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December 3, 2013

Dear Laura and others concerned about the proposed addition of a Direct Transfer Coal Facility to the Fraser Surrey Docks,

I am writing on this topic in my capacity as an expert on the health effects of inhaled particulate matter, in hopes my comments may serve the public interest. Accordingly, I will confine my comments to the human health effects of inhalation of particulate matter (coal dust and/or diesel exhaust) before making just a brief comment on the related issue of climate change.

Coal dust is potentially harmful to those who inhale it. At minimum, it is irritating to those with preexisting lung disease and, for those exposure chronically (classically but not exclusively in the occupational setting) it can cause significant lung disease *de novo*. Therefore to the extent that the containment strategy for coal dust does not operate optimally there is some incremental risk of adverse health effects.

The EIA focuses more on coal dust than on diesel and yet the latter is at least as concerning. Regarding diesel exhaust in particular, as the literature on traffic-related air pollution serves to inform, there are several issues of concern:

- The EIA refers to hospitals and schools as sensitive receptors, but sensitivity is in fact much more granular than that. While children and the ill are indeed amongst the generally more susceptible, there are also susceptible individuals, by virtue of personal genetic variants or other factors, who exist non-discriminately through the 20x20km region considered in the EIA. Thus, while the modeling suggests levels below current standards¹, one must consider that these standards are typically set upon a balance of health concern and what is technologically feasible in terms of exposure reduction in a region. There is consensus that adverse health effects do exist below the standards, but it is simply considered, by relevant agencies, unrealistic to set levels that are fully protective of all those exposure. In the setting of a new facility that will²

¹ For the purposes of the letter, standards and objectives will be considered synonymously though they are truly distinct in detail

² According to page 144-5 of the EIA, there will be 10% more rail/barge traffic and

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introduce new particulate matter into the airshed, one need simply recognize that promulgated air quality standards and the processes that set them are generally based on average health effects, which include more severe effects within particularly susceptible individuals, and – importantly -- political considerations incumbent upon a given region. In that sense, it would seem a very ‘high bar’ indeed to justify any additional output of particulate matter into the airshed. Specifically, on what basis can the EIA conclude, on page 143, that the levels predicted (putting aside for the moment the potential for errors in modeling) “if achieved, are considered protective of health effects in the general public, including for sensitive sub-populations”?

- Related to comments above, it seems clear from Table 7-1 both that the site-related emissions will add considerably to background PM levels and also that there is clear potential for exceeding Air Quality Objectives as a result. That this is predicted to not extend beyond the fence line is not particularly reassuring given the artificial nature of the fence line as a boundary. In fact, the dispersion characteristics of each component of the emissions ‘mix’ from the Project will be unique and it is doubtful that they are all captured adequately in the model – for this I encourage you to seek additional expertise (see below).
- Even if ‘only industrial workers’ were adversely affected – a suggestion that I doubt is accurate based on the points made elsewhere in this letter – is this somehow acceptable? My clinic at Vancouver General Hospital regularly sees occupational lung disease associated with exposures that from some perspectives would have been validated as ‘acceptable’ (quite erroneously).
- In the context of chronic exposure (i.e. local employees or citizens exposed long-term), diesel exhaust (per IARC) and ambient air pollution (per WHO) are each confirmed carcinogens and thus increasing these chronically is of great concern.
- Note also that there is no known lower threshold for the adverse effects of diesel exhaust. As such, it is unfortunate that no Metro Vancouver AAQO for DPM are available, but this should not deter the responsible parties from best practice. In that regard, it is a major concern that page 151 of the EIA cites the maximum predicted annual $PM_{2.5}$ concentration of $4.1 \mu g/m^3$ as cause for reassurance regarding the risk of diesel exhaust. This is problematic for 2 reasons: 1) there will surely be localized exposure well above that even of the “maximized receptor” (the designation of which is not built to appreciate occupational exposures in particular); 2) even using simply the data in Table 7-1, the maximum receptor would be subject to levels above the RfC (which the EIA proposes as a reasonable threshold for concern).

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- Dr. Strang's comments, as cited on page 142 of the EIA, are not reassuring. Conversely, it is concerning that he would apparently suggest that, because asthma is reportedly lower in the South Fraser Valley compared to the rest of the province, the public concerns about coal dust are ill-founded. The level of analysis apparently applied by Dr. Strang are so superficial as to be of *de minimus* value.

On balance, the above concerns suggest that it is difficult to defend the position that there will be no adverse health effects resultant from the Project. Rather, it is a question of how much health effect (not quantified by the EIA because instead it seems to suggest no adverse effects) and to what extent the community is willing to accept such adverse effects resultant from the project. Specifically, page 145 suggests that the Project “will not result in unacceptable health risks” but what in fact is acceptable (to this community)?

I am not sufficiently expert to comment specifically on the dispersion modeling that was employed to lead to the reassurances contained in the EIA, but I encourage you to seek an expert (who is independent of the EIA) to scrutinize this carefully, as the modeling is clearly inclusive of a range of assumptions that appear to critically affect the output of the model. It is not clear to me how valid these assumptions are. Given that such assumptions will likely remain, regardless of which expert is doing or reviewing the modeling, a logical suggestion would be that some ongoing monitoring – robustly designed and with enforceable ‘teeth’ for remediation should the assumptions prove incorrect – be mandated (from a citizenry perspective, this would presumably be fully at the expense of FSD). I see that there is a draft Air Quality Management Plan (AQMP) developed by Levelton, presumably addressing this need, and this plan should be closely examined -- for quality and sufficiency -- by an expert in air quality monitoring who is independent of FSD and Levelton. On page 57 of the EIA, it says regarding the AQMP that “if necessary, additional monitoring and/or mitigation measures could be implemented” but it is unclear how “if necessary” and “could be” are specifically defined and intended. Similarly, on page 65 of the EIA, it says regarding the AQMP that “Best management practices, within constraints of the Project, are identified” but this implies some ambiguity (how exactly are these constraints interacting with priorities including that of the ‘precautionary principle’?) that would best be resolved. Note that the EIA version that I was given access to listed the AQMP as an Appendix but the Appendix was not provided in order to ascertain to what extent the noted ambiguity was decreased.

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Also please note that the AQMP apparently does not plan for air toxics, which are an important part of the airshed mix and would likely be altered by the Project.

Finally, the lack of attention to the effects of the Project on climate change is concerning. Although I will not comment further on this, as Dr. Tim Takaro will independently do so and has more grounds to focus therein, it is worth noting that the potential impact of the Project on climate change and its consequent health effects would seem most worthy of closer scrutiny. In this era, there is no excuse for not at least giving the issue full consideration given the very real threats of climate change associated with burning of fossil fuels.

Sincerely,



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