ACID-CAUSING EMISSION STANDARDS IN ALBERTA: THE STANDARD-SETTING PROCESS, ENFORCEMENT AND FORUMS

SHELLEY N. PHILLIPS* AND GALE L. PRETASH**

The implementation and enforcement of standards regulating acid-causing emissions in Alberta are examined in this paper. Also addressed are the available forums for public input, the need for further scientific analysis and better communication between government, industry and the public.

I. INTRODUCTION

Recent years have seen an increasing awareness of environmental issues among many sectors of the Canadian public. Governments have reacted to these concerns by setting up departments to deal with environmental issues, and by enacting legislative standards to control pollutants. One of the primary concerns has been "acid rain", or, more accurately, "acid precipitation", the result of acid-causing pollutants emitted into the atmosphere through industrial activity. Public concern extends beyond the effects on lakes and wildlife, as there is more and more evidence linking acid-causing emissions to human health. Recently, the Office of Technology, an arm of the U.S. Congress, released a report which sets out the statistical evidence linking sulphuric air pollution with human mortality rates.[1] The public is now questioning the effectiveness of governmental "protective measures"; the systems implemented to protect against pollution must be reviewed.

This paper examines Alberta's legislative standards regulating acid-causing emissions and how those standards are set. Also addressed are the governmental and administrative agencies which implement the standards, including the Alberta Department of the Environment and the Alberta Energy Resources Conservation Board. The enforcement of standards is examined. Finally, the paper examines the available forums for industry and public input and the need for further scientific analysis and better communication between government, industry and the community. The application of the existing regulatory system is examined with reference to the recent well blow-out at Lodgepole, Alberta. Although the regime described in this paper may apply to other types of standards, this paper addresses specifically those standards relating to acid-causing emissions.

A. THE PROBLEM

Acid-causing emissions are recognized by environmental experts as one of the world's foremost pollution problems.[2] The problem has both local and international implications, because the emissions are subject to long-

* Solicitor, Howard, Mackie, Calgary, Alberta.

** Solicitor, MacSween and Company, Red Deer, Alberta.

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1. "Evidence is clear air pollution is ending lives", *Red Deer Advocate*, Bogdan Kipling, 1 October 1982, 4A.

2. R. Hoyle, "The Silent Scourge", (1982) 120:19 *Time* 98.

range transport. More serious examples of damage caused by acid-causing emissions are seen in Eastern North America and Western Europe, where acid precipitation has adversely affected the quality of rivers, lakes and animal life.

Although scientists have examined the effects of high-acidic emissions, the long-term effects of emissions at lower levels are the subject of a good deal of controversy. The scientific evidence is inconclusive. These issues are of relevance because low-level emissions may have unique effects on human health, soils, and agricultural produce.

Emissions of sulphur oxides (SOx) and nitrogen oxides (NOx) are by-products of industrial activity. Alberta is in the enviable position of having substantial hydrocarbon reserves. However, the development of these resources results in acid-causing emissions. The largest sources of such pollutants in Alberta are the natural gas industry, petroleum refining, oil sands production and the heavy oil industry. Alberta gas processing plants alone emitted 326,000 tonnes[3] of sulphur dioxide (SO_2) in 1980.[4]

Although Alberta is a contributor to the acid rain problem, we have not felt the full effects of these emissions to date. This is largely because of such mitigating factors in Alberta as generally alkaline soils which buffer acidity, prevailing winds from west to east which carry much of the pollution beyond the provincial boundary, and low rainfall which reduces the incidence of acid deposition in the form of acid rain. However, this is not to say that Albertans can ignore the consequences of emissions. As well as preventing local effects that may result from long-term exposure, we have a responsibility to our interprovincial and international neighbours to preserve the environment.

II. LEGAL REGIME

A. LEGISLATION AND GUIDELINES

Legislation in Alberta governs the discharge of air-borne contaminants. A number of non-legislated policy directives and guidelines complement this legislation. Many of the standards become enforceable only when incorporated into permits and licences issued by the Energy Resources Conservation Board or the Alberta Department of the Environment. Failure to obtain a permit or to comply with the terms of a permit is an offence.

B. THE STANDARD-SETTING PROCESS

The Federal-Provincial Committee on Air Pollution has established the National Ambient Air Quality Objectives. These Objectives have been adopted in Alberta, as has the industry-government task force approach which was used by the Committee to formulate the Objectives.

Another process for setting standards in Alberta is the permit and licensing systems whereby guidelines or regulations are incorporated

3. One tonne, or one metric ton, equals 1,000 kilograms, or 2,204.623 pounds, *i.e.* one tonne equals 1.1023 tons.

4. Alberta Department of the Environment, "Acid Rain", *Environment Views*, (March/April 1982) Vol. 5, No. 2 at 4.

either as terms of the permit or as pre-conditions to the issuance of a permit. Negotiation is still regarded as an important aspect of the permit-issuing process, and technical or economic factors may be taken into account when setting the conditions which are to be included in the permit or the time frame within which those conditions are to be met. Because of this negotiative approach, social, economic and political factors weigh heavily in the permit-issuing process. Generally, the standard-setting process is completed by industry and government task forces, with little public input.

C. FEDERAL REQUIREMENTS

The relevant federal legislation is The Clean Air Act. In the recent case of *Re Canada Metal Co. Ltd. and The Queen*, it was held that the provisions of the Clean Air Act are *intra vires* Parliament under both the criminal law power and the peace, order and good government power.[5] The quality standards which the Act adopts have played a significant role in relation to the standards adopted in Alberta. These standards can be voluntarily implemented in each Province by adoption (Alberta's adoption of these standards is discussed at Part II, D.1, below). Four types of regulatory instruments have been prepared by the Federal Government: the National Air Quality Objectives, the National Emission Guidelines, the National Emission Standards, and the Specific Emission Standards.

1. National Air Quality Objectives

These Objectives set the levels for identified pollutants in a given geographic area. The three levels are "tolerable", "acceptable" and "desirable". In essence, the Objectives are an attempt to define and quantify the goals for air quality. For example, Alberta has chosen to adopt the "maximum desirable" level, and has incorporated the Objective's numerical standards into its legislation. Ontario has chosen the "tolerable" goal, and adopted the appropriate legislative standards.

2. National Emission Guidelines

These Guidelines indicate the quantity and concentration beyond which an air contaminant should not be emitted into the atmosphere. The emissions are measured at their source.

The Objectives and the Guidelines are enforceable only when adopted by provincial environmental legislation.

3. National Emission Standards

These Standards establish maximum rates of air pollutants that may be emitted from a source, where such an emission is either a threat to human health or could result in the violation of an international obligation by Canada respecting air pollution abatement.

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5. Clean Air Act, S.C. 1970-71-72, c. 47; *Re Canada Metal Co. Ltd. and The Queen* (1983) 144 D.L.R. (3rd) 124 (Man. C.A.).

4. Specific Emission Standards

The Federal Government may adopt and enforce the Specific Emission Standards in three instances: first, where contaminants are being emitted by a stationary source which is under Federal jurisdiction, for example, liquid effluent standards governed by the Federal Fisheries Act; secondly, where a province has incorporated the National Air Quality Objectives into its environmental legislation; and thirdly, where an emitted air pollutant is a threat to the health, welfare or safety of persons in another country.

D. PROVINCIAL REQUIREMENTS

1. Alberta Department of the Environment

At present, the Alberta legislation dealing with atmospheric emissions is the Clean Air Act,[6] originally enacted in 1971, and the Regulations made thereunder. The Regulations prescribe the maximum permissible concentrations of air contaminants in the ambient air as well as guidelines for emissions caused by specific industries.[7] The Alberta Regulations have adopted for their ambient standards the "maximum desirable" level of the Federal National Air Quality Objectives. For example, the Regulations specify that the one hour concentration of sulphur dioxide in the ambient air shall not exceed 450 micrograms per cubic metre (0.17 parts per million).[8]

Section 7 of the Department of the Environment Act[9] provides that the Minister's responsibility is to ensure that the environment of the people of Alberta is managed, developed, conserved and improved to satisfy and fulfill their current and future human needs. This responsibility is interpreted by the Alberta Department of the Environment (Alberta Environment) to encompass a very broad scope:[10]

> Environmental matters are defined as those legal or economic factors, and any operation or activities, which directly or indirectly affect the quality or quantity of any natural resource in the various phases of resource utilization, with special emphasis on the prevention of degradation or pollution of those resources. Specific statutory responsibilities of the department include:
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> 1. the coordination of policies, programs, services and administrative procedures of the government departments and agencies in matters pertaining to the environment;
> 2. the setting and enforcing of standards of environmental quality;
> 3. the prevention, monitoring and control of air and water pollution;
> 4. the control of the environmental impact of land surface disturbances;
> 5. the management of water resources;
> 6. conducting environmental research to assist in achieving departmental objectives; and
> 7. disseminating environment-related information.

6. Clean Air Act, R.S.A. 1980, c. C-12, as am. 1982, c. 11; 1983, c. 77, s. 1.
7. Clean Air Regulations, Alta. Reg. 33/73; Clean Air (General) Regulations, Alta. Reg. 216/75 as am. 88/78, 383/79, 215/80 and 342/82; Clean Air (Maximum Levels) Regulations, Alta. Reg. 218/75 as am. 224/77, 334/77, 167/78 and 319/79; Natural Gas Processing Plant Delegation Regulations, Alta. Reg. 88/74.
8. Clean Air (Maximum Levels) Regulations, *id.* at Reg. 2(c).
9. Department of the Environment Act, R.S.A. 1980, c. D-19, s. 7.
10. Alberta Department of the Environment, Informational Letter IL OG-72-20, "Environmental Management and Pollution Control: Gas Processing Operations".

