Evidentiary Overview and Recommendations of the Public Interest Law Centre of Legal Aid Manitoba on behalf of the Boreal Forest Network and the Concerned Citizens of the Valley

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Overview

In June, 2009, the Public Interest Law Centre was retained by the Concerned Citizens of the Swan Valley and the Boreal Forest Network to provide an independent and evidence based assessment of the LP Swan Valley proposal.

The Centre was mandated to address the following questions:

- Has the Company demonstrated that the proposed changes in emission limits would not result in significant impacts to the surrounding environment and community health?

- What are the implications of decommissioning the RTOs?

- Has adequate consideration been given to technological solutions other than the RTOs?

- Based on the record to date, should the LP Swan Valley application be approved?

To assist the Centre in fulfilling its mandate, three independent experts were retained: Dr. Gordon Brown; Mr. David Chadder; and, Dr. Charles Simon.

<u>The Conclusions of Dr. Brown</u>

Based upon his peer review of the health risk data presented by LP, Dr. Brown concludes that:

> the human risk calculations provided by LP Canada DO NOT represent current accepted practice for human health risk assessment in Canada and the United States.

In his opinion:

> background concentrations associated with regional sources should have been incorporated in the air quality assessment and associated health risk calculations. Failure to do so would have resulted in cumulative ground-level air concentrations being underestimated, which would mean that many of the conclusions regarding “negligible health risks”, etc., are not valid.

Dr. Brown recommends that a number of issues should be addressed before a final decision is made regarding the Application by LP Canada to decommission its RTOs:

- Ambient air quality monitoring locations improperly placed;

- Background air concentrations were not added to modelled OSB mill

predictions;

- Incremental health risk increases could not be quantified due to lack of an appropriate and current “base case” with RTOs operating;

- Risk estimates were not generated for nearby human receptor locations;

- The potential for odour generation, which can generate health concerns, was not assessed;

- A scientific rationale was not provided for the exposure limits that were assumed, some of which may be inappropriate;

- Inclusion of country food and water ingestion pathways would likely provide additional predicted health risks, but were not assessed.

The Conclusion of Mr. Chadder

Based upon his peer review of the LP air quality documentation, Mr. Chadder concludes that “the air quality impacts have not be properly documented or accounted for by LP Canada.”

He suggests that LP has:

- failed to meet minimum industry submission requirements;

- failed to account for all hazardous contaminants of interest in their normal plant emissions;

- failed to include all types of emissions in their dispersion modelling;

- failed to complete a cumulative impact assessment that properly accounts for and includes background ambient measurements;

- failed to consider potential nuisance odour impacts from the emitted contaminants.

In terms of the Company's ambient air quality monitoring, Mr. Chadder observes that:

> Neither monitoring location reflects prevailing winds or maximum peak concentrations . . . As such, these data are more suitable for establishing regional background levels than LP Canada plant impact levels. They do not properly evaluate the impact of plant emissions at the point of plume impingement or maximum concentrations at grade.

The Conclusion of Dr. Simon

Dr. Simon notes that LP is seeking a permanently allowable 33-fold increase in actual VOC emissions from the dryers and press at the Swan Valley mill and an even larger increase in emissions of hazardous air pollutants.

While acknowledging both a reduction in greenhouse gases and nitrous oxide emissions, Dr. Simon expresses the opinion that:

> The potential for formation of tropospheric ozone and smog is significantly greater without control of dryer and press VOC emissions at Swan Valley.

The material presented by Dr. Simon establishes that recent technological developments have enabled modern bioreactors to accept much hotter sources of VOC emissions such as dryers. Dr. Simon observes that a modern bioreactor has operated successfully for some time at a large medium density fibreboard mill in the US meeting or exceeding all vendor guarantees of efficacy and operation costs.

Dr. Simon concludes that this technology has the potential to reduce VOC, HAP, NOx and greenhouse gas emissions while lowering operation costs.

Conclusions based upon a review of the evidence

The independent peer reviews of the LP health risk assessment, dispersion modelling and air quality monitoring demonstrate that there are material deficiencies in the material presented by the Company. Based on the record to date, it is not possible to reliably conclude that the proposed emission limits do not pose a risk to community health and environment.

Recent developments in modern biofiltration technology suggest that an environmentally comparable and economically superior option to RTO emission control technology may be available to LP.

Recommendations

Based upon the independent evaluation of the evidence, we would recommend that:

- The proposed emission levels not be approved.
- LP be directed to provide health risk assessments, dispersion modelling and air quality monitoring that accord with industry best practices.
- LP Swan River be requested to obtain bids from one or more modern bioreactor vendors for the purpose of installing one or more units to control dryer and press emissions.

- The results be tested by independent analysis and by cross examination in a public hearing process which provides both the regulator and the community with an affordable, meaningful and transparent forum to review these evaluations.

Background

The Regulatory Background

On November 18, 2008, Louisiana Pacific Canada (LP) applied under s. 14 of *The Environment Act*[1] (the Act) to amend Licence 1900 S4 relating to the operation of its orientated strand board plant in the Swan Valley of Manitoba (LP Swan Valley).

