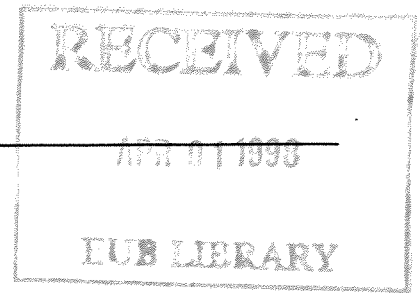


**ALBERTA ENERGY AND UTILITIES BOARD**

Calgary Alberta



**UNION CARBIDE CANADA INC.  
PROPOSED NEW POLYETHYLENE PLANT  
PRENTISS AREA**

**Decision 98-7  
Application No. 970188**

**1 THE APPLICATION, INTERVENTIONS, AND HEARING**

Union Carbide Canada Inc. (Union Carbide) applied, pursuant to section 30 of the Oil and Gas Conservation Act, for an industrial development permit respecting a new polyethylene plant to be located at its existing Prentiss site in the west half of Section 30, Township 39, Range 25, West of the 4th Meridian (hereinafter referred to as the Application). Union Carbide requested authorization for the proposed plant to use a maximum of 740 kilotonnes per year (kt/yr) of ethylene as feedstock and 83.85 million cubic metres per year of natural gas as fuel in the production of a maximum of 771 kt/yr of polyethylene. The plant would have a rail loading facility associated with it.

Union Carbide also requested a 20-year permit term to commence with plant start-up and end on 31 December 2020.

The Application was originally scheduled to be considered at a public hearing on 23 September 1997. As a result of a request from local residents and with the agreement of Union Carbide, the hearing was postponed until 3 November 1997.

The Application and interventions were considered at a public hearing in Red Deer, Alberta on 3 and 4 November 1997 before Board Member, F. J. Mink, P.Eng., and Acting Board Members, J. A. Boon, Ph.D. and F. Rahnama, Ph.D.

**THOSE WHO APPEARED AT THE HEARING**

**Principals and Representatives  
(Abbreviations Used in Report)**

**Witnesses**

Union Carbide Canada Inc. (Union Carbide)  
P. A. Smith, Q.C.

R. C. Slaughter, P.E.  
C. Sam, P.Eng.  
R. E. Saniszlo  
B. Leach, P.Eng. (Golder Associates)  
D. M. Leahey, Ph.D. (of Jacques Whitford  
Environment Limited)

Canadian National Railway (CN)  
S. A. Cantin, Q.C.

J. Foote

**THOSE WHO APPEARED AT THE HEARING (cont'd)**

---

Principals and Representatives  
(Abbreviations Used in Report)

---

Witnesses

Mrs. Marilyn Sharp  
D. J. Hannaford

M. Sharp

Messrs. Chessor, Pocock, Friesen, Gordon,  
and Hainsworth (Local Farmers)

D. Chessor  
B. Pocock  
G. Friesen  
M. Gordon  
J. Hainsworth

V. Anez

Alberta Department of Environmental Protection  
(AEP)  
D. A. Day

C. S. Liu, P.Eng.  
B. Aidun, P.Eng.  
C. Currie

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

---

Mr. V. Anez intervened for purposes of cross-examination and argument only. The Town of Blackfalds filed a letter in support of the Application but did not appear at the hearing.

**2 PRELIMINARY MATTERS**

At the commencement of the hearing, Union Carbide requested the Board to rule on whether it would accept evidence related to a possible second rail line to the site to be operated by Canadian Pacific Railway Company (CP Rail). Union Carbide was of the view that such a line would be within the jurisdiction of the federal regulatory process pursuant to the *Canada Transportation Act*, S.C. 1996, c. 10, which governs the construction, maintenance, and operation of rail facilities owned by CP Rail, and not within the jurisdiction of the Board to consider with respect to the Application.

**2.1 Views of Union Carbide**

Union Carbide noted that, in the event a new rail line were required, CP Rail would have to make a separate application to the Canadian Transportation Agency (CTA) and obtain an approval to

construct and operate the line. Furthermore, it indicated such a line was not part of the Application and was not integral to it.

Union Carbide maintained that its proposed polyethylene plant and a new rail link were distinct projects with distinct owners subject to distinct legislation. Union Carbide argued that any connection to a second rail line could only flow from a CTA approval. Union Carbide was prepared to take the risk that a CP Rail line might not be approved by the CTA.

## **2.2 Views of Mrs. Sharp**

Mrs. Sharp stated that the Application was incomplete and deficient and therefore, should be dismissed by the Board at the outset. She maintained that Union Carbide had stated publicly that the second rail line was integral to its project. She also maintained that Union Carbide had failed to address the information requirements stated in the terms of reference for its Environmental Impact Assessment (EIA) which related to the provision of rail service to its proposed plant and which formed an integral part of the Application. Mrs. Sharp was of the view that the determination on what was relevant to the Application depended in large part upon the interdependence and linkage between the proposed plant and the proposed new rail line. Mrs. Sharp acknowledged that the CTA was obviously the approving authority for the proposed CP Rail line. However, she was of the view that the Board could properly consider the environmental effects arising from the line if it were shown that the line was integral to the Application itself. Mrs. Sharp stated further that, if the Board were to determine that the proposed line was not integral to the Application, the Board ought to clarify that this hearing was not dealing with the issues, including the environmental effects, relating to the proposed CP Rail line in any way. If the hearing were to deal with the proposed CP Rail line, on the other hand, Mrs. Sharp indicated she was requesting a delay of the hearing so that further environmental studies respecting the rail line could be done.

