

## TetrES 'Response to Clean Environment Commission' Report

- Overview report of the Stantec Human Health Risk Assessment and Olsson Dispersion Modeling Reports.
- Cover letter from Hambley.
  - “Modeled acrolein and acetaldehyde emissions from the proposed dryer WESP stack have been increased to account for total emissions from the combined dryer systems (previous assessments were inadvertently based on only one pair of dryers)”. DS: This huge given that ~40% of emissions of total formaldehyde per dryer (see below). Something that our folks did not pick up in cursory examination; points to need for thorough examination of complete data, complete audit. Again, consistent pattern by LP (as in growth and yield). A huge error. Why did Conservation staff not pick it up? ... likely lack the capability to understand the modelling (or the tools/capability to do crude model testing). How can the Department be trusted when they do not have the capability to understand what is being given to them? Other things coming out besides formaldehyde and acrolein I think (would have to recheck) ... should also have been increased.
  - “Thermal Oil Heater HCN emissions have been reduced by one order of magnitude due to a data entry error.”.
  - “Baghouse and Thermal Oil Heater DESP formaldehyde emissions have been reduced based on site-specific test data following ... Appendix C of the dispersion modeling report.”.
  - “New or revised ambient air quality criteria for benzene and acrolein adopted”.
- Page 1-3. Proposed elimination of three RTOs is the only alteration that Conservation deemed to be major, all other minor. DS: But temporary elimination minor.
- MC has never received an odour-nuisance complain from any of LPC's neighbours. Clause 47 of License. DS: Send this out to the local people. Get after CEC again and require independent assessment (go out to the people). Simply not good enough.
- Page 1-6. Proposal for dispersal modelling approach in anticipation of eliminating RTOs submitted in 2003 and approved by MC. DS: So MC well into approval already. Is this in the public registry?
- December 18, 2003. “LPC formally proposed elimination of the two dryer RTOs” ... with dispersion modelling protocol as Conservation had no dispersion modelling guidelines at the time. This was just for the dryers, press RTO was still expected to be operational at the time.
- 2006. Proposal to convert press RTO to RCO to reduce natural gas consumption. Cites a September 2007 letter from Conservation approving conversion to RCO subject to performance testing. Provided some initial dispersion modelling results “satisfying the government's request for same”. “showed that LP could continue to guarantee compliance with the provincial air-quality guidelines”. **DS: No mention of Tracy Braun letter relative to benzene; Is this the letter? What provincial guidelines?**
- November 18, 2008 submission relative to all three RTOs. ~80% of maximum formaldehyde ambient ground level concentration from dryers.
- 1-8. 1.2.7. Indicates LP forwarded draft Guidelines to emissions modeller (Cordilleran). DS: So why did they not follow?
- Note stack height designed to meet guidelines. DS: How much extra stack as a precaution? Sensitivity analysis.

- Notes the various Cordilleran modelling to June 2009 just prior to the Public Meeting.
- Appendix B indicates that the Ontario AAQC for 24-hr acrolein exceeded ... but no human health risk per Section 14 of report. DS: So why does Ontario set this value?
- Cites monitoring station data after RTOs shut down ... that indicate within ambient air quality criteria. **DS: This is at the stations that are well outside plume. Further, they do not note that the mill was operating at a lower temperature during the interim period. Typical TetrES.**
- Brought in Olsson who had acquired Cordilleran for dispersion modelling and Stantec relative to toxicology.
- 1-12. Responds to CEC October 8, 2009 letter. Does not address issues raised by other parties including intervenors.
- 2.0. Notes 'Quality Assurance' review relative to meteorological data used by Olsson. Olsson report has detailed answers to CEC questions.
- 3.0. Screening level and refined model assessments under the draft 2006 Modelling Guidelines. Refined model selected as site was complex. DS: What about first time around?
  - ICE3-PRIME. Industrial Source Complex-PRIME Model. Version 3.
  - Selected to ensure consistency with past modelling approaches and parameters previously reviewed and approved by Conservation.
  - Model inputs include, but are not limited to, topography, meteorology, building downwash and emission specifications.
  - Appropriate for areas of simple terrain ... such as terrain surrounding the Swan Valley OSB facility. Per USEPA, is generally unbiased or overpredicts.
  - Website relative to the model. **DS: Check relative to 'simple terrain'.**
  - Full discussion on model selection in Olsson report.
- 4.0. Provincial approval for use of a single year of met data in modelling.
  - Conservation draft Guidelines allow for 5 recent consecutive years of data from nearest representative weather station or one year of site-specific data that has been subjected to QA/QC analysis. And 90% complete. DS: The one year of data at site-specific ignores fundamental question of inter-year variation. Flawed approach of Guidelines. Should incorporate annual variation.
  - Review of the site-specific met dataset for the five year period from 02 to 06 indicated that 90% data completeness requirement was not met for three of the five most consecutive years ... but was met for 2006. Conservation approved. DS: Should check the other year when complete and how close to 90%. Why not met in the other years? Data thrown out?
  - Used data from adjacent to Site 1 ambient air quality monitoring station, ~1.5 km NNE of plant.
  - Wind rose data in Figure 4-1. Looks like winds mainly from the west to southwest.
  - Conservation used upper air data obtained from The Pas for use in detailed dispersion modelling. DS: Uncertainty? Should compare for other locations that could be better? E.g., Yorkton?
- 5.0. Selected modelling options.
  - Regulator Default settings used except where specified as local conditions dictate.
  - Notes need to disclose this information as standard reporting practice. DS: Was this disclosed with original report?
  - Default settings altered with respect to (a) how model handles missing met data to process short-term averages and (b) instruction of the model to incorporate local terrain data. DS: Was this changed over previous modelling?