The purported objectives of the November 18, 2008 submission were to:

- request increased emission limits from its press vent for formaldehyde, benzene, MDI[2] and VOC[3];
- request increased emission limits from its WESPS[4] for formaldehyde and benzene; and
- demonstrate that the proposed changes in emission limits would not result in significant impacts to the surrounding environment and community health.

The underlying purpose of the application was to enable the decommissioning of the Regenerative Thermal Oxidizers (RTOs) then in use at LP Swan Valley. In seeking the decommissioning, LP Swan Valley cited economic, financial and environmental considerations.

On January 8, 2009, the Director rescinded Licence No. 1900 S4. Pursuant to her authority under s. 10 (2) of *The Act*, she authorized LP Swan Valley to suspend operations of the RTOs subject to the requirements of a new Licence (No. 2861). The licence was to be reviewed before June 1, 2009.

On March 26, 2009, the Minister of Conservation wrote to the Chair of the Clean Environment Commission (CEC). The CEC was asked to review the request for permanent alterations to LP Swan Valley by June 1, 2009. Section 1 of the Terms of Reference asked the CEC to:

> conduct an investigation and provide advice and recommendations to the Minister regarding the potential health and environmental effects of the increased emission limits and subsequent decommissioning of the Regenerative Thermal Oxidizer technology which is contained in Louisiana Pacific's requested license change.[5]

In May, 2009, the CEC indicated that its review of air emission levels proposed by LP Swan Valley would “take the form of an investigation rather than the typical

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1 C.C.S.M. c. E125
2 Diphenyl Methane Disocyanate
3 Volatile Organic Compound
4 Wet Electrostatic Precipitators
5 Our clients renew their objection to the process set out by the Minister. Details of the objection can be found in Appendix A to this submission.

hearing." The CEC indicated that it would not meet the June 1, 2009 time frame prescribed in the Terms of Reference.

On May 20, 2009, Louisiana Pacific sought to extend the terms and conditions of Licence No. 2861 beyond the June 1, 2009 licence review date. On June 8, 2009, the Director extended the terms and conditions of Licence No. 2861.

An Independent Assessment of Four Central Questions

In June, 2009, the Public Interest Law Centre was retained by the Concerned Citizens of the Swan Valley and the Boreal Forest Network to provide an independent and evidence based assessment of the LP Swan Valley proposal.[6]

The Centre was mandated to address the following questions:

- With reference to the health risk assessment, dispersion modelling and ambient air quality monitoring conducted for LP Swan Valley, has the Company demonstrated that the proposed changes in emission limits would not result in significant impacts to the surrounding environment and community health?

- What are the implications of decommissioning the RTOs and failing to replace them with best available control technology?

- Given the statutory objective of sustaining a high quality of life, does the record demonstrate that adequate consideration has been given to technological solutions other than the RTOs which might provide comparable environmental protection on a more cost effective basis?

- Taking into account both the evidence and relevant regulatory considerations, should the LP Swan Valley application be approved?

The Independent Experts

To assist the Centre in fulfilling its mandate, three independent experts were retained:

- **Dr. Gordon Brown** - Dr. Gordon Brown of intrinsik Environmental Sciences Inc. (intrinsik) was asked to conduct a peer review of the application with a focus on potential human health risks associated with decommissioning the

[6] The members of the Concerned Citizens of the Swan Valley live in the Swan Valley. Some own or operate farmland in close proximity to the LP Swan Valley mill. The Boreal Forest Network is an environmental group dedicated to the protection, restoration and sustainable use of the world's boreal forests. Our clients are concerned about the effects of air emissions from the mill on surrounding residents as well as on the flora and fauna. They do not advocate the shut down of LP Swan Valley. They wish to ensure that the mill continues to operate in a way that keeps emissions as low as possible, recognizing the potential health effects of certain Hazardous Air Pollutants and VOCs that the mill emits and the effects of Greenhouse Gases ("GhG") and Nitrogen Oxides ("NOx"). The Concerned Citizens of the Valley were actively involved in the 1994 public hearings with respect to the mill at LP Swan Valley.

RTOs.

Dr. Brown has a PhD in Environmental Science. He has an extensive track record of conducting best practice human health risk assessments for both industry and government. His clients have included the Saskatchewan Ministry of the Environment, Teck Cominco Ltd, Petro Canada, Shell Canada, Alberta Environment, Lafarge Canada, Inland Cement, Dow Chemical Canada Inc. and Epcor Corporation.

Dr. Brown's project experience with the forest products industry has included human health risk or air emission assessments for the following Weyerhauser operations: the Slave Lake OSB mill, the Prince Albert Pulp Mill, the Drayton Valley OSB mill/saw mill, the Edson OSB mill, the Grand Prairie pulp mill and the proposed OSB facility at Grand Prairie.

- **Mr. David Chadder** – Mr. Chadder of RWDI Air Inc. (RWDI) was retained to conduct a peer review of a number of documents produced by Louisiana Pacific. He was asked to provide an expert opinion with regard to their technical merit from an air quality standpoint.

