

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**DOW CHEMICAL CANADA INC.
POLYETHYLENE PLANT EXPANSION
FORT SASKATCHEWAN**

**Decision 97-7
Application No. 970085**

1 THE APPLICATION, INTERVENTIONS, AND HEARING

Dow Chemical Canada Inc. (Dow) applied, pursuant to section 30 of the Oil and Gas Conservation Act, to amend Industrial Development Permit No. IDP 92-1 for its polyethylene plant located within the City of Fort Saskatchewan in part of River Lots Number 1 and 3 of the Fort Saskatchewan settlement, and parts of Sections 2 and 11, Township 55, Range 22, West of the 4th Meridian, to increase capacity by adding a third production train adjacent to its existing trains.

Dow requested amendments to increase ethylene feedstock from 420 to 780 kilotonnes per year (kt/yr), gas as fuel from 20 to 39 million cubic metres/yr, and polyethylene production from 454 to 848 kt/yr. Dow also requested that the permit term be amended to commence with start-up of the third polyethylene train and end on 30 September 2018.

The application was scheduled to be considered at a public hearing commencing on 13 May 1997. As a result of a request from interveners, the hearing was adjourned to 26 May 1997.

Interventions in support of the application were received from the City of Fort Saskatchewan (the City) and Strathcona County (the County), although no-one appeared at the hearing to speak to the County's submission. Mr. V. M. Anez intervened for purposes of cross-examination and argument only. Mr. A. M. Dzurny, Mr. N. E. Demeule, and Mrs. E. Schotte, who indicated they also represented 15 other local residents, intervened in opposition to the application.

The application and interventions were considered at a public hearing in Fort Saskatchewan, Alberta before J. D. Dilay, P.Eng. (Presiding Member), F. J. Mink, P.Eng. (Board Member), and B. T. McManus, Q.C. (Board Member).

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations Used in Report)

Dow Chemical Canada Inc. (Dow)
R. A. Neufeld

City of Fort Saskatchewan (the City)
Mayor K. Hodgins

Mr. A. M. Dzurny, Mr. N. E. Demeule, Mrs. E. Schotte et al
H. I. Shandling, Q.C.
E. C. Gerlock

Mr. V. M. Anez

Alberta Department of Environmental Protection staff
L. B. Begoray, P.Eng.

Alberta Energy and Utilities Board staff
T. H. Donnelly, Board Counsel
W. A. MacDonald, P.Eng.

Witnesses

W. R. Knee, P.E.
P. Bieman
S. B. Mathews, P.Eng.
G. Demke (of Demke Management
Ltd.)

Mayor K. Hodgins

A. M. Dzurny
N. E. Demeule
E. Schotte

2 ISSUES

The Board notes that no concerns were expressed by any participants with respect to the need for the expansion, the present and future availability of ethylene and natural gas to supply the expansion, or with respect to the efficiency of the proposed technology. The Board is satisfied that there is a market for the additional polyethylene that would be produced, adequate energy resources exist to supply the project's needs over the requested term, and Dow's expansion 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 Dow's polyethylene expansion project. The Board is satisfied that this project would confer substantial economic benefits to the Alberta economy. Some 74 per cent of the \$176 million capital cost of the polyethylene plant expansion would be expended in Alberta. The project would create a total of 609 person-years of direct employment for skilled workers during the engineering, design, and construction phase, of which some 527 person-years would occur in Alberta. Another 120 person-years of permanent, on-site operating employment would be created over the 20-year permit term. The Board accepts that the project would also generate indirect employment and economic effects in the economy.

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

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

3 PROJECT IMPACTS

3.1 Views of the Participants

Dow submitted that the impacts from the project were minor and that the residents who intervened were not directly and adversely impacted. It noted that many of the environmental and social concerns raised related to its ethylene plant expansion which had been the subject of a previous hearing in December 1996 and which resulted in Board Decision 97-4¹ being issued in March 1997.

Dow conducted a specific public consultation program for its polyethylene plant expansion as it has done for its other projects, in order to learn about concerns in, and answer questions from, the local community. Prior to making a public announcement about the project, Dow notified all of its neighbours and Community Advisory Panel members by telephone and by letter. It also notified local government officials by letter. After the media announcement, meetings were arranged with those immediate neighbours who were interested in discussing potential concerns. Finally, Dow advertised and held an open house at the polyethylene plant which was open to any member of the public who wanted to attend.

Dow reported on the following primary concerns:

Flaring - Dow stated that the third train would be tied in to the existing polyethylene plant flare stack, and that there would be no change in the flare except for more intermittent flaring due to the additional purification beds required for the third train. The flare itself would be about one-tenth the size of the ethylene plant flare and would not be visible at the Dzurny and Demeule residences under normal operating conditions. In response to questioning about a recent report indicating that many compounds were being emitted from flares, Dow pointed out that the study pertained to solution gas flaring in the oil and gas industry and that the polyethylene plant flare was very different from solution gas flares. One difference was that its flare burned only alkanes and alkenes (such as methane or ethylene) and did not contain any benzene-like compounds, styrene-like compounds, toluenes, xylenes, or the like which are typically found in solution gas. Another difference was that its flare is air- and steam-assisted and has a combustion efficiency of greater than 99 per cent compared to solution gas flare efficiencies as low as 65 per cent.

