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OPPORTUNITIES IN MEXICO- THE ENVIRONMENTAL SECTOR



A C C E S S N O R T H A M E R I C A

CANADA-MEXICO: INDUSTRY PROFILE

 Department of Foreign Affairs and International Trade / Ministère des Affaires étrangères et du Commerce international
Latin America & Caribbean Trade Division

 Atlantic Canada Opportunities Agency / Agence de promotion économique du Canada atlantique

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THE NAFTA

A North American Free Trade Agreement (NAFTA) will expand the current free-trade area of 270 million people into a market of 360 million—a market larger than the population of the 12 countries of the European Community and one with a total North American output over \$7 trillion.

Mexico is Canada's most important trading partner in Latin America. Two-way merchandise trade with Mexico exceeded \$3.5 billion in 1992 and is expected to increase to over \$5 billion by the end of the decade.

Cumulative Canadian investment in Mexico is growing rapidly, increasing from \$350 million in 1989 to over \$580 million in 1992.

This guide booklet has been prepared with the problems inherent to the initiating exporter in mind. However it is not exhaustive; individual circumstances, interests and needs will dictate how companies should tailor their approach and strategy to the Mexican market. While every attempt has been made to ensure accuracy in this study, no responsibility can be accepted for errors or omissions.

Further assistance can be obtained by addressing requests directly to:

Industry Canada (IC) through the provincial International Trade Centres (Key Contacts Section) or to InfoEx at 1-800-267-8376 or (613) 944-4000.

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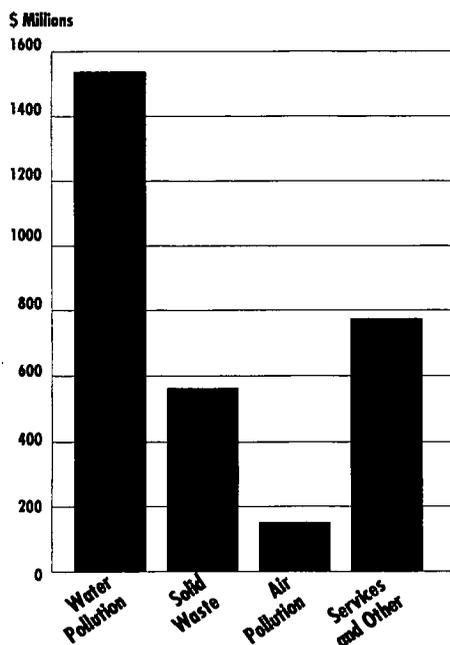
FOREWORD

The Mexican environmental sector offers many opportunities for Canadian companies that provide services or manufacture products for environmental management and pollution control. Although the Mexican environmental market is only about half the size of Canada's, it is expected to grow dramatically as a result of demands for tougher environmental standards and enforcement. The approval of the North American Free Trade Agreement (NAFTA) will make these improvements even more imperative. Since some of Mexico's new environmental standards are being modeled on Canadian regulations, Canadian environmental companies will enjoy a particular advantage in a few areas.

1. INTRODUCTION TO THE ENVIRONMENTAL SECTOR

INTRODUCTION

TABLE 1
ENVIRONMENTAL SECTOR MEXICO - 1991
(MILLION DOLLARS)



The Mexican environmental sector is relatively small - amounting to about \$3 billion* in 1990. Canada's environmental sector is about twice that size: somewhere between \$5 billion and \$7 billion, depending on how it is defined. As a proportion of GNP, Mexico's environmental sector is about the same size as Canada's: around one percent. Since, it has more than three times Canada's population, Mexico's environmental needs, and therefore its market potential, are considerably greater.

Companies in the environmental sector provide services and technology for protecting the environment from damage from all forms of human activity as well as repairing previous damage, and conserving natural resources. The sector includes services such as engineering, research and training, as well as the manufacture of pollution abatement equipment and instrumentation.

The sector can be divided into three major sub-groups: air, water and solid waste. Mexico faces problems of near-crisis proportions in all three areas. These problems result from inadequate environmental infrastructure and expertise, combined with increasing population and sustained economic growth. Increased governmental regulation of the environment is gradually forcing officials of both public agencies and private corporations to take remedial action. These factors combine to create substantial opportunities for Canadian suppliers of both conservation and pollution abatement technologies.

*All currencies are in \$ Canadian unless otherwise stated.



THE MEXICAN ENVIRONMENT: A DEEPENING CRISIS

HIGHLIGHTS OF NAFTA FOR LABOUR AND THE ENVIRONMENT

NAFTA recognizes the importance of domestic and international environmental objectives. Specifically, the Agreement includes provisions which:

- preserve the rights of governments to set high environmental standards;
- affirm the rights of governments to protect the environment;
- this protection may conflict with other trade obligations but should not be discriminatory or take the form of trade barriers;
- establish that the trade-related obligations in certain international environmental agreements can override obligations in NAFTA;
- allow any panel established to address an environmental issue to have access to environmental expertise to help in its deliberations; and
- affirm that no NAFTA country could lower its health, safety or environmental standards in order to attract investment.

Until recently, Mexico has not been a major market for Canadian environmental companies. In 1990, exports of environmental equipment and instrumentation to Mexico peaked at \$6.4 million, and fell to just over \$2 million the following year. But new markets are now beginning to emerge. These opportunities derive mainly from efforts by Mexican government authorities to strengthen regulation of the environment. Mexico currently lacks the environmental infrastructure, the manufacturing capability and the service industry needed to meet these new demands.

The contamination of the Mexican environment has already reached alarming levels. More than 25 percent of all industry is located in the Valley of Mexico, where excessive emissions, high altitude and temperature inversions combine to make Mexico City the most polluted city in the world. Forty percent of all air pollutants come from the country's three largest cities. About 58,000 tonnes of municipal garbage is produced daily, and controlled landfill sites are able to handle only about one-fifth of this volume. Some of the hazardous and clinical waste is disposed of illegally.

More than two-thirds of Mexico's 320 river basins are considered polluted. Municipal and industrial waste water treatment systems handle less than one-quarter of total discharges. Agricultural wastes contribute to the problem, and in some cases untreated sewage is used for irrigation, leading to serious health problems.

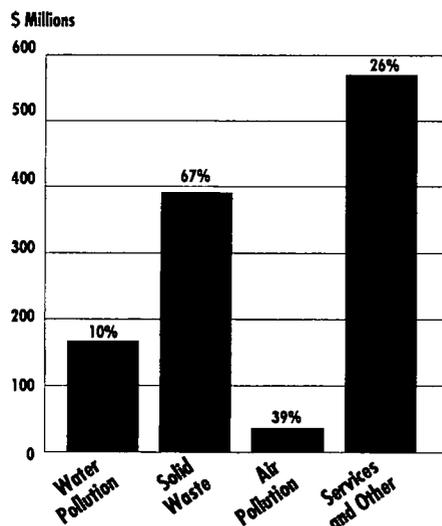
Public concern about environmental pollution has led to government action, most notably the *Federal Law on Ecological Equilibrium and Environmental Contamination* of 1988. This was followed by new enforcement mechanisms in 1992. But other government policies have made it difficult for many small- and medium-sized companies to comply. For example, a tight-money policy has dramatically reduced inflation, but has kept interest rates high. Also, trade liberalization, which has increased the competitiveness of Mexican industries, has exposed companies to aggressive foreign competition, and lowered their profit margins.

In spite of these constraints, substantial increases in demand for environmental equipment and services are expected to result from a combination of public projects and increased enforcement in the private sector. In the early stages of the national effort to gain control over the environment, the emphasis will be on consulting and training services. Thousands of environmental assessments and risk analyses will be required, and regulatory staff will have to be trained. As the process matures, the market will shift towards the provision of equipment for measuring and controlling environmental pollution.



THE IMPACT OF IMPORTS

TABLE 2
IMPORT PENETRATION
ENVIRONMENTAL CONTROL EQUIPMENT
MEXICO - 1991
(MILLION DOLLARS)



Imports play a major role in Mexico's efforts to manage its environmental problems. In 1991, imports of environmental pollution control equipment in the air, water and solid waste sub-sectors totaled \$587 million, about 26 percent of the total market of \$2.2 billion. Imports also made up a substantial proportion of the market for environmental services, estimated at roughly \$765 million.

The share of imports is largest in the solid waste management sub-sector, where it accounts for two-thirds of the market. This is an area which has not yet received major attention by Mexican authorities, and where infrastructure is especially poorly developed. Air pollution equipment is 39 percent imported, but this is a relatively small sub-sector, because large expenditures on fuel substitution and upgrading motor vehicles are not classified as part of the environmental sector. (It will start to grow when alternate fuel becomes cheaper and capital expenditures are tax deductible.) Water pollution equipment, by far the largest of the sub-sectors, is 90 percent domestically produced, but the size of the overall market, combined with an expected growth rate of 15 percent, make it attractive to foreign suppliers.