  Mr. Chadder is a Vice President, Western Operations and Project Director at RWDI. His experience in environmental consulting dates to 1978. Mr. Chadder's area of specialty as Project Director involves the technical supervision of engineering teams involved with air quality, hazard and risk assessments, stack emissions testing and ambient air quality monitoring studies.

  Mr. Chadder's work in the pulp and paper industry has typically included dispersion modelling and ambient air quality monitoring. He has conducted studies relating to a number of projects including Domtar Paper (Cornwall), Tembec (Pine Falls), Bowater (Thunder Bay), Weyerhauser (Dryden) and Abbitibi (five plants in Ontario).

  Mr. Chadder is a member emeritus of the Air and Waste Management Association (AWMA) and the Canadian Meteorological and Oceanographic Society (CMOS). He is accredited as a Qualified Environmental Professional (QEP) and is recognized by the ERCB as an expert witness in air quality, hazard and risk.

- **Dr. Charles Simon –** Dr. Simon was retained to discuss the level of hazardous air pollutant (HAP) and volatile organic compound (VOC) emissions from the flake dryers and board presses at LP Swan Valley with and without the operation of the RTOs to treat emissions. He was also asked to consider alternatives, if any, to the LP proposal.

  Dr. Simon holds a Doctor of Philosophy degree in Physical Chemistry from the University of Florida. For five years, he was employed as a research chemist by the National Council of the Paper Industry for Air and Stream (NCASI). His work there consisted of measuring and reporting VOC, carbon monoxide (CO) and total reduced sulfur compounds (TRS) emission factors

for panel board and paper manufacturing sources such as wood dryers, press vents, wood-fired boilers and electrostatic precipitators.

For the last 15 years, Dr. Simon has provided technical consulting services to the United States Environmental Protection Agency's Office of Enforcement and Compliance Assurance (USEPA-OECA), the US Department of Justice Environmental and Natural Resource Division (USDOJ-ENRD), and the Ontario Ministry of the Environment (MOE).

Dr. Simon has interacted extensively with forest product industry representatives, as well as consulted extensively with EPA personnel responsible for publication of panel board facility emission factors, and EPA personnel, working to develop the plywood and composite wood products National Emission Standards for Hazardous Air Pollutants (PCWP-NESHAP) utilizing Maximum Available Control Technology (MACT).

The Submission

The submission which follows addresses the following questions:

- Has the Company demonstrated that the proposed changes in emission limits would not result in significant impacts to the surrounding environment and community health?

- What are the implications of decommissioning the RTOs?

- Has adequate consideration been given to technological solutions other than the RTOs?

- Based on the record to date, should the LP Swan Valley application be approved?

Has the Company demonstrated that the proposed changes in emission limits would not result in significant impacts to the surrounding environment and community health?

The LP claim

Central to the LP application is the suggestion that the proposed changes in emission limits would not result in significant impacts to the surrounding environment and community health.

In its July 2009 presentation, LP alleges that the proposed emission limits do not pose a risk to community health and environment.[7] In support of this claim, LP:

- relies on the health risk assessment to conclude that “health risks are 'virtually non-existent” and that the increased limits will have “no adverse effect”[8];
- suggests that its dispersion modelling demonstrates that all ambient air quality criteria (AAQC) are met 100% of the time[9];
- argues that continued ambient air quality monitoring demonstrates that all AAQC are met.[10]

The LP conclusions are not supported by the independent peer reviews

Unfortunately, both for the proponent and the community, the LP claims are not supported by the independent peer reviews conducted by Dr. Brown and Mr. Chadder.

In comparing the LP human health data to current accepted practice for human health risk assessment in Canada and the United States, Dr. Brown concludes that a conventional human health risk assessment was not conducted by LP in support of its application. In his view, the human health data provided represents at best, screening level calculations.

Dr. Brown concludes that:

> the human risk calculations provided by LP Canada DO NOT represent current accepted practice for human health risk assessment in Canada and the United States.

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7 Swan Valley OSB Presentation to Clean Environment Commission, July 2009, p. 74.
8 *Ibid*, pp. 53 – 62.
9 *Ibid*, pages 34 -52.
10 *Ibid,* pp. 63 to 73.

In his opinion, the data presented:

> . . . certainly do not represent the scope of HHRA that would typically be required for an application today to increase emissions from an existing, operating industrial facility.[11]

Mr. Chadder offers the opinion that the documents prepared by LP Canada "do not represent an acceptable level of technical information with which to make an informed decision." Focusing on industry minimum standards, Mr. Chadder tersely concludes:

> the air quality impacts have not been properly accounted for.[12]

The Human Health Risk Assessment

Dr. Brown begins his peer review with an extensive discussion of current accepted practice for human health risk assessment in Canada and the United States.[13] He then applies these standards to the LP application and makes the following observations:

- **Background Air Concentrations**

  Dr. Brown notes the failure of the modelled ground-level air concentrations to account for background concentrations of any of the modelled parameters. He observes that this approach is inconsistent with recent guidance from Health Canada which states "background air quality must be considered in the exposure assessment of new developments."

