

SUMMARY OF COMMENTS / RECOMMENDATIONS

PROPONENT: Albchem Industries Ltd.
PROPOSAL NAME: Hargrave Sodium Chlorate Facility
CLASS OF DEVELOPMENT: CLASS 1
TYPE OF DEVELOPMENT: Manufacturing and Industrial Plant
CLIENT FILE NO: 4563.00

OVERVIEW:

A proposal prepared by Stantec Consulting Ltd. was filed by Mr. Kevin Kohler, President and Chief Operating Officer on behalf of Albchem Industries Ltd. for the construction and operation of a plant to produce sodium chlorate from salt brine obtained from solution mining of underlying salt deposits. The development will be located near the community of Hargrave in SW 12-11-27 WPM in the Rural Municipality of Wallace. The Proposal is to operate 24 hours/day 7 days/week.

It is anticipated that approximately 40,000 tonnes of sodium chlorate per year will be produced.

Specific processes include solution mining of the salt deposits, brine treatment including water softening, electrolysis/reaction/digestion, crystallization, drying, and handling, storage and shipping of the crystallized sodium chlorate.

The Department provided the Technical Advisory Committee with information on the Proposal and made public notification in the Virden Empire Advance. The following summarizes the responses:

RELEVANT COMMENTS FROM THE PUBLIC

Two citizens submitted comments regarding the Development:

- one submission stated an intent to submit specific environmental and adverse economic concerns related to the construction of the facility. No submission was received.
- one submitted that although not against the project, there are concerns in regard to proximity to residences; potential odour and noise; lifestyle; ground water contamination; open pit; future subdivisions.

Disposition: Means to address the relevant concerns are in the Environment Licence.

RELEVANT COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

1. **Manitoba Culture, Heritage & Tourism – Historic Resources** – has no concerns.

No response necessary.

Disposition: No action needed.

2. **Manitoba Industry, Trade and Mines – Industry Development Division** – did not respond.

No response necessary.

Disposition: No action needed.

3. **Manitoba Intergovernmental Affairs – Community Land Use Planning Services** – has no land use concerns providing the zoning by-laws are appropriately changed in land use designation and land use zone.

No response necessary.

Disposition: No action needed.

4. **Manitoba Conservation – Environmental Management Division – Senior Scientist** – commented that use of the vented hydrogen should be explored by the proponent.

The proponent replied that the only alternative use which they have for hydrogen at this time is to burn it to make steam. It would take less than half of the hydrogen to meet steam load and the balance would have to be vented. Burning of hydrogen has not been included in the initial capital spending because the burning of waste hydrogen saturated in water vapour is somewhat problematic and they would prefer to do this in a second stage investment once the plant is fully operational. They expect that at today's gas prices a project based on burning hydrogen would have a very attractive ROI and would likely proceed after start-up. Quite often waste hydrogen from sodium chlorate facilities is used as feedstock for across the fence hydrogen peroxide facilities. They remain interested in the potential for producing hydrogen peroxide and will continue to monitor potential uses for hydrogen.

Disposition: No action needed.

5. **Manitoba Conservation – Petroleum and Energy Branch** – had the following comments:

- a) concern about the possible impacts of the development on the oil and gas exploration/production in the area.
- b) concern about their authority to licence and impose criteria on the wells proposed by the proponent.

As these are issues outside of the authority of Environment – Approvals, the proponent was directed to deal directly with the Petroleum and Energy Branch to resolve their issues.

Disposition: In addition to the requirements of the Environment Act Licence, the proponent must meet the requirements of all other applicable federal, provincial and municipal regulations and by-laws.

6. **Manitoba Conservation – Environmental Quality Standards – Air Quality Management Section** – had the following comments:

- a) What is the surrounding land use?

The proponent replies that the surrounding land use is agricultural either as pasture land or crops.

- b) **Figure 2.1:** The components and their flow rates in Streams 14 and 15 in the figure are not included in the accompanying table. The flow rate of evaporated water from the cooling towers is not identified.

The proponent replies that streams 14 and 15 are hydrogen gas and sodium chlorate respectively. The components and flow rates were attached in a Table forwarded to the TAC member. The flow rate of the evaporated water from the cooling towers is estimated at 158.4 gpm based on the wet bulb temperature of 18.9 °C and the inlet cooling water temperature of 31.1 °C. The preliminary water balance of the cooling towers were forwarded to the TAC member. Detailed engineering design of the cooling towers will be confirmed with the equipment supplier.