The import share of the total market is expected to increase as Mexico attempts to rapidly expand the environmental sector beyond its domestic capabilities.

Canada's share of the market for imported environmental equipment is not reflected in the market share charts shown in this study, because this share is small relative to other countries. In particular, the United States claimed about 70 percent of the Mexican environmental import market in 1991.

According to Statistics Canada, Canadian exports of environmental equipment and instruments in 1991 totaled only \$2.3 million, down from \$6.4 million the previous year. The most important products exported were gas purifiers, heat exchange units, catalytic converters, and flow metres which amounted to more than 90 percent of the 1991 total. Exports of services are not included in these data.

COMPETING IN THE ENVIRONMENTAL SECTOR

Canadian firms have competitive advantages in certain market segments, but they must compete with established Mexican suppliers, as well as the many international corporations already active in the market. Given this broad competition, some of the more successful Canadian companies operating in Mexico have concentrated on market niches where they have a particular advantage, or have formed consortia with other Canadian companies.



MARKET OPPORTUNITIES FOR CANADIAN COMPANIES

Sustained economic growth, combined with a much more aggressive approach by the Mexican government to environmental regulation, has created opportunities for Canadian companies in the Mexican environmental sector, and these opportunities are expected to expand further in the future. In the early stages of Mexico's program to transform its environment, the biggest opportunities will be in services such as engineering and design, environmental assessment and training. As the program matures, demand will shift to the supply of environmental management equipment.

2. SUB-SECTOR OVERVIEW

WATER SUPPLY AND SEWAGE TREATMENT

Price of Water by Region

City/Region	Cost Per Cubic Metre \$
Saltillo	0.14
Monterrey	0.35
Ciudad Lerdo	0.37
Gomez Palacio	0.24
Torreón	0.31
Hermosillo	0.13
Villahermosa	0.20

Source: Agua Potable, January 1993

Note: there are large variances in water rates among the different cities. For example, Saltillo and Monterrey are only 90 km apart yet the price is more than 250 percent higher in the heavily industrialized Monterrey area.

The Comisión Nacional del Agua is in the process of decentralizing control over water and sewage systems to the state level, and directly to municipalities with more than 50,000 inhabitants.

Mexico is faced with both a scarcity of natural water, and severe water pollution from household and industrial sources. Supply shortages have driven water prices to unprecedented levels, particularly for industrial use. At the plant level, this has generated a demand for equipment to reduce consumption through recycling. The increasing pollution of the nation's river basins is creating a demand for pollution control and water treatment technologies on a larger scale. The market for water supply and sewage treatment equipment already amounts to more than \$1.5 billion, not including services.

WATER SUPPLY

Mexico's water resources are distributed unevenly relative to both its land mass and its population. Half of the water resources are concentrated in the South-East. The North, which comprises almost one-third of the nation's area, and includes the city of Monterrey, has only 3 percent of the water. The country's largest cities are in the centre of the country, where water resources are located at much lower altitudes than most of the population.

Mexico City, in particular, faces enormous problems. Eighty percent of its water is pumped from aquifers, at a rate which exceeds capacity by 50 percent. This is causing subsidence of the land and damage to surface structures. The rest of Mexico City's water is pumped 127 kilometres from the Cutzumala River. This requires a lift of more than a kilometre, and hence a huge energy cost.

As a result of these difficulties, the price of water is high and it varies greatly from city to city. In 1993, household water prices ranged from a low of \$0.13 per cubic metre in the Hermosillo region, to as much as \$0.37 in Ciudad Lerdo. Prices escalate rapidly with consumption and are much higher for industrial use. Industrial prices in the Federal District begin at \$0.45 and rise with



consumption to 1.18 per cubic metre. Prices have risen dramatically over the past two years as the government has removed subsidies and begun to implement cost-recovery pricing.

SEWAGE TREATMENT

Mexico's river basins have been seriously contaminated, creating a growing demand for pollution control technologies. Two thirds of Mexico's 320 river basins are considered polluted. Twenty of them receive almost 80 percent of all organic waste. Water pollutants come from municipal, industrial and agricultural sources.

Municipal water treatment capacity is grossly inadequate. Most plants use the stabilization lagoon and activated mud techniques. Less than 400 plants treat only 19 percent of municipal discharges.

Similarly, only about one-quarter of industrial waste water is treated. There are 282 industrial treatment plants, most of them using the chemical flocculation and activated mud techniques. About 60 million cubic metres per year of industrial effluents are untreated. The largest sources of industrial waste water are the sugar, chemical, pulp and paper and oil sectors, which together account for about three-quarters of all industrial discharges.

Agriculture and cattle production are another major source of water contamination. Pig farming is considered the most serious threat. Farmers use raw sewage to irrigate some crops, and some vegetables have been found to be contaminated with fecal bacteria, posing a serious health threat.

FIGURE 1
FIVE MOST POLLUTED RIVER BASINS IN MEXICO

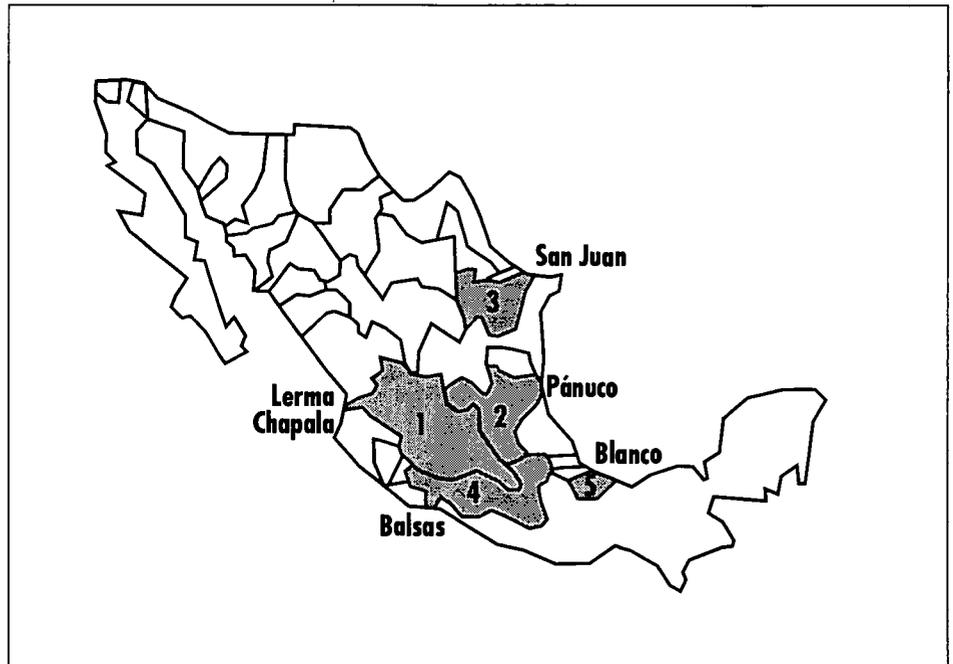
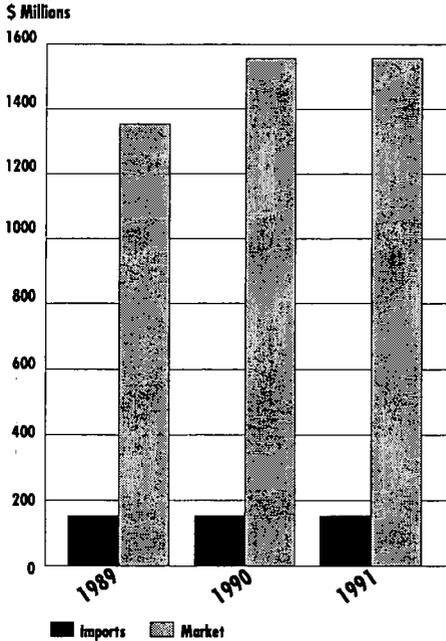


TABLE 3
WATER POLLUTION CONTROL EQUIPMENT
MEXICO - 1989 TO 1991
(MILLIONS OF DOLLARS)



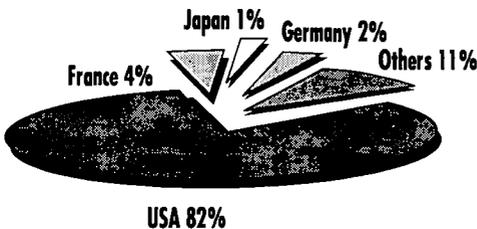
The five river systems shown on the map have been identified as those most urgently needing action to control pollution.