  Dr. Brown concludes that:

  > background concentrations associated with regional sources should have been incorporated in the air quality assessment and associated health risk calculations. Failure to do so would have resulted in cumulative ground-level air concentrations being underestimated, which would mean that many of the conclusions regarding "negligible health risks", etc., are not valid.[14]

  Mr. Chadder also concludes that to provide a proper assessment of the cumulative effects from all emission sources, the ambient background must account for all contaminants of interest.[15]

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[11] intrinsik, *Peer Review of Reported Human Health Risks Associated with Louisiana Pacific Canada's Swan Valley Manitoba OSB Mill Application to Amend Emission Limits*, September 4, 2009, p. 13.

[12] RWDI, *Technical Peer Review and Overall Opinion Louisiana Pacific Swan Valley OSB Plant Request to Amend Air Emission Limits*, September 8, 2009, pp. 3 and 10.

[13] intrinsik, *Ibid,* pp. 2-4.

[14] *Ibid*, p. 5.

[15] RWDI, *Ibid*, p. 8.

- **Quantification of Incremental Health Risks**

  Dr. Brown observes that a proper assessment of the incremental health risks posed by the decommissioning of the RTOs at the LP OSB mill would require that ground-level air concentrations and associated health risk calculations (including background) should be provided at the present time using similar assessment models and methods for both (i) the existing case and (ii) the amended case for which LP is applying. In his view, this:

  > is the only way that any increase in potential health risks can accurately be quantified.

  Unfortunately, as Dr. Brown point out, only the amended case without RTOs was presented.[16]

- **Assumed Exposure Limits[17]**

  Dr. Brown starts from the premise that:

  > When characterizing potential health risks, it is imperative that the nature and basis of the exposure limits (e.g., toxicity reference values, air quality objectives, etc.) used in the health risk assessment are clearly defined. Health Canada states that when alternate limits to Health Canada's are used, a "clear description of the inadequacies of the [limits] presented by Health Canada, along with a convincing rationale (with citations) to support the use of the alternate value."

  He observes that:

  > The exposure limits used in the LP HHRA were typically not Health Canada limits and were frequently not the most "stringent" of the available limits. As such, the rationale for selecting the exposure limits adopted by LP should be provided.

  Formaldehyde chronic

  In terms of formaldehyde, Dr. Brown observes that the chronic exposure limit relied upon by LP is considerably more generous to the Company than either the current EPA or Health Canada standard. He observes that:

  > Use of the current Health Canada limit results in a predicted cancer risk level of 6.7 in 1,000,000. While this incremental risk is still considered low, it does exceed the 1 in 1,000,000 benchmark referenced by LP.

[16] intrinsik, *Ibid,* p. 6.
[17] intrinsik, *Ibid*, pp. 6–12.

Formaldehyde acute

Dr. Brown observes that LP erred by failing to consider the cumulative effect of the average background formaldehyde concentration when added to the predicted value. Combined these figures would yield a total concentration very close to the Manitoba ambient air quality objective of 60 µg/m^3. Mr. Chadder suggests that when this calculation is performed, the interim Manitoba criteria may be exceeded.[18]

Dr. Brown observes that even excluding background concentrations, the maximum predicted 1 hour air concentration exceeds the guidelines endorsed by a number of agencies, including the ATSDR, OEHHA (55 µg/m^3) and TCEQ (50 µg/m^3). In his view, the rationale for selecting the Manitoba air quality objective of 60 µg/m^3 is needed.

Benzene Acute

Dr. Brown concludes that:

> The use of ACGIH values for a public health risk assessment is inappropriate. The ACGIH TLV and STEL are intended to characterize potential risks for occupational exposures only. The maximum predicted 1-hour fence line concentration should have been compared to the ATSDR, in which case the apparent margin of safety is approximately 50-fold lower than that stated by LP.

Acrolein

Dr. Brown notes that the exposure limit employed by LP is incorrect with the correct value being “25-fold more stringent than the value cited.” This point was conceded by Dr. Tatum in her letter to LP of August 14, 2009.[19]

In Dr. Brown's view:

> the addition of any amount of background average acrolein concentrations to the predicted maximum annual value from LP would therefore result in a predicted health risk.

- **Food and Water Ingestion Pathways**

Dr. Brown points out that the LP report is limited to the “inhalation exposure pathway”. It fails to address the “country food” ingestion exposure pathway. Noting that non-volatile chemicals can be deposited in the local environment and may accumulate in soils, vegetation, fish and wildlife, Dr. Brown concludes that chemicals that meet US EPA criteria should be assessed via a “country food” ingestion exposure pathway.[20]

[18] RWDI, *Ibid*, p. 8.
[19] NCASI, Letter to Mr. Allan Hambley dated August 14, 2009.
[20] intrinsik, *Ibid,* p. 12.

