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# **REVIEW OF ENVIRONMENTAL PROTECTION ACTIVITIES FOR 1980-1981**

**PROPRIETARY TO  
IMPERIAL OIL AND  
AFFILIATES**

**IMPERIAL OIL LIMITED  
TORONTO, ONTARIO**

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ENVIRONMENTAL PROTECTION REVIEW  
AND COORDINATION ACTIVITIES

1980 - 1981

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ENVIRONMENTAL PROTECTION REVIEW

AND COORDINATION ACTIVITIES

1980 - 1981

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## SECTION I

### PERSPECTIVE - ISSUES AND LEGISLATION

#### 1. INTERNATIONAL

The Executive Director of U.N.E.P., Dr. Tolba, in his 1981 report highlighted three issues requiring the special programs of study and action by national governments and international agencies. These were: the management of ground water as a renewable resource; control of toxic chemicals in the food chain; and the acceptance of environmental cost/benefit economics in development of resources and re-deployment of industries. In 1982 Dr. Tolba stressed two serious problems; desertification the loss of six million hectares each year from grazing land to desert, and the failure of nations to introduce environmental accounting systems. In his opinion, the use of such systems may have prevented "biological deficit financing".

The tenth annual meeting of the Governing Council of U.N.E.P. solemnly reaffirmed the 1972 Stockholm Declaration on the Human Environment and its Action Plan. They called for strengthening and expansion of national efforts and international cooperation in the field of environmental protection.

The meeting noted that we have witnessed significant progress in environmental sciences, education and awareness. In nearly all countries environmental legislation has been adopted and in a significant number provisions to protect the environment have been enshrined in their constitutions.

There have been some notable major accomplishments in the review period under the U.N.E.P. banner. These are:

1. The Formation of Regional Seas Environmental Action Programs for
  - (a) The Asia-Pacific
  - (b) The Caribbean
  - (c) The Persian Gulf
2. A major Study of Tropical Forest Depletion
3. Several Treaties to Protect Marine Mammals, Fishery and Other Wildlife Resources.



2. U.S. REVIEW

The U.S. situation was reported by Mr. Al Natkin on July 8 to the Corporate Advisory Committee, and a copy of that report is attached as Appendix I.

3. CANADIAN REVIEWA. Canadian Legislation and Regulations 1980 & 1981Federal

The Transportation of Dangerous Goods Act was finally passed and proclaimed in mid-1980. Regulations are still only in final draft form. The study of regulations to phase down or phase out lead alkyls in motor fuels was proposed in late 1980. The decision on whether to proceed with a draft regulation is expected this fall. The Clean Air Act was amended in late 1980 to empower the Minister of Environment to regulate specific sources which could be causing air pollution in another country.

A list of priority and candidate (for regulation) chemicals was issued under the Environmental Contaminants Act.

Guidelines for Thermal Power Generation Air Emissions were issued in 1981.

B. ProvincialBritish Columbia

An Environmental Management Act was passed and the Pollution Control Act was amended to bring it in concordance with the foregoing. Regulations covering Environmental Impact Assessment were issued under the new Act.

Manitoba

The Clean Environment Act was amended to include oil with spills of hazardous substances, and regulations were issued Designating Certain Substances as Hazardous.

Newfoundland

A Department of the Environment Act was passed in 1980 setting up a separate department. An Environmental Assessment Act was proclaimed in 1981.

### Ontario

A Consolidated Hearing Act was passed which combines all environmental enquiries and concern into one hearing.

### Quebec

Regulations for Quality of the Occupational Environment were issued under the Occupational Health and Safety Act in 1980. Regulations prescribing content and procedures for Environmental Assessment and Review were passed in 1981.

### Saskatchewan

An Environmental Assessment Act was passed in 1980. Environmental Spill Control regulations were issued under the Department of Environment Act.

## C. Quality of the Environment

In previous reports it has been noted that no country, not even the U.S., has as yet developed an overall performance index to gauge progress in achieving environmental quality goals.

Air quality in both Canada and the United States has generally improved in both jurisdictions as measured by the so-called criteria pollutants, total suspended particulates, SO<sub>x</sub>, NO<sub>x</sub>, Ozone and Lead. Environmentalists in the U.S. are now turning their attention to Hazardous Air Pollutants (e.g. heavy metals, P.N.A.'s etc.) and are vexed that E.P.A. has not regulated these as called for under their Clean Air Act. In Canada, the pre-occupation is focused on Acid Rain.

Water quality is a much greater concern in the United States than Canada because of the greater degree of industrialization and the fact that nearly 50% of that country's drinking water supplies come from ground water aquifers. Authorities and the public have become aware of the potential for contamination of ground water supplies by toxic chemicals from unsafe waste disposal practices.

If one could ignore the gradually eroding effect of acidic precipitation, the long range concern with respect to toxic pollutants on the Great Lakes and the annual ravage of forest fires and forest pests, the general quality of the Canadian environment is gradually improving.

D. Public Attitudes and Participation

Although pollution in 1980 and 1981, and even today, ranked low on the overall list of concerns in the public, they have very strong environmental views when specifically queried.

Chart 1

When asked to state what are Canada's major environmental problems, air and water pollution have been first named by approximately 60% of the respondents. Abuse of natural resources is the third most mentioned, followed closely by loss of prime farmland.

Chart 2

Industry in general and some particular industries are seen as the major culprits. The discharge of industrial chemicals into the air and water ranks considerably above all others.

Chart 3

The public places primary responsibility on the federal and provincial governments with Ottawa designated over the provinces by a 4 to 3 margin.

Chart 3

There is strong support for more government regulation and little support for relaxation. Despite the recession, the public say they are willing to pay more in taxes or prices to reduce both air and water pollution. It is also interesting to note that the public is not willing to accept higher levels of pollution to ensure future energy supplies.

Chart 4

Acid Rain is perceived as Canada's greatest environmental threat, followed closely by hazardous waste disposal.