## **2.3 Views of CN**

Canadian National Railway Company (CN) stated that there were three means by which Union Carbide could secure a second rail line to its plant site. One would be to rely upon a federal railway company to seek approval from the CTA; the others would be through a provincially incorporated railway company or for Union Carbide to build a private line. CN stated that there was nothing in the Application to confirm what form the proposed second rail line would take. CN was concerned that, if the proposed second line did not materialize by way of an application by CP Rail to the CTA, and Union Carbide were to proceed with the matter as a private or provincial endeavour, CN's interests might be overlooked.

## **2.4 Views of the Local Farmers**

The Local Farmers agreed with Union Carbide that an application for a second rail line was a matter for the CTA. Mr. Chessor was concerned, however, that Union Carbide had stated

publicly that, if a new rail line were not built, Union Carbide could scrap its proposed polyethylene plant. Furthermore, he noted that Alberta Environmental Protection (AEP), through the EIA terms of reference, appeared to recognize that the movement of Union Carbide's product by rail and the construction of the new plant were integrated items. If the second rail line were indeed integral to the Application, Mr. Chessor suggested that it would be in everyone's best interest to delay this hearing until the approval for the second rail line had been granted by the CTA.

## **2.5 Views of the Board**

The Board accepted Union Carbide's position that a second rail line was not integral to development of the proposed polyethylene plant. The Board noted Union Carbide's expectation that the proposed CP Rail line would, if necessary, be the subject of a separate application to the CTA and under federal jurisdiction. As such, the Board accepted that the impacts of a second rail line would be considered by the CTA and that it had no role in licensing such a facility. Accordingly, the Board stated that it would not accept or consider any evidence or questions from any parties which directly related to any proposed rail line. The Board would limit its review to facilities outlined in the Application and contained within the proposed site. The Board was satisfied it could proceed with its consideration of the Application on the basis of the information provided.

## **3 ISSUES**

The Board notes that no concerns were expressed by any participants with respect to the need for the polyethylene 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. Given the evidence, the Board is satisfied that there is a market for the additional polyethylene that would be produced, that adequate energy resources exist to supply the project's needs over the requested term, and that Union Carbide's plant represents an efficient use and an upgrading of Alberta's energy resources.

The evidence shows that this project would confer substantial economic benefits to the Alberta economy. Some 63 per cent of the \$317 million capital cost of the plant would be expended in Alberta. The project would create a total of 992 person-years of direct employment during engineering and construction phases with some 80 per cent of the plant design to take place in Alberta. Another 2415 person-years of employment would be created through the indirect and induced impacts. Union Carbide estimated that the project would add some \$4.3 billion towards Alberta's Gross Domestic Product over 20 years of operation.

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

- the environmental and other impacts of the project, and
- the scope and level of public consultation.

## **4 PROJECT IMPACTS**

### **4.1 Soil Conservation and Reclamation**

#### **4.1.1 Views of the Applicant**

Union Carbide had outlined, in a general way, its proposed soil stripping, topsoil storage, and erosion control procedures in its EIA. In response to other concerns raised by local interveners, it committed to work with AEP and all interested parties toward reaching a consensus solution.

Union Carbide noted that it had been involved in a number of successful reclamation projects since construction had begun at its Prentiss site in 1980. While it acknowledged that its 1994 reclamation effort was not successful because of the absence of a reclamation plan coupled with poor quality control, Union Carbide viewed the conservation and reclamation plan in its EIA as the first step in a long-term planning process designed to restore reclaimed land to "equivalent land capability". The Environmental Protection and Enhancement Act<sup>1</sup> and accompanying regulations define this phrase to mean restoring the ability of the land to support various land uses after reclamation that are similar to the prior activities on that land. In Alberta, this also means restoring the land to the growing conditions of which it was capable prior to disturbance. Union Carbide committed to adhering to this principle in meeting its obligations.

#### **4.1.2 Views of the Intervenors**

The local intervenors maintained that preservation of superior quality agricultural land should be a high priority in locating industrial facilities. Accordingly, Mrs. Sharp and the Local Farmers viewed soil conservation as a very important issue and emphasized that soil handling at the outset of construction was extremely important to ensure that this resource could ultimately be reclaimed to its full potential. The Local Farmers were concerned as to where the responsibility lay to ensure that proper soil management practices were carried out and adhered to, especially during the stripping and construction phases. They requested the Board to identify the appropriate government agency having this responsibility because Union Carbide had not done a very good job of reclaiming the soil on its original site in 1994.

The Local Farmers acknowledged that, more recently, members of the community had been working more closely with Union Carbide in the area of soil conservation and management. They were now of the view that the Union Carbide project manager and engineer had a good understanding of how the various soil horizons should be handled and stored so that the land could be reclaimed at the time the plant is decommissioned. Respecting the installation of the construction camp, the Local Farmers suggested an alternative to the stripping of the topsoil and then installing gravel. They suggested the use of stay anchors manufactured by an Alberta

---

<sup>1</sup> Environmental Protection and Enhancement Act, S.A. 1992, c. E-13.3

company for installing the camp buildings. These anchors, they noted, could be installed and then removed when the camp was disassembled, thus alleviating the removal of large quantities of topsoil. The Local Farmers conceded that Union Carbide's willingness to work with all interested parties to reach a consensus had helped to alleviate some of their concerns in this regard.