Alberta Environment is responsible for the administration of the Clean Air Act.[11] Under section 3 of the Act, certain industries must apply to the Director of Standards and Approvals, a Division of Alberta Environment, for permits to construct facilities. On completion of the construction, the company must apply under section 4 of the Act for a licence to operate. Alberta Environment may set specific emission standards as terms of the permits or licences. The licence to operate must be renewed regularly, allowing Alberta Environment the opportunity to examine the environmental performance of the company and to assess the need to alter the emissions standards. Licences are issued for five-year periods under the Regulations.[12]

The Environment Protection Services Branch of Alberta Environment operates four Divisions. One of those Divisions, the Standards and Approvals Division, is responsible for processing all applications for permits to construct and licences to operate. It is this Division which establishes the terms of the permit or licence, including the operation and emission requirements.

When the Standards and Approvals Division establishes the terms of a permit, it is working with basically two regimes: the requirements and standards set by statute or by regulation, and the operating requirements determined by policy, often referred to as "guidelines" or "objectives". As stated previously, guidelines and objectives are non-legislated standards which are an attempt to define the goals of the regulatory regime. Since these goals are not legislated, they may be departed from where other factors come into play.

(a.) Application of Legislated Standards

How are the legislated standards set? For clarity, a distinction should be made between ambient standards and point-source emission standards. Ambient standards refer to the amount of a pollutant in the atmosphere, or the quality of the air as measured at a monitoring station. Point-source emissions represent the amount of a pollutant that is discharged into the environment by a particular operation at its source. The Alberta Clean Air (Maximum Levels) Regulations[13] set out maximum permissible concentrations of air contaminants in the ambient air ("the ambient standards") for sulphur dioxide, hydrogen sulphide, nitrogen dioxide, carbon monoxide, oxidants, suspended particulates, and the levels for total dust fall readings.

Late in 1969, the Federal Department of National Health and Welfare established an Air Pollution Control Division, which, in turn, established a Federal-Provincial Committee on Air Pollution. In 1971, this Federal-Provincial Committee developed the National Air Quality Objectives for ambient levels of sulphur dioxide, suspended particulates, carbon monoxide, oxidants, and nitrogen dioxide.[14]

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11. *Supra* n. 6.
12. *Supra* n. 8 at Reg. 11.
13. *Supra* n. 7.
14. Fisheries and Environment Canada, Federal-Provincial Committee on Air Pollution (November 1976) "Criteria for National Air Quality Objectives".

A policy decision was made in 1971 that Alberta's ambient limits would be among the most stringent in North America.[15] In keeping with this philosophy, Alberta Environment has adopted the "maximum desirable" objectives for pollutants as set by the Federal-Provincial Committee on Air Pollution.

The Clean Air (Maximum Levels) Regulations[16] deal with point-source emissions of visible emissions, particulate emissions, and gaseous emissions from vinyl chloride and polyvinyl chloride plants. Apart from the Clean Air (Maximum Levels) Regulations, there are no legislated or regulated standards for air pollutants in Alberta.

Responsibility lies with the Standards and Approvals Division of Alberta Environment to identify the need for new pollution standards and to recommend levels for such standards. Whether or not those recommendations are formulated into legislation is a political decision. For example, if it was determined that there was a need to deal with the emission of trace elements from sour gas plants, it would be the responsibility of Standards and Approvals to recommend legislated limits for those pollutants. At present, Alberta has taken no action in this area, notwithstanding that initial studies by the Energy Resources Conservation Board confirm low levels of trace elements[17] and that recommendations have been made by Standards and Approvals for legislated limits.

Vinyl chloride provides an example of the method used to set a legislated standard. The standard was established by a task force consisting of industry and government representatives. The task force determined the sources of vinyl chloride and the amount that emissions from those sources could be reduced, based on the "best available technology" (BAT). Alberta Environment defines BAT as that technology which has proven itself on a pilot scale and can be expected to work on a large scale basis. Economic aspects are not taken into consideration in determining BAT.[18] Since vinyl chloride is a very hazardous chemical, the residual emission after applying BAT was determined to be the appropriate standard, providing that it fell below the known human health-effect level.

(b.) Application of Non-Legislated Standards

How are such non-legislated standards as "guidelines" and "objectives" set? Many air pollutant standards in Alberta have no legislative sanction, but are based upon internal policy decisions and implemented through the permit and licensing system. Factors taken into account in setting non-legislated standards include what is being done in other jurisdictions; what the available technology is; what the known health effect of the pollutant is; the economics of implementing a new system; and the time frame in which a new system could be implemented. Permits are

15. Jerry C. Lack, "Alberta Environment's Approach to Industrial Air Pollution Control", (October 1981), Paper presented on behalf of the Pollution Control Division of the Alberta Department of Environment, Edmonton, Alberta.

16. *Supra* n. 7.

17. A.W. Gnyp and C.C. St. Pierre, "Trace Element Emission Study at Selected Sour Gas Plants Incinerator Stacks", E.R.C.B. News Release, 20 June 1983.

18. *Supra* n. 15 at 6.

handled on a case-by-case basis, and negotiation is an important aspect of the process.

The standard of technology which is generally utilized in Alberta is the "best practicable technology" (BPT), which Alberta Environment defines as "technology which is in general commercial use, is economically feasible and can be expected to control emission levels adequately".[19] This standard is less stringent than BAT and is applied to emissions which are considered to be less harmful in nature. BPT takes economic feasibility into account, whereas BAT does not consider economic aspects. What constitutes BPT or BAT is decided by Alberta Environment, with the appropriate input from industry and other provincial governments.[20] It is applied equally to all industries, and location is generally not a factor, with the exception of particulates which are differentiated for rural and urban areas. Standards may be more stringent in urban areas, depending on existing air quality.

The Standards and Approvals Division plays a dominant role in protecting the environment by setting and implementing standards. This is especially true where new evidence shows hazardous effects to human health, such as chemicals like the vinyl chlorides. With the rapid growth of the petrochemical processing industry, the complaint has been made that Standards and Approvals Division is inadequately staffed to meet its responsibilities.

2. Energy Resources Conservation Board

The Energy Resources Conservation Board (ERCB) was established under the Energy Resources Conservation Act.[21] The ERCB has a broad mandate in relation to the energy resources of Alberta, including a mandate "to control pollution and ensure environment conservation in the exploration for, processing, development and transportation of energy resources and energy".[22] To fulfill this purpose, the ERCB, in 1971, formed an Environment Protection Division within its Development Department. This Division was expanded into a separate Department in July, 1980.[23]

The ERCB has generally interpreted its environmental mandate very narrowly, applying it on a case-by-case, or "site-specific", basis rather than on a broad scale. Thus, pollution control is examined within the confines of each individual resource development application. The result is that many issues in relation to acid-causing emissions, for example, the effect of emissions on soil and agricultural productivity and on human health, have never been brought before the ERCB to be considered on a province-wide basis.

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19. *Id.*
20. *Supra* n. 15 at 7.
21. Energy Resources Conservation Act, R.S.A. 1980, c. E-11, as am. 1981, c. 47; 1982, c. 27; 1983, c. 28.
22. *Id.* at s. 2(d).
23. G.J. DeSorcy, "Procedures of the ERCB in Processing Applications: A Presentation to NonRenewable Resource Study Group of the Public Advisory Committee, Environment Council of Alberta" (January 1982) at 3.

Through its approval mandate, the ERCB is also involved in establishing the legal requirements which must be met by industry. Under the various Acts administered by the ERCB, the ERCB must approve most of the permits and licences issued by Alberta Environment. For example, the ERCB administers the Oil and Gas Conservation Act, the Coal Conservation Act, the Hydro and Electric Energy Act, the Pipeline Act, the Gas Resources Preservation Act and the Turner Valley Unit Operations Act.[24]

Some of these ERCB approvals require an Order-in-Council or Ministerial consent before the ERCB may issue the final approval. Generally speaking, the approval required is that of the Minister of the Environment and relates to any project which could have significant impact on the environment, including such projects as gas processing plants and oil sands projects. Cabinet, or the Minister, is not bound to accept the ERCB's recommendations, and can impose other conditions. Where an Order-in-Council or a Ministerial approval includes conditions, the legislation requires the ERCB to include those conditions in its final approval.[25] The language of the legislation appears to create the possibility that the Minister may delete conditions recommended by the ERCB. Similarly, there appears to be the possibility that the ERCB may refuse to approve an application where the Minister has altered its original conditions. Legally, it appears that the role of the Board is essentially advisory.

Approval criteria for applications before the ERCB are set out in the Regulations under the various Acts administered by the ERCB. In addition, policy documents, such as "Informational Letters", "Guide Series", and "Interim Directives" are issued by the ERCB, sometimes in conjunction with Alberta Environment. These policy documents contain "informal standards" which are implemented as conditions in the ERCB and Alberta Environment permits and licences.

3. Interaction Between Alberta Environment and the ERCB

As can be seen, both Alberta Environment and the ERCB play critical roles in the control of acid-causing emissions from energy resource industries in Alberta. Their roles in this area are often interdependent. As stated by Alberta Environment and adopted by the Board:[26]

> The roles of the department and the board are interdependent to the extent that the exploration for, processing, development and transportation of energy resources affect the management, development, conservation and improvement of the environment.

This interrelationship is demonstrated in the implementation of the regulations and standards. For example, in the sour gas processing industry, Guide G-26 entitled "Sour Gas Processing Plant Applications to the ERCB, A Guide to Content" contains information clarifying the application requirements.[27] The Guide is issued under the authority of the Deputy Minister of Alberta Environment and the Chairman of the

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24. R.S.A. 1980, ccs. O-5, C-14, H-13, P-8, G-3 and T-12, respectively.
25. *Supra* n. 23 at 9.
26. *Supra* n. 10 at 4.
27. Energy Resources Conservation Board, "Guide G-26: Sour Gas Processing Plant Applications to the ERCB: A Guide to Content" (1981) at 4.

ERCB. ERCB approval is required for a gas processing scheme under subsection 26(1) of the Oil and Gas Conservation Act. In addition, the application must be referred to the Minister of Alberta Environment for approval on environmental matters.[28]

Applicants are urged by the government to contact the ERCB and Alberta Environment for a pre-application discussion of major gas processing schemes, so that the conditions for approval and the time-frame for compliance with the conditions, can be negotiated. During this pre-application phase, Alberta Environment has the jurisdiction to require that an environmental impact assessment be done regarding the project. Guide G-27 states that:[29]

> In some instances an environment impact assessment may be required although this will be judged on a case by case basis.

