



Crofton: Clean Air or Foul?

What's in the smoke? Crofton pulp mill on the day the Kyoto Accord came into effect.

Text by Delores Broten Photo by Michael Cooke

"We are disturbed by what we perceive to be the company's ongoing attempts to conceal and downplay the impact of toxic pollutants coming from its Crofton pulp mill," said Michael Ableman of the Crofton Airshed Citizens Group (CACG). "Citizens are unknowingly participating in a giant public health experiment, thanks to the mill and our provincial government."

Ableman was speaking at a sombre public meeting on the eve of Earth Day in Crofton BC, the site of the controversial Norske Canada Crofton kraft mill. At the meeting, the CACG released a damning 122-page report prepared by RWDI AIR Inc. of Vancouver and Pioneer Technologies Corp. of Olympia WA. The report, commissioned by *Reach for Unbleached!* with proceeds from the Clean Air Concert held last fall, critiques an earlier air emissions study by Norske Canada consultant Jacques Whitford (JW), which essentially gave the Crofton pulp mill a clean bill of health.

RWDI formed an international peer review team to look at the JW report, and found it to be lacking in clarity, key baseline information, and credibility: "The Report does not constitute a Baseline Human Health Risk Assessment..."

Using neutral language, the citizens' consultants carefully explained that the mill study amounted to a snow job, with the devil in the details. The most serious criticism was that the Norske JW study lacked "transparency" so that, even with access to the confidential input data, gained through a controversial Non-Disclosure Agreement with the company, the RWDI consultants could not figure out how the study was conducted. Citizens would be even more hapless.

Background

In the fall of 2003 the Crofton pulp mill on Vancouver Island, owned by Norske Canada, applied for a permit to burn coal, railway ties and tires in its aging power boiler. Taking alarm, in January 2004 the Crofton Airshed Citizens' Group organized a public meeting in Crofton, with BC Ministry of Water Land and Air Protection staff, mill officials, *Reach for Unbleached!* and some independent experts, including a doctor and a US air pollution regulator.

The meeting was attended by over 500 people, and it became clear that the citizens of the area required more information. The mill responded by forming a Community Advisory Forum, and funding an air emissions health risk study done by consultants Jacques Whitford, as well as a peer review by another consulting firm, Senes. The mill's study found some minor problems, but gave the airshed overall a clean bill of health.

In the meantime, the Clean Air Concert in Duncan BC in September, with Randy and Tal Bachman, Neil Young, and the Barenaked Ladies, generated funds for the Crofton Airshed Citizens Group and *Reach for Unbleached!*, a registered charity, to do their own research. This was a first in North America.

Independent Peer Review

The first stage of this research is an independent peer review of the mill's study, carried out by RWDI Consulting Engineers and scientists, and Pioneer Technologies from Seattle. The RWDI report identified several major deficiencies with the JW study. Lack of transparency in terms of the sources of the data, the assumptions made and the presentation of the results was cited as a major difficulty in reviewing the work and stressed by the consultants as unacceptable by risk assessment standards.

The CACG consultants did not have access to the mill or any operating details other than those provided by Norske for the original study, and were restricted by the terms of a Non-Disclosure Agreement with the company. (Although normal in Canada, the consultants claimed such agreements were unprecedented in the US or Europe.) However, even with these limitations, RWDI identified several areas where the emissions inventory was likely understated, and certainly unreliable. The deficiencies of greatest concern relate to the emission inventory, dispersion modelling methodology and human health risk assessment.

Emission Inventory

- Average annual emission rates were used in the Crofton Mill Emission Inventory. Peak 1-hour emission rates should have been used to determine maximum short-term (24-hour or less) ground-level concentrations and resulting acute health impacts.
- Emissions during start up, shut down or during low efficiency operation were not considered. As a result, emissions and associated risks may have been significantly underestimated.
- Emissions from vehicles and vessels associated with the mill were omitted, although likely to be significant for human health because emitted at ground level.
- A number of contaminants were not included even though standard emission factors are available for at least some of the processes. No explanation is provided for not including these contaminants. This may have resulted in an

underestimation of emissions and associated risk.

- The Crofton emission inventory does not include criteria air contaminant emissions for the operation of the power boilers using bunker C oil and natural gas.
- Perhaps most tellingly, on the computer model the mill study arbitrarily set the "mixing zone" ceiling, below which pollutants can be trapped, at 20 metres, while some of the stacks rise above that height so their ground level impacts are excluded!

Dispersion modelling for the air emissions

RWDI agreed with the basic methodology used in the JW study to model the dispersion of the air emissions from the mill, but had a few serious caveats:

- Omission of surface observation of winds at the Crofton Mill site, which result in a significant distortion in wind direction during stable (inversion-potential) weather patterns.
- Land use (which affects wind behaviour), particularly in the region immediately surrounding the Crofton Mill was improperly characterized.
- Receptor spacing at which pollution is calculated immediately beyond the fence line is too sparse at 250 metres instead of a standard 50 metres, and
- Background sources should have been included in modelling, or else predicted model concentrations should have included some estimate of background contributions.