Mrs. Sharp was dismayed that Union Carbide had not developed a proposed reclamation plan to address soil conservation and reclamation matters as well as quality control issues. She noted the poor effort of Union Carbide in reclaiming part of its site in 1994. Mrs. Sharp indicated that she was somewhat reassured by Union Carbide's commitment to meet with interested parties and work toward reaching a consensus on outstanding issues.

AEP stated that it is responsible for dealing with soil conservation and reclamation matters. It emphasized its expectation that a project proponent would minimize land disturbance and conserve topsoil to the maximum extent feasible. AEP noted that one section of Union Carbide's EIA focussed on land conservation and reclamation matters and that its understanding was that Union Carbide would be conserving topsoil. AEP explained that soil conservation and reclamation matters are a part of its approvals process and may result in conditions being included in any approvals it issues. Any new or revised procedures respecting soil conservation that might be arrived at through collaborative discussions among the interested parties would be accepted and reviewed by AEP as part of its approvals process. Finally, AEP invited comments from interested parties regarding soil conservation and reclamation matters.

#### **4.1.3 Views of the Board**

The Board agrees that soil conservation and reclamation are important matters, the procedures for which need to be determined and agreed to by interested parties. The Board notes that these matters fall under AEP's jurisdiction, and that AEP confirmed that these matters would be included in its project approval. The Board also notes Union Carbide's commitment to work with AEP and other interested parties to reach a consensus on conservation and reclamation issues as well as AEP's willingness to receive comments on these matters from interested parties. Given the evidence and undertakings, the Board is satisfied that the concerns raised by Mrs. Sharp and the Local Farmers respecting soil conservation and reclamation will be addressed. Respecting whether or not to use stay anchors for the construction camp as suggested by the Local Farmers, the Board notes that the Local Farmers provided Union Carbide with related reference material on the subject and that it is a decision for Union Carbide to make. The Board also notes Union Carbide's commitment to reclaim the site to meet provincial standards. The Board is satisfied with these commitments and notes that AEP will have to issue a Reclamation Certificate at that time before the company's obligations are fully discharged.

## **4.2 Land-Use Issues**

### **4.2.1 Views of the Applicant**

Union Carbide noted the concerns of local residents that development of the new plant would require the use of additional prime agricultural land. It indicated that Lacombe County (the

County) has the jurisdiction to consider land-use issues related to rezoning of land for industrial purposes. Considering that the County had held a public hearing prior to rezoning the land required by Union Carbide, which included the rail yard, it maintained that land-use issues had already been considered and dealt with. Union Carbide submitted that the on-site rail yard and related facilities were necessary for the success of its project to deliver its polyethylene products in an efficient, effective, and economic manner to its customers. Union Carbide explained that it had examined a number of alternatives to the on-site rail yard, including off-site storage in Alberta and in other parts of North America, and concluded that no other cost-effective option would sufficiently meet the requirements of its project.

Union Carbide acknowledged that the design size of its rail yard exceeded the need for product storage at the initial production rate. It submitted that storage for some 800 to 900 rail cars would be required to handle the initial production capacity of its new plant. However, Union Carbide noted that this was immediately expandable to the 1200 cars which would be required to handle the maximum production applied for and likely to occur within 3 years. It noted that the total physical capacity of the rail yard would be 1500 rail cars. Respecting the rail yard size, Union Carbide submitted that it had applied for approval for what it would eventually require over the project's life in order to be fair to the community rather than apply for requirements that over time would be recognized as being insufficient. It noted that the size of the rail yard was relatively small compared to the overall site area, and that it would operate the rail yard in a manner that would minimize impacts.

Union Carbide explained that it had tried as much as possible to consult with the community and had worked with the local planning authorities to minimize the impact of its project on agricultural land. It maintained that it had responded to local land-use concerns, and noted as an example the significant reduction in the amount of land required for its new plant and associated rail yard from the initial requirement of some 256 hectares. This reduction was the result of a new, more compact, site "footprint" or layout. The new footprint limited the fragmentation of agricultural land, reduced the amount of soil that would be disturbed, and reduced the soil reclamation requirements. Union Carbide affirmed that land which it owned but did not use at this time for industrial purposes, in particular in the buffer zone, would continue to be available for agriculture; and thus, should not reduce the current amount of agricultural land available. Further, Union Carbide stated that it did not believe that the project would reduce the supply of agricultural land because the "...plant expansion will be occurring on land already owned by Union Carbide...". With respect to the request of the Local Farmers for Union Carbide to consider the use of restrictive covenants on this land, Union Carbide noted its longstanding willingness to work with local authorities to manage the land-use designations so that the control of this land would rest in the hands of the community and not individual landowners.

Union Carbide also indicated that it was prepared to work with its Community Advisory Panel (CAP) to ensure that the information that the community is looking for would be passed on to the community. Union Carbide also indicated it would be looking to CAP for direction and help to implement new processes. In its view, CAP was an important means to communicate with and

receive information from the community. Union Carbide acknowledged that there was still much work to be done to reach a satisfactory level of communication between the company and the community.