- The Lerma-Chapala watershed receives 16 percent of the country's waste water, but only 180 of more than 1,200 companies along the river have waste water treatment systems. An ambitious government program to build additional treatment plants is in progress.
- The Pánuco River Basin receives pollution from the port of Tampico-Madero-Altamira. A study has been undertaken to identify the most serious toxic substances and their sources.
- The San Juan watershed includes the cities of Monterrey and Saltillo. A toxic waste study has been undertaken and construction of a waste treatment plant for Monterrey is underway.
- The Balsas River Basin includes the Federal District. Two waste treatment plants have been built and three others are being improved.
- The Blanco River system is affected by several urban areas. The Veracruz state government has initiated a public-private company to build and operate a regional waste water treatment plant.

THE MARKET FOR WATER SUPPLY AND SEWAGE TREATMENT EQUIPMENT

The Mexican market for water supply, sewage and water treatment equipment was estimated at more than \$1.5 billion in 1991, with an annual growth rate of about 15 percent forecast for 1992 to 1994. The 1993 government budget for capital expenditures alone was \$1.6 billion. There is an additional market for technical services for repair, maintenance, training and research studies.

TABLE 4
IMPORT MARKET SHARES
WATER POLLUTION CONTROL EQUIPMENT
MEXICO - 1991



IMPORTS OF WATER POLLUTION CONTROL EQUIPMENT

The market for water pollution control equipment is the largest component of the overall environmental sector, accounting for more than \$1.5 billion in 1991. Import penetration was only about 10 percent. The United States was the leading importer, with more than 80 percent of the market, followed by France and Germany. Imports of services are not included in these figures.

COMPETITION IN WATER AND SEWAGE TREATMENT

There are a significant number of Mexican companies operating in the water treatment sector. They are most competitive in the low-technology, price-sensitive parts of the market, including valves, water lines, pumps, metres and other products that can be manufactured with Mexican technology. These companies include Aguaconsult, Aguamex, Agua Major, Etrasa, Agua-Treat and Filtros y Purificadores Azteca.



CASE STUDY:

WASTE WATER TREATMENT ZENON ENVIRONMENTAL INC.

Zenon is a 12-year-old Canadian company which went public in 1992. The company has been growing rapidly, and has expanded into international markets, with operations in Europe and the United States. Zenon believes that Mexico is a major potential market for its water treatment processes, which can not only recycle water, but some of the contaminants as well. Corporate Vice President, Ron Clifton points out that the Mexicans have a "national will to get on with things" which is creating a demand for environmental products and services.

Assistance from the Department of Foreign Affairs and International Trade (DFAIT), and Industry Canada (IC) has been instrumental in the efforts of Zenon Environmental Inc. of Burlington, Ontario to enter the Mexican market. Zenon has used the services of DFAIT and IC to conduct its research into the Mexican market and to develop an understanding of the country's culture and ways of doing business. They have received assistance in networking and meeting contacts in Mexico through trade missions.

The Company initially entered the Mexican market by selling their products and services to General Motors and Chrysler, U.S. companies with operations in Mexico. These automotive companies already knew what Zenon had to offer and could readily integrate the offerings into their existing operations.

Zenon's objective is to form a corporate relationship with a Mexican partner. They are now looking at partnerships that may involve any or all of pure product representation, joint ventures, an interest in a Mexican company or to establishing an office there. They feel they bring leading edge technology, experience, and knowledge to a partnership and are looking for their partner to provide an understanding of the culture, the way to do business, the markets for their products and customer-oriented service.

There are five manufacturing companies active in Mexico which can design and build complete water treatment systems: Babcock and Wilcox, Degremont de México, Etrasa, Lawsco and Intensa. They account for about 60 percent of total sales.

There are a number of Mexican consulting firms that provide water pollution control services. They tend to provide the labour-intensive portions of large engineering projects, because only a few of them are capable of complete projects. These include Grupo Mexicano de Desarrollo, FINSA, Grupo IC, Bufete, Gutsa and Cydsa.

Finally, there are several companies which produce chemicals for use in water treatment, including Dow, Bayer, Rohm and Hass, as well as a small number of Mexican firms which specialize in narrow product lines.

INTERNATIONAL WATER AND SEWAGE COMPANIES OPERATING IN MEXICO

Foreign Firm	Representative in Mexico
Ashbrook Simon Hartley	Servicios de Ingeniería del Medio Ambiente, S.A. •
Babcock & Wilcox	Babcock & Wilcox de México
Culligan International	Industrias Mass.
Degremont	Degremont de México
Dorr-Oliver, Inc.	Dorr-Oliver de México, S.A. de C.V.
Envirex, Inc.	Belco Mexicana, S.A. de C.V.
Générale de Eaux	Bufete
Graver Water	Industrias Econdyne, S.A. de C.V.
Hach Company	General de Laboratorios, S.A. de C.V.
Illinois Water Treatment	Itensa, S.A.
Leeds & Northrup	Leeds & Northrup Mexican S.A.
Lowsco Corp.	Lowsco Mex, S.A. de C.V.
Lyonnais des Eaux	
Memtec International	ARNI, S.A.
Millipore Corporation	Millipore, S.A. de C.V.
Radian Corporation	Corporación Radián S.A. de C.V.
Western Water Equipment	Soliatec, S.A. de C.V.



MARKET OPPORTUNITIES FOR CANADIAN COMPANIES

Water and sewage treatment equipment and services is the most established environmental market in Mexico. The demand comes mainly from municipal buyers, manufacturing consortiums and tourist developments.

CASE STUDY:

WASTE WATER TREATMENT

BIOCLEAR TECHNOLOGY, INC.

The experience of Bioclear Technology Inc., of Winnipeg, confirms the market significance of increased environmental concern in Mexico, especially in view of NAFTA.

Bioclear, which was established in 1976, is a leading manufacturer of Sequencing Batch Reactors (SBR) which are used in wastewater treatment facilities. Their "Fourth Generation Systems" are acknowledged as the most advanced SBR systems in the industry.

Bioclear recognized the significance of Mexico's efforts to clean up its environment and has been active in Mexico the past two years. As the company's Sales Manager, Murray Dulton puts it: "The anticipation of the North American Free Trade Agreement has committed Mexico to improving its infrastructures, beginning with its public facilities. Both industry and government are committed to change and have opened their trade barriers to foreign technology, such as our own". Dulton adds that in the northern *maquiladora* zone alone, Bioclear has a potential market worth more than \$100 million within the next five years.

After introducing its technology to Mexican authorities at the Expo '91 trade show in Monterrey, Bioclear entered into an agreement to install a demonstration plant at the University of Monterrey, for testing by Mexico's National Water Commission. The objective is to obtain Mexican environmental approval for the SBR system.

TECHNICAL STUDIES. The push for cost recovery by municipal water utilities will fuel a demand for rehabilitation of existing waste water treatment plants. This will create a market for technical evaluations and feasibility studies.

BUILD-OPERATE-TRANSFER (BOT) PROJECTS. The decentralization of authority for water management to municipal governments creates a market for BOT project development by foreign firms, because municipal authorities often lack the technical and management skills to launch their own water projects. In addition, PEMEX officials have announced plans for five waste water treatment plants to be contracted on a BOT basis. Each plant will be in the U.S. \$20 million class and will include service contracts for 12 to 15 years. Similar opportunities exist in private sector petrochemical plants.

WASTE MONITORING AND METERING EQUIPMENT. Increased quality monitoring by the National Water Commission (CNA) combined with decentralization and the expansion of cost-recovery pricing will create a demand for monitoring and metering equipment. This market includes flow metres, spectrometres, sampling and laboratory equipment as well as other pollution monitoring systems. The larger multinationals and Mexican corporations will also increasingly choose to monitor their waste water discharges.

LABORATORY EQUIPMENT AND SERVICES. The growth in environmental audits and impact assessments is creating an increased demand for laboratory services by engineering firms, and laboratory equipment by private laboratories.

PRE-TREATMENT EQUIPMENT. Increased enforcement by the Federal Attorney for Environmental Protection will lead industries with large environmental impacts, such as the sugar industry, to install pre-treatment equipment.

CONSULTING SERVICES. There is an excellent market for consulting and training services directly to the National Water Commission (CNA) and to the municipalities and state organizations it services.

INDUSTRIAL ESTATE DEVELOPMENTS AND INDUSTRY GROUPS.

The *Departamento del Distrito Federal* which manages the Federal District is implementing a policy to develop industrial estates, which will include facilities to treat effluent from the resident factories. An example is the *Iztapalapa* Estate in Mexico City built by FINSA. Nine other estates are planned in the Mexico City area. The high price of water is also driving private companies to form consortia to construct collectively-owned water recycling plants. An example is the *Vallejo* treatment facility in Mexico City.