- c) **2.1.8.1 Cooling System:** What chemicals are used as anti-corrosion agents in the cooling system and what are their estimated emission rate to the atmosphere?

The proponent replies that the proposed anti-corrosion agents used in the cooling water system will likely be a zinc and orthophosphate base chemical. The MSDS of the chemical and the preliminary treatment program is forwarded. The final treatment program will be confirmed with the supplier.

- d) **4.2.3.1 Sampling Results:**

The boiler exhaust stack testing results of 64.6 ppm NO_x should be converted to g/GJ and compared with the CCME national emission guideline for new fossil fuel-fired boilers of 26 g/GJ to determine if it would be in compliance.

The proponent replies that they will try to convert the NO_x emission to g/GJ with Dillon consulting and compare the value with CCME national emission guideline. They will address the result of the conversion in the air dispersion modelling report.

The baghouse vent survey results should be converted to g/m³ for comparison with Manitoba's atmospheric emission criteria of 0.23 g/m³ (calculated at 25 °C and 760 mm Hg).

The proponent replies that assuming the air density is 1.184 kg/m³ at 25°C and 1 atm, the product loading baghouse vent contains 0.0192 kg/1000kg of particulate in air representing 0.023 g/m³ of atmospheric emission. Similarly, the storage silo vent contains 0.0121 kg/1000kg of particulate representing 0.014 g/m³. These figures are below the Manitoba's atmospheric emission criteria of 0.23 g/m³.

- e) **4.2.3.2 Air Dispersion Modelling:**

The air dispersion modelling should be repeated for the Hargrave facility using the US EPA's Industrial Source Complex short-term model. The results from the Bruderheim facility may not be representative because of differences in: i) meteorology; ii) topography; iii) receptor locations; iv) source configuration; and v) other physical characteristics of the source.

In the modelling of the ambient particulate levels, the particulate concentrations were compared with the Alberta and Ontario criteria for particulates. Given that the particulates are sodium chlorate, then the ambient concentrations should be compared with the relevant Ontario criteria for sodium chlorate of 18 µg/m³ (1/2-hour point of impingement standard) and 6 µg/m³ (24-hour ambient air quality criterion).

Since several of the substances that are used or manufactured on the site are on the National Pollutant Release Inventory (NPRI) list of substances (e.g., chlorine, hydrogen chloride, etc.), it is suggested that the proponent determine whether or not reporting to NPRI is required.

The proponent replies that Dillon Consulting will conduct the air dispersion modelling on their behalf. The results of the modelling will be forwarded for review.

- f) **4.2.7 Noise:** What is the distance of the Hargrave facility to the nearest residence or other occupied building?

The proponent replies that the nearest residence of the proposed Hargrave facility is KN & KM Heaman. Their residence is about 1-km northeast of the facility. There are three other occupied residences including R & H. Lamont, R.K. Kinnaird and R.K. & L.J. Kinnaird within the 2 km of the facility. The forwarded map shows the location of the property in relative to the surrounding neighbors. Albchem presently has three neighbors within one kilometer of the Bruderheim facility but have not received a formal complaint from any of these neighbors over noise.

- g) **5.6.3 Air Quality:**

The use of a continuous chlorine analyzer and recording system on the hydrogen scrubbing system is warranted.

The proposals for stack sampling (*i.e.*, chlorine and hydrochloric acid in the hydrogen scrubbing system, nitrogen oxides from the boiler, and particulates/sodium chlorate from the baghouse vents) should be incorporated into the *Environment Act* licence for this facility. As well, the scrubber off the product dryer (*i.e.*, stream 12 in Figure 2.1) should also be considered for sampling.

At the ambient air monitoring station, other parameters that should be considered include: i) chlorine; and ii) sodium chlorate.

The proponent replies that they are prepared to install a continuous chlorine analyzer on the hydrogen stack equipped with recording system. Through instrumentation with redundancies and alarming, the control room operator will monitor the level of chlorine in the hydrogen gas continuously. In addition, they propose to survey manually the stack twice per calendar year for chlorine and hydrochloric acid.

As for other emission sources, such as the dryer scrubber and baghouses and the boiler stack, they will survey these sources within the first year of operations to confirm effectiveness of the pollution abatement equipment.

The proponents replies were sent to the TAC member for further review. The ADM was performed as requested. Additional TAC comments, where submitted, are incorporated in the above statements.

Disposition: The Environmental licence addresses the relevant applicable items.