In response to questioning by the Local Farmers, Union Carbide indicated its understanding that NOVA Chemicals Ltd. (NOVA Chemicals) was undertaking an initiative to the Canadian Chemical Producers Association (CCPA), of which both NOVA Chemicals and Union Carbide were members, regarding the inclusion of land use as a consideration in the CCPA's Responsible Care Code. Union Carbide stated that it would be prepared to support whatever initiative resulted from NOVA Chemicals' work.

#### **4.2.2 Views of the Interveners**

CN and other local residents expressed concern that the land for trackage on the Union Carbide site was a misuse of the agricultural land. CN questioned whether everything had been done to investigate alternate sites to store the product off site. CN recognized that, based on the zoning, Union Carbide was entitled to use all the land already acquired for industrial purposes. However, CN suggested that the Board invite Union Carbide to produce a report with respect to the yard operation after a meaningful review of available options and in consultation with affected parties, in particular with CN. CN's position was that it had the knowledge, the expertise, and perhaps more importantly, the storage capacity to handle the Union Carbide product. It disputed the remarks by Union Carbide that negotiating a rail yard and trackage alternative with CN had been fully addressed. CN noted that the evidence presented to the Board did not include any report, or any alternatives for the Board to assess and no witnesses at the hearing to comment further on any alternative discussed with CN.

Mrs. Sharp expressed concern about the amount of agricultural land being used for the rail yard. She had requested Union Carbide to pursue other options to minimize the size of the rail yard such as using under-utilized storage yards in other parts of the country or using already existing sidings in the County. She expressed some frustration that Union Carbide's new design to move the rail loading facilities was only released a week prior to the hearing and provided the interveners with little time to evaluate the benefits of the new proposal. Mrs. Sharp was of the view that there were many significant changes that might still be required to be made to at the proposed plant layout, and questioned Union Carbide's willingness to address them.

Mrs. Sharp stated that she has had extensive involvement in CAP in the past, with the majority of that dialogue dedicated to the plant expansion. During that time, Mrs. Sharp attempted to share community concerns and issues, such as the rail-yard sizing, with plant personnel, and have them addressed. Mrs. Sharp had praised Union Carbide when it reduced the rail yard and loading facility land requirements, but now questioned whether this commitment had changed. Mrs. Sharp understood from a verbal discussion with Union Carbide that the rail yard would be limited to 900 cars, which was down from the 1,500 stated in the Application. Given the evidence from



the hearing, it seemed to have been a misunderstanding or a change of position. Mrs. Sharp submitted that the Board has the authority and should defer its consideration of the Application until such time as Union Carbide could provide specific details and certain commitments as to the basic design and layout of the plant as well as at least some evidence of an exhaustive consideration of the rail-yard storage option.

Mr. Chessor supported Mrs. Sharp's position that the plans for this project seemed to be a moving target. Mr. Chessor also expressed concerns over where the rail yard was going to be located. He argued that information should be made available to deal with all the issues at the time of the hearing and that it would be very hard for the Board to make a decision until all the details had been outlined. Mr. Friesen also criticized the applicant on the use of additional agricultural land for this industrial expansion. He noted that there was good land along every railroad that was not being used for food production that could be used for rail-car storage. Mr. Friesen questioned why Union Carbide needed to own agricultural land for a buffer zone to protect itself when it could rely on the County for that protection through the zoning process. He requested Union Carbide to at least place restrictive covenants on the land in its buffer zone or even better, to return that buffer zone to the farm community for farming. With respect to Union Carbide's dealings with CAP, the Local Farmers expressed ongoing concern that the results of these dealings did not reach the community as a whole. They suggested that some way be found to distribute the CAP minutes within the community.

As a general point, Mrs. Sharp and the Local Farmers were strongly of the view that the amount of good quality agricultural land taken out of production and converted to industrial purposes should be minimized because agricultural land is a non-renewable resource. They stated that "if agriculture in Alberta is to experience the Alberta advantage and continue to be important to the Alberta economy, [then people] must change [their] attitude towards land use". "Agricultural land [should not be] viewed as a commodity to be bought and sold [but rather] as a renewable resource to be used effectively according to its capability." While they acknowledged the positive economic aspects of the project, they emphasized that there were many negative impacts associated with non-agricultural activities invading an agricultural community, which are overlooked or ignored. The Local Farmers were of the view that the significant increase in land costs experienced since the mid-1970's, had prevented farmers from generating enough revenue to offset the cost of land purchased. They pointed out that the problem was actually bigger than just a single project given the attendant effect on urban expansion, country residential development, and transportation corridors; all of which gradually erode some of Alberta's best agricultural land. The Local Farmers noted that impacts of urbanization and industrialization of agricultural land are complex and go beyond the actual loss of the land. Conflicts could arise between farmers and non-farm rural residences over access to land, use of roads, taxes, and social services. In addition to requiring more land to be viable, they stressed that agriculture also needs people and the appropriate infrastructure. They noted that as industrialization of an area increases, the more difficult it becomes for farmers to access agricultural services due to the competition for the labour force.

The Local Farmers submitted that they were, in general, concerned about the lack of intervention by government to protect the rural community.