TOURIST DEVELOPMENTS. Existing and new tourist developments are incorporating water pollution control equipment into their infrastructures.

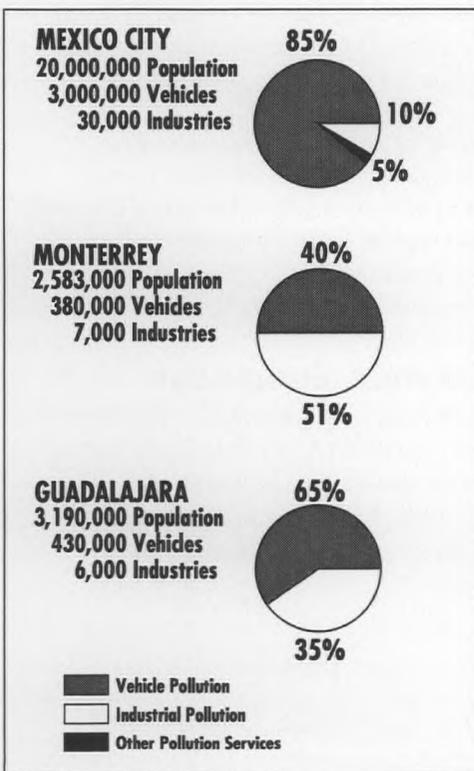


AIR POLLUTION CONTROL

Mexico's large urban centres suffer from serious air pollution problems. The most serious problems are in the regions of Mexico City, Guadalajara and Monterrey, which are responsible for 40 percent of all atmospheric emissions. The petrochemical producing state of Veracruz has special problems, and the rapidly expanding industrial areas of the North are also considered critical.

FIGURE 2
MEXICAN CITIES HAVING HIGH LEVELS OF AIR POLLUTION

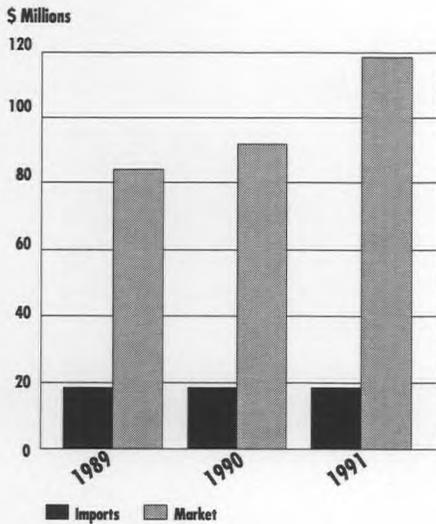
TABLE 5
CONTRIBUTING FACTORS TO AIR POLLUTION IN MAJOR MEXICAN CITIES



Mexico City is widely regarded as the most polluted city in the world. Industrial emissions are almost entirely uncontrolled, but transportation is by far the biggest polluter, accounting for three-quarters of all emissions. Fuel oil and gasoline — produced by PEMEX, the state oil monopoly — has a very high sulphur content. Internal combustion engines operate inefficiently at the city's altitude of 2,240 metres. These problems are exacerbated by thermal inversions which trap pollutants in the valley.



TABLE 6
AIR POLLUTION EQUIPMENT
DOMESTIC MARKET AND IMPORTS
MEXICO - 1989 TO 1991
(MILLIONS OF DOLLARS)



Although industry contributes a relatively small proportion of overall emissions, industrial air pollution is a serious problem because very few plants have emission control systems, and because they release a large proportion of highly-toxic substances. The most serious problems are in the pulp and paper, cement and textile industries which together account for almost 60 percent of industrial pollution. Part of the industrial air pollution problem results from extensive use of heavy crude oil for fuel.

THE MARKET FOR AIR POLLUTION EQUIPMENT

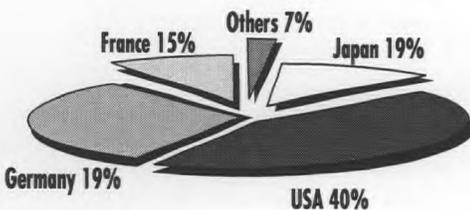
The market for air pollution equipment in Mexico was estimated at \$118 million in 1991, with growth projected at about 15 percent per year over the 1992 to 1994 period. Most improvements in air quality will result from government-initiated programs to reduce automobile emissions through the use of unleaded gasoline and catalytic converters. *Paraestatal* corporations, especially those in petroleum and electrical generation, are under pressure to reduce their emissions, but much of this will be accomplished through fuel substitution.

Direct sales of air pollution control equipment to end users, especially small factories, are not expected to increase substantially in the short term. In the longer term, however, increased enforcement of air contamination regulations will lead to a growing market, especially in those sectors and geographical areas targeted as enforcement priorities.

IMPORTS OF AIR POLLUTION CONTROL EQUIPMENT

Import penetration in the market for air pollution equipment was a healthy 39 percent of the domestic market, but the overall market size is a relatively small \$120 million. This reflects that fact that although air pollution control is a high priority, it is being achieved largely through changes to transportation technology, including unleaded fuel and emission control standards for automobiles, which are not classified as part of this sub-sector. These data exclude imports of services.

TABLE 7
IMPORT MARKET SHARES
AIR POLLUTION EQUIPMENT
MEXICO - 1991



COMPETITION IN AIR POLLUTION CONTROL EQUIPMENT

Mexican firms active in the market for air pollution equipment include relatively large companies such as Purificación de Aire Mexicana and Avante Ingenieros as well as a number of smaller firms such as Visa. Local manufacturers produce basic equipment such as dust collectors and filters. More advanced equipment, including monitors, metering instruments, analyzers, mobile laboratories and electronic control equipment are usually imported.

1. Paraestatal - state controlled



CASE STUDY:

AIR POLLUTION CONTROL BOVAR-WESTERN RESEARCH

Mexico's efforts to reduce air pollution by substituting low-sulphur fuels for automobiles and thermal electricity generating plants has provided a growing market for Bovar-Western Research, of Calgary.

Bovar-Western was founded in 1967 to service the Canadian sulphur recovery and gas processing industry. Over the past two decades, the company's products and services have become industry standards, and it now has markets in 33 countries worldwide.

Bovar-Western secured the first of its ongoing Mexican sales in 1987 when it obtained its first contract with PEMEX, the state oil monopoly, for instrumentation used in its sulphur recovery processes. It has since expanded its market to other petrochemical facilities in Mexico, and has announced that it will soon designate a permanent sales staff in Mexico.

Len Edwards, Bovar-Western's sales manager, notes that while markets in Canada and the United States are relatively mature, "legislation is just coming on stream in developing countries. For example, Mexico has, through the North American Free Trade Agreement, demonstrated its willingness to clean up its industries"

INTERNATIONAL AIR POLLUTION COMPANIES OPERATING IN MEXICO

Foreign Firm	Representative in Mexico
Altech Systems Corporation	Altech Systems Corporation
American Airlifters	
Babcock & Wilcox	Babcock & Wilcox de México
Beckman	
Chemical Waste Management	Chemical Waste Management de México
ENV America	ENV Ambiente de México, S.A. de C.V.
Fisher Governer	
Flakt	
Flex Kleen	
Foxboro	
Honeywell	
Jones and Neuse, Inc.	Technoconsult
Lear Siegler, Inc.	Ingeniería Ecológica
Leeds and Northrup	Leeds and Northrup Mexicana, S.A.
Marley International	
Radian Corporation	Corporación Radián S.A. de C.V.
Rohm and Haas	Solitec, S.A. de C.V.
Taylor Instruments	

MARKET OPPORTUNITIES FOR CANADIAN COMPANIES

The high levels of air pollution, particularly in the Valley of Mexico and the northern border areas has led to concerted efforts to reduce emissions of harmful substances into the air. Much of this effort is devoted to fuel substitution, but there is also a large demand for equipment to remove particulates, such as electrostatic precipitators and scrubbers.

FUEL OIL SUBSTITUTION. PEMEX is now developing low-sulphur gas oil which has a sulphur content of 0.5 percent compared with 4.0 percent for existing fuel oil. A gas oil with only 0.1 percent sulphur is under development. To reduce air pollution, privately-owned corporations will have to change fuels, but few of them can afford the cost of retrofitting their equipment, and the new fuels are



also more expensive. There is a proposal for a 50 percent tax credit to offset these costs. If this is enacted, there will be substantial demand for equipment to retrofit boilers and for flue recovery systems to increase efficiency. Retrofitting to burn natural gas or liquid propane will also create market opportunities.

