

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**SHELL CHEMICALS CANADA LTD.
NEW ETHYLENE GLYCOLS PLANT
FORT SASKATCHEWAN AREA**

**Decision 98-3
Application No. 1008234**

1 THE APPLICATION, INTERVENTIONS, AND HEARING

Shell Chemicals Canada Ltd. (Shell) applied to the Alberta Energy and Utilities Board (EUB), pursuant to section 30 of the Oil and Gas Conservation Act, for an industrial development permit respecting a new ethylene glycols plant to be located adjacent to the styrene monomer plant on its existing Scotford site, located approximately 11 kilometres (km) northeast of the City of Fort Saskatchewan (the City), in Strathcona County (the County). This world-scale plant would be sited in the north half of Section 32, Township 55, and the south half of Section 5, Township 56, in Range 21, West of the 4th Meridian.

Shell requested authorization to use, on an annual basis, 250 kilotonnes (kt) of ethylene as feedstock and 87.8 million cubic metres of natural gas as fuel in the production of 443 kt of ethylene glycols (consisting of 400 kt of monoethylene glycol, 40 kt of diethylene glycol, and 3 kt of triethylene glycol). Shell also requested a 20-year permit term to commence with start-up of the plant in the year 2000.

The application and submissions were considered at a public hearing in Fort Saskatchewan, Alberta on 25 November 1997 before Board Members, F. J. Mink, P.Eng. (Presiding Member) and G. J. Miller, and Acting Board Member, M. J. Bruni.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives
(Abbreviations Used in Report)

Witnesses

Shell Chemicals Canada Ltd. (Shell)
L. G. Keough

M.L.S. Fromow, P.Eng.
H. V. Blair
G. Bucholtz, P.Eng.
R. Weidel, P.Eng.
E. J. Williams
K. Blonski, Ph.D.
F. W. Kloiber, P.Eng. (of Amberg Corp.)
R. E. Rogers, Ph.D. (of Toxcon Inc.)
L. D. Frank, P.Eng. (of HFP Acoustical
Consultants)
D. B. Ramsay (of Ramsay & Associates
Consulting Services)
D. E. Reid, P.Biol.
R. L. Bear

THOSE WHO APPEARED AT THE HEARING (cont'd)

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Shell Chemicals Canada Ltd. (cont'd)	D. M. Trotter, Ph.D. (all of AGRA Earth & Environmental) D. M. Leahey, Ph.D. (of Jacques Whitford Environment Limited) L. S. Lyness, P.Geol. (of Komex International Ltd.)
Strathcona County (the County) L. J. Burgess, Q.C.	Mayor V. Hartwell R. Powell R. G. Klassen B. Horton, P.Eng. Fire Chief L. Burton
City of Fort Saskatchewan (the City) G. C. Harris	G. C. Harris
A. Dzurny et al (Local Residents Group) E. C. Gerlock	A. M. Dzurny N. E. Demeule E. Schotte
Mr. and Mrs. K. Samoil K. Samoil	K. Samoil
Mr. V. M. Anez	
Alberta Energy and Utilities Board staff T. H. Donnelly, Board Counsel W. A. MacDonald, P.Eng. D. C. DeGagne, C.E.T. D. D. Fraser	

Mr. V. M. Anez intervened for purposes of cross-examination and argument only. The Alberta Department of Environmental Protection appeared but did not take an active part in the hearing. The Confederation of Regions Party filed a letter of objection but did not appear at the hearing.

2 ISSUES

The Board notes that no concerns were expressed by any participants with respect to the need for the ethylene glycols plant, the present and future availability of ethylene and natural gas to supply the plant, or with respect to the efficiency of the proposed technology. The Board is satisfied that there is a market for the additional ethylene glycols that would be produced, adequate energy resources exist to supply the project's needs over the requested term, and the proposed plant

represents an efficient use of energy resources and is an upgrading of Alberta's resources.

