

Manitoba Conservation Response to the Public Interest Law Centre Submission to the CEC

Introduction

Manitoba Conservation is in receipt of the documents submitted to the Clean Environment Commission (CEC) by the Public Interest Law Centre (PILC). Technical staff have carefully reviewed the material and would like to provide the CEC with department comments in response.

In summary, while the documents provide a lot of detail regarding various methods and theories in assessing air emissions and their concomitant impacts to the public and environment, the level of detail originally required by the department for the LP Notice of Alteration submission was adequate to make an appropriate assessment of impacts resulting from the net change in operation. The alleged deficiencies identified by three external consultants (Dr. Brown, Dr. Simon, & Mr. Chadder) are irrelevant in assessing the environmental impacts of LP's request to increase licence limits. Additional information the consultants suggest should be acquired represents information that is inconsistent with requirements in other jurisdictions and other assessments under the Manitoba Environment Act.

Detailed responses to specific issues raised by the PILC and Manitoba Conservation's approach in assessing the proposal are provided below. Manitoba Conservation is confident that our review of the LP EAP adequately considered potential environmental and human health effects.

Human Health Assessment

Dr. Brown's report included extensive criticism on the scope of the human health risk assessment (HHRA) completed by LP. He indicated that a more extensive study should have been completed and that LP's assessment is best characterized as "screening level". The Department agrees that the assessment is a "screening level". Common practice is to conduct a level one screening first to see if the results show a potential risk. Depending on the results of the screening level report, a decision is subsequently made whether a more detailed review is required to adequately ensure the project does not pose health risks. In the case of LP, the level one showed no such risk and therefore a more detailed study would have been extraneous and unnecessary to evaluate risk.

It is not standard practice to require an HHRA as part of an application for an amendment to an existing *Environment Act* licence nor is an HHRA routinely required during environmental licensing of new industrial facilities under the Manitoba *Environment Act*. The identified risk associated with the LP EAP did not, and does not, warrant requiring anything beyond a screening level HHRA.

The pollutants of concern emitted from LP were assessed on an inhalation basis because the primary exposure pathway would be through inhalation. By their nature and volatility

in the environment, there is limited expectation of human health effects through other exposure routes such as ingestion of country foods as suggested by Dr. Brown. Of the chemicals assessed in the Intrinsic review (*i.e.*, formaldehyde, benzene, hydrogen cyanide, MDI, acrolein, phenol, acetaldehyde, methanol and propionaldehyde), only 4,4'-diphenylmethane diisocyanate (MDI) would be considered “non-volatile” with a vapour pressure less than 0.001 mg Hg and a molecular weight more than 200 g/mole. Given that MDI is degraded readily by reacting with water, MDI is unlikely to accumulate in the food chain (US NLM, 2009).

Additionally, the required science is not sufficiently available for an evaluation of the synergistic effects of the pollutants of concern at LP. While a screening-level assessment of cumulative effects can be estimated using simplifying assumptions (*e.g.*, effects are additive, risks can be summed for those substances that have similar target organs, effects or mechanisms of action), more scientific research is required to develop the methodology for appropriately assessing cumulative risks (US EPA, 2003). Therefore it is not defensible to say that LP’s HHRA was incomplete for failing to consider these effects, as was alleged by Dr. Brown.

The environmental licencing process in place in Manitoba and elsewhere for evaluating human health effects is to compare expected ambient concentrations of emitted pollutants to the relevant ambient air quality criteria. This process begins with comparing modelled ground level concentrations to published Manitoba air quality criteria where available. For those substances for which Manitoba does not have criteria, a comparison is done between modelled ground level concentrations and criteria or guidelines from other leading jurisdictions. This process was followed by LP and is accepted by Manitoba Conservation. In addition to this comparison, LP was required to perform an assessment of carcinogenic compounds to determine whether their ambient concentrations would exceed the acceptable 1 in a million risk level. LP accurately followed this process and results showed the acceptable level was not exceeded.

Dr. Brown criticized the use of the CIIT unit risk factor for formaldehyde stating that other, higher, values exist and should have been used. He specifically referenced a Health Canada value. However, Health Canada has since endorsed the CIIT value (Health Canada, 2001) and therefore the Department concluded that the use of the CIIT unit risk factor was appropriate as this is their most recent publicized value.

