



November 25, 2009

BY EMAIL

Marsulex Inc.
3025 Industrial Way
Prince George, BC, V2B 5S6

Attention: Randal Sarrazin, Plant Manager

Dear Mr. Sarrazin:

Re: Proposed Amendments to Marsulex Air Emissions Permit PA-2119

The Prince George Air Improvement Roundtable (PG AIR) thanks Marsulex Inc. and the Ministry of Environment for the opportunity to comment on the proposed amendments to provisions of the provincial Air Emissions Permit PA-2119 (Permit) regulating the emission, monitoring and reporting of sulphur dioxide (SO₂) from the sulphuric acid/sulphur dioxide plant (Plant) at the Marsulex facility located in the BCR Industrial site.

The primary role of PG AIR is to develop and implement the Air Quality Management Plan (Plan), which largely provides strategic direction on air quality management in the Prince George airshed. A key objective of the Phase I Plan and the current Phase II Plan is to prevent further degradation of local ambient air quality, especially of fine particulate matter (PM₁₀ and PM_{2.5}) levels, which are among the highest in British Columbia. In connection with this, PG AIR reviews and provides comment on permit applications on a case-by-case basis.

Sulphur oxides (SO_x, including SO₂) and nitrogen oxides (NO_x) can react in the atmosphere to result in the secondary formation of PM_{2.5}. According to chemical speciation and (preliminary) dispersion model research conducted on behalf of the PG AIR Research Working Group, secondary formation is estimated to contribute between seven and ten percent of fine particulate matter emissions to the downtown (Plaza) monitoring site. Exposure to fine particulate matter has been linked to adverse human health impacts, including respiratory diseases (such as asthma, emphysema, pneumonia and bronchitis), cardiovascular problems, and premature death. As such, management actions to limit or reduce SO₂ emissions are an element of an overall strategy to reduce levels of fine particulate matter in the Prince George airshed.



Having reviewed the proposed Permit amendments, the associated *Technical Assessment Report* (Report), and additional information provided by Marsulex, PG AIR is pleased to provide the comments set out below. It should be noted that, as discussed in the Report, the proposed Permit amendments focus only on provisions regulating SO₂ emissions and not those regulating primary particulate matter emissions; as such, the comments provided by PG AIR at this time are largely limited to the proposed amendments.

1. SO₂ Emission Limits (Sections 2.1.2 & 2.1.3)

PG AIR commends Marsulex for taking significant actions to reduce its emissions of SO₂ to the Prince George airshed since the environmental incident in 2006, and acknowledges that Marsulex was one of the smallest emitters of SO₂ required to report to NPRI in 2007 and 2008, emitting less than five percent of all of the SO₂ in the airshed.

As set out in the Report, since 2006, Marsulex has made considerable efforts to avoid unknown releases of SO₂ to the atmosphere, including installing a new furnace (2007, \$2M) and a new converter and dual adsorption towers (2008 and 2009, \$5.5M), which, collectively, have reduced the total annual emissions of SO₂ at the Plant by approximately 50 percent. In December 2008, Marsulex also amended the Permit to include reductions of approximately 27 percent of its daily mass of SO₂ per tonne of acid produced and the total daily limit of SO₂ from the Plant.

The proposed Permit amendments in question relate to the instantaneous maximum SO₂ discharge limit of 2,100 parts per million (ppm), which becomes effective January 14, 2010, and the average hourly SO₂ concentration maximum limit of 1,200 ppm, which is currently in effect. Marsulex has advised that, based on data collected from operation of the new equipment during 23 start ups over the last 16 months, the new equipment cannot meet an instantaneous maximum limit under all start up conditions. As such, Marsulex has requested that this limit be replaced with a 15-minute average maximum limit. Marsulex has also requested to offset this increase with a proposed 17 percent decrease in the average hourly maximum limit (from 1,200 ppm to 1,000 ppm).