Issues to be addressed before a conclusion can be drawn

In concluding that the LP health risk data does not accord with current accepted practice, Dr. Brown highlights the following issues:

- Ambient air quality monitoring locations improperly placed;
- Background air concentrations were not added to modelled OSB mill predictions;
- Incremental health risk increases could not be quantified due to lack of an appropriate and current “base case” with RTOs operating;
- Risk estimates were not generated for nearby human receptor locations;
- The potential for odour generation, which can generate health concerns, was not assessed;
- A scientific rationale was not provided for the exposure limits that were assumed, some of which may be inappropriate;
- Inclusion of country food and water ingestion pathways would likely provide additional predicted health risks, but were not assessed.

In his view, these issues should be addressed before a final decision is made regarding the Application by LP Canada to decommission their RTOs.[21]

Air Emissions

Mr. Chadder begins his report with a discussion of the minimum industry standards required to properly detail air quality impacts in a consistent manner. He suggests that LP has ignored “many of the essential elements for submission requirements that are typically required for a proper engineering assessment.”[22]

With regard to air emission modelling, he outlines a number of major concerns including:

- **The failure to include the composition of certain pollutants in the modelling report**

  Noting that the Draft Guidelines for Air Dispersion Modelling in Manitoba (the Draft Guidelines) requires the composition of any pollutants being emitted, Mr. Chadder observes that a significant percentage of the VOC emissions have not been characterized, accounted for in the emission

[21] intrinsik, *Ibid,* p. 13.
[22] RDWI, *Ibid*, p. 3.

inventory, modelled in ISC-Prime, evaluated for compliance, nuisance odour potential or investigated in the human health risk. He expresses the concern that:

> additional contaminants have been overlooked and the air quality impacts understated.[23]

- **The failure to include fugitive emissions in the modelling report**

Observing that the Draft Guidelines require the proponent to provide information relating to all sources of air emissions whether directly emitted or indirectly released as fugitive sources, Mr. Chadder notes that fugitive sources and sources without emission limits were not included in the modelling exercise.

In his view, inclusion of fugitive emissions in the modelled impacts would result in higher ambient levels than reported by LP Canada as well as a greater potential for off-site nuisance odour complaints.[24]

- **The failure to account for background values in the modelling report**

Mr. Chadder observes that the Draft Guidelines provide that if a source has a potentially significant impact, background ambient air quality also needs to be considered and included in the air dispersion modelling results.

He concludes that:

> the predicted impacts are understated as reported by LP Canada without a proper inclusion of the background ambient levels.[25]

Ambient Air Quality Measurements

- **Monitoring locations fail to reflect prevailing winds or maximum peak concentration**

Mr. Chadder discusses core objectives in terms of determining an appropriate site for ambient air quality stations. These objectives include:

1) addressing peak off-site contaminant concentrations;
2) prevailing winds; and,
3) local population.

[23] RDWI, *Ibid*, p. 5.
[24] RDWI, *Ibid*, p. 6-7.
[25] RDWI, *Ibid*, p. 9.

In Mr. Chadder's view,

> Neither monitoring location reflects prevailing winds or maximum peak concentrations . . . As such, these data are more suitable for establishing regional background levels than LP Canada plant impact levels. They do not properly evaluate the impact of plant emissions at the point of plume impingement or maximum concentrations at grade.[26]

Potential Odour Impacts

Mr. Chadder observes that nuisance odours can cause a loss of personal enjoyment of a residence and that it is common for the public to consider nuisance odours to be hazardous and cause negative health effects.

Mr. Chadder notes that many of the contaminants handled in the LP plant and discharged to the environment have published odour detection thresholds. He suggests that the maximum 1 hour concentrations for formaldehyde and phenol may exceed odour detection thresholds.[27]

Conclusions with regard to air quality impacts

Mr. Chadder concludes by stating that "the air quality impacts have not been properly documented or accounted for by LP Canada."[28] He suggests that LP has:

- failed to meet minimum industry submission requirements;
- failed to account for all hazardous contaminants of interest in their normal plant emissions;
- failed to include all types of emissions in their dispersion modelling;
- failed to complete a cumulative impact assessment that properly accounts for and includes background ambient measurements; and
- failed to consider potential nuisance odour impacts from the emitted contaminants.

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[26] RWDI, *Ibid*, p. 8.
[27] RDWI, *Ibid*, p. 9.
[28] RDWI, *Ibid*, p. 10. Mr Chadder notes that results from the May 2006 air emission testing at LP Swan Valley "indicated levels that are higher than were modelled by Olson." With regard to acrolein, he notes that stack testing results for acrolein indicated emission rates of 0.76 as compared to the lower emission rates of 0.14 used with ISC-PRIME RWDI, *Ibid*, p. 7.

LP has not met its onus

The independent peer reviews of the LP health risk assessment, dispersion modelling and air quality monitoring demonstrates that there are material deficiencies in the material presented by the Company. Based on the record to date, it is not possible to reliably conclude that the proposed emission limits do not pose a risk to community health and environment.

On behalf of our clients, we would recommend that LP be directed to provide health risk assessments, dispersion modelling and air quality monitoring that accord with industry best practices. These results should be tested by independent analysis and by cross examination in a process which provides both the regulator and the community with an affordable, meaningful and transparent forum to review these evaluations.