- 6.0. Start-up, shutdown, or upset conditions.
  - These conditions can generate more emissions than steady state conditions in some industrial processes.
  - Per Olsson report, emission rates modelled in assessment representative of licensed maximum authorized emission rates (either existing or proposed) or actual maximum emission rates where no license limit is in place ... under the steady state operating scenario.
  - Indicates controlled start-up and shutdown scenarios not included as impacts would be lower.
- 7.0. Facility overview.
  - Did not read. Can read later.
- 8.0. Pollutants and rationale for modelling emissions.
  - Use site-specific stack testing data or “other accepted emissions approximation techniques are acceptable” when stack testing data are not available.
  - Page 8-1. Suggest MDI and hydrogen cyanide as HAPs as written.
  - “Emission rates for the modelling were provided to Olsson Associates for use in the modelling by LPC.”. Note Appendix C ... written by Olsson or LPC or ? Looks like LPC provided per 8.1. **DS: Clarify this. LP providing input data. Where is independent? This is a problem, get after this. This is the kind of thing that a consultant points out to ensure that not liable should the provided data be wrong.**
  - Table 8-1 and 8-2. Numbers for maximum emissions in g/hour and tonnes/year. **DS: Look like they far exceed our estimates. Why? Looks like reporting error.** Likely in part due to the problem of only including one dryer but should check. Far more than estimated earlier ... check closely. Check against earlier document.
  - Table 8-1. This looks like numbers similar to thing provided to government earlier that we had reviewed ... so this is based on two dryer RTOs I expect. Table 8-2 ... screwed up numbers for annual. **Need to let people know ... is there an erratum?**
  - Indicates “The LPC OSB Plant does not generate sufficient fugitive emissions to warrant their inclusion in the modelling conducted in Olsson’s assessment”. Indicate did not assess fugitive from log yard (i.e., no data) ... so not quantified. Did not consider VOCs coming off wood. But could be significant from logs per some information from Simon. Also particulates from equipment. Within the plant, constant negative pressure ... so nothing remains in plant. DS: But what of those workers who used to complain of being sick and my neighbour?
- 9.0. Land use analysis.
  - Silly categories. But may relate to dispersion modelling.
  - Should relate to height of trees but does not appear to.
  - Should look at the area ... grassland seems off but unsure on this.
- 10.0. Local topography.
  - Indicates local topography in Olsson report.
  - 300 masl to 640 masl at larger scale.
- 11.0. Background ambient.
  - Reports on ambient air quality monitoring program from the two sites.
  - Notes data collection efficiencies. Indicates >90% for 2004 to Q1 2009. See Appendix B.
  - Notes calibration and quality assurance.
  - **DS: Report provides data only as averages, this clearly is inadequate. Some understanding of variation (e.g., standard deviation, standard error,**

**range, histogram) is critical to understanding background variation. E.g., a certain background level, on a hourly basis, may generally be OK but perhaps be quite high 5% of the time ... and this might be important from a health perspective. An average masks this. Perhaps the data are fully reported on in the Olsson report.**