¹ Decision 97-4. Application No. 960461 by Dow Chemical Canada Inc. regarding an Ethylene Plant Expansion at its Fort Saskatchewan Site. Alberta Energy and Utilities Board. 11 March 1997.

Noise - Dow submitted that noise levels would be well within the Board's guidelines at the two closest residences to the polyethylene plant and would not be measurable or noticeable at Mr. Dzurny's residence which is some 4.5 kilometres from the polyethylene plant.

Air Emissions - Dow stated that air emissions from its polyethylene plant were not an issue and that all emissions would be within Alberta's ambient air quality guidelines. In spite of this compliance, Dow indicated that it was voluntarily committing to further reduce NO_x emissions on site through the use of a low NO_x burner in the new polyethylene furnace and through a reduction of NO_x emissions at its power plant. These measures, Dow noted, would result in a 20-per cent reduction in NO_x emissions on its entire petrochemical complex compared to the one-per cent increase that would occur with the polyethylene plant expansion. Dow also noted that this would be in addition to the 40-per cent voluntary reduction in NO_x emissions that it has achieved since 1989. In addition, Dow noted that globally it had set as a target for 2005, a 50-per cent reduction in chemical emissions (excluding NO_x and CO₂) at its worldwide facilities. It indicated that the Fort Saskatchewan site also would be adopting this goal. Dow indicated that its philosophy is to prioritize the emission sources and to implement solutions where the largest reductions can be achieved. Dow asserted that it fully intended to comply with the commitments in its application and with all of Alberta Environmental Protection's requirements.

Spills - Dow indicated that polyethylene is a solid product, and in the unlikely event of a spill, the polyethylene pellets would be cleaned up by shovel in the same fashion as a grain spill. The risk and potential size of a feedstock spill was minimal because the ethylene is pipelined to the plant. Dow further noted a number of other containment features designed and built into its plant to minimize potential impacts of spills.

Other - With respect to other, more general concerns raised such as emergency response planning, impact from rail cars, access, and safety, Dow highlighted follow-up steps or discussions it had carried out since the ethylene plant expansion hearing in December 1996.

Mayor Hodgins of the City spoke in favour of the Dow project, noting that the development conformed to the intended land usage for the area, the project would have a minimal overall environmental impact, and was an investment in the future. He stated that Dow had developed a good relationship with both the community and the local governments over the years. The Mayor said that the City would have some concern if there were a delay in the Board's decision as this might detrimentally affect the project.

Messrs. Dzurny, Demeule and Mrs. Schotte raised a number of general concerns that were previously identified at the ethylene plant hearing, including adverse flaring, impacts from industrial noise, light, air emissions, emergency response planning, handling of spills, rail cars, access, and safety. They viewed Dow's ethylene plant expansion application and December hearing as "a thin end of a wedge... which was being driven to open up the area for general industrial development". They maintained that the Board should have considered the effect of the two projects together. They said that they had not attended Dow's open house to learn the facts about and potential impacts of the project.

Mr. Anez raised a number of areas of concern in his cross-examination of the applicant. His main point was that companies such as Dow should be working voluntarily to reduce emissions beyond what is required by current guidelines, in all areas no matter how small; and that an

action plan to accomplish this should be made part of any approval issued. To him a company's commitment to

do so was not enough. He argued that one has to be able to predict emissions from a given process in order to be able to take action to control or reduce emissions. He also maintained that there had to be accurate material and energy balances in order that the emissions calculations could be done and the furnace properly designed to minimize emissions. While he indicated that he believed there were errors in Dow's material and energy balances, he did not state what the errors were. However, he did concede that he did not know the fuel gas composition and had assumed a composition of 70 per cent methane and 30 per cent CO₂ in order to do his calculations. Mr. Anez's final concern related to flaring efficiency and the chemical compounds that might be coming off the flare. He mentioned an Alberta Research Council report which indicated a large number of such compounds being emitted from flares.

3.2 Views of the Board

The Board notes that there appeared to be confusion on the part of Messrs. Dzurny, Demeule and Mrs. Schotte about the impacts associated with the proposed polyethylene plant expansion, which is the subject of this application and hearing, and the impacts arising from other Dow operations at its Fort Saskatchewan site. Many of the concerns raised appear to the Board to be related more to Dow's existing ethylene plant, a proposed expansion of which was the subject of a Board hearing held on 5 December 1996 and Board Decision Report 97-4¹.

The Board is concerned that the interveners did not make an effort to learn the specific facts about the project and the potential impacts prior to requesting a public hearing of the application. The Board requires a project proponent such as Dow to conduct a public consultation program specifically to obtain the local community's concerns and input so that consideration of them can be incorporated in the project at an early stage when it is easiest and least costly to do. The Board expects a project proponent to document in its application what the concerns of the local community are and how it intends to address those concerns. The Board does not agree with Mr. Demeule's comment that open houses are generally a one-way process in which the company never listens but only gives out information. In the Board's experience, they are a valuable and necessary part of the regulatory process. In the Board's view, they offer an opportunity for the public to become informed about projects at an early stage of project planning and to make informed decisions on possible impacts. Such dialogue should allow appropriate changes to the project to be made well before the formal application is filed.