While an instantaneous maximum limit may result in a greater reduction in short-term ambient levels, PG AIR understands that no other jurisdiction currently appears to have imposed such a provision on a sulphuric acid plant, and acknowledges that Marsulex should not be required to operate a Plant that may be knowingly out of compliance with the Permit. However, in order to balance the need for an achievable emissions limit and the need to minimize impacts of SO₂ to the ambient environment, PG AIR recommends the continued use of the existing five-minute average maximum limit contained in the Permit (s. 2.1.2). Based on the data provided, the five-minute maximum average limit was well above the values measured during the previous 23 start ups, with the near exception of a warm start up



in July 2009. Marsulex has advised that the emission values associated with the July 2009 start up were an isolated incident that occurred as a result of operator error and that corrective actions have been put in place (namely, the Standard Operating Procedures have been revised and the operators have been retrained) to prevent a reoccurrence of this nature.

PG AIR also agrees with Marsulex that the replacement of an instantaneous maximum limit with an average maximum limit should be offset with the proposed decrease in the hourly maximum limit, which will serve to further decrease ambient levels over the long term.

2. Guidelines and Practices for Shutdown/Start up (Section 3.6)

The federal and provincial governments have implemented ambient air quality objectives to ensure long-term protection of public health and the environment. The Air Dispersion Modelling report dated October 2009, prepared on behalf of Marsulex by Levelton Consultants, predicts that ambient levels of SO₂ based on existing Plant emissions would, during normal operating conditions (within one hour of start-up), meet all provincial Level A ambient objectives for SO₂. The model also predicts that, during start-up times, ambient levels of SO₂ based on existing Plant emissions would meet the provincial 1-hour Level A ambient objectives for SO₂ at all times at the nearest residential air quality monitoring location (Gladstone) and would meet the provincial 1-hour Level B ambient objectives for SO₂ within the vicinity of the Plant at all times except six hours during the year in which the Level B ambient objectives for SO₂ may not be met.

Recognizing that there are uncertainties in model predictions, in addition to those introduced by the emission inputs (including inputting errors for the meteorological components), PG AIR recommends that the Ministry and Marsulex work together to assist Marsulex to achieve, during start ups, the Level B ambient objectives for SO₂ within the vicinity of the Plant and the Level A ambient objectives at the nearest residential air quality monitoring location (Gladstone). PG AIR recognizes that Marsulex has implemented Best Management Practices (BMPs) for shutdowns, which contain a number of provisions to meet the desired ambient objectives and to avoid environmental impacts from the Plant, and encourages Marsulex to continuously improve these BMPs and to develop BMPs for all aspects of its operations if it has not already done so, so to further improve environmental performance.

3. Other

As recommended by PG AIR for the Pacific BioEnergy permit amendment, this Permit should contain a requirement that the permittee comply with any recommendations in the Plan that apply to its operations, including any recommendations produced during the term of the Permit. The Phase III Plan, which is currently being developed, may contain



recommendations that all, or at least the highest-priority, combustion sources meet the lowest achievable discharge rate, commensurate with emission rates associated with other sources equipped with Best Available Technology. This would be consistent with the principle of continuing improvement that is particularly relevant to pollutants, such as fine particulate matter, that lack thresholds for human health effects. PG AIR notes that the new converter and dual adsorption towers are currently considered Best Achievable Technology. Similarly, any increase in emissions, due either to further production expansion or to inaccuracy in modelled or actual emissions, should not be approved without application of the lowest achievable emission rates for the relevant sources.

Finally, as recommended by PG AIR for the Pacific BioEnergy permit amendment, a fixed expiry date should be included in this Permit, to require the permittee to evaluate the effectiveness of emission management measures in protecting the ambient environment, to promote continuous improvement by enabling new developments in emission management, monitoring and impact assessment to be incorporated, and to give the public and other stakeholders the opportunity to provide input.

PG AIR again thanks Marsulex for the actions taken to date to reduce SO₂ emissions from its Plant and its commitment to continued participation in the Prince George Monitoring Working Group. Management actions to reduce the impact of SO₂ are one of the elements of an overall strategy to reducing environmental and health impacts from secondary formation of fine particulate matter and improving air quality in the Prince George airshed.

Yours truly,

Prince George Air Improvement Roundtable (PG AIR)

[original signed]

Daniela Fisher, B.Sc., LL.B.
Air Quality Management Coordinator

cc: Maureen Bilawchuk, Ministry of Environment (by email)
Ann Godon, Ministry of Environment (by email)