LIQUID PROPANE (LP) CONVERSION. The Federal District is implementing a program to convert truck fleets to LP gas, which could lead to further conversion projects. But the potential for conversion is limited by the lack of infrastructure and processing facilities for liquid propane.

POWER PLANT POLLUTION CONTROL. There is a continuing demand for equipment to remove sulphur from thermal power plant emissions. This market is likely to be reduced substantially, however, if PEMEX can supply adequate quantities of low-sulphur fuel.

PRIVATE SECTOR AIR POLLUTION CONTROL. The demand for air pollution equipment, which would otherwise be created by increased enforcement efforts, is to some extent offset by financial constraints. This is especially true for smaller companies. Multinational firms with access to foreign capital are potential customers for such equipment, especially those in the chemical industry and those who use industrial solvents, both areas where the Federal Attorney is concentrating enforcement.

SOLID WASTE DISPOSAL

Solid waste disposal is a serious problem in Mexico, but it has so far received less attention than air and water pollution. Nonetheless, the solid waste sector will become a higher priority in the future.

There are three categories of solid waste: municipal waste, industrial waste and hazardous and clinical waste. Total solid waste amounts to some 472,000 metric tonnes per day, of which about 85 percent is industrial waste.

The mining industry alone produces about 300,000 tonnes per day of waste material. The textile, oil refining, petrochemical chemical and metal industries are also major contributors to the solid waste problem.

Municipal garbage has been increasing due to population growth and changes in consumption patterns, and has now reached 58,000 tonnes per day. Seventy percent of urban refuse is collected by municipal systems. There were only 34 controlled landfill sites in Mexico in 1990, enough for only about one-fifth of the population and many of them are inadequate to protect against ground water contamination. An additional ten landfill sites had been opened by the end of 1992, and sites have been selected for another seven.

CASE STUDY: SOLID WASTE DISPOSAL LAIDLAW INC.

Mexico's program of privatization has paid off for Laidlaw Inc., of Burlington, Ontario. The company, which went public in 1989, is a North American leader in environmental services for both the private and public sectors.

Laidlaw entered the Mexican market in 1992, when it acquired a hazardous waste treatment facility in Mexico's Ciudad Juárez. It collects local waste for delivery to its landfills in Texas and California. The company sees this as a further step towards unifying its North American hazardous waste operations into a single continental organization. Laidlaw officials estimate that revenues from Mexico's northern region alone will generate \$20 to \$30 million over the next two or three years.

Donald Jackson, Laidlaw's President and CEO, attributes the company's interest in Mexico to the fact that, "it has recognized that this large market has a government that is committed to rapid development and privatization."



TABLE 8
SOLID WASTE DISPOSAL EQUIPMENT
DOMESTIC MARKET AND IMPORTS
MEXICO - 1989 TO 1991
(MILLIONS OF DOLLARS)

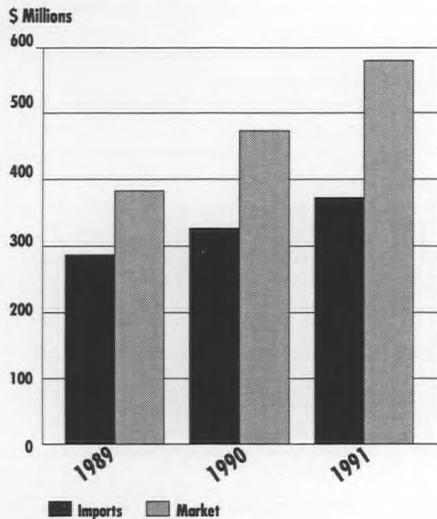
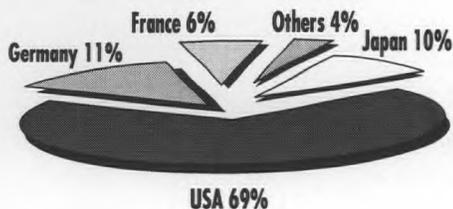


TABLE 9
IMPORT MARKET SHARES
SOLID WASTE DISPOSAL EQUIPMENT
MEXICO - 1991



There is an informal, but extensive, system for the recycling of glass, cardboard and plastics by *pepenadores*² who collect and sell this material to recycling factories. About U.S. \$2 million of recycled materials per day are sold in Mexico City alone. This is considered an obstacle to the privatization of municipal waste collection.

Hazardous and clinical waste is also a serious problem. Most of it ends up in local landfills. There are three containment facilities for hazardous wastes, but only one of them is operational. The single operational plant, located in Monterrey, can handle only about 10 percent of Mexico's daily output of 14,000 tonnes of hazardous wastes. Mexico has no facilities for the disposal of clinical waste, which is presently incinerated and disposed of in landfills.

THE MARKET FOR WASTE DISPOSAL EQUIPMENT

The market for solid waste handling equipment in Mexico was estimated at \$580 million in 1991, with annual growth forecast at 25 percent over the 1992-1994 period. Some observers believe that this growth potential will not be realized for two to five years, because air and water pollution control are presently higher priorities for the Mexican government.

IMPORTS OF SOLID WASTE EQUIPMENT

Imports of solid waste equipment make up a large share of a relatively small market. In 1991, imported equipment accounted for about two-thirds of the \$580 million market. The United States supplied almost 70 percent of this equipment, with Germany and Japan claiming the second and third largest market shares. Imports of services are not included.

COMPETITION IN SOLID WASTE EQUIPMENT

Mexico produces very little of the instrumentation or equipment used in the management of hazardous wastes. Some Mexican firms assemble instruments from imported components.

Technology is a key factor in selling solid waste equipment, as are maintenance and the availability of spare parts.

Two of the largest solid waste companies in the United States are now actively pursuing opportunities in Mexico. They are Chemical Waste Management and Browning-Ferris, both of which have formed joint ventures with Mexican firms.

2. Peppenadores - very poor people who collect garbage



INTERNATIONAL SOLID WASTE COMPANIES OPERATING IN MEXICO

CASE STUDY:

SOLID WASTE RECYCLING RECOVERY TECHNOLOGIES INC.

The experience of Recovery Technologies Inc. (RTI) of Mississauga Ontario, illustrates the importance of trade shows as a route of entry into the Mexican environmental market.

RTI, which was established in 1989, has developed an energy efficient, cost-competitive cryogenic whole-tire recycling system. The company developed its first system at its Ayr, Ontario, plant where it developed a technology which reduces discarded tires to rubber granules. The granules, which can be various sizes, are used to manufacture products ranging from car bumpers to construction materials.

RTI's objective is to sell its systems, on a turnkey basis, in locations where the granules can be used in the manufacture of new products. By 1992, the company had expanded from 4 to 23 employees and had sold installations in Italy and Switzerland. With negotiations in progress in several other countries, RTI has opened a second plant, in Cambridge Ontario, to house its most recent designs.

RTI participated in Canada Expo '92, in Monterrey, Mexico. As a result, it has signed a contract for the supply of a cryogenic tire recycling system with Grupo Neosa, a manufacturer of rubber sole shoes.

Foreign Firm	Representative in Mexico
Atmos	Atmos, S.A.
Aralco	Aralco, S.A. de C.V.
Babcock & Wilcox	Babcock & Wilcox de México
Browning-Ferris	Demos Internacional
Chemical Waste Management	Grupo Hermes
Dietzgen	
Dorr-Oliver	Dorr-Oliver de México, S.A. de C.V.
Fisher Governer	
Foxboro	
Hach	General de Laboratorios, S.A. de C.V.
Honeywell	
Horr and Choperena	Horr and Choperena, S.A.
Laidlaw	
Lawscomes	Lascomex, S.A. de C.V.
Leeds and Northrup	Leeds and Northrup Mexicana, S.A.
Perkin Elmer	
Sigma Engineering	Sigma Engineering, S.A. de C.V.
Taylor Instruments	
Uniloc	
Walace and Tierman	

MARKET OPPORTUNITIES FOR CANADIAN COMPANIES

Although solid waste disposal is not presently a high priority in Mexico, this sector is considered a good prospect for expansion over the next 2 to 5 years. This sub-sector is poorly developed, and new municipal projects are likely to be contracted to the private sector, providing opportunities for engineering, site selections, land fills and hazardous waste facilities.

SOIL TESTING AND REMEDIATION. The Mexican government is considering new regulations to require the vendors of commercial property to conduct an environmental inspection prior to sale. If this is enacted, PEMEX will be required to conduct extensive analysis and soil remediation on several of their sites.



ENVIRONMENTAL AUDITS. The present market for audits and assessments is mainly from multinationals and Mexican conglomerates. If a proposed new measure to make the environmental assessments tax deductible is enacted, it is expected that the demand for audits and assessments from small- and medium-sized enterprises will increase.