The Board also notes that nobody challenged the economic merits of Shell's proposed facility. The Board is satisfied that this project would generally confer substantial economic benefits for Alberta. Some 65 per cent of the estimated \$358 million capital cost of the ethylene glycols plant would be expended in Alberta. The project would create a total of 1190 person-years of direct construction employment and another 1020 person-years of on-site operating employment over the 20-year permit term. The Board accepts that the project would also generate significant tax revenue for the municipal, provincial, and federal governments, and substantial indirect employment and other economic effects in the provincial economy.

The Board believes the remaining issues to be considered with respect to this application are:

- the environmental and other impacts of the project, and
- the general land-use conflict in the area.

3 PROJECT IMPACTS

3.1 Views of the Applicant

Shell submitted that its affiliate, Shell International Chemicals B.V., is a leading licensor of ethylene oxide/ethylene glycol technology and a major producer of the product. This is the most widely used technology for ethylene glycol plants in the world. Shell indicated that it had selected its technology for the proposed plant because of its reputation for safe and reliable operation and its minimized waste streams. It was satisfied the plant would meet all environmental expectations and would cause no harm to people. Shell also noted that it was a "Responsible Care" company which compelled it to operate under a strict code of conduct subject to independent verification by representatives of both the local public and other companies in its industry.

Prior to filing its application, Shell conducted an extensive public consultation program for its project, including newsletters, open houses, meetings, and one-on-one discussions, in order to learn about the concerns of and to answer questions from the local community. In its view, all of the concerns raised by the public were addressed in the Environmental Impact Assessment (EIA) including the cumulative impacts of the application. On the basis of its studies and analyses, Shell concluded that its "design work has laid the ground work for a plant that will operate well within all Alberta regulations."

Notwithstanding that position, Shell recognized the public concerns about impacts from its plant including the following which were of primary concern:

Flaring - Shell indicated that its process is a stable operation and flaring would only occur in significant process upset conditions. It noted that there was only one condition, respecting the recycled gas stream, which would require a controlled depressuring of the recycled gas to the flare. Thus, Shell concluded that flaring would occur very rarely, possibly once or twice a year, based on its experience with its other similar plants around the world.

Noise - Shell indicated that local residents had identified industrial noise as one of their main concerns. It commissioned a noise study to determine the most severe impact on selected residences in proximity to its facility. Shell noted that the study looked at the contribution of the Shell ethylene glycols plant only and concluded that there was at least a 9- to 15-decibel difference between the contribution of the proposed facility to the permissible sound level as determined in accordance with the EUB's Interim Noise Control Directive¹. In Shell's view, the sound level contribution would be below the total existing sound levels and should not impact local residents.

Sources of greatest noise appear to be from flaring, operations, and air coolers. Shell indicated that it would design its air coolers to minimize noise, it would use the existing flare stack at the styrene plant, and it would take noise into consideration when it developed its operating procedures. To minimize the impact of nighttime rail traffic noise, which was also raised as an issue, Shell indicated that it would limit its routine rail service to daylight operations.

Air Emissions - Shell highlighted a number of design optimizations incorporated into its ethylene glycols plant which would contribute to lower emissions, including the use of low NO_x burners, heat integration with the existing styrene plant, and elimination of the need for cooling capacity normally provided by a "chilling" unit.

Shell submitted that its modelling had taken into account the entire suite of emissions from industry within a 10-km radius. It concluded that the background levels of all emissions except benzene were well within Alberta regulations. It noted that because benzene is a carcinogen, there is no threshold deemed to be acceptable. Its modelling identified a possible concentration of benzene at the fenceline which dropped off rapidly with distance. Shell assessed the health risk associated with exposure to the benzene from the standpoint of an employee, an adult resident and a child resident, and found in all cases that the risk calculations for cancer were less than one part in a million, which is a level used by Occupational Health and Safety in determining employee safety. Shell also noted that its project would neither import nor export ethylene oxide (EO), which would eliminate the intermediate tankage normally required. Accordingly, EO emissions would be reduced such that exposure levels within the plant site would only be about 10 per cent of the current worker guidelines.