#### **4.2.3 Views of the Board**

The Board accepts that the rail yard is a necessary part of the overall project and that Union Carbide should be capable to operate it in a proper manner. The Board is also satisfied that off-site options for storage have been investigated without commercial success. It notes the applicant's effort to optimize the rail-yard layout in order to minimize the amount of agricultural land removed from farming and to avoid fragmentation of the remaining land to make it easier to farm. The Board also notes that Union Carbide has located the rail-car storage facility on already disturbed land. The Board believes that Union Carbide understands the general community concern and it accepts the ultimate decision for land use rests with the County. The Board recognizes the merits of locating the new plant in the proximity of an existing plant that will reduce the ultimate effect. Commitments by Union Carbide to work closely with CAP should address any ongoing issues the community may have.

While the Board recognizes the concerns raised by the Local Farmers respecting the negative impacts of industrialization on the cost of agricultural land and on farming, this area is not within the Board's jurisdiction. In the Board's view, these are matters that should be raised with the County.

### **4.3 Ethylene Emissions**

#### **4.3.1 Views of the Applicant**

Union Carbide submitted that it had considered all releases of potentially toxic emissions associated with its plant and, with the exception of ethylene, found no concerns. They were all under, and in many cases substantially under, the established guidelines and criteria set by government.

Union Carbide was aware of the ongoing concern in the community about effects of ethylene emissions on crops. Union Carbide indicated that it is participating in a joint industry/government research project to study the effect of ethylene emissions on crops. The review, to be conducted by AEP, would establish an ethylene emission guideline for Alberta. Union Carbide committed to meet the measures proposed by the guideline and to take whatever remedial actions that might be necessary to protect the environment.

Union Carbide accepted that instantaneous dosage was an important factor in determining the impact of emissions on crops. It noted that AEP's preliminary guideline for ethylene emissions was set at 120 micrograms per cubic metre averaged over a 6-hour period, and would include higher doses of exposure for a shorter time period. It was Union Carbide's understanding that AEP had reviewed the existing information on the subject and concluded that its preliminary guideline was adequate to prevent undue effects pending the results of the research project. Union Carbide emphasized strongly that the ethylene emission condition that was modelled would

represent an extremely rare event which might occur perhaps twice in the operating life of the plant. Union Carbide also emphasized that in the entire time that its existing ethylene glycol facilities have been operating, there has not been any reported claim of crop damage due to ethylene emissions that was attributable to the operation of its facility.

#### **4.3.2 Views of the Interveners**

Mr. Pocock voiced his frustration and disappointment that Union Carbide did not have an expert witness to answer his questions on ethylene-related impacts. It was his view that the onus should be on a company moving into a prime farming area, to prove that it was not causing damage to crops or adverse effects to the health of livestock or people.

Mr. Pocock expressed repeated concern about the potential for adverse effects on crops from ethylene emissions at the Union Carbide site. He questioned the value of the model results supplied by Union Carbide. He emphasized that it was the dose of ethylene received by the crop that was the critical factor not the average concentration shown by the model because average values say nothing of maximum levels or for how long these maximum levels persist. He noted that the time of exposure during the growing cycle would also have an effect. In his view, the use of long-term averages was not an appropriate criterion to monitor emissions. He maintained that using a 6-hour average, as AEP has used in its interim guidelines, could "hide" shorter exposures of much higher levels of ethylene emissions which could have a considerably greater impact than a steady-state exposure at the average level.

AEP indicated that the Interim Draft Ethylene Guidelines (IDEG) were open for public comment at the present time and invited anyone who wanted to express concerns or comments to submit them to the Standards and Guidelines Branch of AEP by 1 June 1998. Also AEP noted that copies of the IDEG or the executive summary were available to anyone interested upon request.

#### **4.3.3 Views of the Board**

The Board notes that no evidence exists that past emissions of ethylene have impacted crops. Having considered all the evidence, the Board believes the emissions impacts associated with the proposed plant are likely to be minimal. Further, the Board believes the analysis of emissions carried out by the applicant represents a realistic picture of cumulative effects in the area. With respect to the IDEG, the Board notes that they are an interim measure which will be in force only until completion of the joint industry/government research project into the effect of ethylene emissions on crops. The Board agrees with Mr. Pocock that the dose is the important factor and that a short term higher dose could be masked by the averaging process. However, the Board also notes that the condition modelled was a worst-case scenario that would rarely, if ever, occur. Therefore, until the research project is completed and shows otherwise, the Board believes that any impact of ethylene emissions on crops would be minimal.

## 4.4 Noise

### 4.4.1 Views of the Applicant

Union Carbide acknowledged the concerns about noise in the area. It submitted that it has been implementing a sound suppression program at its existing ethylene glycol facility over the past several years at a cost of more than \$840,000 to date.

In preparation for the proposed plant, Union Carbide commissioned a baseline noise impact assessment (NIA) at selected residential locations in the immediate vicinity of the site to evaluate the contribution from the existing Prentiss facility as well as from the project, including the contribution of construction noise, the contribution of added road traffic noise due to the construction, and the contribution due to the operation of the rail yard. It concluded that the noise contribution of the expanded Prentiss site, with the sound suppression program fully implemented and the additional noise mitigation requirements for the existing plant and the project identified in the NIA study also implemented, would meet the EUB's Noise Control Directive<sup>2</sup> at the nearest most-impacted residence. Union Carbide was confident that its sound suppression program would achieve the necessary results and it confirmed its intention to meet the EUB's Noise Control Directive.

