>Disposition:</u> The effects of these uncertainties have been discussed in section 8.10 of the Report.	
84	Section 8.9.5	There was a discussion of using uncertainty factors of 3 and 10 to adjust from a subchronic to a chronic exposure and from an acute to a chronic TRV.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> That is correct.	
85	Section 8.9.6	There is no discussion on the affect of using uptake factors to predict COPC concentrations in certain media and biota.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> Section 8.10.7 discusses the exposure prediction limitations, including the use of uptake factors (UP).	
86	Appendix A, General	Rationale should be provided why compounds such as acroleyn, butadiene, methylene chloride phthalates, CO and Cl ₂ were not considered for screening of COPC.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> This has been provided in the Report.	
87	Appendix A, Section 1, Table 2	The document should identify the environmental media whose half-life was considered. We assumed that the half-life for soil was considered.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<u>Disposition:</u> Table 2 has been updated to specify the environmental media for half-life, which was soil.	
88	Appendix A, Section 1,	For the COPC that were considered for inhalation pathway only, the environmental persistence is more represented by half-life in air. Was this considered in COPC screening?	

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Reviewer's Name & Organization		Harriet Phillips and Mehran Monabbati, SENES Consultants Limited	Date of comments: 09/06/2009 Disposition: 29/06/2009 Reviewer: 06/07/2009
Comment Number	Section Number	REVIEWER'S COMMENTS/AUTHOR'S DISPOSITION	DISPOSITION BY AUTHOR AND REVIEWER
	Table 3	<u>Disposition:</u> Half-life in air was not considered for COPC screening of the inhalation pathway, as all potential COPC were assessed for the inhalation pathway, regardless of environmental persistence.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No As long as it is clarified in the document.
89	Appendix A, Section 1, Table 2	Unit for $t_{1/2}$ should be identified. <u>Disposition:</u> The units (days) have been to Table 2 of the Report.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
90	Appendix A, Section 1, Table 3	For clarity, HCl, HF, and NH ₃ should be listed under a heading other than under CAC's. <u>Disposition:</u> While Jacques Whitford recognises that HCl and HF are not defined by Environmental Canada as CACs, it is believed that this category is the best placement for these substances. NH ₃ is considered a CAC by Environment Canada. Clarity will be provided in the Report.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
91	General	The document is poor in referencing, page numbering, equation numbering, etc. <u>Disposition:</u> All referencing, pages and equations numbering have been updated.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
92	General	The comments provided above will not affect the conclusions of the assessment; however they will result in improvements to the transparency of the report. <u>Disposition:</u> No further comment needed.	Accepted by Reviewer <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No