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Ms. Michelle Camilleri
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Dear Michelle:

RE: ADDITIONAL INFORMATION AST BRUDERHEIM APPLICATIONS

1. INTRODUCTION

This letter and three attachments are submitted as an unofficial response to your e-mail of October 31st, 2007, which requests additional information pertaining to Alberta Sulphur Terminals (AST's) application and environmental assessment for the proposed Bruderheim Sulphur Forming and Shipping Facility (Project). The additional information requested in your e-mail is provided below for easy reference. AST will be meeting with Canexus in the near future to discuss the results of the Chlorate/Sulphur Reactivity Testing. Following this meeting, AST will provide official documents to Alberta Environment for release to the public.

1. *Absence of a long-term pump test*
   - *Required to asses the effects of the Project on changes in groundwater levels, flows, and groundwater travel times;*
   - *Required to assess the adequateness of the groundwater supply for the Project;*
   - *Required for a more realistic assessment of potential contamination transport (currently based on a 2-hour pumping test which is not adequate);*
   - *Important that assessment of effects of withdrawal and potential for contamination of nearby water wells be based on adequate data obtained from a long term pump test as opposed to the data from the 2-hour pump test presented in the EIA.*
2. *Lack of a cumulative effects assessment for the groundwater quantity and quality portion of the EIA.*
3. *Absence of the tests comparing the potential reactivity of Sulphur and Chlorate.*

In our review of the EIA we have also identified the following issues which we are not categorizing as major but will form part of the SIRs:

- *Lack of Process Flow Diagrams/Process Equipment Performance Information - necessary to define percentage removal efficient of Pollution Control Devices;*
- *Lack of Mass Balance - necessary for quantification of waste streams;*
- *Lack of Heat Balance - necessary to obtain CO_2 emissions;*
- *Lack of Water Balance - necessary to confirm zero discharge, make-up water, ultimate fate of impurities etc.*
- *H2S Risk Management - how will the H2S level in the feed be controlled and how well with the equipment perform at higher H2S levels;*
- *Emergency Response (fire) - what is the response capabilities of other local industries and local fire departments as it appears that there will be reliance on Mutual Aid Resources in an emergency situation.*

2. INFORMATION REQUIREMENTS

2.1 Long Term Pump Test

The results of the long term pumping and recovery test are presented as Attachment 1. The results of this test are consistent with the short term pumping test that was completed to support the EIA. Hence, the conclusions of the EIA remain valid. These conclusions and the mitigation and monitoring measures that have been proposed to address the issues associated with groundwater supply are summarized as follows.

- The groundwater resources underlying the Site are marginal. Sufficient groundwater is available to augment the water supply for the first stage of facility development. Multiple wells will need to be installed to provide this supply.
- Monitoring of the groundwater supply can be implemented to ensure that off-Site groundwater users are not adversely affected by the diversion of groundwater for this Project.
- An alternate water supply from Lamont County Water Utility is available to the Project as a contingency in the event that the groundwater supply is inadequate or in the event that groundwater withdrawal imparts undo risk to off-Site groundwater users. AST is in contact with Lamont County Administration regarding connection to the water pipeline adjacent to the proposed facility.

2.2 Groundwater Cumulative Effects

There was no cumulative assessment of groundwater quantity issues completed as part of the EIA because there are no proposed or current projects in the vicinity of the proposed Project that are expected to affect the quantity of groundwater resources beneath the Site. Further, the use of groundwater for the Project is contingent on there being no significant effect on the quantity of groundwater resources located outside of the Site. The contingency water supply will be utilized should this be the case.

There was no cumulative assessment of groundwater quality issues completed as part of the EIA because no significant groundwater quality issues are anticipated as part of the proposed Project development. Further, groundwater monitoring will be implemented to identify and react to any groundwater quality issues that may occur. Finally, there are no proposed or current projects in the vicinity of the proposed Project that are expected to affect the quality of groundwater resources beneath the Site.