Dr. Brown indicated that the HHRA should have included a comparison of proposed risk to existing risk, and should have focused on discrete human receptor locations. The Department disagrees with Dr. Brown and believes that the approach of assessing the maximum environmental concentration under the worst case scenario is sufficient to ensure human health protection. To ask LP to go beyond this level of assessment would be inconsistent with other jurisdictions in Canada and would set LP at an unfair comparison to other companies undergoing air assessment in Manitoba. Further, it would offer nothing further in terms of assessing potential effects to the environment and people.

Exposure Limits of Specific Compounds

The Department agrees with Dr. Brown in that workplace exposure guidelines should not be used in a human health assessment. The internal review conducted of the LP submission included comparisons to more appropriate guidelines and the aforementioned carcinogenetic assessments. The following summarizes the Department's conclusions associated with the assessment of each specifically identified compound:

- Formaldehyde: use of CIIT unit risk factor is appropriate and comparison to Manitoba guideline is appropriate since the plant is located in Manitoba.
- Benzene: assessment was appropriate.
- HCN: assessment was appropriate.
- MDI: assessment was appropriate.
- NO₂: Conclusion of no unacceptable risk is still valid. Assessment was appropriate
- Acrolein: The Department had previously identified a need to address acrolein concerns. Further discussion, pending the outcome of the CEC investigation, is necessary as acrolein standards are currently under review.
- PM: the proposal is not expected to alter PM emissions. The Department requested these data as information to assess the plant's performance versus current standards.
- Phenol: evaluation was appropriate given ambient concentrations.
- Acetaldehyde: assessment was appropriate.
- Methanol: assessment was appropriate given ambient concentrations.
- Propionaldehyde: assessment was appropriate given ambient concentrations.

Air Dispersion Modelling

Dr. Brown and Mr. Chadder criticized the air dispersion modelling for not including background levels in the results of the modelling. In an ideal situation, background data would be available for addition to model results. In the case of LP Minitonas, the only information available regarding background air quality data is information collected from LP at their two ambient monitoring stations. The majority of these data was collected while the plant was operating and therefore they cannot conclusively be referred to as background data because they have been subject to influence by the plant's emissions. It is true that background data were collected in the years immediately prior to the plant's

operation, but this information is over 14 years old and is not necessarily reflective of current background levels.

The Department did consider what effects past measured background levels taken at the two ambient monitoring stations would have on the model results. Based on this evaluation, including a review of the frequency analysis and location of maximum predicted ground level concentrations, the Department determined that the air dispersion model conclusions as presented are appropriate and are more than enough to ensure ambient criteria will be met.

Ambient Air Monitoring Stations

Dr. Brown and Mr. Chadder provided extensive criticism of the ambient air monitoring station locations. The Department considers this to be irrelevant to the current proposal. The original locations of the monitoring stations were based on the information known at the time of the *Environmental Assessment* in 1994. At that time, there were no on-site meteorological data so data from the local Swan Valley airport were used. The locations of the modelled peak concentrations, therefore, reflected the anticipated plant configuration at that time as well as off-site specific meteorological data.

Dr. Brown claimed that it is unknown whether monitoring stations are located near residences. The Department can confirm that the stations were intentionally sited, so as to be near to residences. The third recommended location and the location that appears to be favoured by Dr. Brown and Mr. Chadder is in an unpopulated area southeast of the plant. While collecting air quality data at this location would provide some information in confirming model results, it would not provide any useful information regarding human health effects as the area is not populated.

Odour Assessment

Dr. Brown and Mr. Chadder recommend that an extensive odour assessment be completed. The air quality criteria/guidelines used in the proposal include odour impacts in their development and therefore odour is evaluated in that regard.

While individual odorous contaminants can be identified and assessed in the exhaust gases from oriented strand board (OSB) facilities, OSB sources such as the drying of wood flakes can release a large number of potentially odorous air contaminants. When odours arise from a mixture of compounds, a comprehensive odour assessment based on the individual species is difficult. Given the inherent challenge in adequately assessing odorous mixtures, including the individuality of odour reception and sensitivity, the Department has implemented an odour nuisance management strategy to deal with odour complaints associated with industrial facilities. One of the guiding principles of the strategy is that the community, the facility and the Department cooperatively work together to resolve any odour nuisance issues that may arise. Ultimately, the members of the community affected by an odour nuisance should be the ones to decide what constitutes an unacceptable ambient odour level in their community.

For compounds that were not specifically evaluated, or that may combine to create odours not accounted for in the modelling, the Department does not expect an odour impact on the surrounding community. The Department has not received any odour complaints during LP's entire operating period. This includes operation with, and without the regenerative thermal oxidizers (RTOs). Therefore requiring a comprehensive odour assessment is not warranted and would offer no useful purpose.