The environmental impact assessment is requested by Alberta Environment, as a matter of policy, where the potential environmental impact of a project is seen to be "significant". What is a "significant" impact remains unclear. For example, in the recent application by Shell Canada Resources Ltd. to expand and modernize its Jumping Pound gas processing plant, 25 miles west of Calgary, an environmental impact assessment was not required by the Minister of the Environment, even though an intervener had requested that Shell be obliged to do an environmental impact assessment. Apparently the impact of this project was not considered to be significant enough to warrant such an assessment, although the revenues of the project are estimated to be in the hundreds of millions of dollars over the next two decades.[30]

Although a direct correlation cannot be drawn between the expected revenues of the project and its environmental impact, it is generally perceived by the public that higher dollar expenditure and revenue projects will have greater impact than smaller projects. The onus of showing minimal negative environmental impact ought to lie with the applicant and the Department of Alberta Environment. Disclosure of the factors taken into account in determining whether a project will have a "significant impact", meriting an environmental impact assessment, would help discharge that onus and would improve the public view of the decision-making process.

The criticism has been made that the environmental impact assessment process should be formalized and should include adequate opportunity for public input. At present, an impact assessment is prepared by the applicant, with no opportunity for public scrutiny prior to its presentation as evidence before the ERCB in the resource-development application.

In addition to environment impact assessments, applicants have been directed by Alberta Environment to provide more information on the environmental aspects of a project than the Regulations under the Oil and

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28. Oil and Gas Conservation Act, R.S.A. 1980, c. O-5, s. 26.

29. *Supra* n. 27 at 4.

30. Discussions with staff of the Energy Resources Conservation Board; "The ERCB backs down" (1981) 8:46 *Alberta Report* 16; and transcripts of the E.R.C.B. Jumping Pound Hearing.

Gas Conservation Act would appear to allow the Department to request.[31] Bill C-14 amended the Clean Air Act in 1982, to give the Department the jurisdiction to request some of this additional information.[32]

Applications for approval under subsection 26(1) of the Oil and Gas Conservation Act and applications for permits and licences under the Clean Air Act are all submitted to the ERCB.[33] Alberta Environment may direct public disclosure in the pre-application phase.[34] The ERCB may decide that a public hearing will be held, or may be required to hold a hearing by statute.[35] The decision is then made whether a senior representative of Alberta Environment will sit as an acting Board member. This procedure is usually adopted where environmental impact is expected to be an important issue. In addition, the ERCB may ask Alberta Environment staff to appear at the hearing, to assist it. Beyond this assistance, Alberta Environment may "officially intervene in the proceedings and take a clear position on the matter".[36] This was the case in the recent Lodgepole Inquiry Phase I, where one of the six panel members was a representative of Alberta Environment, and where Alberta Environment was represented by counsel and made a submission. Participation by Alberta Environment in these multiple roles raises concerns on the part of both industry and public as to potential conflicts of interest.

The evidence received at the ERCB hearing is reviewed by the ERCB and by the Alberta Environment staff who assist at the hearing, but it is not reviewed by the Alberta Environment staff who appear as interveners.[37] The ERCB approval is sent to Alberta Environment in cases requiring Ministerial approval of environmental conditions or requiring permits to construct and licences to operate under the Clean Air Act. The ERCB then sends the entire "approval package" to the applicant.

Conditions in permits for gas processing plants must conform to the requirements of the Oil and Gas Conservation Regulations.[38] Regulation 9.040 states that the operator of a processing plant shall conduct operations in such a manner as to maintain the average maximum concentration of any air contaminants in the ambient air within the maximum permissible concentrations set out in the Clean Air (Maximum Levels) Regulations under the Clean Air Act, or to maintain any other standards the ERCB or Alberta Environment may specify. Regulation 9.050 requires operators to keep "records satisfactory to the Board and the Department of the Environment" of sulphur emissions.

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31. *Supra* n. 27 at 2.
32. Clean Air Act Amendment 1982, S.A. 1982, c. 11.
33. Oil and Gas Conservation Regulation, Alta. Reg. 151/71 as am., Reg. 9.020(1); and discussions with E.R.C.B. staff.
34. *Supra* n. 23 at Figure 1.
35. *Id.* at Figure 3; and M.J. Bruni and K.F. Miller, "Practice and Procedure before the Energy Resources Conservation Board" (1982) 20 *Alta. L. Rev.* 79.
36. *Id.* at 7.
37. *Id.*
38. *Supra* n. 33.

The ERCB also distributes an Air Monitoring Directive. The Air Monitoring Directive, entitled "AMD-81-1, Oil and Gas Industry", issued by the Alberta Environment's Director of the Division of Pollution Control, sets out monitoring and reporting guidelines which are "designed to specify acceptable monitoring methods and to standardize the format of the returns."[39] It applies to the sour gas industry with consideration being given to individual plant's licence conditions with regard to the Directive's implementation.

Under this Monitoring Directive, the interaction of Alberta Environment and the ERCB can be seen again. The Directive addresses monitoring and reporting requirements for specific pollutants.

(a.) Monitoring

The policy of Alberta Environment has been that the polluter must bear the expense of the monitoring required as a result of its operation. At the time the permit is issued, the company is advised of both the ambient and point-source monitoring requirements and the time-frame within which they must be implemented. The frequency and number of surveys required is based on emission rates and the potential hazard of the pollutants.

Site selection, instrument selection, monitoring operations for continuous ambient levels, status monitoring (of sulphation levels in the general plant area), and soil pH levels are under the jurisdiction of Alberta Environment. Continuous stack emission monitoring operations and guidelines are directed by the ERCB for sour gas and by the Pollution Control Division of Environmental Protection Services of Alberta Environment for petroleum refining, oil sands and heavy oil. The area of continuous in-stack monitoring is presently being reviewed by Alberta Environment, and guidelines are expected to be published. The ambient monitoring program is also being reviewed.

Manual stack surveys are regulated by the Alberta Stack Sampling Code.[40] The ERCB is to be notified two weeks before a sour gas operator conducts a stack survey required by its licence. For petroleum refining, oil sands and heavy oil operations, Alberta Environment is to be notified.[41]

Continuous ambient monitoring calibration procedures are under the jurisdiction of Alberta Environment. For the sour gas industry, continuous stack monitoring calibration procedures are reviewed by the ERCB. The Pollution Control Division of Alberta Environment is responsible for calibration procedures in petroleum refining, oil sands and heavy oil plants.

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39. Alberta Department of the Environment, "Air Monitoring Directive, AMD-81-1: Oil and Gas Industry" (16 February 1982) at 1.

40. Industrial Waste Management Branch, Standards and Approvals Division, Alberta Department of the Environment, Publication FFC-1/76, "Source Sampling Code, Reference Methods for Source Sampling and Analysis of Particulates, Sulphur Oxides and Oxides of Nitrogen".

41. *Id.* at 17.

Alberta Environment attempts to ensure the accuracy of ambient data through the Air Monitoring Directive and through approval of air monitoring sites and instruments, inspections of the monitoring sites and station operation, and random observations of calibrations carried out by industry consultants. Finally, government mobile air monitoring units randomly monitor the air quality.[42]

Source-emission monitoring must include both continuous stack monitoring and manual surveys conducted in accordance with techniques and equipment approved by Alberta Environment. In addition, Alberta Environment randomly observes industry consultants conducting stack surveys and may conduct its own stack emission surveys. Finally, Alberta Environment analyses portions of samples collected by industry consultants.[43]

(b.) Reporting

The reporting system is implemented through the licence requirement. Responsibilities under the reporting system are outlined in the Air Monitoring Directive, which requires that environmental information be submitted to the Department at the end of each month. In the event of an emission in excess of the licenced limits, there are more specific requirements.

Under the Clean Air (General) Regulations,[44] the Director of Pollution Control of Alberta Environment must be notified of any uncontrolled release of an air contaminant or of any accidental release or discharge of an air contaminant. Notice must be given within 24 hours of the release or of the notification thereof to the Plant Operator, and a written report must be submitted within 72 hours.[45] Ambient violations, stack or source violations, and uncontrolled, unlicenced or accidental releases are to be recorded by this method. Alberta Environment regards non-reporting to be a serious violation and recommends charges in such instances.

Ambient violations may be "disclaimed" by the company.[46] If the reason for disclaiming the violation is not accepted by the Pollution Control Division, it must notify the company by formal written response. Where a disclaimer is accepted, the violation is not included in the monthly report summaries.

Monthly reports on uncontrolled or accidental releases must be submitted to Alberta Environment. Additionally, the sour gas industry is required to send reports of stack survey results and monthly reports on continuous stack emission monitoring results to the ERCB. The sour gas industry also has special requirements for their submissions to Alberta Environment.[47] The petroleum refining, oil sands and heavy oil in-

42. *Supra* n. 15 at 11.

43. *Id.* at 12.

44. Clean Air (General) Regulations, *supra* n. 7 at Reg. 12; and *supra* n. 39 at 24.

45. *Supra* n. 44 at Reg. 12.

46. *Supra* n. 39 at 26. Abnormal weather conditions or inversions, plant operating difficulties and inconsistent composition of the feedstock were cited to the authors as uncontrollable causes of ambient violation justifying a "disclaimer".

47. *Supra* n. 39 at 31.

dustries are required to submit stack emission information and manual stack survey reports to Alberta Environment.

The last reporting requirement in the Alberta Monitoring Directive is that annual reports are to be submitted to Alberta Environment.[48] This annual report is to contain, among other information, a summary of the number of readings in excess of the Clean Air (Maximum Levels) Regulation for sulphur dioxide, hydrogen sulphide, nitrogen dioxide and carbon monoxide, together with reasons for the violations.