## SECTION II

### PERFORMANCE, PROBLEMS, AND PLANS OF OPERATING DEPARTMENTS

#### 1. ESSO RESOURCES CANADA LIMITED

##### A. Exploration and Production

###### Accomplishments

- (a) Prepared and submitted Environmental Impact Statement on Norman Wells expansion project. Completed EARP and N.W.T. water board hearings and obtained environmental approval with conditions.
- (b) Completed oil spill contingency plan for Norman Wells area.
- (c) Completed scientific studies for Beaufort Sea Production Environmental Impact Statement and initiated preparation of EIS documents.
- (d) Repaired and improved pipelines in Redwater, Devon, Judy Creek, Boundary Lake, Nisku areas as well as inspections of other major pipelines.
- (e) Participated in oil spill countermeasures research and improved efficiency of responding to spills in Alberta.
- (f) Reduced H<sub>2</sub>S and smoke emissions at plants in Redwater and Quirk Creek.
- (g) Completed western provinces operations environmental task force study.

###### Major Problems Remaining

- (a) Obtaining regulatory approvals for Beaufort Sea production and transportation.
- (b) Oil spill clean-up in ice-infested waters.
- (c) Corrosion failures of pipelines, high cost of clean-up, rehabilitation and compensation.

- (d) Meeting the environmental conditions attached to the Norman Wells approvals.
- (e) Disposal of oil field wastes.
- (f) Long-term environmental monitoring for major projects in frontier areas.
- (g) Increasing government intervention in industry activities.
- (h) Increasing concern by landowners and residents on local issues related to air emissions, soil acidification, and water quality, resulting in delays, conflicts and increased compensation.

B. Heavy Oil

(i) Syncrude

Accomplishments

- (a) Improved response to major SO<sub>2</sub> excursions.
- (b) Implemented operation to recover bitumen from tailings pond.
- (c) Continued long reclamation through re-vegetation and re-forestation.
- (d) Reduction in bird kills at tailings pond.

Major Problems Remaining:

- (a) Major land requirements for tailings pond.
- (b) Periodic excessive SO<sub>2</sub>, H<sub>2</sub>S and particulate emissions.
- (c) Oil loss and odour from tailings pond.

(ii) Operations - Pilot Plants

Accomplishments

- (a) Improved water reuse at Leming.
- (b) Mud reuse applied during drilling operations.

### Major Problems Remaining

- (a) Casing failures.
- (b) Freshwater makeup and produced water reuse.
- (c) Compliance with SO<sub>2</sub> emission regulations.

## C. Minerals

### Accomplishments

- (a) Midwest Lake EIS completed.
- (b) Fisheries and wildlife studies conducted at Kutcho Creek.
- (c) Environmental evaluations undertaken at Byron Creek Collieries and Quintette Coal.
- (d) Air and water permits finalized for Granduc.
- (e) Contamination of research program at Judy Creek coal reserve test pit.

### Major Problems Remaining

- (a) Maintaining air and water quality at coal mines.
- (b) Lead time required to conduct environmental impact assessment studies.
- (c) Incorporating environmental guidelines into minerals exploration activities.

## 2. ESSO PETROLEUM CANADA

### A. Refining, Marine and Pipeline

#### Accomplishments

- (a) Land farming of Biox and oily sludges has been successfully applied to all refineries.



- (b) Management programme has been installed to handle toxic materials.
- (c) Significant progress has been made in in-plant noise control.
- (d) Air quality monitoring network established at Dartmouth and SO<sub>2</sub> emergency response system set up in Sarnia.
- (e) Government permits obtained for projects in Montreal and Strathcona.
- (f) Furnace conversion to gas at Montreal has reduced SO<sub>2</sub> emissions.
- (g) Spent caustic successfully handled in waste water treating systems at Montreal and Sarnia.
- (h) Ninety safety and pollution control inspections were carried out on deep sea and domestic crude and product ships.
- (i) Over four thousand product transfers by barges and tankers with only one minor spill.
- (j) Initiated a supervisory leak detection system on Quebec South Shore Pipeline.
- (k) Participated in development of "one call" leak detection system in Alberta.

#### Major Problems Remaining

- (a) Operational incidents causing releases - e.g., reverse flow at Dartmouth Cat Cracker deposited soot and particulates on neighbouring homes.
- (b) Meeting effluent water quality requirements.
  - Biox problems at Sarnia and Strathcona.
  - Effluent sheens - Dartmouth and Sarnia.
  - Exceedences at Montreal.
- (c) Eliminating oil spills into water bodies.
  - Loading rod leaks at Montreal
  - Heavy oil spill at Ioco.

## B. Marketing

### Accomplishments

- (a) Underground tank upgrading program is continuing on schedule. To date, 2,200 locations have been tested, 120 tank systems replaced and 185 impressed current systems installed.
- (b) Published, through PACE, booklets on "Inventory Controls as a Means of Identification of Underground Tank Leaks".
- (c) Major upgrading of drainage system and separators at Finch Avenue Terminal.
- (d) Initiated a review of emergency response organization and capability encompassing oil spills, chemicals (TEAP II) and propane/butanes.
- (e) Communications to employees, associates and customers were developed regarding toxicity and handling procedures for used engine oil following the disclosure of skin cancer in animal tests.

### Major Problems Remaining

- (a) Monitored developments regarding toxicity of used engine oil, can label warnings may be required.
- (b) Environment Canada are pressing industry to install overfill alarms on above ground tankage.
- (c) Continue to work with Environment Canada on development of practical regulations for operation, maintenance and inspection of plants.

## 3. ESSO CHEMICAL CANADA

### Accomplishments

- (a) Reduction of fluorine and particulate emissions at Redwater.
- (b) Reduction of VCM emissions at Sarnia.
- (c) Reduction of surface water run-off contamination at Redwater.

### Major Problems Remaining

- (a) Control of surface water run-off at Redwater.
- (b) Minimizing waste generation at Sarnia.