Shell maintained that CO₂ production from this facility would be modest when compared to other

¹ Interim Directive ID 94-4 Noise Control Directive. Alberta Energy and Utilities Board, 12 August 1994.

ethylene glycol plants. It submitted that its process, which uses Shell-developed catalysts, would produce some 20 per cent less CO₂ than other similar plants not using Shell catalysts. Further, Shell indicated that it was in an advanced stage of negotiations to sell a portion of its CO₂ production, which would reduce CO₂ emissions by a minimum of another 50 per cent. As an additional step, Shell stated that it was also in advanced negotiations for a co-generation facility that would have the potential to eliminate an additional 150 tonnes per year of CO₂ from its operations. In summary, Shell indicated that CO₂ emissions from its expanded site would be reduced on an output basis by 60 per cent over a conventional design regardless of whether it proceeded with the co-generation project or not.

Shell noted that it is a signatory to the Voluntary Challenge Reduction Program which was established to reduce greenhouse gas emissions. For the last 3 years it has also participated in the Accelerated Reduction of Toxins Program which has reduced the fugitive emissions of its existing site by 40 per cent since 1988. In addition Shell stated that it would be participating in funding of a joint industry-government study which would establish Alberta air ethylene guidelines over the next 3 years. As well, it indicated that it would work towards regional air monitoring.

Groundwater - Shell outlined an intensive baseline groundwater program for the proposed site which included installing a number of monitoring wells and taking and analyzing groundwater samples for various selective amine and trace organic compounds.

Shell noted that, although its site is naturally vulnerable to groundwater contamination because of the sandy nature of the soil, it intended to eliminate that risk by adopting various safety measures. It intended to build in many containment components such as double-lining of ponds and double baseliners under tanks as a first line of defence. As a second line of defence, it proposed to have at-source monitoring so that any leaking substance could be detected immediately. The third line of defence would be the actual groundwater monitoring system. The existing array of monitoring wells at its styrene facility would be expanded to include the proposed ethylene glycols plant.

In response to concerns raised about the impact of dewatering during the construction phase and its impact on water wells, Shell noted that its construction approach would minimize the amount of dewatering required even more so than its assessed case which had no impact on groundwater.

Access - Shell noted that its site is serviced by Canadian Pacific Railway (CP Rail), with whom it has had a long-term relationship. Using CP Rail would allow it to bypass the area of the highest density rural population to the south and hence, would avoid contributing to the access concerns raised by the Local Residents Group.

Fog - Shell submitted that conditions respecting its cooling tower which had the potential to cause some fog formation, would occur not more than about two times a year; and that in its opinion, this would not cause a significant problem.

Emergency Response/Evacuation - Shell stated that it has a fully trained and integrated emergency response team with the Shell Canada Limited refinery. It noted that the two teams train and exercise together on a regular basis. Shell also noted that it is a member of the Northeast Region CAER² Association (NRCAER) which has some 63 members consisting of industry, municipal and provincial governments, the RCMP, and local hospitals. NRCAER's emergency response plan applies to the whole area (outside Shell's plant fenceline) and provides a coordinated response to an emergency. Shell's emergency response team, it noted, also practices exercises and drills on a periodic basis within the County under a unified command. Shell stated that it is a member of a number of different organizations which gives it immediate access to specialized help in the event of an off-site spill or transportation emergency.

3.2 Views of the Interveners

Both the County and the City supported the proposed project. The County said that the ethylene glycols plant was an appropriate development for the Shell site. The City indicated that its support was predicated on all applicable legislated and environmental requirements being met.

A main area of concern raised by Messrs. Dzurny, Demeule and Mrs. Schotte (the Local Residents Group) was that no requirement had been placed on Shell to address cumulative effects of air emissions and noise from all industrial sources in the area. Specific concerns of the group included adverse impacts on lifestyle from flaring, impacts from industrial noise and additional rail and truck traffic during both the construction and operational phases, access to their residences, and safety considerations with respect to train traffic as well as unexplained effects on trees and vegetation. The Local Residents Group viewed Shell's proposed new plant as adding to the problems currently being experienced by members of the community.

