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## The Kitimat airshed study —not so simple - Patrick Brown

**T**his study tells us that with proper management, there is significant capacity in the Kitimat airshed to safely accommodate industrial growth while still protecting human health and the environment,' said BC's Environment Minister Mary Polak on July 18 when she announced the release of a report about the potential impact of future industrial development on the air in Kitimat.

The report, which had been ordered in October last year, dealt with two specific air pollutants, Sulphur dioxide (SO<sub>2</sub>) and Nitrogen dioxide (NO<sub>2</sub>). The consultants studied their creation and distribution in the Kitimat area, and the effect they might have on human health, vegetation, soil acidification, soil eutrophication, and aquatic ecosystems (specifically, lakes in the area).

What Minister Polak might have said was: 'As long as we can get the aluminum smelter to install sulphur dioxide scrubbers that won't acidify the sea, and all the LNG plants are electrically powered, we can build LNG plants at Kitimat and the air won't be any harder on human health than it is now.'

### The Aluminum Smelter

Since the close of the Methanex plant in 2006, and the shutdown of the Eurocan pulp mill in 2010, the only major industry left in Kitimat is the 50-year-old Rio Tinto Alcan (RTA) aluminum smelter. It is, of course, the main source of Kitimat's air pollution. So when the company announced its \$3.5 billion Kitimat Modernization Project to increase production by 55%, Kitimat was encouraged. RTA said that emissions of Polycyclic Aromatic Hydrocarbons (PAH) would be reduced by 98% to 3 tonnes/year; particulates would be down 80% to 420 tonnes/year; gaseous fluorides will be down 72% to 168 tonnes per year; and greenhouse gases will be down 36% to 898,800 tonnes/year.

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### Emission Scenarios

The study was carried out on eight selected combinations of possible industrial developments centred around Kitimat. The numbers represent the totals of both SO<sub>2</sub> and NO<sub>2</sub> emissions, in tonnes per day.

#### Scenario A listed smelter SO<sub>2</sub> emissions of 6.5 tonnes/day (termed 'Full Treatment').

A. 28.2: Full treatment of smelter SO<sub>2</sub> emissions, four electrically driven LNG plants, no refinery, and shipping from the smelter and the LNG plants.

#### Scenarios B through D listed smelter SO<sub>2</sub> emissions of 27.5 tonnes/day (termed 'Partial Treatment')

B. 51.8: Partial treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven by gas turbines with NO<sub>x</sub> treatment, no refinery, and shipping from the smelter and the LNG plants;

C. 57.5: Partial treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven 60% by grid electricity but no NO<sub>x</sub> treatment on the other 40%, no refinery, shipping from the smelter and LNG plants; and

D. 61.8: Partial treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven by gas turbines with no NO<sub>x</sub> treatment, no refinery, shipping from the smelter and LNG plants.

#### Scenarios E through H listed emissions from the smelter of 41.8 tonnes/day of SO<sub>2</sub> (termed 'Base Case').

E. 66.1: No treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven by gas turbines with NO<sub>x</sub> treatment, no refinery, and shipping from the smelter and LNG plants;

F. 72.6: No treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven by gas turbines with NO<sub>x</sub> treatment, refinery in full operation, and shipping from the smelter, LNG plants, and the refinery;

G. 76.2: No treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven by gas turbines with no NO<sub>x</sub> treatment, no refinery, and shipping from smelter and LNG plants; and

H. 82.6: No treatment of smelter SO<sub>2</sub> emissions, four LNG plants driven by gas turbines with no NO<sub>x</sub> treatment, refinery in full operation, and shipping from smelter, LNG plants, and refinery.

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However, SO<sub>2</sub> emissions would increase 55% from 27 tonnes/day to 42 tonnes/day. The smelter would, in fact, 'use up' the airshed 'room' needed to accommodate even one turbine-powered LNG plant.

The provincial permit allowing this increase was issued on April 23, 2013. After the permit was issued, two local ladies, Elisabeth Stannus and Emily Toews (supported by the SkeenaWild Conservation Trust), challenged the provincial environmental decision to allow this SO<sub>2</sub> increase. They suggested that the SO<sub>2</sub> emissions in the Kitimat airshed could be considerably reduced by 'scrubbing' the emissions from the smelter.

Rio Tinto Alcan indicated that not only would this cost an additional \$100 million, but that it would have to be carried out with seawater; the result would be that all the additional SO<sub>2</sub> would end up dissolved in the sea, and this would be undesirable.

Despite opposition by RTA and the Environmental Appeal Board, the ladies achieved standing to seek a court-ordered procedural review of the granting of the SO<sub>2</sub> permit. They'll be in court this October.

### The Scenarios

For the purposes of the study, the provincial government anticipated that Kitimat might accommodate four LNG plants, an oil refinery (similar to BC newspaper magnate David Black's proposal), and a BC Hydro gas-turbine-powered electrical generation plant. In addition, the study was to include airshed emissions from associated shipping and other transportation. Its geographical area was to include Douglas Channel, from Hartley Bay to Kitimat, and the Kitimat river valley from Kitimat to Terrace.

Eight scenarios were studied, see 'Emissions Scenario' BOX,

above. A review of the chosen scenarios shows that a large number of combinations of industrial possibilities is possible.

It is clear from the tables in the report that the smelter is the main source of SO<sub>2</sub> in Kitimat, and unless scrubbing or some other form of treatment is adopted, it will continue to be.

Interestingly, no quantity less than four LNG plants was considered and nowhere is there any mention of the Northern Gateway pipeline.

As an afterthought, emissions from a potential BC Hydro gas-turbine-powered generating plant were included in Scenario H. There are two different generating plants, with and without Selective Catalytic Reduction NO<sub>2</sub> control, located in two possible locations. This results in four alternatives added to Scenario H.

### No Room For LNG

Since Scenario A—28.2 tonnes/day of SO<sub>2</sub> and NO<sub>2</sub>—appears to be the level referred to by the Minister in her statement above, it seems that 'Full Treatment' of the smelter's SO<sub>2</sub> emissions, bringing total SO<sub>2</sub> levels back to pre-'modernization' levels, would be essential to 'protecting human health and the environment'. This does not leave any room for adding any gas-turbine-powered LNG plants.

To quote Green Party MLA Andrew Weaver: 'The BC Government is not painting a complete picture of the serious ramifications of this study.'

They are trying to paint what is actually a dire conclusion in good light to avoid undermining their LNG dreams. The study undeniably concludes that if you put four LNG plants into Kitimat you will have critical impacts on human health.' ✍

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