## 4. OIL SPILLS

Within Esso Resources, 1980 was the worst year on record for both numbers of spills and cost of clean-up. In 1981, both the number and cost have been reduced.

Refinery spills were typically small-volume incidents which were contained within the Company property and were readily recoverable.

Marine and pipeline transportation had no significant spills of oil during 1980 or 1981, similar to previous years.

Spills in marketing remained at levels similar to previous years. Truck accidents, especially in the Prairie Region, accounted for a large number of spills. In most cases, containment and partial recovery of product was possible.

Overall work error continues to be responsible for a slight majority of the incidents, although spills caused by equipment failure and corrosion are rising in comparison. As in-house training and environmental awareness continues, and as in-place equipment (such as pipelines and tanks) get older, this trend is expected to continue.

As the volume of oil spilled in most incidents was low and contingency plans were in place to respond, the damage caused to the local environment and personal property was minimal during 1980 and 1981. A number of the spills which occurred in Alberta in 1980 did result in some public and government criticism and subsequent bad publicity. Esso Resources have made efforts to improve this situation through in-house spill prevention programs such as corrosion/leak detection surveys and more effective response to spills by field personnel.



### SECTION III

#### COORDINATION ACTIVITIES

##### 1. TECHNICAL EFFORT, EXPENDITURES, BUDGET

Chart 6

The total technical effort for Environmental Protection increased in 1980 (117 man years) and dropped back somewhat in 1981 (110 man years) compared to 1979 (103 man years). The number of full-time professionals grew from 35 in 1975 to a peak of 62 in 1980 and then fell to about 49 in 1981. The decline was principally to decreased requirements because of deferral of major projects such as Cold Lake. The effort by Region Environmental Advisors dropped about in half from 1979 to 1980. For all regions, except the Prairies, it became a part-time assignment, generally combined with marketing engineering functions.

Chart 7

Capital expenditures for environmental control peaked at about \$70 M in 1979, dropped to \$66 M in 1980 and falls to between \$55-65 M out to 1984, with further decline predicted. There is a good deal of uncertainty in connection with the forecast numbers because of the current business climate.

##### 2. INDUSTRY ACTIVITIES

###### A. Commitment of Company Resources to Industry/Environmental Activities

Company personnel are strongly committed in the management direction and technical activities of six industry environmental associations, four major operational oil spill cooperatives, and the environmental committees of three trade associations (C.M.A., C.P.A. & C.C.P.A.). The total number of individuals in committee work probably ranges between thirty and forty in any year and probably aggregates the full time equivalent of three or four man years.

There is a considerable variety of activities, including monitoring the air and water in the vicinity of our operations; training for and responding to oil spills; developing and managing environmental research projects; responding to government regulatory initiatives and information needs, and communicating with the public in a broad sense.

Chart 8

The dues, fees and operating costs (including research) charged to Imperial for these industry activities totalled \$986,700 in 1980 and \$1,416,000 in 1981.

Imperial's share of the resource inputs, dollars and man hours varies from 10 to 25%. The benefits to the company are probably several-fold the inputs because of the multiplier effect.

Several of the associations publish formal annual reports; however, a summary narrative of the activities of the more important ones follows herewith.

B. Arctic Petroleum Operators Association

The Arctic Petroleum Operators Association is composed of 20 oil companies operating in the Arctic. The association sponsors research projects primarily related to environmental and engineering areas of the petroleum industry's activities in the arctic. In addition, A.P.O.A. supports workshops and conferences on northern issues and acts as a forum for communicating with local community, native and public interest groups. The Environmental and Oil Spill Committees of A.P.O.A. plan and coordinate studies to improve the understanding of the physical and biological Arctic environment and to safeguard that environment by preventing or minimizing damage caused by petroleum activities. Projects in 1980 and 1981 have focused on investigation of effects of ice forces and permafrost on operations, cleanup of oil in ice-infested waters and improved training for oil spill response.

C. Canadian Chemical Producers Association

The Environmental Quality Committee of C.C.P.A. has continued to play an active role in advising and assisting provincial and federal governments on environmental matters related to the industry. Guidance has been given to the Quebec government regarding air pollution control from chemical plants. The committee has conducted surveys in different provinces to assist governments in developing their waste disposal long-range plans. Assistance has been provided in the design and establishment of waste transportation manifest forms. Within the increasing concern over hazardous chemicals, the Environmental Quality Committee of C.C.P.A. has assisted governments in developing tests and methods for control and monitoring purposes. New and proposed legislation on hazardous chemicals is closely monitored. In order to improve emergency response, TEAP II (Transportation Emergency Assistance Plan) has been developed for the industry as a nationwide response network.

D. Canadian Petroleum Association  
Environmental Planning and Management Committee

The C.P.A.'s Environmental Committee redefined their role and were very active in this period. Communications, both internally across the various companies, and externally with government agencies, the public and the media, were stepped up and greatly improved.

A major project in 1980 was the preparation of Environmental Operating Guidelines for E&P sector of the industry.

The committee prepared several briefs each year for various government studies and hearings.

An extensive report on waste generation and disposal practices in the industry was prepared for the Energy Resources Conservation Board. A product of this effort was issuance of a manual entitled "Waste Management Guidelines".

The committee presented an industry brief in response to the Alberta Government's Land Management Plan for the Eastern Slopes.

The committee actively promoted Oil Spill Clean-up training activities. Research projects were undertaken related to the development and improvement of techniques and equipment for spill cleanup, containment, recovery and disposal.

Studies were completed on the impact of seismic and drilling operations on wildlife, and the impact of drilling fluids in marine and land environments. The problem of acidic water run-off from sulfur block storage was surveyed and protective measures defined.

Considerable effort was spent in addressing regulation hearings and research in respect of the effect of acid gas emissions from gas plants on soils, crops, animals and humans.