All of the information submitted by the company is considered public information with the exception of production data which the company has marked confidential. At the time of writing, Alberta Environment, on advice from the Attorney General's Department, claimed that all information is the property of the company which submitted it, and that the writers, therefore, were unable to obtain statistics covering the total annual number of ambient violations, which the government calls "contraventions", in recent years. The Environmental Statutes Amendment Act[49] provides that the information may be released, on application to and with the consent of the Minister of the Environment.

In summary, Alberta Environment receives all violation reports on the 24 and 72 hour system, monthly reports on all violations (which monthly reports from the sour gas industry include additional information such as tonnes of sulphur dioxide emitted for the month) and comprehensive annual reports.

The ERCB receives stack survey results and monthly reports on continuous stack emission monitoring results as well as any information required as a condition of the ERCB approval. For example, the ERCB may require sulphur balance reports, as set out in the "Sulphur Recovery and Sulphur Dioxide Emissions at Gas Processing Plants Guidelines".[50] These sulphur balance reports indicate the sulphur recovery levels. They are received monthly and are analyzed in relation to quarterly sulphur recovery requirements.

One further reporting requirement is found in Oil and Gas Conservation Regulation 9.050 subsection (4), which provides that:

> If the total quantity of sulphur emitted to the atmosphere in any day exceeds the quantity approved by the Board or the Department of the Environment by more than 50%, the operator shall immediately report such emissions to the Board by the quickest effective means.

Monitoring and reporting requirements have recently been summarized by the ERCB.[52]

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48. *Id.* at 28.
49. Environmental Statutes Amendment Act, S.A. 1983, c. 77.
50. Energy Resources Conservation Board, Informational Letter IL-OG-74-75, "Sulphur Recovery and Sulphur Dioxide Emissions at Gas Processing Plants Guidelines" (20 March 1974); and see E.R.C.B. Informational Letter No. IL-80-24, "Sulphur Recovery Guidelines, Gas Processing Operations".
51. *Supra* n. 33 at Reg. 9.050(4).
52. Energy Resources Conservation Board, "Report 82-D: Sour Gas Processing in Alberta", Appendix A.

As can be seen, companies submit a substantial amount of information to the ERCB and Alberta Environment. Comprehensive analysis of the information requires considerable communication between these two bodies. At present, the amount and the method of such communication appears to be totally within the realm of bureaucratic discretion. In some instances, Alberta Environment has delegated its powers of enforcement to the ERCB. However, it would appear that violations are still being reported to Alberta Environment, and it is unclear how, or if, the information is relayed to the ERCB. This lack of clarity about the roles of the ERCB and Alberta Environment, and the fact that most of the monitoring and reporting is conducted by the companies themselves, often raises questions of credibility in the minds of the public.

4. Summary

As stated in Information Letter IL-OG-72-20,[53] Alberta Environment is responsible for ensuring that the environment of the people of Alberta is managed, developed, conserved and improved to satisfy and fulfill their current and future human needs. Environmental matters are defined to include legal or economic factors and operations or activities which may directly or indirectly affect the quality of any natural resource in the various phases of resource utilization, with special emphasis being placed on the degradation or pollution of those resources.[54]

To effect this purpose, Alberta Environment has jurisdiction over, and is ultimately responsible for, environmental conservation and pollution control in Alberta. Among other things, this involves the setting and enforcing of standards for environmental quality as well as the prevention, monitoring and control of air pollution.

The ERCB has jurisdiction over the management of energy and energy resources within the province. To effect these purposes, the ERCB has responsibility for the surveillance and enforcement of pollution control, as well as jurisdiction over, and responsibility for, the conservation of energy resources within the province. Thus, the duties of the Board include, among other things, the appraisal of reserves and productive capacity of energy resources within Alberta and environmental conservation in the exploration, processing, development and transportation of energy.[55]

Effective control of acid-causing emissions in Alberta requires considerable expertise, concern for the environment, and administrative capability. Effective implementation requires that the respective roles of Alberta Environment and the ERCB be adequately defined and be communicated and coordinated both internally and publicly. This coordination is presently lacking. Its development would clarify industry's obligations and increase public confidence in the system. Without this, the stated purposes of Alberta Environment and the ERCB cannot be fulfilled.

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53. *Supra* n. 10.
54. *Id.*
55. *Supra* n. 10.

III. ENFORCEMENT

A. ALBERTA ENVIRONMENT AND ERCB

To be effective, every system of pollution control must have a viable means of enforcement. For clarification, it is necessary to distinguish between legislated standards and objectives which are published as guidelines. In the area of acid-causing emissions, there are both legislated standards and guidelines. It may be argued that the ambient standards prescribed by the Clean Air Act[56] are unenforceable, because the Act does not specifically make it an offence to breach those standards. However, when those ambient standards are written into the terms of a licence or permit, the standards become enforceable via subsections 3(1) and 4(8) of the Clean Air Act. These provisions make it an offence to construct without a permit, to operate without a licence, or to be in contravention of a term or condition of a permit or licence. Section 16 of the Clean Air Act states that the general penalty for an offence is a maximum fine of $25,000, or imprisonment not exceeding three months in default of payment.[57]

The Director of Pollution Control has a means of enforcement other than prosecution. Under section 13 of the Clean Air Act, the Director may issue an emission control order with which the licensee must comply. Further, under section 14 of the Act, the Minister may issue a stop order and effectively shut the operation down.

The ERCB can also enforce the terms and conditions of its approvals. For example, subsection 9.070(1) of the Oil and Gas Conservation Regulations provides that:[58]

> [w]here it appears to the Board that the operations of a scheme for the processing of gas has contravened or is contravening the Act, these regulations or an order of the Board, the Board may
>
> (a) order that operations of the scheme be partially or totally suspended, or
>
> (b) require that remedial measures be taken.

The ERCB may hold an inquiry to investigate the circumstances leading to the suspension, after which the Board may order that the suspension continue or that the processing scheme be shut down until a further Board order. In addition, the ERCB is delegated power under the Natural Gas Processing Plant Delegation Regulations and the Thermal Electric Plant Delegation Regulations.[59] Under these regulations, the ERCB is given powers equivalent to those which the Director of Pollution Control has under sections 13 and 15 of the Clean Air Act. Those sections relate to the issuing of emission control orders and the right of entry and inspection of any premises. This authority is delegated to the ERCB in relation to processing plants within the meaning of the Oil and Gas Conservation Act and in relation to power plants within the meaning of the Hydro and Electric Energy Act. An examination of these enforce-

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56. *Supra* n. 6.

57. Until the 1982 amendment, *supra* n. 32, the maximum fine was $5,000.

58. *Supra* n. 33 at Reg. 9.070(1).

59. Natural Gas Processing Plant Delegation Regulations, Alta. Reg. 88/74, and Thermal Electric Power Plant Delegation Regulations, Alta. Reg. 89/74.

ment provisions indicates that they are more than adequate to achieve the enforcement of the legislated standards.

Alberta Environment's enforcement policy has been described as follows:[60]

> In Alberta, the policy of the Department of Environment is to better our environment by working with industry through cooperation and persuasion.
>
> The enforcement steps taken in increasing order of severity are:
>
> 1. work with the company to resolve the problem,
> 2. issue an Emission Control Order,
> 3. prosecute, or
> 4. issue a **STOP** order.
>
> Generally, when an ambient or source emission problem becomes evident during the compliance review and the situation is not environmentally serious, the first line of approach is for the Department staff to work with the industry towards a solution. Usually, there will be technical meetings with the appropriate follow-up correspondence which summarizes the agreements, including industry action and compliance dates.
>
> If the industry does not cooperate or responds too slowly, the next step is the issuance of an Emission Control Order and a news release. The Control Order is a legal document which is duly served and is totally enforceable. In a Control Order, the Director of Pollution Control tells the company what is expected of it within a given time period. Even at this stage, the industry is given the opportunity to discuss the basis for the Control Order and the terms and conditions. Although the approach is much harsher than a simple letter, the Department still endeavours to work with the problem industry. If the industry can prove an extension of the deadline is necessary, a Control Order can be amended.
>
> If the company does not comply with the Control Order, the cooperative phase is ended. The options are court prosecution or a Ministerial Stop Order. Ministerial Stop Orders are generally issued only if a company is extremely uncooperative or if there is immediate danger to human life or property, or both. In a Stop Order, the company may be ordered to cease a contravention or stop an operation.
>
> Alberta Environment believes that in most cases it is not productive to enforce through the courts. Court action is time-consuming and costly and often, while the court case drags on, the violation continues. It has been the Department's experience that enforcement can be achieved most effectively through technical discussions rather than reverting to an adversary system.
>
> However, if at any time the company does not respond in a satisfactory manner, the Department does not hesitate to recommend to the Attorney General's Department that charges be laid.

Discussions with Alberta Environment staff indicated that they consider the consultative step in the enforcement process to be the most effective method in resolving the majority of "pollution episodes". This can be illustrated by examining the actual number of Stop Orders and prosecutions. From 1977 to 1980 inclusive, one Stop Order was issued and ten prosecutions were commenced (see Tables 1 to 5). In 1980 alone, there were some 1,100 violations of the emission guidelines for gas plants.[61]

As indicated in Table 5, many companies are subject to reporting requirements. Compliance with these reporting requirements is considered to be even more important than compliance with the emission limits:[62]

> Although the goal for all industry must be 100% compliance, Alberta Environment recognizes that it is not practical for industry sources to meet the licenced emission limits or the regulated ambient air limits 100% of the time. However, in some regulated

60. *Supra* n. 15 at 20.

61. "The ERCB backs down" (1981) 8:46 *Alberta Report* 16.

62. *Supra* n. 15 at 2.

areas such as reporting uncontrolled or unlicenced emissions, full compliance is essential.

The writers were unable to obtain statistics respecting non-compliance with the reporting requirements.