IDENTIFICATION OF WASTES. To gain control over solid waste disposal, the Mexican government will be required to develop specific classification criteria and require disclosure of industrial inventories. This will create a demand for engineering services and laboratory services and equipment.

TRAINING. There is little expertise in solid waste management in Mexico, leading to sales opportunities for training services to both the public and private sectors.

DISPOSAL OF HAZARDOUS AND CLINICAL WASTE. There is no established infrastructure in Mexico for the disposal of large quantities of hazardous and clinical waste. This creates opportunities for Canadian companies with expertise in industrial disposal methods.

3. HOW THE ENVIRONMENTAL SECTOR OPERATES

Governments and government agencies are the most important buyers of environmental equipment in Mexico. Federal government expenditures for environmental protection totaled U.S. \$2.5 billion in 1993. About one-third of these expenditures are allocated to mass transit and clean fuel programs, which are dealing with Mexico's serious automotive pollution problems. Another third is for conservation and protection of endangered species. The remaining third is devoted to environmental infrastructure, water facilities and other equipment.

As enforcement of environmental regulations becomes more aggressive, a large untapped market for pollution abatement equipment for industry will become evident. In the short run, due to rapidly rising industrial water prices, equipment for recycling water at the plant level is probably the most important private sector opportunity.

PUBLIC ENVIRONMENTAL PROGRAMS

Four major public programs constitute the main thrust of Mexico's environmental strategy.

THE NATIONAL PROGRAM FOR ENVIRONMENTAL PROTECTION 1990-1994 sets up a national strategy for environmental control, and allocates responsibilities for action among public institutions. The program encompasses elimination of highly polluting activities, water conservation and rehabilitation of damaged areas as well as the establishment of national parks and solid waste management facilities. All federal government environmental spending is managed through this program.



THE COMPREHENSIVE PLAN FOR PREVENTION OF POLLUTION IN THE VALLEY OF MEXICO is devoted to controlling air polluting emissions in the Mexico City region. The plan is aimed mainly at reducing emissions from motor vehicles and from the 220 worst industrial polluters. The plan is coordinated by a commission made up of representatives of government departments and major state-owned enterprises. The total budget for the plan is U.S. \$2.5 billion.

THE INTEGRATED ENVIRONMENTAL PLAN FOR THE MEXICAN-UNITED STATES BORDER AREA is a joint initiative of the Mexican and United States governments. It focuses on a 100 km strip on each side of the border. The first phase of this ten-year program will run until 1994, and will concentrate on increasing enforcement and improving air, water and solid waste management in Tijuana, Nogales and Nuevo Laredo. SEDESOL has committed U.S. \$460 million for the first phase, including U.S. \$220 million for sewage systems and treatment plants.

THE NATIONAL PROGRAM FOR DRINKING WATER AND SEWAGE is managed by the National Water Commission. The objectives of the program are to expand waste water treatment, to increase recycling and to improve disinfection of drinking water. The program budget is U.S. \$1.2 billion, with U.S. \$700 million allocated to Mexico City, Monterrey and Guadalajara.

GOVERNMENT PURCHASERS OF ENVIRONMENTAL EQUIPMENT AND SERVICES

Although Mexican government environmental efforts are, for the most part, coordinated through major national and regional programs, purchases of equipment and services are undertaken by individual government departments, agencies, and public enterprises. The main agencies responsible for environmental purchases are shown below.

SECRETARÍA DE DESARROLLO SOCIAL (SEDESOL) is the Mexican Secretariat for Social Development. It has overall responsibility for the environment, including regulation and enforcement, urban development, infrastructure and housing, and indigenous communities. SEDESOL was created in 1992 through the merger of two separate federal agencies formerly responsible for the environment and the development of social programs. SEDESOL's 1992 budget was U.S. \$627 million.

SECRETARÍA DE AGRICULTURA Y RECURSOS HIDRÁULICOS (SARH) is the Secretariat of Agriculture and Hydraulic Resources. It is responsible for all matters related to water in the federal jurisdiction. It includes the National Water Commission, which manages water resources and builds facilities, and the Mexican Institute for Water Technology, which develops and transfers water technology.



PETRÓLEOS MEXICANOS (PEMEX) is Mexico's *paraestatal* oil monopoly. It has responsibility for all exploration, production and marketing of crude oil and the refining of petroleum products. It is Mexico's largest corporation, employing more than 136,000 people. PEMEX has been under increasing pressure to improve its environmental record, and has established a corporate environment department consisting of more than 200 people.

COMISIÓN FEDERAL DE ELECTRICIDAD (CFE) is the *paraestatal* corporation responsible for providing all of Mexico's electrical power. It has an installed capacity of 33,000 megawatts, two-thirds of it generated by thermal plants using high-sulphur fuel oil. It has one nuclear plant, which supplies 2.5 percent of the nation's power. The balance is hydro and geothermal power. CFE established an environmental division in 1992, with an initial budget of U.S. \$5 million and a staff of 35. CFE is under increasing pressure to reduce emissions, particularly in the northern border area and the Valley of Mexico.

DEPARTAMENTO DEL DISTRITO FEDERAL (DDF) is the Federal District Department responsible for the Mexico City area, which includes 16 municipalities. The DDF is equivalent to a state, and wields considerable influence over the *Comprehensive Plan for Prevention of Pollution in the Valley of Mexico*, the nation's largest environmental program.

NACIONAL FINANCIERA (NAFINSA) is a development bank owned by the government of Mexico. It provides loan guarantees for environmental protection projects and provides equity financing for environmental companies.

FACTORS INFLUENCING ENVIRONMENTAL EXPENDITURES

The bulk of environmental expenditures in Mexico are made by federal government departments and agencies, *paraestatal* corporations, the Federal District and state governments. These institutions have come under increasing public pressure to make environmental protection a larger priority in their spending plans. Several factors, acting together, will lead to a rapidly expanding environmental sector in Mexico in the near future.

LEGISLATION. The General Law on Ecological Equilibrium and Environmental Protection of 1988 is the cornerstone of Mexico's environmental law framework. SEDESOL, the government department responsible for the environment, is drafting standards and developing regulations under the law. This activity has already created a market for consulting services, and as the new regulations are enforced, environmental product demand will increase as well.

ENVIRONMENT. Mexico's environment has deteriorated to the point where the quality of life and public health are threatened. Increasing levels of pollution also threaten to dampen economic growth.



DEMOGRAPHY. Rapid urbanization, particularly in Monterrey, Tijuana, Ciudad Juárez and Mexico City has increased population densities dramatically, leading to demands on water supply, sewage treatment and solid waste management systems that far exceed existing capacity.

ECONOMICS. The Mexican government has transformed the economy through an aggressive program of privatization and trade liberalization. This has led to an influx of foreign investment. Much of this investment has been allocated to new plants which require government approvals. For this reason, new plants tend to adopt cleaner technologies than those used by more established producers.

NAFTA. The Mexican government faced political pressure from Canada and the United States as Mexican environmental conditions became an issue threatening the ratification of the North American Free Trade Agreement. The "parallel agreement" on the environment will lead to more stringent environmental legislation and more aggressive enforcement in Mexico.

CUSTOMER PROFILE: SEDESOL

Secretaría de Desarrollo Social (SEDESOL) is the Mexican Secretariat for Social Development. It was created in 1992 to integrate environmental regulation with broader social development activities, under one federal department. In addition to environmental regulation and enforcement, SEDESOL is responsible for urban development, infrastructure and housing and indigenous communities. SEDESOL's 1992 budget was U.S. \$627 million of which U.S. \$78 million was allocated to the environment, a substantial increase from prior years. SEDESOL is a direct customer for environmental equipment and services as well as a major force driving spending on pollution abatement by both public agencies and private corporations.

SEDESOL's environmental mandate is carried out by two directorates:

- *Instituto Nacional de Ecología* (INE) is the National Institute for Ecology, which is responsible for all technical functions, including risk assessment and formulation of regulations.
- *Procuraduría Federal de Protección al Ambiente* is the Federal Attorney Office for Environmental Protection, with responsibility for enforcing compliance with environmental laws.

These directorates have autonomous decision-making authority, but are dependent on SEDESOL for funding.



INSTITUTO NACIONAL DE ECOLOGÍA (INE)

The INE is based in Mexico City, with a staff of 500. It has three principal functions: formulating new standards and regulations, environmental impact and risk assessment and granting permits for industrial plants.

STANDARDS AND REGULATIONS must follow the framework established by the Standards at Metrology Law (*Ley de Normas y Metrología*). These standards, known as *normas* are formulated by government committees in all sectors, with participation from industry, universities and research institutes. Eighty-three *Normas Técnicas Ecológicas* (NTEs) were produced up to 1992. During 1993, these NTEs were reviewed and another 84 new standards were formulated. Another 71 are planned for 1994. Much of this development work has been contracted to Canadian firms, with funding provided under the Government of Canada's Green Plan.