E. Canadian Offshore Oil Spill Research Association

The Canadian Offshore Oil Spill Research Association was formed in 1980 under the sponsorship of A.P.O.A. and E.P.O.A. to carry out research on oil spill fate and effects, countermeasures, equipment and material development and dispersant evaluations related to the marine areas of Canada's offshore, where there is planned or



ongoing petroleum activity. In 1980 and 1981 some 14 research projects were initiated and undertaken by C.O.O.S.R.A., including a number of significant field studies in the arctic and eastcoast offshore areas. C.O.O.S.R.A. acts closely with Federal government research departments and many of the projects were joint efforts between the industry and government.

F. Eastcoast Petroleum Operators Association

The Eastcoast Petroleum Operators Association has a membership of 18 oil companies. E.P.O.A. sponsors primarily environmental and oil spill research related to the eastcoast offshore area. In addition, E.P.O.A. has set up and sponsors the Eastcoast Spill Response Association (E.S.R.A.), a joint cooperative for dealing with oil spills. In 1980 and 1981 research projects were undertaken to assess environmental impact of petroleum activities on the marine ecosystem and commercial fisheries, as well as improving the response to open ocean spills and blowouts.

G. PACE

The membership was reduced to 11 companies with the acquisition of Petro-Fina by Petro-Canada and the withdrawal of Irving Oil Company. Both 1980 and 1981 were very active years for this association. Again, over 100 individuals from the various companies were involved in the work of the various committees.

Budgets for the Association were \$750,000 in 1980 and \$808,000 in 1981. Approximately 25% of the funds are required for office and administrative expense and 75% for Research and Committee projects. Imperial's share has run slightly over 25% of the budget.

In 1980 six, and in 1981 three, briefs or position statements were prepared and presented with respect to federal legislation, draft or proposed regulations affecting the industry. In addition, another six briefs were either prepared or assisted with in support of provincial associations responding to provincial legislation and regulation.

Each year the association directors held a policy and planning meeting with the senior staff of the Environmental Protection Service. This exchange of concerns with respect to environmental programs and issues serves as an early warning signal for regulatory initiatives.

To fulfill the Association's objectives of "fostering and sponsoring research - promoting the development and application of environmental conservation technology - and disseminating information within the industry"; in 1980 5 project reports, 1 guideline document and 3 manuals on workshop proceedings were published, and in 1981 publications by the same categories were 6, 4 and 3, respectively.

Formal liaison is maintained with the Canadian Petroleum Association through a liaison committee, which usually meets twice a year. Informal liaison was explored with A.P.I.'s General Environmental Affairs Committee in 1981, with the objective of ensuring efficiency in the conduct of research projects which may be of mutual interest.

### 3. ENVIRONMENTAL QUALITY COMMITTEE

#### A. Summary of Activities

The Committee met five times in each of 1980 and 1981. The minutes of the bi-monthly meetings were circulated widely within the company and, in effect, served as an Environmental Affairs Newsletter.

The highlights of the activities included:

- A high level of legislative activity continued through the period, in particular dealing with disposal of hazardous wastes, transportation of dangerous goods, amendments to the Canada Shipping Act and Occupational Health and Safety. The implications for, and impact on, the company were reviewed and assessed.
- The Acid Rain situation was carefully monitored. The Environmental Protection Department was involved in a number of study groups including Exxon, PACE, IPIECA, and a corporate position was developed. There seemed to be increasing recognition of complexity of the problem, although it remained highly political.
- The initiative by Environment Canada to phase down the lead content of gasoline, and the corporate and industry responses to it, were regularly reviewed.

- Liaison was maintained with activities within Exxon by periodic reviews of expenditures and specific projects of mutual interest, e.g. Exxon REHD Research programme.
- Federal legislation was proposed (as an outcome of the Mississauga derailment) which amongst other things would place greater responsibility and liability on the shipper. As a result, the Canadian Propane Gas Association and the Canadian Chemical Producers' Association developed improved industry response plans, with increased hands-on capability. Imperial participated in these industry groups and also initiated studies to develop an overall in-house approach to dangerous goods response. An ad hoc subcommittee of EQC studied the problem and recommended the establishment of a central corporate focus for transportation of hazardous materials to follow and respond to development of laws, and to provide a forum for coordination of inter-departmental matters, and to set up a formal audit capability.
- The Alberta government initiated a programme to establish a system for the disposal of hazardous wastes within the province. Public hearings were held and extensive technical studies were conducted. Imperial personnel were actively involved. The eventual outcome will probably be used as a model by other jurisdictions to solve this difficult, and often emotional, problem.
- The multi-million dollar oil spill R & D work going on in Exxon and in industry and government in Canada was reviewed. The tendency was to de-emphasize equipment and hardware development in favour of fate and effects of oil and dispersed oil projects, and improving dispersant applications technology and the effectiveness of the products.

#### B. Oil Spill Contingency Planning

Oil spill contingency planning to develop improved response capability both in terms of organization and equipment was very actively pursued. The Imperial programme took full advantage of the Exxon and Canadian contingency programmes to maximize the benefits to the company at minimum cost. Imperial made significant contributions in leadership and technical input to all of these activities.

The Exxon Oil Spill Response Programme consisted of four main components - formation of affiliate corporate oil spill committees, participation in Exxon R & D, oil spill equipment, and organization and manpower programmes.

The equipment programme involved a number of large central stockpiles of equipment to back up regional capability. Although tentative approval for an Exxon program was received from the Management Committee in January 1980, it was decided to try a high level approach to solicit industry support. Imperial participated in technical committees, which put a complete package together for consideration for a decision by mid 1982 by potential industry members.

The manpower programme provided for Eastern and Western Hemisphere Exxon response teams to provide oil spill response management and technical expertise to support regions and affiliates. Imperial joined with Exxon U.S.A. and Esso Inter-America to set up the Western Hemisphere team; personnel have been designated and procedures have been established.

Imperial was appointed to the Exxon Corporate Oil Spill Committee and to the Chairmanship of the Oil Spill Response Operations Committee (OSROC).