With respect to the interveners' contention that the ethylene and polyethylene applications should have been considered together, the Board certainly encourages and prefers proponents to submit applications for related projects at the same time so that they may be heard at one time. However, the Board notes that this is not always possible for a variety of reasons. Further, whether two consecutive hearings or two separate hearings are held, each application must be considered, and stand or fall, on its own merits. The Board considers the process used by Dow in this instance to be acceptable.

The Board notes that both Dow and Mr. Anez appear to agree on the need for companies to voluntarily work to reduce emissions at facilities, over and above what may be required by

regulators. The disagreement appears to be over how and where to obtain these reductions.

Since these are "voluntary" reductions, the Board believes that it is best left to the individual company to determine how best to invest its money to achieve these additional emission reductions. The Board commends Dow on the steps it has taken and is planning to take to achieve additional emission reductions at its Fort Saskatchewan site.

The Board cannot reconcile the concern by Mr. Anez over Dow's material and energy balances. The Board notes that the fuel gas composition assumed by Mr. Anez for completing his calculations is substantially different from the actual composition which may well be the reason for the differences between his calculations and those of Dow. The Board is satisfied with the evidence presented by Dow on the material and energy balances of its process.

The Board believes and expects the proposed expansion will meet all relevant provincial standards. The Board has considered all the evidence presented and is satisfied that the impacts associated with the addition of the third polyethylene train are minimal and acceptable. With respect to the other, more general concerns raised by the interveners such as emergency response planning, impact of rail cars, access, and safety, the Board notes that no new information was raised that had not been discussed previously at the ethylene plant expansion hearing. The Board is satisfied that the existing and expanded Dow polyethylene operations will not represent a safety concern to the public.

4 LAND-USE CONFLICT

4.1 Views of the Participants

Dow noted that land-use conflicts expressed at this hearing were essentially the same as those expressed at its earlier ethylene plant expansion hearing. Dow stated that the land-use concerns raised by the residents were an issue that must involve the City, the County, various provincial government departments, and all industry in the area including Dow. To address the concerns and in keeping with the Board's Decision 97-4¹, Dow had started working toward a goal of bringing the local industry together so that resources, ideas, and concepts could be pooled with those by local and provincial governments and then considered by residents affected. Dow pointed out that the local and provincial governments had to be involved in the process because there were more residents involved than those represented by Messrs. Dzurny, Demeule and Mrs. Schotte. It noted the spirit of cooperation that it had seen to date from the industry and local governments to work together to address the issue. In response to questioning, Dow disagreed with the suggestion that the local residents should be involved in discussions from the outset. In its view because of the number of other parties involved, each representing different interests, time is required to explore ideas to arrive at proposals that fairly meet the needs of all of the parties before these proposals can be taken to the residents for further discussion.

Messrs. Dzurny, Demeule and Mrs. Schotte stated that "their biggest concern [was] the inevitable land-use conflict which will arise as industry further encroaches on their residences." They viewed their situation, a small pocket of residential/agricultural homes which have become almost completely surrounded by industry, as being unique. They expressed concerns that further industrial expansion, illustrated by Dow's application, would increase cumulative impacts

and

cause even more deterioration in their quality of lifestyle than had already occurred to date. They submitted that sufficient buffer zones should be set up around Dow and other industrial facilities in order to minimize impacts on residents; and suggested that consideration be given to the purchase of their lands. They questioned Dow's commitments to resolving land-use conflicts and indicated that they wanted to be involved from the outset in any discussions among other stakeholders.

4.2 Views of the Board

Given the location and nature of this expansion, the Board does not believe the proposed expansion represents a significant increase to the existing land-use conflict in the area. In its Decision Report 97-4¹, the Board acknowledged the problem of land-use conflicts and the quality of life concerns raised by these residents. Following up on its commitment in that decision, the Board advised the provincial government about the problem and added its support to the establishment of a collaborative process which would address the growing land-use conflicts in the area. The Board remains convinced that the ultimate and most timely solution to the residents' concerns must involve a collaborative process with all affected parties (the City, the County, the provincial government, and the industry in the Fort Saskatchewan area). The Board notes that a process has begun with preliminary discussions having been held at the industry/local government level; and given the interest, is hopeful that a solution will be reached in a timely fashion. The Board intends to follow up on the land-use and related concerns raised with respect to this application by bringing them to the attention of the government.

5 DECISION

The Board is prepared to approve Application No. 970085 and issue an amendment to Permit No. IDP 92-1 subject to receiving the approval of the Lieutenant Governor in Council.

DATED at Calgary, Alberta, on 12 June 1997.

ALBERTA ENERGY AND UTILITIES BOARD

J. D. Dilay, P.Eng.
Presiding Member

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

B. T. McManus, Q.C.

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Board Member