Mr. Samoil, a resident living about 1.2 km west of the Shell styrene plant, stated that he and his family had been in the area two years longer than Shell. He indicated that they were at a point where living in the area had become very uncomfortable; their quality of life had been affected by the existing plant and would be further affected by the proposed ethylene glycols plant. His specific concerns centred on construction and operations noise, potential groundwater contamination, increased traffic due to construction and plant startup. His family is already experiencing limited access and his opportunity to evacuate could be blocked during an emergency release from a plant. Mr. Samoil also expressed concern that his residential property values could suffer further as a result of the proposed plant. He emphasized that his concerns were specific to Shell and therefore should not be grouped with the general industrial concerns in the area. Finally, Mr. Samoil requested the Board to ensure that his family's concerns were addressed before any approval was issued.

Mr. Anez's area of concern centred on minimizing emissions from the proposed plant.

3.3 Views of the Board

The Board is satisfied that the proposed ethylene glycols plant will meet all relevant provincial environmental standards. Having considered all the evidence, the Board believes the emissions impacts associated with the proposed plant to be minimal. The Board believes the analysis of emissions carried out by the applicant represents a realistic picture of cumulative effects in the area. The Board also believes that Shell's approach to protecting the groundwater is reasonable, given its experience in this regard at its site. With respect to the general concerns raised by the interveners such as additional rail and road traffic, emergency response planning, access, and safety, the Board notes the undertakings of Shell to mitigate the impacts and to address community concerns. Shell's use of the CP Rail system will keep the additional rail traffic associated with the proposed plant away from the area where the members of the Local Residents Group live. The Board is satisfied that the existing and expanded Shell operations should not represent a safety concern to the public. However, the Board notes that questions and concerns about emergency response planning matters continue to be raised by the community. The Board would encourage both industry and the municipal governments to review their current procedures and practices respecting how they communicate these matters to the public with a view to finding more effective ways to communicate with the public as well as improving the public's understanding of emergency response matters and the roles of the various parties. The Board also expects Shell to address the specific concerns of Mr. Samoil respecting evacuation in case of an emergency.

4 LAND-USE CONFLICT

4.1 Views of the Applicant

Shell acknowledged the concerns of local residents about the growing industrial activity in the area and the aggregate impact on residents in the area. It had met the residents at its open houses and was aware the residents wished to be relocated due to noise, flaring, and other effects caused by industrial encroachment. Shell also indicated that it had met with Mrs. Samoil in order to address her and her husband's concerns, one of which related to the issue of land use and property values. Shell stated that it would work to include the Samoils in any comprehensive solution that was worked out between industry and the County regarding the land-use question. However, Shell emphasized that the problem of industrial expansion in this area was not unique to itself.

Shell noted that heavy industry tends to cluster in areas such as the Fort Saskatchewan and northern Strathcona County areas, where infrastructure, feedstock, and a skilled workforce are abundant. It also noted that the involvement of many industrial participants, various governments, and residents, would complicate the situation. However, it was Shell's view that continuing dialogue among all affected parties would help to resolve these issues. Shell regretted not being able to offer more information on the progress to resolve the land-use issue at the time but indicated that it was not for lack of effort. It maintained that industry and municipal governments were working actively to determine their position.

Shell's view was that government and industry must reach common ground before it would be productive to involve residents directly in the discussions. Contrary to perception, it understood

that any proposal reached by the industry/government group would be a starting point for discussions with the residents rather than a "take it or leave it" proposition. Shell committed to being actively involved in the process. In its view, it would not be appropriate for the Board to withhold or delay approval of its application pending the satisfactory resolution of the land-use conflict, especially when the process was one over which Shell would have very little control.

4.2 Views of the Interveners

The County indicated that it was aware of the group of local landowners who had brought issues before the Board beyond the Shell application. The County also noted that the landowners' request to have an opportunity to relocate by having their properties purchased, would be a consideration that went well beyond the traditional municipal role. While the County accepted no legal obligation to address such requests as part of its general municipal mandate, it acknowledged the unique land-use circumstances in this area.