In Canada, extensive work continued through PACE to maintain the capability of the local co-operatives and to extend the network of major co-operatives across the country. In Ontario, the Petroleum Industry Marine Environmental Co-Operative (PIMEC) was organized with a target of three centres and an equipment stockpile of about \$6M. By the end of 1981, the Sarnia base had been established and work was well along on the other two at Sault Ste. Marie and Kingston. Slow progress was made in developing the major co-operatives in Quebec and the Atlantic regions. However, it is anticipated that both co-ops will be established in 1982.

Considerable progress was made in the Joint Oil Spill Response Executive Planning Committee (PACE/Department of Transport) in developing a response plan for a very large ship source oil spill. The momentum and enthusiasm seemed to be building up for this project.

Imperial's programme with Exxon and industry was approved by Imperial's Management Committee in mid 1981.

#### 4. COORDINATION DEPARTMENT ACTIVITIES

The department continued to represent Imperial in many industry and affiliate associations and committees. Guidance and assistance were given to Esso Resources and Esso Chemical for the conduct of baseline studies and preparation of Environmental Impact Statements.

The department was again active in organizing and participating in company, Exxon, and industry research programs and activities. The evaluation, administration, and follow-up of University Research Grant requests and awards in the Environmental Field each year required a recognizable piece of the department's effort.

In both years two-day meetings were held with the Region Environmental Advisors with the objective of information exchange and update of environmental issues, activities, technical and legislative matters. The major focus of the meetings has been on Oil Spill Contingency, incidents, planning, organization and research. Imperial's involvement in emergencies resulting from the Transportation of Dangerous Goods is an area of growing importance for these discussions. The principle role of the Regional Advisors is to effect interdepartmental and industry cooperation in contingency planning and action, and to provide liaison with government authorities for these activities.

E.C. (Evan) Birchard has been deeply involved in most environmental study programs and project environmental impact statements under development by Esso Resources. He has been very active in many oil spill research projects in which the company has participated with Exxon, the Federal Government, and several industry associations.

G.R. (Bob) Fern continued to shoulder important responsibilities in organizational and operational planning of company, Exxon national and international Oil Spill Contingency Planning. He has been Chairman of the Oil Industry Contingency Plans National Coordinating Committee since its formation under PACE sponsorship in 1972. Recently he was made Chairman of Oil Spill Research and Operations Committee of Exxon's Corporate Oil Spill Organization.



A.L. (Lee) Scott guided corporate activities in the Toxic Substance field as Chairman of the Toxic Substance Subcommittee of E.Q.C. One of these activities was the preparation of a toxic chemical inventory at each company operating location and of Health Hazard Data Sheets to ensure safety in the use or storage of these materials. This committee also coordinated external and internal responses to new toxicity findings and information in respect of products we produce or use, as such information appeared from Exxon, government or other industry testing laboratories. During this period Scott also chaired the many activities of the PACE Air Quality Committee.

H.H. (Harvey) Clare represented Canada during this period on the Environment Commission of the International Chamber of Commerce and on the Environmental Committee of BIAC (the Business and Industry Advisory Committee to O.E.C.D.). These appointments reflected the company's active involvement at the executive level in the Canadian Council of the I.C.C.

Throughout this period Clare was the designated representative for Imperial in PACE's Board of Directors and also acted on the executive committee of PACE.

The Coordinator represented Imperial on the Petroleum and Synthetic Fuels Planning Group of Exxon's Environmental Health Advisory Committee. This group was one of four business line groups providing input of business line needs for industrial hygiene, toxicology, and epidemiology and recommending the level of research activity for Exxon Corporation's Environmental Health Research Division programs.

The Coordinator also represented Imperial on the Advisory Committee on Potential Environmental Health Hazards to Exxon's Corporation Medical Department. This committee examines the business implications which may result from regulatory obligations and the Corporate Medical Department recommendations in respect of toxicity information being generated by R.E.H.D., and other government, academic, or commercial institutions. Some of the items of agenda which required consideration for coordinated action were labelling and handling warnings with respect to the potential carcinogenicity of used lubricating oils;

an update of industrial hygiene practices with respect to products containing High Boiling Aromatics; customer warnings with respect to potential carcinogenicity of heating oils and some solvents; and recommended changes to the Occupational Exposure Limit (OEL) to benzene vapours.

### Organizational Changes

#### Appendix II

In mid 1981 Esso Resources Canada established the position of Manager of Environmental and Socio-Economic Affairs, with a small staff located at their Head Office in Calgary. This has improved communications and delineation of responsibilities in environmental matters within the divisions of Esso Resources and with Imperial. The role statement for this position is shown as Appendix II.

#### Appendix III

In late 1981 the Coordinator recommended to Imperial's executive and Esso Petroleum Canada management that the responsibilities carried by the Coordination Department for refining and marketing divisions be assumed by Esso Petroleum. These responsibilities included representation and membership on the PACE Board and Committees. This change was effected on March 1, 1982, with the transfer of A.L. Scott to EPC and his assumption of the position of Manager of Environmental Affairs. The incumbent reports to the Executive Vice-President and his role statement is attached as Appendix III.

#### Appendix IV

Esso Chemical Canada established the position of Environmental Health and Conservation Advisor in 1977 reporting to the Manager - Engineering and Technical Coordination. In 1980 the position of Manager - Environmental Affairs was established, reporting to the President of ECC. The position description is shown as Appendix IV.