ENVIRONMENTAL IMPACT ASSESSMENT AND RISK ASSESSMENT regulations require that new industrial operations must submit an Environmental Impact Assessment (EIA) prior to construction. Non-polluting operations that submit a statement to that effect are exempted. If the operation is considered highly dangerous, an additional risk assessment is also required. A total of 1,378 EIAs were submitted in 1992, a dramatic increase from the 218 filed in 1989.

PERMITS for air emissions, water discharges and hazardous waste handling are issued by the INE for a range of specific industries, including petroleum, chemicals, steel, paper, sugar, beverages, cement, automobiles and mining. Federal public works projects, public highways, federal tourism projects and all industries in the Mexico-U.S. border area also require permits.

PROCURADURÍA FEDERAL DE PROTECCIÓN AL AMBIENTE

The Federal Attorney for Environmental Protection is Mexico's environmental enforcement agency. The Federal Attorney's mandate is to monitor compliance with air, waste and noise legislation and standards. It is not responsible for water, which is in the jurisdiction of the Ministry of Agriculture and Hydraulic Resources (SARH). It conducts investigations, inspections and environmental audits. Inspectors can impose sanctions ranging from fines or plant closures to performance bonds. The Attorney's Office has 500 employees in Mexico City, 450 in the border area, as well as staff in each state.

The Federal Attorney was first established in 1992, and has been responsible for a dramatic increase in the number of inspections. More than 4,500 inspections were conducted in 1992, and this rose to almost 7,000 in the first three months of 1993. This has been an important driving force in the demand for environmental products and services by the private sector.

Another mechanism available to the Federal Attorney is the environment audit. So far, these audits have been financed by SEDESOL, and conducted by private companies. There are currently 63 companies registered with SEDESOL that can perform environmental audits. Efforts are underway to make environmental audits tax deductible, which would increase audit activity by private corporations.



CUSTOMER PROFILE: SECRETARÍA DE AGRICULTURA Y RECURSOS HIDRÁULICOS (SARH)

SARH is the Mexican Secretariat of Agriculture and Hydraulic Resources. It has two agencies that manage water resources: The *Comisión Nacional del Agua* (National Water Commission) and the *Instituto Mexicano de Tecnología del Agua* (Mexican Institute for Water Technology).

COMISIÓN NACIONAL DEL AGUA (CNA)

The CNA was created in 1989 and has a mandate which covers the regulation of drinking water, sewage and industrial waste water for the entire country as well as building and operating the water supply and sewage systems in the Valley of Mexico, Cutzamala, Guerrero and Veracruz. It issues permits for all water resources and waste water discharges into water basins. The CNA's budget for 1993 is U.S. \$1.1 billion. It has a total of 800 staff, of which 400 are located in Mexico City.

The CNA also provides technical support to states and municipalities who operate their own water and sewage systems. Under the National Program for Drinking Water and Sewage of 1990, there has been a major effort to decentralize responsibility for water to state and municipal *Organismos Operadores* (operating agencies). There are now approximately 40 cities in Mexico which have complete responsibility for their own water resources.

The CNA approves and supervises water projects, with project financing provided by BANOBRAS, a state owned development bank. The *Organismos Operadores* have been hampered by a lack of management and technical expertise, and frequent personnel changes following municipal elections. For these reasons, the CNA is experimenting with licensing the operations of water treatment plants to the private sector through "Build, Operate, Own" and "Build, Operate, Transfer" arrangements as well as through subcontracting.

INSTITUTO MEXICANO DE TECNOLOGÍA DEL AGUA (IMTA)

The IMTA is the Mexican Institute of Water Technology. IMTA's mandate is to develop and transfer technologies related to the efficient use of water, and to provide water management training. It offers consulting and engineering services, and is responsible for training municipal and state employees involved in water treatment. In 1993, the operation of IMTA's technical workshops for water systems was contracted to five foreign companies, including the Ontario Environmental Training Consortium.



CUSTOMER PROFILE: PEMEX

PEMEX is the national oil monopoly owned by the Government of Mexico. It manages the exploration, production and marketing of virtually all crude oil and refined oil products in the country. It is the largest corporation in Mexico, and the 37th largest in the world, and employs more than 136,000 people. The corporation is accountable to the Secretariat of Energy and Paraestatal Industry (SEMIP), which regulates the petroleum sector. The Minister of SEMIP is the chairman of the PEMEX board of directors.

In 1993, PEMEX was divided into a holding company with four operating subsidiaries. The subsidiaries are self-governing bodies responsible for exploration and production, refining, gas and primary petrochemicals and secondary petrochemicals. The *Instituto Mexicano del Petróleo* (IMP) and *Petróleos Mexicanos Internacional* (PMI), remain outside this structure. The latter organization is responsible for exports of crude oil.

Due to increasing public pressure, PEMEX has increased its commitment to environmental protection, and has established an environment department, consisting of some 200 people.

The PEMEX environment division has a mandate to develop standards and consolidate environmental information. The subsidiaries each have equivalent, but smaller, environment departments. One of their functions is to conduct environmental assessments and to ensure compliance with government regulations. They also have a responsibility to develop low-polluting fuels.

The latter mandate has particular significance under the Comprehensive Plan for Prevention of Pollution in the Valley of Mexico, because PEMEX fuels are particularly high in sulphur. The plan has allocated more than U.S. \$1 billion to the development of unleaded gasoline, low-sulphur diesel fuel and low sulphur fuel oil. This activity will result in large investments in pollution control and abatement equipment, mainly financed by Japan, through tied-aid from Japan's EXIMBANK.

In 1992, PEMEX submitted more than 300 environmental impact assessments and 120 risk assessments to SEDESOL. Most of them were conducted by consulting firms from the United States.



CUSTOMER PROFILE: COMISIÓN FEDERAL DE ELECTRICIDAD (CFE)

The CFE is the Federal Electricity Commission, a state corporation responsible for providing electrical power to all of Mexico. It reports to the Secretariat of Energy and Paraestatal Industries (SEMIP). It has constitutional authority for all planning, development and operation of electrical generation systems. It employs 85,000 people and had sales of U.S. \$3 billion in 1990. In 1992, it also received some U.S. \$6 billion in government subsidies.

Installed capacity is 33,000 megawatts, expected to more than double by the year 2010. Two-thirds of all electricity is generated by thermal plants. The company maintains one nuclear plant, supplying 2.5 percent of Mexico's electricity. The rest of the nation's power comes from hydro and geothermal generation plants.

The government is demanding that the CFE bring revenues into line with costs. Subsidies are expected to be completely eliminated by the year 2000.

The CFE established an environmental division in 1992. It includes a staff of 35 and is planned to increase to 55 in 1994. The division undertakes environmental impact assessments, risk assessments and evaluates air, water and solid waste emissions. When its expansion is complete, the CFE plans to complete approximately 60 assessments per year.

Like other public enterprises operating in the Valley of Mexico and the northern border area, the CFE is under government pressure to reduce emissions, particularly from its thermal power plants which burn high-sulphur content fuel oil produced by PEMEX.

PRIVATE PURCHASERS OF ENVIRONMENTAL EQUIPMENT AND SERVICES

The trend towards increased levels of environmental regulation and enforcement, which has been evident over the past few years, is expected to continue. There will be growing pressure for compliance with government regulations and for the development of new environmental initiatives in the private sector. This trend will create sales opportunities for all kinds of pollution abatement equipment and technical services purchased by private corporations. There will also be a growing demand for waste water recycling at the plant level, as a result of more aggressive cost recovery policies reflected in higher water prices.



Financial constraints will limit the market potential of these developments. Tight monetary policies have kept interest rates high. Trade liberalization has removed the market protection formerly enjoyed by many Mexican companies, forcing them to focus on improving competitiveness. These financial constraints severely affect small- and medium-sized enterprises, which do not enjoy the access to foreign funding that larger conglomerates sometimes do.

Under these circumstances, the most promising market segments are comprised of customers who are either under particular pressure from regulatory authorities, or who have access to foreign capital. For example:

- industries where the Federal Attorney's Office is focusing attention, especially steel, cement and chemicals;
- all industries located in the northern border area;
- the 220 highest polluting companies that have been identified in the Valley of Mexico; and,
- foreign-owned subsidiaries.

NAFINSA: FINANCING FOR PRIVATE ENVIRONMENTAL PROJECTS

Financing environmental projects undertaken by small- and medium-sized enterprises is the mandate of the Nacional Financiera (NAFINSA), a state owned development bank. It provides loan guarantees for environmental projects, and also provides equity financing for environmental companies.