While there are no applicable regulations or guidelines related to construction noise, Union Carbide indicated that its NIA study estimated that the overall construction-related noise should remain within the EUB Noise Control Directive. It noted that construction activities would be limited to "slightly extended daytime hours" (6:00 a.m. to 10:00 p.m.) and that some noisy activities such as the steel erection stage or the commissioning phase, would be of relatively short duration. Union Carbide also noted a number of mitigative measures it would adopt in order to reduce the impact of construction and commissioning noise at residential locations.

The NIA study concluded that the overall predicted road traffic noise, as a result of additional traffic, would be minimal except during the Monday through Thursday commuter peak during the construction phase of the project. During these periods, the peak 1-hour noise levels could be well above existing levels at some residential locations.

In response to the concern raised at the hearing about existing noise from trucks using their retarder brakes to slow down, Union Carbide indicated that, while it was the County's responsibility, it would work with the County to have appropriate road signs installed to address the problem.

The NIA study concluded that daytime operational noise levels in the rail yard would have a noticeable, but not excessive, effect on the environment. Nighttime noise levels would be minimal. To mitigate the nighttime rail noise disturbances, Union Carbide expected to limit the

---

<sup>2</sup> Interim Directive ID 94-4 Noise Control Directive. Alberta Energy and Utilities Board, 12 August 1994.

train movements, whenever possible, to daytime hours. It also offered to use electric track pullers or a track mobile, rather than the noisier diesel locomotives, to move rail cars during the nighttime to further mitigate industrial noise from its site.

In response to concerns expressed by residents about a number of loud and unidentified plant noises at its existing operations, Union Carbide explained that the incidents were all venting related. One event was caused by a ruptured disc for which there was no pre-warning. The other events were related to planned shutdowns which, it noted, it should be able to forecast when it has to do the venting. Therefore, Union Carbide indicated that it had already undertaken to develop a system to forewarn its neighbours about these events. During the normal course of events for planned shutdowns, Union Carbide said it usually planned these events to occur during the day.

Union Carbide stated that it would consider impacts arising from noise as one more aspect of the continuous improvement process that it had implemented at its current site. It intended to review the plant operation, including noise-related impacts, to see where additional improvements could be made that would reduce impacts.

#### **4.4.2 Views of the Interveners**

A number of local residents were concerned about the existing and anticipated noise impact from the Union Carbide site. Mr. Chessor remarked that at times Union Carbide moved rail cars at the plant site with the brakes on, which created some very loud noises. Mr. Chessor also noted that a large number of trucks, travelling between Highway 12 and the plant site on a daily basis, apply their retarder brakes to slow down, thus creating a noise problem. Mrs. Sharp also raised concerns regarding noise at the Prentiss site associated with the number and timing of rail movements, and the use of track mobiles and brakes being applied at night.

The Local Farmers submitted that during the past 5 months there had been a number of occasions when extremely loud and unidentified noises had been emitted from the existing ethylene glycol plants.

#### **4.4.3 Views of the Board**

The Board notes Union Carbide's commitment to meet the EUB Noise Control Directive<sup>2</sup> which should maintain acceptable noise levels. To meet this commitment would require the completion of Union Carbide's existing sound suppression program, currently being implemented, as well as the completion of the additional sound mitigation work identified in the NIA study. The Board also notes that the Noise Control Directive accepts some elevated levels of noise during the construction phase of a project. During plant operations, rail car movements can have a particularly aggravating impact in rural settings. With respect to the rail yard, the Board expects Union Carbide to take all reasonable steps to minimize noise. In this regard, the Board notes

Union Carbide's pledge to confine movements to daytime hours whenever possible and to use electric track pullers or a track mobile when rail cars must be moved at night. The Board would recommend that the use of the track pullers at night also be limited in order to minimize the brake squeal noise that was raised as a concern by the Local Farmers.

With respect to the concerns raised at the existing facility, the Board notes that some of these incidents are unpredictable and therefore, beyond the control of Union Carbide to provide advance notice. However, when such events are predictable because they are part of a planned shutdown, the Board notes that Union Carbide, on its own initiative, has undertaken to give advance notice to local residents and to confine such events whenever possible to daytime hours. The Board believes that these steps should help address the problem. The Board also notes that Union Carbide's ongoing sound suppression program should help reduce the existing facility's overall noise levels and perhaps also help to reduce the number of incidents of noise complaints.

## **4.5 Groundwater**

### **4.5.1 Views of the Applicant**

Union Carbide submitted that it would not be drilling any additional water wells to supply its proposed plant and therefore, the project would have no impact on groundwater or on local springs. Union Carbide noted that there are two springs on the property surrounding its plant. It indicated that there was no requirement to monitor these springs, but that it has had discussions and was continuing to work with the farmers who lease its lands, to make available to them adequate facilities to water cattle. It noted that potable water requirements would be drawn from the raw water pond and treated. Union Carbide noted, however, that its present groundwater monitoring program would be expanded to include the polyethylene plant. Union Carbide also indicated that it did not consider more remote springs from the plant site to be an issue because no water wells would be drilled. If a spring were found during soil stripping operations, Union Carbide indicated that it would work with AEP's local office to ensure that such springs were protected in accordance with AEP's requirements.