Extent of Emissions Evaluated

Mr. Chadder stated that the LP proposal failed to sufficiently identify pollutants of concern emitted from the plant. He based this opinion on the difference between the sum of the proposed individual VOC emission limits and the proposed total VOC emission limit. The pollutants evaluated by LP are consistent, and in many cases are more extensive, than that which other jurisdictions require.

For example, the US EPA requires analysis of acetaldehyde, acrolein, formaldehyde, phenol, propionaldehyde, and methanol. Licences/permits for OSB plants in other jurisdictions include press and dryer emission limits for formaldehyde, carbon monoxide, NO_x, particulate matter, benzene, and MDI. The LP proposal included an analysis of all of the aforementioned pollutants and therefore the Department considers it to be very thorough and complete. To require more would serve no benefit to the environmental assessment process and would increase consulting fees without concomitant benefit to the regulator.

A large number of VOC species can be emitted during the drying of wood, and not all of the individual species have been adequately identified in the literature. For example, in the U.S. EPA *Compilation of Air Pollutant Emission Factors* chapter on waferboard/oriented strandboard manufacturing (Chapter 10.6.1), only 67% of the total mass of VOC emitted during the drying of hardwood is accounted for by emissions of individual species (US EPA, 2002). LP assessed seven of the 11 VOC species identified by the US EPA as having detectable emissions during the drying of hardwood, and these seven species comprise over 95% of the total mass released by the 11 individual species.

Additionally, there will always be a portion of total VOC emissions that include a multitude of individual VOCs emitted at insignificant rates. To require an evaluation of each and every VOC emitted regardless of significance is not feasible, practical, warranted, or necessary. Controlling the VOCs emissions of the above listed compounds is consistent with industry and regulatory standards.

Cumulative Assessment

Dr. Brown recommended that the cumulative health effects potentially associated with exposure to mixtures be assessed in the risk assessment. While a superficial assessment of the effects of the concurrent exposure to multiple pollutants can be made, more

scientific research is required to develop the methodology for appropriately assessing these cumulative risks (US EPA, 2003).

Alternate Pollution Control Equipment

Dr. Simon has suggested that LP consider alternate pollution control equipment that may allow continued control of VOC emissions at a lower operating cost than the RTOs. It is LP's, or any other proponent's, decision as to what pollution control equipment to propose. The Department's role is to evaluate whether the proposed pollution control equipment is sufficient to ensure protection of human health and the environment. To specify the type of equipment to be used could place the government in a position of conflict of interest by recommending one product over another. Further, if the product mandated by the regulator turned out to have problems, malfunction and/or cause adverse health or safety incidents, the government could be deemed liable for requiring such equipment.

Regulatory Background

The regulatory background section completed by the PILC does not tell the whole story. The following is a chronological listing of the events between Nov 18, 2008 and March 16, 2009 that should clarify the process followed:

1. On Nov. 18, 2008, LP submitted a notice of alteration requesting increased emission limits in order to allow decommissioning of their RTOs.
2. On Dec. 11, 2008, EALB notified LP of its decision to designate the notice of alteration as a major alteration, which in turn required that an Environment Act Proposal be submitted.
3. On Dec. 22, 2008, LP submitted a notice of alteration requesting a temporary increase in emission limits in order to allow shutting down their RTOs while operating at a reduced capacity.
4. On January 8, 2009, EALB approved the Dec. 22, 2008 as a minor alteration and issued a new Environment Act Licence which included the increased emission rates. This was done with the understanding that an Environment Act Proposal would be submitted requesting a permanent increase to the emission limits under normal operation conditions as per the Nov. 18 NoA and Dec. 11 letter.
5. On January 19, 2009, LP submitted the requested Environment Act Proposal seeking permanent increases to the emission limits.
6. On March 16, 2009 the Minister requested the CEC conduct an investigation of the proposal.

Conclusion

Manitoba Conservation considers the LP EAP to be complete and accurate. The proposed research and extraneous consulting activities advocated by Dr. Brown and Mr. Chadder are well beyond the scope of the Environmental Assessment and Licensing process. The Department's technical review has concluded that the information provided

in the LP EAP is sufficient for evaluating potential human health and environmental effects. The same approach would be taken for other plants should they apply to the department for an Environment Act licence. The department continues to monitor developments in air emissions and cross jurisdictional comparisons are done regularly in order to ensure that Manitoba businesses are assessed consistently with other jurisdictions in Canada.

References

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