An interesting example of enforcement is the 1982 prosecution of Suncor Inc. for polluting the Athabasca River near Fort McMurray. Charges included exceeding operating licence provisions for oil and grease emissions and failing to report excessive discharges under the Clean Water Act.[63] A $500 fine was levied against Suncor on the latter charge.[64]

Enforcement by the ERCB is primarily the responsibility of the Operations Division of the Development Department. This Division has 120 field staff across the province, located in 7 field offices. The field staff are responsible for surveillance. Along with responding to complaints, the staff is responsible for policing five areas of concern, namely, drilling, production, environment, gas-gathering systems and plants, and pipelines. The complaint has been made that the ERCB's manpower in this area is insufficient to meet these responsibilities adequately.[65]

Monitoring and reporting requirements were discussed at Part II D.3, above. The ERCB enforces the terms of its approvals on the basis of these reports and, where it is not satisfied that the reports are accurate, it requests further explanation from the company. In addition, the ERCB responds to requests from Alberta Environment for inspection and investigation. The ERCB is responsible for regular inspections of sour gas plants, which are typically done twice a year.[66] On such an inspection, the plant is checked for compliance with the terms of the approval, the handling of water, the monitoring methods employed, and "fugitive odours". The enforcement steps taken by the ERCB, in increasing order of severity, are:[67]

1. the writing of a letter to the licensee involved signed either by a Board member or a staff member. Such a letter would set out corrections which must be made within a specified time period;
2. an inquiry to discuss the problems, causes and possible remedial action which can be taken;
3. an order may be made requesting that certain requirements be met by a certain date;
4. if the licensee refuses to comply with the request, the operation can be completely shut down.

As with Alberta Environment, the ERCB deals with most pollution problems through consultation with the company. The various Acts administered by the ERCB empower it to prosecute licensees. However, like Alberta Environment, the ERCB believes that prosecution is seldom the best route to a satisfactory solution.

Crucial to the enforcement of the standards relating to acid-causing emissions is the requirement that industry make regular emission reports to Alberta Environment and the ERCB. Since responsibility for en-

63. "Suncor charges laid", *Edmonton Journal*, 19 March 1982, Final edition, p. A3.
64. Discussions with staff of the Environmental Law Centre, University of Alberta, Edmonton, Alberta.
65. Discussions with staff of the Energy Resources Conservation Board, Calgary, Alberta.
66. *Supra* n. 52 at Appendix B-3.
67. Discussions with staff of Energy Resources Conservation Board, Calgary, Alberta.

vironmental monitoring rests with industry, questions have been raised about the credibility of the data; Alberta Environment considers this problem to be its responsibility.[68] This includes the establishment of codes to ensure acceptable data standards and gathering practices and a program to spot-check the data quality and instrument operation of the company. However, as admitted by the members of the Pollution Control Division of Alberta Environment, the Department must, by and large, accept the information which is provided by industry.[69]

The fact is that there were more than 1,100 violations of the emission guidelines for gas plants in the year 1980, while there were no prosecutions during that year.[70] Alberta Environment would explain this by the cooperative remedies employed between itself and the respective companies. However, the lack of prosecutions, coupled with the fact that a large portion of the emission monitoring is conducted by industry itself, leaves room for suspicion among the public.

Indeed, it appears that a number of people are questioning whether adequate standards have been set and whether the standards are being enforced responsibly.[71] For example, the public complaint by the residents of Pincher Creek as to the potential health hazards posed by gas plant emissions in the area has prompted the Canadian Public Health Association to recommend a full-scale study. The province initially refused to conduct a study of any kind, but later agreed to conduct a less comprehensive study than the one recommended by the Canadian Public Health Association. Many residents and public health groups, however, are not satisfied that the proposed provincial study will resolve the question of the long-term effects of gas plant emissions.[72] The ERCB has begun initial work on a more extensive study of this issue.[73]

Added to the problem of data credibility is the problem of informational gaps between Alberta Environment and the ERCB. For example, under the existing regulations, guidelines and policy, the ERCB is responsible for enforcement of on-site emission violations, but Alberta Environment receives the 24 and 72 hour reports of those violations. The ERCB may receive this information as a result of bureaucratic discretion or company policy. Further, the ERCB does not officially receive reports of ambient standard monitoring. There does not appear to be any systematic or comprehensive policy for monitoring and enforcing pollution standards with respect to acid-causing emissions.

In summary, the government agencies involved rely primarily on cooperative enforcement. Failing that, stronger remedies are available, although seldom employed. This non-enforcement results in public

68. *Supra* n. 15.

69. Discussion with staff of Alberta Environment.

70. *Supra* n. 61.

71. Franson et al., "Environmental standards: a comparative study of Canadian standards, standard-setting processes and enforcement", 1982, Environment Council of Alberta.

72. B. Nelson, "Rural Albertans to boycott in inadequate probe", *The Globe and Mail*, 5 April 1982, p. 4.

73. Energy Resources Conservation Board, "Final Report: Sage-Pincher Creek Health Study", 17 June 1983.

cynicism about environmental law enforcement. Resolution of the issue requires that the public be properly informed and provided with an adequate opportunity for input.

IV. FORUMS

As previously discussed, there are several forums which address energy-related environmental issues in Alberta. For example, the ERCB addresses these issues through its permit-application process. However, Alberta has no forum to address issues of general public concern respecting acid-causing emissions, such as public health and welfare, effects on agricultural production, effects on soils and forests, and the interprovincial effects of acid-causing emissions.

This part of the paper will discuss the existing forums which could address such broad issues, and will consider the potential forums which could be created.

A. ENVIRONMENT COUNCIL OF ALBERTA (ECA)

The Environment Council of Alberta was established by the Environment Conservation Act.[74] It was initially called the Environment Conservation Authority, and its original function was to investigate matters relating to environment conservation, to make recommendations thereon to the Lieutenant Governor in Council, and to coordinate policies, programs, administrative procedures and government agencies pertaining to conservation. To achieve these objectives, the Authority had a great deal of technical expertise and investigative power at its disposal. During the mid-1970's, the Authority achieved its purposes and submitted a number of highly influential reports to Alberta Environment. However, after a series of politically unpopular decisions, the Authority was stripped of its powers in 1977,[75] and its name was changed to the Environment Council of Alberta. The Council now serves in an advisory capacity, and requires an order of the Lieutenant Governor in Council to hold public hearings.[76]

Where the ECA holds a public hearing pursuant to Cabinet request, the Act empowers it to receive submissions on matters pertaining to environmental conservation and to engage the services of technical and other staff in connection with the inquiry.[77] These powers make the ECA a competent agency to hold general inquiries, once Cabinet has deemed such inquiry politically expedient. The Public Advisory Committee of the ECA, established by section 10 of the Act, has examined numerous environmental issues and made many worthwhile recommendations. But because the ECA's mandate is strictly advisory at present, no forum exists to ensure that those recommendations are implemented and, indeed, they seldom are. The ECA has been criticized for not exerting more pressure on the government to implement its recommendations.

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74. Environment Conservation Act, R.S.A. 1970, c. 125 as am.; now, Environment Council Act, R.S.A. 1980, c. E-13.

75. The Environment Conservation Amendment Act, 1977, S.A. 1977, c. 66.

76. *Id.*

77. Environment Council Act, *supra* n. 74, s-ss. 7(d) and 7(g).

B. ALBERTA ENVIRONMENT

Under the Department of the Environment Act,[78] Alberta Environment has numerous powers which would permit it to hold public hearings on issues of general concern and to compile and assess information pertaining to the environment. It appears, however, that an internal policy decision has been made to delegate the powers of public inquiry to the ERCB, by virtue of what Alberta Environment calls the "one window approach".[79] Thus, in Alberta, each application goes through only one hearing, which is conducted by the ERCB. The obvious advantage of this approach is that it involves only one hearing, at which all relevant matters can be addressed in a systematic manner. Further, since the ERCB has a great deal of expertise at its disposal, it is in a position to examine the technical issues.

However, a problem arises because, in fact, the ERCB has adopted a "case-by-case" approach, with the result that broad issues are rarely addressed. Alberta Environment could ask the ERCB to hold a public inquiry respecting the environmental aspects of a development application where the resource development involves "significant environmental factors". However, it appears that this does not happen very often. Similarly, Alberta Environment can request that an environmental impact assessment be done. But environmental impact assessments are not mandatory, and they are seldom required.

C. ENERGY RESOURCES CONSERVATION BOARD

The ERCB site-specific approach to hearings on resource development applications means that, for the most part, only issues specific to the particular application will be heard. With respect to each hearing, the ERCB notifies "interested parties", which generally means persons with land or residences in close physical proximity to the project site. These interested parties may raise an issue of "general public concern" only if it is relevant to the specific application before the ERCB. However, such issues are addressed within the confines of the specific application, rather than on a comprehensive basis.

An example which illustrates the gap respecting broad environmental issues is the recent request made by a number of environmental groups that the ERCB hold a general inquiry on the subject of acid-causing emissions from Alberta sources. The Letter of Request discusses the jurisdiction of the ERCB as follows:[80]

> The Energy Resources Conservation Board is given a clear mandate to inquire into the matter of acid-forming emission sources and to make recommendations to the Lieutenant Governor in Council for the control of those sources. Section 22 of the *Energy Resources Conservation Act*, Ch. E-11, RSA 1980, states:
>
> S.22 The Board may and at the request of the Lieutenant Governor in Council shall, at the places, at the times and in a manner it considers advisable

78. Department of the Environment Act, R.S.A. 1980, c. D-19 as am. S.A. 1981, c. 67, s. 2.

79. *Supra* n. 10.

80. Environment Law Centre, Edmonton, Alberta, "Request to the Energy Resources Conservation Board for an Inquiry Into Acid-Forming Emission Sources Pursuant to Their Powers Under Section 22 of the Energy Resources Conservation Act"; and *supra* n. 52.

(a) make inquiries and investigations and prepare studies and reports on any matter within the purview of any Act administered by it relating to energy resources and energy, and

(b) recommend to the Lieutenant Governor in Council any measures it considers necessary or advisable in the public interest related to the exploration for, production, development, conservation, control, transportation, transmission, use and marketing of energy resources and energy.