CHART 1

## WHAT ARE CANADA'S MAJOR ENVIRONMENTAL PROBLEMS?

MOST PRESSING ENVIRONMENTAL PROBLEMS  
FACING CANADA TODAY

	<u>1982</u>	<u>% 1981</u>	<u>1980</u>
WATER POLLUTION	57	64	61
AIR/ATMOSPHERIC CONTAMINATION/POLLUTION	57	60	54
ABUSE/EXPLOITATION/DEPLETION OF RENEWABLE RESOURCES (E.G. FORESTS, FISHERIES, WILDLIFE)	35	36	36
LOSS OF PRIME FARMLAND TO DEVELOPMENT	37	30	30
EXPLOITATION/DEPLETION OF NON-RENEWABLE RESOURCES (E.G. MINERALS, OIL AND GAS)	23	26	28
NUCLEAR POWER PLANTS	27	23	26
ABSENCE OF RECYCLING SYSTEMS FOR PAPER AND OTHER PRODUCTS	23	19	24
SOLID WASTE (GARBAGE) DISPOSAL	14	17	12
ENVIRONMENTAL DAMAGE CAUSED BY MAJOR DEVELOPMENT PROJECTS (E.G. AIRPORTS, HYDROELECTRIC POWER, PIPELINES)	14	12	12
NOISE POLLUTION	9	9	10

CHART 2

SOURCES OF POLLUTIONMAJOR SOURCES OF ENVIRONMENTAL POLLUTION  
IN CANADA TODAY

	<u>1982</u>	<u>% 1981</u>	<u>1980</u>
DISCHARGE OF INDUSTRIAL CHEMICALS	83	80	79
INADEQUATE SEWAGE TREATMENT FACILITIES	33	32	32
MOTOR VEHICLE EMISSIONS	24	29	32
OIL TANKER ACCIDENTS	14	18	23
AIR POLLUTION FROM COAL/OIL-FIRED ELECTRIC GENERATING PLANTS	31	22	22
PULP MILLS	17	18	21
AEROSOL SPRAYS AND OTHER FACTORS AFFECTING THE UPPER ATMOSPHERE	16	17	20
MINING AND SMELTING OR REFINING OPERATIONS	21	22	18
NUCLEAR POWER PLANTS	22	18	18
DISPOSAL OF MUNICIPAL GARBAGE AND OTHER SOLID WASTE	15	21	15
AGRICULTURAL USE OF PESTICIDES	19	16	14

CHART 3

WHO HAS THE PRIMARY RESPONSIBILITY FOR PROTECTING THE ENVIRONMENT?

FEDERAL GOVERNMENT						
PROVINCIAL GOVERNMENTS						
PRIVATE SECTOR						
INDIVIDUALS						
NO OPINION						
THERE IS NOT ENOUGH GOVERNMENT REGULATION TO PROTECT THE ENVIRONMENT FROM TOXIC MATERIALS, SUCH AS CHEMICAL WASTES, USED IN INDUSTRY	45	30	11	7	7	
	75					
THE FEDERAL GOVERNMENT IS DOING ENOUGH TO PROTECT CANADA'S ENVIRONMENT	4	23	34	32	7	
			66			
THE FEDERAL GOVERNMENT IS DOING ENOUGH TO PROTECT CANADA'S RARE AND ENDANGERED SPECIES FROM EXTINCTION	10	37	23	18	13	

CHART 4

WOULD YOU TRADE OFF POLLUTION FOR ENERGY?

IN ORDER TO PROVIDE ENOUGH ENERGY FOR OUR FUTURE NEEDS, CANADIANS WILL HAVE TO ACCEPT HIGHER LEVELS OF POLLUTION	8	20	32	32	7	
			64			

CHART 5

OIL SPILL STATISTICS

<u>FUNCTION/AFFILIATE</u>	<u>NUMBER OF SPILLS</u>		
	<u>1981</u>	<u>1980</u>	<u>1979</u>
ESSO RESOURCES:			
PRODUCTION OPERATIONS	76	85	66
HEAVY OIL	3	12	3
ESSO PETROLEUM:			
REFINERY	71	87	82
MARINE	0	1	2
PIPELINE	0	0	2
MARKETING : CONSUMER	49	50	59
: DISTRIBUTION	30	18	27
	<u>229</u>	<u>253</u>	<u>241</u>

CHART 6

ENVIRONMENTAL MANPOWER SUMMARY  
 (MAN YEARS)

	<u>1979</u>		<u>1980</u>		<u>1981</u>	
	<u>FULL TIME</u>	<u>PART TIME</u>	<u>FULL TIME</u>	<u>PART TIME</u>	<u>FULL TIME</u>	<u>PART TIME</u>
<u>ESSO RESOURCES CANADA LIMITED</u>						
PRODUCTION/EXPLORATION	7.5	-	9	10.5	8	15.5
MINERALS	7.5	-	9	1.1	6	1.2
HEAVY OIL (1)	9.5	2.25	14	4	1.0	2.0
<u>ESSO PETROLEUM CANADA</u>						
REFINERIES	16	33.5	18.0	25.5	19.3	28.6
MARKETING	-	8.6	-	7.1	-	7.0
REGION ENVIRONMENTAL ADVISORS	6	-	1	2.1	1	2.0
<u>ESSO CHEMICAL CANADA</u>	3	3.7	4	4	6	4
<u>RESEARCH</u>	2	0.5	3.0	0.8	3.6	0.8
<u>ENVIRONMENTAL PROTECTION DEPARTMENT</u>	4	-	4	-	4	-
	<u>55.5</u>	<u>47.55</u>	<u>62</u>	<u>55.1</u>	<u>48.9</u>	<u>61.1</u>
	103.05		117.1		110	

(1) SYNCRUDE - 1980 - 39 MAN YEARS  
 - 1981 - 36 MAN YEARS



CHART 7

ENVIRONMENTAL CAPITAL EXPENDITURES

	(\$M)					
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
<u>ESSO RESOURCES CANADA</u>						
PRODUCTION/EXPLORATION	29.1	22.4	27	20.8	15	15
HEAVY OIL (1)	16.8	5.7	5.2	6.0	7.1	8.0
MINERALS	0.7	1.2	1.4	0.7	0.9	1.1
<u>ESSO PETROLEUM CANADA</u>						
REFINING	10.0	6.0	16.8	17.5	36.2	11.9
MARKETING	5.6	5.5	4.5	4.2	4.0	3.2
<u>ESSO CHEMICAL CANADA</u>	<u>3.7</u>	<u>12.3</u>	<u>3.5</u>	<u>6.2</u>	<u>0.8</u>	<u>0.8</u>
	<u>65.9</u>	<u>53.1</u>	<u>58.4</u>	<u>55.4</u>	<u>64.0</u>	<u>40</u>

(1) INCLUDES I.O.L. SHARE  
OF SYNCRUDE.