### **4.5.2 Views of the Interveners**

The Local Farmers expressed some concerns about potential effects on both groundwater and springs. Their concerns about groundwater appeared alleviated when they learned that no water wells would be drilled. However, they did not believe that this addressed springs. They advocated that there should be some monitoring required on springs.

AEP indicated that the contact respecting concerns about springs would be its local regional administrator for water resources who is located in Red Deer.

### **4.5.3 Views of the Board**

Given the attention it is given by the applicant and local AEP officials, the Board is satisfied that both groundwater and springs will be adequately protected.

## **4.6 Fog and Icing Problems**

### **4.6.1 Views of the Applicant**

Union Carbide submitted that the proposed plant would require the addition of one cooling tower at the site. It made no comment respecting fog or any related ice build-up in nearby buildings.

### **4.6.2 Views of the Local Farmers**

Two of the Local Farmers, who live relatively close to the Union Carbide plant, indicated they were experiencing problems with ice or frost build-up in buildings. They associated the effect with the higher humidity levels caused by the amount of water vapour emissions or fog from the cooling towers of the existing facility. They expected that this problem would continue and be made worse by the proposed plant. One individual indicated that the nature of fog in the area had changed and become "more unnatural" since Union Carbide's plant had come on the scene. Several individuals indicated the existence of a very fine snow, having the texture of a very fine salt, that would fall through the day to a depth of about "one-half to three-quarters of an inch" and that could be seen on occasion, coming off the cooling towers. Another expressed concern that the increase in the humidity due to the additional cooling tower could possibly increase the incidence of respiratory diseases.

### **4.6.3 Views of the Board**

Given the nature of the discussion or evidence from the hearing, it is difficult to ascertain whether the problem is indeed caused by Union Carbide's operations or whether it might be a natural phenomenon. In the event the problems persist, the Board recommends the issue be raised with the company. In turn, the Board would expect Union Carbide to investigate such complaints/concerns and to take whatever remedial steps are reasonable in the circumstances. In the Board's view, adding one more cooling tower should not add measurably to the occurrence of fog in the area.

## **4.7 Health , Safety, Emergency Response**

### **4.7.1 Views of the Applicant**

Environmental and health risks are associated with a variety of factors. Union Carbide noted that it embraces the health, safety, and environmental standards set by Responsible Care, a code of

conduct developed by the CCPA. Further, it stressed that proper implementation of the Responsible Care Code of Practice at its Prentiss site had been verified by audit in the spring of 1997. Union Carbide also highlighted its facility's excellent safety record of 12 years without a lost workday due to injury. In response to questions about what various bells and sirens at its site meant or sharing information regarding worst-case accident scenarios at its site, Union Carbide indicated a willingness to work with CAP to determine the best way and frequency of communicating that information. It noted that the worst-case accident scenario had not changed since it was last communicated to the public in the mid-1980's but that it would have to be reworked with the addition of the project.

Union Carbide submitted that it would use at this site, its award-winning UNIPOL polyethylene process which it described as the most advanced and most widely used polyethylene technology in the world. The raw materials used would be relatively innocuous, process operating conditions would be mild, and the system would be failsafe under loss of utilities or automatic controls. Further, no reaction solvents would be required, thus minimizing the hazards associated with flammable liquids. The fire and explosion hazard would also be low. Chemicals defined as toxic or hazardous would be either avoided or their quantity and use kept to the absolute minimum. As such, Union Carbide concluded that the operation of its expanded facility would not cause any adverse health or safety impacts on workers, nearby residents, users of the Red Deer River, livestock, or wildlife. In response to questioning regarding ethylene oxide emissions, Union Carbide indicated that it has set a corporate standard not to expose people at its fence line to what it called the threshold limit value (TLV) divided by a thousand. It indicated that the TLV is equivalent to the Alberta Occupational Health and Safety standard occupational exposure limit. At the present time, it was evaluating whether it was meeting this corporate internal standard at Prentiss.

Union Carbide noted that it had modified its existing facilities in a number of ways to reduce the impacts of its new plant including:

- the installation of a state-of-the-art flarestack to reduce hydrocarbon emissions,
- the use of a low phosphate formulation for treating cooling water, thus reducing the amount of phosphates returned to the Red Deer River,
- the installation of mufflers to reduce sound emissions and disturbances to its neighbours, and
- the installation of a biological oxidation unit to reduce the organic content in the plant's effluent.

Union Carbide submitted that it had "an emergency preparedness group" at its facility which trained regularly for on-site and off-site effects. For emergencies that might impact outside the



facility fence line, it used an emergency call-out system which had a guaranteed 5-minute turnaround time. Union Carbide noted that it had improved its emergency response system through implementation of revised emergency procedures and a new on-site emergency operations centre. It also noted that its "emergency preparedness program" has been in place since the original plant start-up. However, it was unable to indicate to what extent the public had been involved originally in developing the program, the method by which the public would be notified, or how the public would become knowledgeable about what the program was all about. Union Carbide indicated that the use of open houses, along with some site visits, were the main methods for gauging community concerns about emergency preparedness or its operations. It noted that the frequency of such open houses had decreased to about once every 2 years, although its current plans were for a return to an annual frequency.