- Looks like have now included background air quality in dispersion modelling, but question is ... did they use the average or maximum or what?
- Interesting relative to formaldehyde ... “only ambient formaldehyde concentrations uninfluenced by plant emissions were considered in the background calculations.”. So looks like data were thrown out (i.e., relatively high values) ... important to look at the basis for doing so ... basis for decision as to which values influenced by plant. Method for calculating 24-hr and annual levels is highly questionable ... if sampling for hourly was not biased, the adjustment is not warranted.
- Removed one benzene sample, “elevated”, as “contaminated”. But few high benzene samples.
- DS: Need to look at these situations where few observations may be high in the context of what is important from a health perspective. E.g., if a 24-hr exposure is important, then even infrequent high background levels may be important.
- Have not been collecting data for total PM, PM<sub>2.5</sub>, NO<sub>x</sub>, acetaldehyde, acrolein, methanol, and propionaldehyde. Indicate that only PM, PM<sub>2.5</sub>, and NO<sub>x</sub> are expected to be present in ambient air in potentially significant concentrations. Indicates that process changes would not impact on PM from mill, and would result in decrease in NO<sub>x</sub> in mill.
- 12.0. Good engineering practice stack height.
- 13.0. Application of ambient air quality criteria.
  - “The CEC correctly indicated that Manitoba lacks ambient air quality criteria for many emissions associated with OSB production”.
  - Applied modelled results to Ontario AAQC where no Manitoba criteria per the 2006 draft Manitoba Air Dispersion Modelling Guidelines. Suggests reason for selecting Ontario was that it is recent, but this is irrelevant to 2006 (i.e., unless recent in 2006). Also standard Manitoba practice to apply Ontario criteria where no Manitoba criteria exist.
  - Table indicates acrolein not met for Ontario 24-hour average. DS: Check against acrolein findings earlier. Is this consistent or due to only using emissions from one dryer in modelling? **Should check Table ... while Manitoba had a 1-hr average for formaldehyde, for example, does Ontario use anything beyond that? If so, should also include those.**
- Health risk assessment.
  - Stand-alone health risk assessment completed by Stantec.
  - Indicates that, with the exception of acrolein, “risk estimates for all receptors exposed to COPC were found to be below the acceptable inhalation non-carcinogenic benchmark of 1.0 and carcinogenic benchmark of 1 in 100,000.”.
  - Indicate that the acrolein level, even though above AAQC, poses little health risk. DS: Begs the question, what is the basis for the level then ... answered further on ... Ontario uses a ‘safety’ factor.
  - Indicates would require person to be breathing air for 24 hours of day, and that the likelihood is very small per the Olsson report. DS: Really? I would expect some days where little to no dispersal of contaminants. **Which**

**acrolein data did they use? ... again, there was the set of data which had high acrolein values that was not used in the initial assessment.**

- Indicate no adverse health effects. Basically discount the Ontario AAQC when it is exceeded.
- What about the ground level ozone that we saw?
- 15.0. Documentation.
- 16.0. Recommendations.
  - **IMPORTANT.** “there remains some uncertainty about the derivation of some of the emission factors used in the emissions dispersion modelling due to the lack of published representative data for Canadian wood species and a limited site-specific dataset for some parameters since the upgrade.”. So this suggests that the input data, as supplied by LP, may be suspect. **Again, the whole deck of cards hinges upon the LP Joker ... if the input data supplied by LP are wrong, then the dispersion modelling and health risk assessment will be wrong. Need to look at the Olsson report.**
  - Recommends revisit stack design in light of acrolein emissions.
  - Suggests consider monitoring stations to be able to see if predictions are met (i.e., monitoring areas where high predicted values as opposed to just outside of plumes).

Notations to Soprovich.

- Young fellow who moved to Alberta from the Valley, and whose asthma cleared up.
- Really should have the specialists examine the information again. And LP should pay given the deficiencies that were observed. Although they clearly missed certain rather blatant errors (e.g., use of emissions from only one dryer) ... but this a consequence of a cursory type of examination.
- Should look at the letter from CEC.
- Example of TetrES work ... they know who pays the bills ... only mention the positive ... and leave out relevant and important details ... e.g., mill operating at a lower temperature in relation to ambient air quality data since RTOs temporarily shut off ... RTOS major but do not say that temporary was minor.
- Cherry picking of data? I.e., the high acrolein data not used? This issue needs to be addressed.
- Check when CEC making decision. Status of Byron.
- Ground level ozone we saw with Richard Cloutier.
- Do we want to send a letter? Do we want to meet? Byron?