The implications of decommissioning the RTOs?

In its submission of July 2009, LP identifies the reduction of greenhouse gases and nitrous oxides that will flow from a decommissioning of the RTOs.[29] It points to its significant capital investment in a single pass dryer in order to reduce emissions[30] as well as the fact that it is the only wood products facility in Canada with RTOs.[31] LP details both the economic benefits that it brings to the Swan Valley and the Province of Manitoba as well as the annual operating costs associated with the RTOs.[32] It also sets out the estimated capital replacement cost for the RTOs.[33]

While these submissions offer helpful information for the regulatory process, the July 2009 submission of LP is somewhat reticent on three central questions:

- What are the real implications of the materially higher VOC and HAP emission levels that LP is asking the regulator to approve?

- Focussing on the North American marketplace, how do the requested emission levels compare to other LP operations?

- Given recent and verifiable improvements in other technologies, are there cost effective alternatives to the RTOs which offer comparable or enhanced environmental benefits?

Dr. Charles Simon addresses these questions in his evidence.[34]

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[29] Swan Valley OSB Presentation to Clean Environment Commission, July 2009, pp. 75 – 81.
[30] *Ibid*, p. 83.
[31] *Ibid*, p. 18.
[32] *Ibid*, pp. 89-90.
[33] Albeit without any mention of a depreciation schedule.
[34] Dr. Charles Simon, *Comments on Louisiana Pacific Swan Valley, Manitoba orientated strandboard facility's proposal to permanently eliminate abatement of hazardous air pollutant and volatile organic compound emissions from flake dryers and the board process, September 8, 2009.*

The Big Picture

Looking at the big picture, Dr. Simon succinctly points out that LP is seeking a permanently allowable 33-fold increase in actual VOC emissions from the dryers and press at the Swan Valley mill and an even larger increase in emissions of hazardous air pollutants.

> LP is requesting the Manitoban Government to allow a permanent 33-fold increase in actual VOC emissions from the dryers and press at the Swan Valley mill, from about 25 tons per year (tpy) with properly operating RTO controls, to over 825 tpy when operating only wet electrostatic precipitators.
>
> The LP request of the Manitoba Government will also allow a 100-fold increase in actual emissions of hazardous air pollutants from the dryers and press, from about 4 tpy with properly operating RTO controls, to over 400 tpy when operating only wet electrostatic precipitators.[35]

Based upon his review of the LP emission testing, Dr. Simon also questions whether the actual increase in VOC emissions projected by LP may be materially understated.

While acknowledging both a reduction in greenhouse gases and nitrous oxide emissions, Dr. Simon observes that the consequence of decommissioning is that the Swan Valley OSB mill will remain a high NOx emitting facility while becoming a high-VOC emitting facility. In his view,

> The potential for formation of tropospheric ozone and smog is significantly greater without control of dryer and press VOC emissions at Swan Valley.[36]

The North American Market Place

Recognizing that LP Swan Valley sells its product into a North American marketplace, Dr. Simon compares the proposed VOC emission limits of LP Swan Valley to a number of the LP US operations.[37]

[35] Simon, *Ibid*, p. 2.
[36] *Ibid, p. 2.*
[37] *Ibid*, p. 5.

Table 1. LP OSB mill flake dryer and board press VOC emissions in Swan Valley, MB and in the United States. (Not all listings are in the same terms.)

Louisiana Pacific OSB/L Mill Location		Total Dryer + Press VOC emissions tpy
Swan Valley	***aspen without BACT***	***825, as VOC (requested) [26]***
Swan Valley	***aspen without BACT***	***1140, as VOC (test results) [27]***
Swan Valley	*aspen with BACT-RTOs*	*25, as VOC (test results) [1]*
Swan Valley	*aspen with BACT-Bioreactor*	*57, as VOC (@95% efficiency)*
Roxboro, NC	s. pine with BACT	33 (test results) [28]
Athens, GA	s. pine with BACT	53 (permit limits) [29]
Sagola, MI	aspen with BACT	50 (permit limits) [30]
Carthage, TX	s. pine with BACT	~100 (>90% control required) [31]
Jasper, TX	s. pine with BACT	37 (test results) [32]
Limerick, M (OSL)	hardwood with BACT	52 (permit limits) [33]

The record of this proceeding does not appear to offer a satisfactory explanation regarding why the LP operations in these jurisdictions are able to operate at radically lower emission limits than the ones it proposes for LP Swan Valley.

Dr. Simon concludes that:

> LP Swan Valley would continue to be one of the cleanest OSB mills in North America if it continues to utilize BACT to control its dryer and press emissions, and it would be one of the highest VOC/HAP emitting mills in the continent if it does not control its emissions.[38]

Has adequate consideration been given to solutions other than the RTOs?

The record of this proceeding is relatively scanty in terms of consideration of options other than the permanent shut down of the RTOs.

The LP submission appears to suggest that the only two options available to LP

[38] *Ibid*, p. 5.