CHART 8

ENVIRONMENTAL ASSOCIATIONSI.O.L. SHARE (\$)

	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
APOA	1,140,000	340,000	300,000	727,000
BURRARD CLEAN	37,300	44,500	48,000	52,000
CCPA	20,000	20,000	23,000	23,000
COOSRA	-	-	100,000	110,000
CPA	N/A	N/A	35,000	37,000
EPOA	-	-	1,700	27,000
ESRA	-	256,000	105,000	17,000
LAMBTON I.A.	58,700	78,400	100,000	87,000
LAVAL I.A.	39,500	60,900	69,000	69,000
PACE	101,000	77,000	100,000	140,000
PIMEC	-	-	105,000	127,000
	<u>1,396,500</u>	<u>876,800</u>	<u>986,700</u>	<u>1,416,000</u>

ENVIRONMENTAL AFFAIRS OVERVIEW

- ENVIRONMENTAL GAINS WILL WEATHER CURRENT ECONOMIC SLOWDOWN.
- PUBLIC VERY MUCH AWARE OF ENVIRONMENTAL ISSUES.
- ENVIRONMENTAL ACTIVISTS VERY SENSITIVE TO ANY BACKSLIDING.
- GOVERNMENT REGULATIONS - SOME RELAXATION AT NATIONAL LEVEL BUT FEW SUBSTANTIVE CHANGES.

### KEY ENVIRONMENTAL AFFAIRS ISSUES AND CONCERNS

- RELAXATION AT NATIONAL LEVEL WILL MEAN MORE ACTIVITY AT LOCAL LEVELS.
- USE OF ENVIRONMENTAL IMPACT ASSESSMENT GROWING.
- OIL SPILL RESPONSE CAPABILITY MUST BE MAINTAINED.
  - INTERNATIONAL OIL SPILL ORGANIZATION
  - OIL SPILL CHEMICALS
- ACID RAIN HAS NOW EMERGED AS AN ISSUE IN NORTH AMERICA.
- CO<sub>2</sub>/GREENHOUSE EFFECT RECEIVING INCREASED MEDIA ATTENTION.
- INCREASED EMPHASIS ON TOXIC SUBSTANCES/ENVIRONMENTAL HEALTH.

INDUSTRY OIL SPILL RESPONSE ORGANIZATION (IOSO)

- ESTABLISH THREE STRATEGICALLY LOCATED AIR TRANSPORTABLE STOCKPILES.
  - AMSTERDAM, SINGAPORE, AND HOUSTON
  - CHEMICAL AND MECHANICAL RESPONSE PACKAGES
  - TOTAL INVESTMENT OF ABOUT \$20M
  
- EQUIPMENT OWNED, MAINTAINED, AND OPERATED BY PRIVATE CONTRACTORS.
  - SUPERVISED BY A SERVICE COMPANY (IOSO) OWNED BY PARTICIPATING INDUSTRY MEMBERS.
  - SPILLER STILL HAS ON-SCENE MANAGEMENT RESPONSIBILITY.
  
- FORMATION OF IOSO TRIGGERED WHEN COMMITMENT RECEIVED FROM COMPANIES REPRESENTING 50% OF INTERNATIONAL OIL INDUSTRY FUNCTIONAL ACTIVITY.
  - 90 COMPANIES/ORGANIZATIONS CONTACTED (REPRESENT 80.7%).
  - LETTERS OF INTENT FROM EXXON, SOHIO, B.P., PETRO CANADA (17%).
  - END JULY SET AS DEADLINE.

### ACID RAIN SITUATION

- LAKES ARE ACIDIFYING IN POORLY BUFFERED AREAS.
- $\text{SO}_2/\text{NO}_x$  EMISSIONS ARE CONTRIBUTORY.
- MANY KEY UNCERTAINTIES EXIST
  - NATURAL VS. MAN-MADE EMISSIONS.
  - SOURCE/RECEPTOR RELATIONSHIPS NOT KNOWN.
  - LOCAL VS. LONG RANGE TRANSPORT EFFECTS.
  - ATMOSPHERIC CHEMISTRY NOT DEFINED.
- $\text{SO}_2$  EMISSION CONTROLS FROM COAL FIRED POWER PLANTS SOUGHT.
  - EUROPEAN PROBLEM UNCLEAR -- FURTHER RESEARCH UNDERWAY.
  - U.S./CANADA SPLIT OVER NEXT STEPS -  
RESEARCH VS. IMMEDIATE ACTION
- 50%  $\text{SO}_2$  REDUCTION BY 1990 PROPOSED BY CANADA.
- SIMILAR REDUCTION IN U.S. (31 STATE AREA) - POWER PLANTS WOULD:
  - SPEND \$7G (\$ 1982)
  - RAISE ELECTRIC RATES 5 TO 20%



### ACID RAIN POSITION

- TOO MANY UNCERTAINTIES EXIST.
- LACK OF DEMONSTRATED ADVERSE EFFECTS ON SOILS, FORESTS AND HUMAN HEALTH PROVIDE BASIS FOR POSTPONING PRECIPITOUS ACTION.
- THERE SHOULD BE NO DELAY IN CONDUCTING ADEQUATE RESEARCH AND DEVELOP COST-EFFECTIVE, TECHNICALLY SOUND SOLUTIONS.
- NORTH AMERICAN AGENCIES SHOULD BECOME MORE FAMILIAR WITH EUROPEAN SITUATION, FINDINGS AND RESEARCH.