In the County's view, the general area in proximity of the existing industry, is one that will continue to develop with heavy industrial projects of local, regional, provincial, and Canadian significance. The County also recognized that the industrial use of the area is provincially significant and provides regional benefits in terms of employment and investment opportunities. Therefore, the County was actively pursuing these issues because of the potential benefits to the larger community; and showed a strong commitment to resolving the land-use conflict problem.

The County noted that, at the time of the hearing, it had tabled a possible framework for the purchase of the properties in the Northeast Industrial Area with a core group of potential industry partners. It stated that negotiations are continuing toward reaching an agreement with industry regarding the organization and the capitalization of the proposed corporate entity. The County urged the Board to continue encouraging a comprehensive and shared solution to the resident landowners' request.

While the County considered that its primary role in the overall solution was to facilitate the negotiations, it was prepared to be a significant partner in the resolution of the issue. The County's view was that it was essentially a two-stage negotiation process. Currently it was negotiating with industry to find a structure for negotiation that would have the support of the participants. Once this was concluded, it would be appropriate to enter the second phase which would be the corporate entity entitled to negotiate, to discuss the proposal with the residents.

The County expected that the negotiations with its industrial/government partners would take approximately four to six months before it would be in a position to present something to the residents. While it was reluctant to provide a guarantee on the progress, the County was cautiously optimistic that it could be achieved in this time frame.

The City was supportive of reaching a resolution of the land-use conflict, and accepted the County as taking the lead role. The City acknowledged that its role would be more passive.

The Local Residents Group members again expressed their frustration at the lack of progress in resolving the area land-use conflict issue even after many meetings with provincial government officials, with municipal government officials, and with local industries including Shell. One member stated "I feel that all levels of government, as well as all industry in the area, are not making a concerted effort to settle this land conflict issue". In his view everyone was pointing their finger at someone else and using this as a delay mechanism. The Group was dismayed at being pushed into a corner by the expansions and the attendant result of growing concern about its members' safety, health and environmental impact. The Group members indicated that they were getting very tired of receiving lip-service but no action. One Group member noted that the area had devolved from what used to be a very nice, quiet place to one of sights, sounds, smells, and dangers associated with heavy industry which have taken their toll on the human side of things through induced stress and exposure to industrial emissions until it is no longer a healthy environment in which to live. The Local Residents Group saw the proposed Shell plant as a further degradation of their rural lifestyle and way of life.

The Local Residents Group noted that its suggestions for an independent chairperson in the process and to have representatives on the committee have been ignored. The Group stated that it felt betrayed by the authorities for not doing anything as well as by the industry for making empty promises.

Mr. Samoil indicated that his concerns (outlined in section 3.2) were specific to Shell and therefore, should not be grouped in with the general industrial concerns in the area.

4.3 Views of the Board

Given the location relative to the residents and the nature of Shell's proposed ethylene glycols plant, the Board does not believe that the proposal represents an environmental risk or material change to the existing land-use conflict in the area.

Notwithstanding, the Board believes that full industrial development of the area is ultimately not acceptable without the relocation of the residents in the area. The Board has no jurisdiction in the process to affect the settlement. While the Board notes some progress has been made in recent months among some stakeholders in working towards an overall solution, it also appreciates the frustration of the local residents. The Board urges all parties to work towards an early resolution.

5 DECISION

Upon consideration of all of the evidence, the Board finds the project to be in the public interest and is prepared to approve Application No. 1008234. It will issue an industrial development permit to Shell after receiving the approval of the Lieutenant Governor in Council.

DATED at Calgary, Alberta, on 3 March 1998.

ALBERTA ENERGY AND UTILITIES BOARD

<Original signed by>

F. J. Mink, P.Eng.
Presiding Member

<Original signed by>

G. J. Miller
Board Member

<Original signed by>

M. J. Bruni
Acting Board Member