In a more general sense the ERCB by the provisions of its enabling legislation is provided with a broad responsibility for pollution control and environment conservation as well as the powers to put those measures into effect.

Section 2 of the *Energy Resources Conservation Act* which established the Board states that the purposes of the Act are among others,

s.2 (c) to effect the conservation of, and to prevent the waste of, the energy resources of Alberta;

(d) to control pollution and ensure environment conservation in the exploration for, processing, development, and transportation of energy resources and energy;

Section 10, subsection (2) of the *Oil and Gas Conservation Act*, Ch. 0-5, RSA 1980 gives the Board the power to make regulations for pollution control,

s.10(2) The Board, with the approval of the Minister of the Environment, may make regulations:

(c) prescribing the measures to be taken to control pollution above, at or below the surface in the drilling of wells and in operations for the production of oil, gas and crude bitumen and in other operations over which the Board has jurisdiction.

The Board by the act of preparing its general report and recommendations on the sour gas industry Report, 82-D, has recognized the existence of this mandate.

The request for a broad inquiry was rejected by the ERCB, which cited a lack of jurisdiction over such issues as the impact of acid-forming pollutants on human health. Apparently, the thirteen-page request letter did not sufficiently document the nature of the inquiry sought.[81]

The ERCB has held inquiries on a level more comprehensive than specific case applications. One such inquiry was undertaken by the Advisory Committee on Agricultural Matters. This group, under the aegis of the ERCB, consists of four representatives of the agricultural community (i.e. Surface Rights, Unifarm, Cattlemen's Association and Farmer's Advocate), two members of Alberta Environment, one representative of the Alberta Department of Energy and Natural Resources, two representatives of the ERCB, and four industry representatives. The Advisory Committee examined the existing well-spacing practices, and its recommendation that target areas be moved from the centres of the quarter section was accepted and implemented. In the future, the Advisory Committee may examine such issues as the right of farmers to obtain information respecting drilling done on their land, and the disposal of sump fluids. The Pipeline Corridor hearings held by the ERCB addressed broad issues. Supply and demand hearings also cover broad areas of information.[82]

81. R. Pederson, "Environmentalists lose bid to examine acid rain", *Edmonton Journal*, 26 October 1982, Final edition, B1.

82. Discussions with Mr. E. Brushett, Manager, Environmental Department, Energy Resources Conservation Board; and Energy Resources Conservation Board, "Forecast of the supply and requirements of crude oil, synthetic crude oil and pentanes plus in Alberta 1975-1995", 1978.

It is submitted that there is a need to hold broad-scale hearings. The ERCB has the power under its general environmental mandate to hold such inquiries. It also has a great deal of technical expertise at its disposal and existing mechanisms for formal hearings. Because the ERCB was established to deal with sour gas in Alberta, it has extensive experience with this resource industry. Further, because the ERCB is a non-political body, it is in an ideal position to receive input. This would resolve two problems, namely, the ERCB would be better informed and public skepticism would be relieved. If the ERCB continues to refuse to act, legislative action may be necessary.

D. INDUSTRY FORUMS

As previously discussed, one forum available to industry is the ERCB, through resource development applications. There are other forums available which can address more specific issues on behalf of industry. One such forum is the Alberta Petroleum Industry — Government Environmental Committee (APIGEC). This joint industry-government committee was established in 1971 for the specific purpose of examining the distances between urban residences and sour gas installations.[83] APIGEC meets quarterly to address such issues as sour gas guidelines, and it reports on sour gas hazards and other environmental issues associated with sour gas processing.

APIGEC is composed of two ERCB board members, the manager of the Environmental Protection Department of the ERCB, the Deputy and the Assistant Deputy Ministers of Alberta Environment, one member of the Alberta Department of Energy and Natural Resources, and five senior industry representatives, usually General Managers or Vice Presidents. APIGEC subcommittees on Processing, Exploration, Production and Oil Sands have been set up to deal with problems specific to the sour gas industry. These subcommittees are chaired by industry, and are comprised of senior representatives of both government and industry.

APIGEC receives strong support from industry, and is a critical link in the "cooperative approach" so highly favoured by both industry and the Alberta government in dealing with problems arising from the petroleum industry. The group's latest initiative was launched on March 17, 1983. Known as the Alberta Government and Industry Acid Deposition Research Program (AGIADRP), APIGEC members have agreed to commit funds to a program:[84]

> to commission major studies for an assessment of the long-term environmental impact of acid-forming gases.

The Program is expected to last for seven years, and government and industry have shared the estimated $8 million cost equally. It is unknown how these funds will be allocated, and which, if any, groups, other than

83. Discussions with staff of Amoco Canada Petroleum Company Ltd. and the Energy Resources Conservation Board; Energy Resources Conservation Board, "A Report by Alberta Petroleum Industry — Government Environmental Committee on Hydrogen Sulphide Isopleth Prediction, Phase I, Model Sensitivity Study", Dec., 1978 and subsequent publications.

84. Alberta Department of Environment, News Release, Aug. 10, 1983, "Alberta Government and Industry Acid Deposition Research Program", 17 March 1983.

Committee members, will be asked to participate or will receive funding. The members of the Committee are the Canadian Petroleum Association, the Independent Petroleum Association of Canada, TransAlta Utilities Corporation, Alberta Power Ltd., The City of Edmonton, Petro-Canada Exploration Inc., Nova, An Alberta Corporation and the Alberta Minister of the Environment. There are three appointed observers: two from the ERCB, and Dr. M. Kostuch, representing the public on a volunteer basis.

The Federal-Provincial Committee on Air Pollution and its successors have provided an avenue for input from industry. The Committee established a number of standards. These standards were published in the Canada Gazette before implementation, with a request for public comment.

Some industry groups have been creative in developing forums to educate people and help dispel the public's "innate fear and ignorance" of energy-related issues. One example is the Society for Environmental and Energy Development Studies (SEEDS).[85] This group has designed a program to increase energy awareness in the public school system. Curriculum materials cover energy sources, environmental concerns and related energy extraction and conservation issues.

The Federal Sub-committee on Acid Rain, during the study which culminated in the report entitled "Still Waters: The Chilling Reality of Acid Rain", held hearings across the country. Input from the public, government, and industry was received at these hearings. However, the Government of Alberta did not make any submissions to this Federal Committee.[86]

E. OTHER PUBLIC FORUMS

A number of other avenues exist for concerned groups to express their views on acid-causing emissions. On an individual basis, there is always the method of expressing views to elected federal and provincial representatives. The media are useful public forums, and the effects of acid-causing emissions have been the subject of an increasing amount of media coverage of late.[87]

Small-scale forums are available to some in the form of studies, surveys, and workshops. The scientific community has been involved in a number of workshops on this topic.[88]

The forum of last resort is the judicial system. Court actions in this area have been rare. The adversarial nature of our court system runs contrary to the "cooperative approach" favoured by government and industry. Individual prosecutions are rare and, as discussed earlier, such

85. The SEEDS Foundation, 406, 10169 - 104 Street, Edmonton, Alberta, T5J 1A5. Executive Director of SEEDS is Dr. Bob Westbury.

86. Canada, House of Commons Sub-Committee on Acid Rain, "Still Waters: The Chilling Reality of Acid Rain", 1981.

87. *Supra* n. 2; *also*: A. Geddes, "Sour gas: the growing fears" (1982) 9:49 *Alberta Report* 12.

88. Symposium — Workshop: Acid Forming Emissions in Alberta and Their Ecological Effects. Co-sponsored by Alberta Department of the Environment, Canadian Petroleum Association, and Oil Sands Environmental Study Group, Edmonton, March 9-12, 1982.

prosecutions may not be the most effective means of achieving pollution abatement. Court action is costly and time-consuming and, in the interim, the violation will probably continue. Further, the defences of due diligence and of licence justification,[89] coupled with the high standard of proof required in criminal actions, make convictions difficult to obtain. Because of these difficulties, officials prefer to negotiate with the offending companies. Although control and stop orders can be issued where negotiations are not successful, an impression of leniency has been created, and this apparent leniency must be explained to the public.

Civil class actions may hold promise for some groups, but the standing requirements for such an action narrow its potential. The cost and time involved in bringing a class action are often prohibitive. In addition, court judgments may only address the symptoms, rather than the causes, of the problem.

Finally, depending upon the circumstances, judicial review of the regulatory tribunal may be available.

F. ALTERNATIVES FOR PUBLIC INPUT

Public opinion is mounting for a more extensive examination of the effects of Alberta's acid-causing emissions. The public is demanding more input and information in this area. However, a request for public representation on APIGEC has been refused,[90] and a request from various Alberta and Saskatchewan environmental groups that the ERCB hold a public inquiry into emissions and their effects has been turned down.[91] The ERCB is undertaking a more extensive study of the problems between industry and residents of the Pincher Creek area. Initial proposals indicate that unexplained ill-health, and inadequate communications between government, industry and the public, are among the most serious issues which should be addressed.[92]

The Environment Council of Alberta has made a number of recommendations concerning the sour gas industry. It has also called for the appointment of a Special Select Committee of the Legislature to hold public hearings and make recommendations on air pollution control. These recommendations would be based on information collected by the ECA over more than a decade.[93] The ECA would be an appropriate body to hold a major inquiry on these issues. The Alberta College of Physicians and Surgeons has indicated its support for a study of the health effects of exposure to levels of hydrogen sulfide and sulphur dioxide such as those experienced during the 1982 Amoco well blow-out at Lodgepole, Alberta.[94] The farm lobby has been influential in the past, and it is possible that it will bring pressure on government and industry to examine acid-causing emissions.

89. *R.* v. *Great Canadian Oil Sands* (1978) 9 A.R. 86 (Alta. Dist. Ct.).

90. Letter to Dr. M. Kostuch from W. Solodzuk, Chairman of Alberta Petroleum Industry — Government Environmental Committee and Deputy Minister of the Environment, 2 June 1982.

91. *Supra* n. 80 and accompanying text.