CURRENT STATUS  
REHD ACTIVITIES

- BASIC FACILITY CONSTRUCTION COMPLETE
- \$27M CAPITAL
- 145 STAFF IN PLACE (56 PROFESSIONALS)
- LAB VALIDATION 65% COMPLETE: 90% BY END 1982
- ACTIVE TESTING PROGRAM UNDERWAY FOR CHEMICALS,  
PETROLEUM AND SYNFUELS
- 1982 OPERATING EXPENSES - \$17.6M

# REHD 1982 EXPENSE BUDGET

\$M

		<u>TOTAL</u>	<u>EST. IMPERIAL SHARE</u>
<u>DIRECT CLIENT SUPPORT</u>			
CHEMICALS		3.1	.14 (3)
PETROLEUM		2.9	.18 (4)
SYNFUELS		1.1	.04
OTHER		<u>0.8</u>	<u>0</u>
TOTAL		7.8	.36
<u>GENERAL BIOMEDICAL RESEARCH</u>			
	(1) (2)	2.2	0
<u>CORP. MED. &amp; ENV. HEALTH</u>			
	(1)	.7	0
<u>NET LAB COSTS</u>			
	(1)	<u>6.9</u>	<u>0</u>
TOTAL		17.6	.36
(1)	CORPORATE SPONSORED		
(2)	CLIENT SPONSORED IN 1983		
(3)	VIA MUTUALIZED PROGRAMS		
(4)	\$80k VIA ER&E MUTUALIZED PROGRAMS		

-OVERLAY

# EXXON ENVIRONMENTAL EXPENDITURES INCREASING LESS RAPIDLY

\$M

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>PRELIM. 1982 EST.</u>
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## WORLDWIDE

CAPITAL	216	292	316	361	391	496
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EXPENSE	367	426	538	720	829	884
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R&D	<u>18</u>	<u>23</u>	<u>37</u>	<u>37</u>	<u>28</u>	<u>35</u>
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TOTAL	601	741	891	1118	1248	1415
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INCREASE %/YEAR	-	23	20	26	12	13
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- OVERLAY

IMPERIAL %/YEAR	62	65	99	125	90	113
	-	5	52	26	(28)	26

## CONCLUSIONS

- ROO'S HAVE BEEN TAKING A RESPONSIBLE POSITION ON ENVIRONMENTAL MATTERS.
  - ENSURE CONTINUATION OF THIS SENSITIVITY.
- ACHIEVE MAXIMUM VALUE FOR OUR ENVIRONMENTAL DOLLAR.
  - DEVELOP MORE EFFICIENT POLLUTION CONTROL TECHNIQUES THROUGH R&D EFFORT.
  - ENSURE ENVIRONMENTAL PROGRAMS ARE RESPONSIVE TO BUSINESS OUTLOOK.
  - IMPROVE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS.
- INSTITUTE REGULATORY COMPLIANCE SYSTEMS.



ROLE OF ENVIRONMENTAL AFFAIRS MANAGER

ESSO RESOURCES CANADA LIMITED

MAJOR RESPONSIBILITY AREAS

1. ENVIRONMENTAL AFFAIRS
2. SOCIO-ECONOMIC AFFAIRS
3. MANAGEMENT OF ENVIRONMENTAL AFFAIRS DEPARTMENT

KEY RESULTS AREAS

1. CORPORATE POLICIES
2. EXTERNAL CONTACTS
3. INTERNAL COORDINATION
4. BUSINESS ADVICE
5. CORPORATE STEWARDSHIP
6. PERSONNEL DEVELOPMENT

REPORTS TO       -       EXECUTIVE VICE PRESIDENT

MANAGER - ENVIRONMENTAL AFFAIRS

ESSO PETROLEUM CANADA

Duties:

- Co-ordinate and ensure consistent philosophy in Esso Petroleum Canada environmental and health activities in the area of:
  - Refining
  - Marketing
  - Distribution
  - Pipelines
  - Marine
  - Technology and Design
- Represent Esso Petroleum Canada or co-ordinate attendance on inter-department I.O.L. committees and Exxon committees dealing with environmental health issues.
- Represent Esso Petroleum Canada on environmental affairs policy matters involving:
  - PACE
  - Federal and Provincial Governments
  - Provincial petroleum or environmental associations
  - Professional associations
- Provide policy guidance for all Esso Petroleum Canada departments on matters concerning environmental affairs.
- Provide policy guidance to the operations Planning Committee and Management Committee of EPC.
- Monitor the effectiveness of departmental programs and provide guidance where appropriate.

Reporting to:

Executive Vice President

Effective Date  
of Appointment:

March 1, 1982

ROLE OF ENVIRONMENTAL AFFAIRS MANAGER

ESSO CHEMICAL CANADA

INVOLVES:

- MONITORING AND INFLUENCING GOVERNMENT AND INDUSTRY ACTIVITIES.
- MONITORING ECC OPERATIONS.
- IDENTIFYING AND EVALUATING RISKS.
- RECOMMENDING POLICY.
- ENSURING ADEQUATE PLANNING AND RESOURCES.
- ENSURING COMPLIANCE WITH POLICIES AND REGULATIONS.
- COORDINATING SUPPLY OF MEDICAL AND INDUSTRIAL HYGIENE SERVICES.
- ARRANGING SUPPLY AND DISSEMINATION OF ENVIRONMENTAL INFORMATION.
- STEWARDING TO ECC MANAGEMENT.
- PARTICIPATING IN IMPERIAL AND EXXON CHEMICAL MUTUAL ACTIVITIES.

REPORTING TO       -       PRESIDENT, ESSO CHEMICAL CANADA

ROLE OF ENVIRONMENTAL AFFAIRS MANAGER

ESSO RESOURCES CANADA LIMITED

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- PARTICIPATING IN IMPERIAL AND EXXON CHEMICAL MUTUAL ACTIVITIES.

REPORTING TO      -      PRESIDENT, ESSO CHEMICAL CANADA