7. **Environment Canada – Canadian Environment Review Agency** – submitted one late comment from Fisheries and Oceans requested additional information about a stream crossing.

The proponent submitted additional information which was forwarded to Fisheries and Oceans. A verbal response from F&O indicates that they are satisfied with the information provided and no longer have concerns regarding the crossing

Disposition: No further action needed.

8. **Manitoba Conservation – Policy Coordination Branch** – has the following comments:

- a) A thorough study should be made to determine that there are no significant aquifers which would be impacted by the location or development of the facility.
- b) The surface conductor casing should be grouted to a depth of 300 metres below ground surface. The grouting should be pressure tested.
- c) The proponent should utilize all safety procedures necessary to prevent spills, smell and area access.

Disposition: The Environmental licence addresses these items.

9. **Manitoba Conservation – Environmental Operations Division – Park West Region** – has the following comments:

- a) Domestic waste may be disposed of on-site with proper approvals.
- b) Any environmental monitoring requirements should be subject to the Departments review and approval.
- c) The cooling towers may affect visibility on the Trans Canada Highway.

The proponent replies that with respect to the plume which the cooling towers will generate, particularly on very cold days, they can draw upon our experience at Bruderheim where the towers are less than 750m south of Hwy 45. They have never generated a plume which has come close to impacting the highway. The facility at Bruderheim is twice the size (and rejects twice the heat) of the proposed facility at Hargrave and they have a similar climate having seen -40 deg and even slightly colder several times over the life of the facility. One peculiar design feature which they have, includes locating the cooling towers adjacent to the process building, rather than out in the open for optimum air inflow. This creates turbulence around the cooling tower plume and keeps the plume bushy and close to the buildings - it also reduces tower icing on cold windy days and for this reason they have adopted the same concept for Manitoba - recognizing that they lose some efficiency as a result.

At Hargrave the prevailing winds are from the west and the centerline of the Trans Canada Hwy will be nearly 400m east of the centerline of the towers. Empirically this will give us very similar conditions due to the different heat loads of the facilities. To the north the Trans Canada is closer, however, in a southerly wind the cooling towers would be blocked by the 80m crystallizer roofline and this would keep the plume quite close to the building and broken up by the turbulence. In addition southerlies are likely warming winds which further reduce the size of the plume.

The smaller plume at Hargrave will not pose a problem to traffic on the Trans Canada. The plume has never been an issue on Hwy 45 in over 9 years of operation, now at much higher loads than at Hargrave

Disposition:

- Item a) No action needed.
Item b &c) The Environmental licence will addresses these items.

10. **Manitoba Agriculture – Soils and Crops - Soil Resource Section** – did not respond.

No response necessary.

Disposition: No action needed.

11. **Manitoba Highways and Transportation - Highway Planning and Design** – did not respond.

No response necessary.

Disposition: No action needed.

12. **Manitoba Health - Public Health - Environmental Unit** – has the following comments:

- a) Manitoba Conservation needs to be consulted regarding the frequency of monitoring and chemical parameters to be included for groundwater, soil, air and leachate collection systems.
- b) Monitoring results should comply with CCME guidelines.

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Disposition:

- Item a) Agreed.
- Item b) CCME guidelines shall be applicable where appropriate.

13. **Manitoba Labour - Workplace Safety and Health Division – Mines Branch** – submitted a late response with the following comments:

- a) Producing life of each well, My estimate is around 4 years.

The proponent replies that the conservative estimate of the producing life of the brine well is about 10 to 15 years. Albchem currently operates a 10 yrs old brine well at the Bruderheim facility. The cavity is about 60 m in diameter and is performing satisfactory to this date.

- b) How many wells over the project life.

The proponent replies that there will likely be 2 wells over the 30 years project life

- c) Combined effect of these wells in terms of surface subsidence, if any, and mitigate actions taken to control ground subsidence.

The proponent replies that the combined surface subsidence effect of these 2 wells is not known at this time but is expected to be minimal given the depth and the salt roof to be maintained in the well. We would suggest that a baseline survey at the time the well is put in operational and a survey after 3 years. Future survey will be conducted on a schedule acceptable to the Director

Disposition: Relevant concerns have been addressed in the Licence.

PUBLIC HEARING:

Public hearings were not requested nor convened.

RECOMMENDATIONS:

A Licence considering the above relevant concerns as well as those of the Approvals Branch be prepared and issued. Responsibility for administration of the Licence remain with the Approvals Branch pending completion of the construction and commissioning of the facility.

PREPARED BY:

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