Health Risk Assessment

Problems with the JW study's health risk approach result in unreliability of the estimation of the human health risks associated with exposure to emissions from the Crofton Mill, according to Pioneer Technologies Corporation of Seattle, retained by the air modeling scientists at RWDI to look at the human health risk assessment.

These deficiencies include:

- The JW Report does not constitute a Baseline Human Health Risk Assessment because it does not evaluate all complete exposure pathways or sensitive subpopulations.

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Photos by Delores Broten

The JW Report only evaluates the inhalation pathway for adults. Indirect exposure pathways (e.g., ingestion, dermal) and sensitive sub-populations like children should be evaluated.

- The JW Report only considers/calculates the risks/hazards associated with individual substances. Cumulative risks/hazards should have been calculated and presented. Risk is therefore greatly underestimated.

- The Toxicity Assessment should explicitly identify and summarize toxicological criteria for each substance. In addition, it is important to consider whether or not the criteria have been updated to reflect more recent scientific information. For example the British Columbia ambient air quality objectives were developed in the 1980s and it is not clear if they have ever been updated and if not, whether new science should be considered when applying the values.

PIONEER performed a Screening Level Risk Evaluation (SLRE) of the airborne concentrations presented in the JW study, using *only* the mill's estimates of airborne concentrations but incorporating up-to-date toxicity information available from the US Environmental Protection Agency. Each of the airborne concentrations were used "as-is" to calculate Hazard Quotients (HQs) and Cancer Risks (CRs) for an adult resident exposed via inhalation of air only. The individual HQs and CRs were summed to calculate the cumulative Hazard Index (HI) and cumulative CRs for each receptor (i.e., fenceline, gridded, and special receptor).

Pioneer found what would normally be considered unacceptable health risks (in other jurisdictions than British Columbia) for both cancer and chronic and subchronic health hazards at most of the area covered by the study, including near the mill, where trailers and apartments are located.

For cancer, Pioneer calculated risks of between one in a million and one in ten thousand for those living around the mill for 30 years. This is a small number, but it is important to note that EPA guidance documents consider that any cancer risk of over one in a million, calculated using this methodology, indicates a problem with the site. Generally, notes Pioneer, "as risks increase above 1 chance in 1,000,000, they become less desirable. The risk to individuals generally should not exceed 1 in 10,000 (i.e., 1E-04)." (1⁻⁴)

Acetaldehyde, arsenic, carbon tetrachloride, chloroform, chromium VI, dioxin/furans, formaldehyde, tetrachloroethylene, and trichloroethylene were responsible for the majority of the carcinogenic risks.

All of the chronic and subchronic Hazard Index ratings for all locations calculated exceeded 1, which, says Pioneer, "indicates that noncancer health effects may be manifested," although they were unable to be precise about actual

risks or effects. The pollutants responsible for the potential chronic health risks were acetaldehyde, acrolein, chlorine, chlorine dioxide, hydrochloric acid, hydrogen sulphide, oxides of nitrogen, particulate (PM10), and sulphur dioxide. Ammonia and hydrogen sulphide were responsible for the majority of the subchronic health hazard potentials.

Summary

All of the above begs several questions:

How often are unacceptable studies foisted on innocent communities who do not have the funds to send the work to other experts for review?

How often, when citizens themselves are able to pick out problems with corporate studies, are they ignored because they are not experts?

Where are the government science and pollution experts whose job it is to deal with major industrial pollution?

Why can communities not rely on federal or provincial government scientists and bureaucrats to step in to set the facts straight when studies with major distortions are released to the public?

And why, if the government experts do NOT recognize the issues at stake in this kind of study because they do not have a high enough level of expertise, are we the taxpayers not DEMANDING that more experts be put on the public payroll?

All the bake sales in Canada could not raise enough money to do the work we need the government to do on our behalf.



The Crofton baseline study on air quality and community health impacts done by Jacques Whitford and the Senes peer review of that study are available on the Norske Canada website at www.norskecanada.com Communities, Crofton, Environmental and Safety Results.

The full RWDI report, and an executive summary, is available at <http://www.croftonair.org> and www.rfu.org.

We are a pulp mill. . .

In a move calculated to avoid pressures such as those which have caught up its Crofton mill, Norske Canada has warned prospective buyers in a new high end development located in the plume of its Elk Falls mill in Campbell River BC that they will have to live with the effects of the nearby industry.

Developer Don Corson of Merrill and Ring didn't appreciate the warning. He told the Campbell River council that this was the first he had heard of the mill's concern and he wasn't worried since "Norske Canada has done good work in the past to reduce its emissions. He was confident they would continue to do so in the future and requested council not delay the developer's plans."

—Campbell River Mirror, February 2005