Swan Valley are either to permanently decommission its RTOs and thereby dramatically increase VOC and HAP emission levels or to continue with the status quo at risk of shutting down the plant.[39]

Similarly, the *North American Orientated Strand Board Industry Review* prepared by Senes Consultants Ltd. leaves the impression that while biofilter systems are useful in controlling emissions from presses, they are less valuable in enabling the cost effective control of emissions from dryers.[40]

This impression is no doubt accurate as it refers to traditional biofiltration technology. However, as set out in a number of the documents which can be found in Attachment 5 to Dr. Simon's evidence, modern bioreactor technology can accept much hotter sources of VOC emissions such as dryers.[41] As Dr. Simon observes a modern bioreactor has operated successfully for some time at a large medium density fibreboard mill in the US meeting or exceeding all vendor guarantees of efficacy and operation costs.[42] Testing on the recently installed system at the Roseburg Forest Products plant appears to have yielded impressive results.[43]

Similarly, a 2009 paper by Dr. Rakesh Govind considered the employment of four VOC treatment technologies for a wood dryer application.[44] His analysis which considered both the economic and environmental footprint of these technologies suggests that thermal oxidizers have a significantly higher total cost and environmental impact than modern biofiltration technology.[45]

As Dr. Simon observes:

> Modern bioreactor technology offers a compromise technology that would seem to fit both parties' goals. LP could decommission the RTOs permanently, thus eliminating their natural gas usage with associated high costs. A modern bioreactor may also be able to replace the WESPs, relieving LP of the high electrical and maintenance costs of those units. The

[39] Please see the Louisiana Pacific cover letter to Tracey Braun, November 18, 2008 at p. 2.
[40] June 2009, p. 19.
[41] For example, please consider the Tri-Mer Product Bulletin from June 2009. Simon, *Ibid*, Attachment 5A. It suggests that modern biofiltration technology can accept much hotter sources of VOC emissions such as dryers. It indicates that the technology is much less expensive to operate over time as compared to thermal oxidation.
[42] Simon, *Ibid*, p. 3.
[43] Dr. Rakesh Govind, *Meeting the MACT with Multiphase BioSystem*, 2009. Simon, *Ibid*, Attachment 5D.
[44] The analysis considered a case study where total process exhaust is 150,000 acfm from four individual dryers.
[45] Please see *Review of Biofiltration and its Implications for Climate Change*, Paper 2009-A-956-AWMA prepared by Dr. Rakesh Govind, Chemical and Materials Engineering, University of Cincinnati. Simon, Ibid, Attachment 5C.

citizens of Manitoba could enjoy the continued abatement of 95% or more of the hazardous and non-hazardous organic compounds emitted by the facility's dryers and press, and LP Swan Valley could eliminate greenhouse gas and NOx emissions from the RTOs while providing the community with the cleanest OSB mill in the country at an operating cost below the cost of operating the WESPs alone.[46]

The table below[47] provides Dr. Simon's estimate of the amounts of VOC, HAP and NOx emissions at LP Swan Valley with:

- WESPs and RTOs operational,
- WESPs operational and RTOs non-operational, and
- WESPs and RTOs replaced by modern bioreactors.

In his opinion, modern bioreactors offer the best VOC and HAP control with the least deleterious impacts on other air emissions.

Table 2. VOC, HAP and NOx emissions from the dryers, press and thermal oil heater stack at LP Swan Valley without RTOs, with RTOs and with bioreactors.

Pollutant	without RTOs or other VOC/HAP controls	with RTO	with bioreactor
NOx, tpy	151	198	151
VOC, tpy	1,140	25	57
HAP, tpy	424	4.3	21

Dr. Simon suggests that the regulator consider requiring LP Swan River to obtain bids from one or more modern bioreactor vendors with the intention of installing one or more units to control dryer and press emissions.[48]

Should the LP Swan Valley application be approved?

The Minister has asked the CEC to provide advice and recommendations regarding

[46] Simon, *Ibid*, p. 9.
[47] *Ibid*, p. 11.
[48] *Ibid*, p. 11.

the potential health and environmental effects of the increased emission limits and subsequent decommissioning of the RTOS proposed by LP.

In making its recommendations, the CEC will no doubt wish to consider the evidentiary record as well as the following regulatory considerations.

Relevant Regulatory Considerations

Manitoba had developed guidelines for acceptable concentrations of certain contaminants as well as draft guidelines for air dispersion modelling. However, legally enforceable air emission limits in Manitoba are developed on a plant by plant basis and set out in the operating licence.

In determining the applicable air emission limits for LP Swan Valley, consideration should be given to s. 1(1) of *The Environment Act.*[49] It provides that the purpose of the Act is to "develop and maintain an environmental management system in Manitoba which will ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for this and future generations."