92. *Supra* n. 71 and n. 72.

93. Public Advisory Committee to the Environment Council of Alberta, "1981 Resolutions", December 1981, Resolutions 10 and 11.

94. Dr. L.H. Leriche, Registrar, Alberta College of Physicians and Surgeons, 4 January, 1983.

The province of Alberta has "the world's most stringent" regulations for acid-causing emissions;[95] government and industry in this province are in an optimal position to take the lead in developing protective environmental strategies.

V. LODGEPOLE — A CASE IN POINT

Amoco Dome Brazeau 13-12, the well at Lodgepole, Alberta which blew wild for 68 days in 1982, raised a number of the foregoing issues. Sour gas from the well permeated the atmosphere over many parts of Alberta, raising questions about both the health and environmental effects and industry policies and practices. Although a number of these questions are unique to the emergency blow-out situation, others are of general concern in relation to low-level emissions.

The ERCB held an inquiry into the accident, Phase I of which spanned 11 weeks and produced 9700 pages of transcript. The purpose of the first phase of the hearing was fact-finding, and twenty participants submitted briefs, evidence and arguments. Phase II of the hearing entailed an industry-wide probe into methods of preventing future blow-outs.

A. STANDARDS

The issue of the standards relating to acid-causing emissions arose in two ways. First, public interest groups raised the argument that exposure to low levels of hydrogen sulfide and sulphur dioxide may be harmful to human, animal and plant health, and claimed that harmful effects had resulted from the blow-out. Although Amoco Canada Petroleum Company Ltd. (Amoco) maintained "that the most significant impact was the concern and anxiety created in the public",[96] the Provincial Board of Health recommended that:[97]

> the government accept in principle the necessity for studies related to human exposure to H_2S and SO_2, and that a task force be established to deal with health effects.

Since the scientific data base does not resolve the question, the debate continues.

Secondly, exposure to hydrogen sulfide, in particular, was experienced at levels considerably higher than usual, at least near the well site. The question of an evacuation procedure, its adequacy, and responsibility for establishing and implementing it, caused controversy. Although a number of agencies believed that they had the authority to make a decision on voluntary evacuation, ultimate responsibility for evacuation was not clear.

The evacuation level for ambient hydrogen sulfide concentration, which was based upon Occupational Health and Safety limits and ratified by the Provincial Board of Health, was set on an *ad hoc* basis, after the blow-out occurred, by the "command post" team led by the ERCB. The criticism was levied that the team did not have the medical expertise

95. Alberta Department of the Environment, News Release, Aug. 10, 1983, "Alberta Government and Industry Acid Deposition Research Program", 17 March 1983.

96. Energy Resources Conservation Board, "Proceeding No. 83007, Lodgepole Inquiry", 15 Feb. 1984, Vol. 93 at 9700.

97. *Id.*, 14 February 1984, Vol. 92(b) at 9532.

necessary to set a standard. No standards exist with respect to exposure to other components of sour gas, and Alberta Environment has recommended a study to determine the gaseous composition of Alberta's oil and gas fields, and the ambient concentrations and their effects.

These issues are critical and must be clarified for the benefit of all residents of the province.

B. AIR MONITORING

An air monitoring program was coordinated by Alberta Environment, with most of the data being collected by the Department and Amoco. Stationary and mobile units were used to record hydrogen sulfide levels. The program was entirely *ad hoc*, there being no legislated, regulatory or other official guide or directive with respect to mobile monitoring operations or the operation of stationary monitors in an emergency situation.

Alberta Environment claimed that the air monitoring program adequately protected public safety.[98] However, the Department recommended to the inquiry that, in the event of a future blow-out, it have "direct control" over any air monitoring initiated by or for the company.[99] In addition, it recommended that the "initial response capability of industry for air quality monitoring to ensure public safety during the first few hours of a blow-out" be examined.[100] The issue of monitoring clearly requires the development of uniform and appropriate procedures.

Alberta Environment considered its exclusive mandate, in the circumstances, to be the monitoring of gas levels to ensure public safety, and did not consider that it had any mandate or responsibility to collect data or conduct environmental studies.[101] Laudable as these objectives may be, the opportunity was a unique one for gathering scientific information throughout the affected environment, since the blow-out provided an opportunity to study the effects of exposure to sour gas on human, animal and plant populations.

The question of Alberta Environment's ability to do more than monitor air quality must be addressed to ensure that Alberta Environment fulfills its mandate of environmental protection.

C. ACCESS TO INFORMATION

The inquiry considered the public's lack of access to usable data on many aspects of the blow-out.[102] Amoco made information available through a 24-hour telephone line, news releases, and informal contacts between Amoco personnel and the public. Government agencies communicated with the public via telephone responses, news releases, other media contacts, and informal public contacts. Dissemination of information through the media proved to be a less than adequate channel for pro-

98. *Id.* at 9536.
99. *Id.* at 9539.
100. *Id.* at 9538.
101. *Id.* at 9500.
102. *Supra* n. 95 at 9689.
103. *Id.* at 9698.

viding information to the public. Difficulties in obtaining information on monitoring readings, evacuation plans, well-capping operations and agency coordination created the impression that the government was not in control of the situation.

If one accepts that the public has a right to all available information, the question arises respecting who is responsible for providing that information and how that responsibility is to be fulfilled. In this regard, Amoco stressed the need for government action:[103]

> The Government agencies must take the lead in the area of communications with the public. The company involved in an industrial accident which causes annoyance and anxiety to the public lacks credibility with the public. Moreover, industry will never have wide credibility on health issues.

D. ENFORCEMENT

The question arises respecting what, if any, enforcement remedies are appropriate in a blow-out situation. Are the circumstances such that the costs of the blow-out should be quantified and fines levied? Or are the costs experienced by the public (apart from those specific cases where the company has made financial compensation) to be borne by it as one of the risks it must bear in an energy-producing province?

VI. CONCLUSIONS

The system which currently exists in Alberta for the control of acid-causing emissions is not comprehensive and suffers from a lack of official, concise documentation. Emergency situations such as Lodgepole emphasize the need for a complete, accurate, and legally-binding statement detailing the standards, the information that is to be gathered to monitor those standards, the method for gathering that information, and the means by which that information is to be made available to the public. It is essential that the public play a part in developing such a statement.

That statement also requires a clarification of the roles of the various government agencies *inter se*, in both routine and emergency situations. The lack of a clear legislative framework setting out the responsibilities of the numerous government agencies leaves unacceptable gaps and the potential for inadequate or conflicting decision-making. The "command-post" approach coordinated by the ERCB in the Lodgepole incident had its advantages, but it also had its weaknesses. In any emergency situation, the first requirement is that a structure already be in place. Most critical issues arise quickly, and responsibility for roles and communication ought not to need attention. In the Lodgepole situation, it seems that the ERCB could have performed its technical role more efficiently and effectively if it had not been burdened with other responsibilities.

Crucial to a successful resolution of the acid-causing emissions issue is the demand for appropriate public forums. It is submitted that an examination of the entire acid-causing emission regulatory program in the province is needed and that such a process would be incomplete without effective public input. The issues of hearing costs and hearing procedure must be addressed, as must the issue of the jurisdiction of the various

bodies to solicit public input. The question of the public's access to information should be critically examined.

Government and industry stand to benefit from methods which would inform the public and thereby increase public confidence. Solutions are possible, are being actively pursued, and will be reached if the cooperative and earnest effort of all interests is encouraged to continue.

Meanwhile, acid-causing emissions are viewed as a major world pollution problem. If the existing government and industry bodies with jurisdiction over this topic refuse to take the appropriate steps, then legislative action must be taken to ensure that the issue is resolved in a manner that fulfills our responsibilities to our neighbours and to subsequent generations.