2.3 Chlorate/Sulphur Reactivity

The results of the chlorate/sulphur reactivity tests are presented as Attachment 2. The test results suggest that the risks associated with the presence of fugitive sulphur dust in the vicinity of the Canexus chlorate plant are similar to the risks associated with the presence of crop dust. Mixtures of 99.998% sodium chlorate to 0.002% sulphur, which represents a total 5 year maximum accumulation, as predicted by the air component of the EIA, can generate a small exothermic response of less than 10°F (12°C) at a temperature of approximately 200°F (93°C). This small exothermic response is not considered to be an explosive hazard and occurs at a temperature well above the expected ambient air temperature of the area. Stronger exothermic responses are associated with the mixtures of 90% sodium chlorate with 10% oat flour or sulphur. Again, these mixtures are not expected to present an explosive hazard, and the exothermic responses occurred at temperatures well above expected ambient temperatures.

3. OTHER ISSUES

3.1 Process Diagrams

A process diagram for the proposed Project is presented as Figure 3.2-2 on page 64 of Volume 1. There are no specific pollution prevention components to the sulphur forming process. Pollution prevention is achieved by preventing contact between sulphur and water, and by allowing the pastilles to form in an environment that minimizes fugitive dust.

Iron sponge adsorption (SulphaTreat) is proposed to minimize potential H_2S emissions associated with liquid sulphur handling. This is a passive process, hence there is no 'process diagram' associated with it. The 90% adsorption rate assumed in the EIA is based on the vendor's performance specification provided in Attachment 3.

3.2 Mass Balance

There is no mass balance presented in the Project description because the forming process involves only the solidification of sulphur through cooling. There are no chemical reactions that could otherwise result in emissions or waste products. Emissions associated with the forming process are limited to the following:

- residual H_2S entrained in the liquid sulphur delivered to the Site (up to 10 ppm) is assumed to be liberated through the liquid sulphur handling operations; and
- up to 0.2% fugitive sulphur dust is assumed to be generated through the sulphur handling process.

The release of H_2S was conservatively estimated assuming 10 ppm H_2S is entrained in the sulphur and that all of this H_2S is released as part of the liquid sulphur handling process. It is noted that H_2S adsorption is incorporated into the tank venting systems associated with the Project.

The proportion of sulphur released as fugitive dust was conservatively estimated assuming that all fine particles associated with the formed sulphur would be liberated as fugitive dust through the pastille handling process. The proportion of fine sulphur particles (0.2%) associated with the pastilles was taken from grain size distributions determined for the pastilles.

3.3 Heat Balance

There is no heat balance presented in the Project description, and no corresponding estimate of CO_2 emissions associated with the heat balance because heat loss associated with the forming of sulphur is relevant only to the consumption of water, which is lost to evaporation through the sulphur cooling process. The process of sulphur forming is purely one of solidification associated with sulphur cooling. There are no chemical reactions involved in the process that may result in CO_2 emissions. CO_2 emissions associated with the Project are described and quantified in Section 3.6.1 of Volume 1.

3.4 Water Balance

There is no water balance, per se, because water is only lost to the process through cooling related evaporation. The volume of water lost to evaporation has been provided by Sandvik. This volume of water is equivalent to the make up water specified in Section 3.5.1 of Volume 1 of the EIA. All cooling water not lost to evaporation is recycled as cooling water.

3.5 H_2S Contingency

Only degassed sulphur will be accepted for forming. Degassing of sulphur is industry standard in Alberta and has proven to be reliable through decades of implementation. Notwithstanding this track record of reliability, H_2S adsorption is incorporated into the venting systems for all liquid sulphur storage tanks. H_2S monitoring is also included at all transfer and handling facilities for liquid sulphur. If high levels of H_2S are detected, sulphur transfer operations will be halted, sulphur loads will be checked for residual levels of H_2S, and any sulphur containing H_2S at concentrations greater than 10 ppm will be returned to the generators.

3.6 Emergency Response

The capacities of the emergency response capabilities in the area were not quantified as part of the EIA. At the present time, local municipal emergency response leaders are in dialogue with our expert to understand the nature of the emergency response requirements and to identify any potential gaps in training or resources. Given the nature of any potential sulphur fires, in that it is extremely slow burning and the engineering controls in the facility design, we do not anticipate that large additional resources would be required

4. CLOSURE

We trust that this letter and attachments adequately address your additional information needs as described in your e-mail of October 31st, 2007. If you have any questions or require any additional information, please do not hesitate to contact the undersigned.

Sincerely,

WorleyParsons Komex

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