The principles and guidelines of *The Sustainable Development Act*[50] are also applicable. *The Sustainable Development Act* provides that economic decisions should adequately reflect environmental, human health and social effects. Further, the economy, the environment, human health and social well-being should be managed for the equal benefit of present and future generations.[51]

A particularly relevant consideration is the precautionary principle which was adopted in the *Rio Declaration* to which Canada is a signatory.[52]

The "precautionary principle" is a principle of environmental and international law which provides that where scientific evidence is uncertain one ought to err on the side of caution. In addressing environmental issues, we often have imperfect knowledge as to the potential impact of activities on the environment. Before approving development, governments should consider environmentally protective measures, especially where the potential harms may be irreversible. Failure to apply the precautionary principle could result in irreparable harm to people and the environment.

Application of the relevant regulatory considerations to the record

The independent expert reviews of the proposal reveals both analysis not properly conducted and options not fully considered.

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[49] C.C.S.M. c. E125
[50] C.C.S.M. c. S270
[51] Please refer to ss. 1(1), 2(1).
[52] See for example, *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, [2001] 2 S.C.R. 241 at 266-267 and *Labrador Inuit Assn. v. Newfoundland (Minister of Environment and Labour),* [1997] N.J. No. 223 (Nfld C.A.) at para. 11.

At issue is an application by LP to dramatically increase the allowable emission limits for the volatile organic compounds and hazardous air pollutants produced by its Swan Valley Manitoba operations.

The Company portrays its application as an economic win for the community and for the Company. It suggests that there is no material environmental downside to its proposal. It points to likely reductions in green house gases and nitrous oxide emissions as a consequence of decommissioning. Given the troubled economic times for its industry, LP implies that decommissioning of the RTOs is the only possible mechanism by which the plant's competitive position and long term future can be assured.

The independent experts retained are not nearly as sanguine about the LP application as the proponent. The peer reviews of Dr. Brown and Mr. Chadder point out that the health risk assessment, air dispersion modelling and ambient air quality monitoring conducted by the Company are materially deficient and not in accord with currently accepted practice.

Dr. Brown concludes that the failure to include background concentrations associated with regional sources in the air quality assessment and associated health risk calculations:

> would have resulted in cumulative ground-level air concentrations being underestimated, which would mean that many of the conclusions regarding “negligible health risks”, etc., are not valid.

He observes that:

> Inclusion of country food and water ingestion pathways would likely provide additional predicted health risks, but were not assessed.

Mr. Chadder offers the opinion that the documents prepared by LP Canada “do not represent an acceptable level of technical information with which to make an informed decision.”

Focusing on the big picture, Dr. Simon concludes:

> The potential for formation of tropospheric ozone and smog is significantly greater without control of dryer and press VOC emissions at Swan Valley.

Based on the current record, it cannot reasonably be concluded that the proposed emission limits do not pose a risk to community health and environment. That assertion has simply not been established on a balance of probabilities. Given the current record and applying the precautionary concept, it would not be appropriate to approve the proposed emission levels.

The record of the hearing to date shows relatively limited discussion of more traditional biolfilter technology and does not appear to fully address current technology. Recent developments in modern biofiltration technology suggest that

an environmentally comparable and economically superior option to RTO emission control technology may be available to LP. Unfortunately, LP has chosen not to put this option before the regulator. Potentially cleaner, more cost effective pollution abatement technologies, such as bioreactors, must be considered as an alternative to drastically increased emission limits.

Recommendations

Based upon the independent evaluation of the evidence, we would recommend that:

- The proposed emission levels not be approved.
- LP be directed to provide health risk assessments, dispersion modelling and air quality monitoring that accord with industry best practices.
- LP Swan River be requested to obtain bids from one or more modern bioreactor vendors for the purpose of installing one or more units to control dryer and press emissions.
- The results be tested by independent analysis and by cross examination in a public hearing process which provides both the regulator and the community with an affordable, meaningful and transparent forum to review these evaluations.

Appendix A

Restated Objection to the Process

Throughout the investigation process, our clients have asserted their objection to the process undertaken by Manitoba Conservation in order to determine whether to accept Louisiana Pacific's request to increase air emissions at LP Swan Valley. Several decisions that have been made by Manitoba Conservation have resulted in what is arguably a material and ongoing reduction in the environmental protections offered to residents of the Swan Valley.[53]

In addition, the Minister's decision to refuse to order a full public hearing and instead use an investigation process does not allow for full and meaningful input prior to the CEC's recommendation and the ultimate regulatory decision. Without a full public hearing, interested parties have been denied the ability to cross-examine Louisiana Pacific. Without cross-examination, Louisiana Pacific's evidence has not been properly tested. Given the potentially significant impacts of increased emission levels, the appropriate regulatory process would allow for a full public hearing, with rigorous scrutiny of Louisiana Pacific's proposal.

[53] Licence No. 2861 was issued in January 2009. It allowed for the suspension of the operation of LP Swan Valley RTOs. It is our understanding that no notice was provided to the public and no opportunity was provided to comment. Following this decision, a referral was made by the Minister to the CEC asking it to investigate the proposal to relax air emissions. The license was extended on June 8, 2009, in response to correspondence from Louisiana Pacific seeking to extend the terms and conditions of Licence No. 2861 beyond the June 1, 2009 licence review date. To our clients' knowledge, no notice was provided and no opportunity was given for interested parties to address the request.