Table 1

Number of Emission Control Orders Issued. 1977 - 1980

Year	No. of Emission Control Orders
1977	6
1978	38
1979	2
1980	4

Table 2

Number of Stop Orders Issued. 1977 - 1980

Year	No. of Stop Orders
1977	0
1978	0
1979	1
1980	0

Table 3

Number of Prosecutions. 1977 - 1980

Year	No. of Prosecutions
1977	1
1978	4
1979	4
1980	1

Table 4

Number of Certificates of Variances Issued. 1977 - 1980

Year	No. of Certificates of Variances Issued
1977	4
1978	6
1979	7
1980	5

Table 5

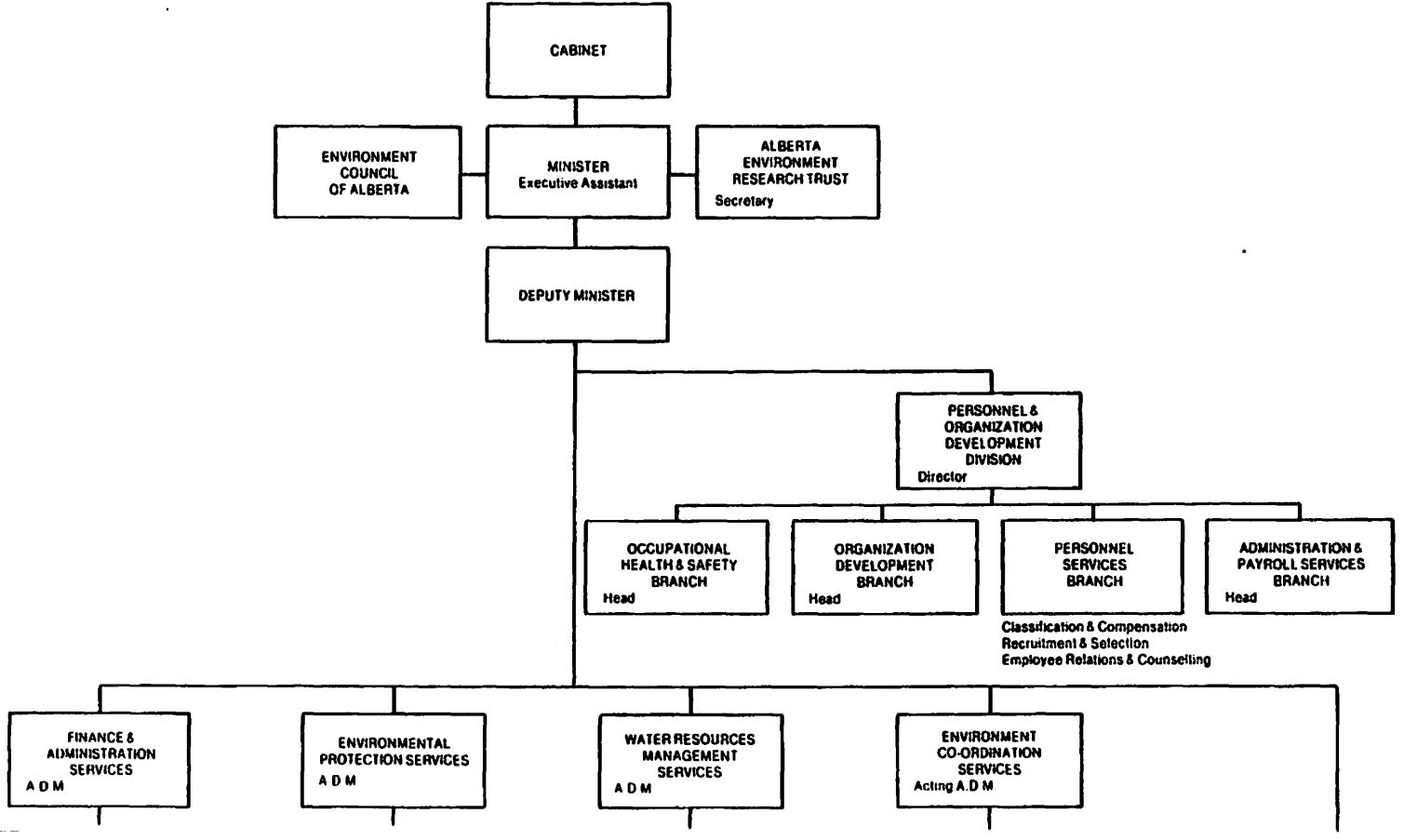
Clean Air Licences
(Cumulative numbers)

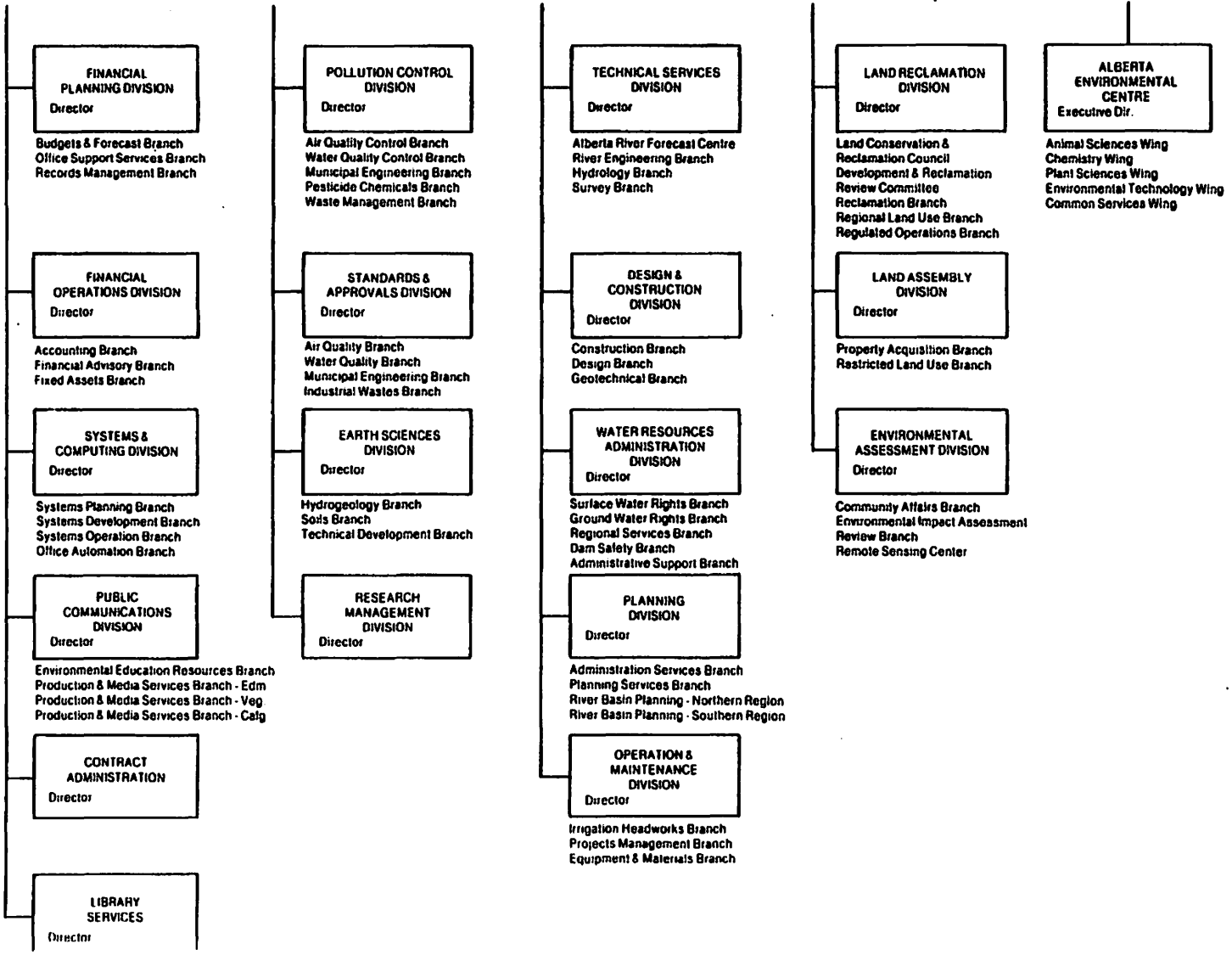
	1976	1977	1979	1979	1980
Plants licenced and required to submit any data	263	362	411	456	476
Monthly reports required to be submitted as per licence	1725	2399	2612	2832	3043
Annual reports required to be submitted as per licence	146	214	222	231	246

Note: Total number of plants licenced under The Clean Air Act as of June 1, 1981 is 1775.

Table 6

Alberta Department of the Environment Organizational Structure as of March, 1983




FINANCIAL PLANNING DIVISION
Director
Budgets & Forecast Branch
Office Support Services Branch
Records Management Branch
FINANCIAL OPERATIONS DIVISION
Director
Accounting Branch
Financial Advisory Branch
Fixed Assets Branch
SYSTEMS & COMPUTING DIVISION
Director
Systems Planning Branch
Systems Development Branch
Systems Operation Branch
Office Automation Branch
PUBLIC COMMUNICATIONS DIVISION
Director
Environmental Education Resources Branch
Production & Media Services Branch - Edm
Production & Media Services Branch - Veg
Production & Media Services Branch - Calg
CONTRACT ADMINISTRATION
Director
LIBRARY SERVICES
Director
POLLUTION CONTROL DIVISION
Director
Air Quality Control Branch
Water Quality Control Branch
Municipal Engineering Branch
Pesticide Chemicals Branch
Waste Management Branch
STANDARDS & APPROVALS DIVISION
Director
Air Quality Branch
Water Quality Branch
Municipal Engineering Branch
Industrial Wastes Branch
EARTH SCIENCES DIVISION
Director
Hydrogeology Branch
Soils Branch
Technical Development Branch
RESEARCH MANAGEMENT DIVISION
Director
TECHNICAL SERVICES DIVISION
Director
Alberta River Forecast Centre
River Engineering Branch
Hydrology Branch
Survey Branch
DESIGN & CONSTRUCTION DIVISION
Director
Construction Branch
Design Branch
Geotechnical Branch
WATER RESOURCES ADMINISTRATION DIVISION
Director
Surface Water Rights Branch
Ground Water Rights Branch
Regional Services Branch
Dam Safety Branch
Administrative Support Branch
PLANNING DIVISION
Director
Administration Services Branch
Planning Services Branch
River Basin Planning - Northern Region
River Basin Planning - Southern Region
OPERATION & MAINTENANCE DIVISION
Director
Irrigation Headworks Branch
Projects Management Branch
Equipment & Materials Branch
LAND RECLAMATION DIVISION
Director
Land Conservation & Reclamation Council
Development & Reclamation Review Committee
Reclamation Branch
Regional Land Use Branch
Regulated Operations Branch
LAND ASSEMBLY DIVISION
Director
Property Acquisition Branch
Restricted Land Use Branch
ENVIRONMENTAL ASSESSMENT DIVISION
Director
Community Affairs Branch
Environmental Impact Assessment Review Branch
Remote Sensing Center
ALBERTA ENVIRONMENTAL CENTRE
Executive Dir.
Animal Sciences Wing
Chemistry Wing
Plant Sciences Wing
Environmental Technology Wing
Common Services Wing

APPENDIX A

Resource Persons

Mr. Ron L. Findlay, B.Sc., Manager, Environmental Affairs, Amoco Canada Petroleum Ltd.

Dr. George L. Lesko, Ph. D., Director, Environmental Affairs, Syncrude Canada.

Mr. Frank Witthoeft, P. Eng., Engineer, Air Quality Branch, Standards and Approvals Division, Alberta Environment.

Mr. Jerry C. Lack, M.Sc., P. Eng., Head, Air Quality Control Branch, Pollution Control Division, Alberta Environment.

Ms. Linda Duncan, LL.B., Executive Director, Environment Law Association of Alberta.

Mr. J. D. Dilay, P. Eng., Assistant Manager, Pipelines Department, Energy Resources Conservation Board.

Mr. E. R. Brushett, P. Eng., Manager, Environment Protection Department, Energy Resources Conservation Board.

Mr. R. W. Edgecomb, P. Eng., Assistant Manager, Field Operations, Energy Resources Conservation Board.