#### **4.7.2 Views of the Interveners**

The interveners raised general concerns about the health and safety aspects of the existing operations and by extension, of the proposed plant. Questions included what the worst-case accident scenario for the plant would be, and the effects of lightning or adverse weather conditions such as blizzards, on plant operations and safety, and how Union Carbide would respond in such situations. They also expressed an interest in the nature of safety problems encountered at the existing facility and how they were corrected, the monitoring done and the availability of the resulting data, and the availability of any regulatory exceedances that occurred on some sort of regular basis. Questions were also raised respecting how and how often emergency response procedures were to be communicated to the public.

#### **4.7.3 Views of the Board**

The Board is satisfied that the proposed polyethylene plant can meet all relevant provincial environmental standards and that the proposed plant should not present a hazard to the health and safety of the public. The Board would encourage Union Carbide to arrange, either through CAP, informational meetings, or any other appropriate means, to address the community questions which the Board notes are of a general nature respecting the Union Carbide operations. The Board expects Union Carbide to complete and be able to implement its emergency response plan in consultation with local residents in advance of operating the polyethylene plant.

## **5 PUBLIC CONSULTATION**

### **5.1 Views of the Applicant**

Union Carbide conducted an extensive public consultation program to discuss its project and gather input on the effects of the proposed facilities from the local community. The program consisted of several open houses, distributing community newsletters, meetings with members of

the County and municipal authorities, several neighbours, plant employees, and installation of a toll-free telephone number. It noted that many of the suggestions received were incorporated into the design of the facilities. Union Carbide stated that the consultation process had continued until the present and would undoubtedly continue into the future. Union Carbide also noted that it meets with CAP on a regular basis to discuss a wide variety of issues. In summary, the company stated that it has strived to be a good steward of the environment, to be a responsible community member and neighbour, and expressed a willingness to work with the community to ensure that it minimized any disturbances to its neighbours.

## **5.2 Views of the Board**

The Board notes what appeared to be a large gap between how the applicant perceived its communications with the public and vice versa. In the Board's view, many or all of the issues of concern could have been most effectively dealt with at CAP or in direct discussions between Union Carbide and the community. To do so effectively, requires a high level of trust between the parties and a willingness by all parties to address the issues.

The Board notes a number of examples which illustrate the existence of this gap and lack of trust. Union Carbide decided to make the additional application material, provided to the Board subsequent to the filing of the Application, available to interested parties on request instead of automatically distributing the material because it formed part of the complete Application. The local community appears to have interpreted this as Union Carbide trying to hide something. Not asking their basic plant safety questions, or reporting their concerns about fog-induced ice build-up problems in buildings or the loud noises to Union Carbide at the earliest opportunity so that the problems could be investigated and the appropriate corrective action taken, are other examples of the lack of trust within the community. Soil conservation measures to be used for the project and the rail yard size are further examples of apparent miscommunication/ misunderstanding between the written and verbal information provided. Union Carbide did not appear to have told the residents that it was willing to work with them to reach a consensus until it was at the hearing.

To build trust requires a measure of good will on both sides. The Board would encourage all parties to re-examine how they are communicating so as to minimize the possibilities for misunderstandings and maximize the opportunities for cooperation in future.

The Board commends Union Carbide on its efforts to improve on its community relations. In particular, creating the position of Community Relations Manager, establishing CAP, establishing a community newsletter, and bringing issues to the table with CAP for discussion should create a better forum for the parties to communicate. The Board believes that these steps should ultimately help in re-establishing a positive long-term relationship with the community.

Based on the evidence of the Local Farmers, it is also clear to the Board that the public does not have a clear picture of the regulatory process for dealing with major energy projects in general, or

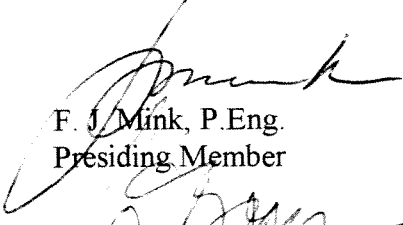
how and where the jurisdiction of the provincial departments or agencies apply. It is incumbent on the public as well as regulators to make the process transparent. The Board recognizes that this is an area where the communication could be improved and it will discuss the matter with others involved.

## 6 DECISION

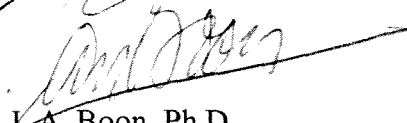
Upon consideration of all of the evidence, the Board finds the project to be in the public interest and is prepared to approve Application No. 970188. Accordingly, the Board will issue an industrial development permit to Union Carbide after receiving the approval of the Lieutenant Governor in Council.

DATED at Calgary, Alberta, on 31 March 1998.

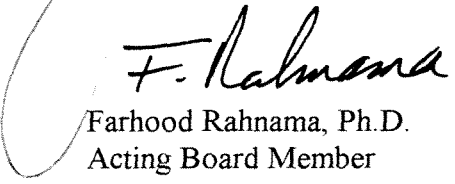
ALBERTA ENERGY AND UTILITIES BOARD



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



J. A. Boon, Ph.D.  
Acting Board Member



Farhood Rahnama, Ph.D.  
Acting Board Member