LOAN GUARANTEES

NAFINSA will provide guarantees for up to half of the amount of a loan, provided that the other half is guaranteed by corporate assets or the personal assets of the directors. These loan guarantees are designed for companies which do not qualify for regular bank loans and are available to companies incorporated in Mexico, whether or not they are foreign-owned. The funds are available for environmental assessments and for the purchase of environmental equipment. If the company has foreign currency transactions, the loan can be in foreign currency. For 1993, NAFINSA anticipates total guarantees of about U.S. \$135 million.



NORTH AMERICAN VENTURE CAPITAL FUND

This fund, established in September 1992, has U.S. \$30 million available for equity participation in environmental companies, and is expected to grow to U.S. \$50 million by 1994. Funding is available to Canadian firms if they are importing proven technologies and are promoting technology transfer. No more than 10 percent of the value of the fund can be invested in any one project. Terms of up to 10 years will be considered, although average investment duration is expected to be in the range of 5 to 7 years.

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THE REGULATORY FRAMEWORK

The Mexican environmental sector is regulated at the federal, state and municipal levels. The influence of various regulatory agencies on market demands for products and services is discussed where it is relevant throughout this study. This section provides an overview of the regulatory framework.

Mexico's system of environmental regulation is grounded in its Constitution. Several articles of the Constitution govern the use of natural resources, safety, and pollution prevention and control. Responsibilities are allocated between the federal, state and municipal governments. In general, the federal government is responsible for environmental issues that affect more than one state, including large industries, rivers and water systems. States and municipalities are usually responsible for municipal water and waste.

The *Ley de Equilibrio Ecológico y Protección al Medio Ambiente* (General Law for Ecological Equilibrium and Environment Protection of 1988) is the cornerstone of Mexico's environmental policy. This law is patterned after those in other countries, including the United States, and incorporates rules designed by the Environmental Protection Agency. It provides the framework for environmental standards and enforcement throughout Mexico.

The General Law is supplemented by various regulations and technical *normas*. The regulations outline the procedures required by the law, while the *normas* provide quantitative parameters.



All states are required to publish their own environmental law. Twenty-nine states have created their own laws, which are adaptations of the federal law. The States of Tlaxcala and Campeche have not yet enacted their own environmental legislation.

The *Secretaría de Desarrollo Social* (SEDESOL), a department of the federal government, has responsibility for both the formulation of *normas*, and for enforcement of the law. These functions are separated into two independent agencies of the Secretariat.

The *Instituto Nacional de Ecología* (National Institute for Ecology) formulates environmental standards, and conducts and evaluates environmental impact studies. New industrial plants must submit environmental impact studies and obtain permits from the Institute before commencing construction.

The *Procuraduría Federal de Protección al Ambiente* (Federal Attorney for Environmental Protection) is responsible for inspections and enforcement. The sanctions available to the Federal Attorney include fines, cancellation of permits, plant closures, performance bonds, and requirements for environmental audits. The number of inspections and environmental risk assessments has been increasing rapidly, as SEDESOL develops its regulatory program.

The Federal Attorney does not enforce water regulations, which are the responsibility of the *Comisión Nacional del Agua* (National Water Commission), which reports to the Ministry of Agriculture and Hydraulic Resources. The Commission is in the process of decentralizing control over water and sewage systems to the state level, and directly to municipalities with more than 50,000 inhabitants.

4. MARKET RESEARCH

Preparation of a business plan is the first stage of entering any new market. The factors that will lead to success in Mexico include thorough market research, a permanent local presence and an understanding of the Mexican market. The formation of a consortia of Canadian companies which focuses on specific Mexican needs has also proven successful.

MARKET RESEARCH

Information about the Mexican market is available from a variety of Canadian and Mexican government authorities.

DEPARTMENT OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE (DFAIT) can provide general market information, studies of specific industries, and information about trade shows. The Canadian Embassy in Mexico and its satellite office in Monterrey can help to identify partners or agents, and can introduce Canadian companies to prospective clients. DFAIT is also responsible for



international initiatives under Environment Canada's Green Plan. DFAIT maintains a network of International Trade Centres in every province and can be reached through the InfoEx toll free service (1-800-267-8376).

INDUSTRY CANADA (IC) has a mandate to improve the competitiveness of Canadian industry. The department's Environmental Industries Directorate coordinates with DFAIT on a number of projects such as trade shows and missions. IC has regional offices which work directly with Canadian companies and can be contacted through the provincial International Trade Centres offices.

THE CANADIAN INTERNATIONAL DEVELOPMENT AGENCY (CIDA) operates the Industrial Cooperation Program. This program provides financial contributions to stimulate private sector involvement in developing countries, including environmental projects.

THE EXPORT DEVELOPMENT CORPORATION (EDC) provides insurance, guarantees and financing to facilitate Canadian exports. EDC has a \$500 million line of credit with PEMEX for projects with a minimum cost of \$1 million. EDC maintains offices in several major Canadian cities.

THE CANADIAN COUNCIL FOR THE AMERICAS promotes the expansion of trade with Latin America and the Caribbean (416-367-4313).

THE MEXICAN EMBASSY in Ottawa and its Consulates in Montreal, Toronto and Vancouver can provide information about doing business in Mexico.

THE SECRETARIAT FOR SOCIAL DEVELOPMENT AND HOUSING (SEDESOL) maintains an office in Washington DC. (202-728-1770). This office has detailed information about Mexican environmental programs.

INTERNATIONAL FINANCIAL INSTITUTIONS, including the World Bank and the Inter-American Development Bank, provide funds to Mexico for a wide variety of specific projects. These banks can provide details of upcoming projects and identify the Mexican executing agencies. The banks also produce a variety of studies related to the environment.

LOCAL PRESENCE

Government agencies and *paraestatal* corporations prefer to purchase imported services and equipment through companies with a permanent local presence in Mexico.

A practical way to establish this presence is to form a strategic alliance or partnership with a Mexican company. For many small- and medium-sized Canadian companies, this is the only effective way to enter the Mexican market. Canadian firms can provide expertise and technology transfer that mesh well with the market knowledge and relatively low operating costs of local partners.

Mexico's markets are highly regional, and Canadian firms often prefer to have separate partners in different markets. In the environmental sector, it is especially useful to have partners both in the Federal District (Mexico City) and in the northern border area, which are the sites of major environmental programs.



5. WHERE TO GO FOR ADDITIONAL ASSISTANCE

CANADIAN GOVERNMENT DEPARTMENTS AND SERVICES IN CANADA

DEPARTMENT OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE* (OTTAWA)

Department of Foreign Affairs and International Trade (DFAIT) is the Canadian federal government department most directly responsible for trade development. The **InfoEx Centre** is the first contact point for advice on how to start exporting; it provides information on export-related programs and services; helps find fast answers to export problems; acts as the entry point to DFAIT's trade information network; and can provide interested companies with copies of specialized export publications.

InfoEx Centre

Tel: 1-800-267-8376 or (613) 994-4000
Fax: (613) 996-9709

Latin America and Caribbean Trade Division promotes trade with Mexico. There are several trade commissioners at the Embassy of Canada in Mexico City, and there is a satellite office in Monterrey. Trade Commissioners can provide a range of services including introducing Canadian companies to potential customers in Mexico, advising on marketing channels, assisting those wishing to participate in trade fairs, helping identify suitable Mexican firms to act as agents, and compiling credit and business information on potential foreign customers.

Latin America and Caribbean Trade Division (LGT)

Department of Foreign Affairs and International Trade
Lester B. Pearson Building
125 Sussex Drive
Ottawa, ON K1A 0G2
Tel: (613) 996-6547
Fax: (613) 943-8806

INTERNATIONAL TRADE CENTRES

International Trade Centres have been established across the country as a first point of contact to support the exporting efforts of Canadian firms. Co-located with the regional offices of Industry Canada (IC), the centres operate under the guidance of DFAIT and all have resident Trade Commissioners. They help companies determine whether or not they are ready to export; assist

firms with marketing research and market planning; provide access to government programs designed to promote exports; and arrange for assistance from the Trade Development Division in Ottawa and trade officers abroad. Contact the International Trade Centre nearest you:

British Columbia: Scotia Tower
900-650 West Georgia Street
P.O. Box 11610
Vancouver, BC V6B 5H8
Tel: (604) 666-0434
Fax: (604) 666-8330

Yukon: Room 210
300 Main Street
Whitehorse, YT Y1A 2B5
Tel: (403) 667-3921
Fax: (403) 668-5003

Alberta: Canada Place
Suite 540
9700 Jasper Avenue
Edmonton, AB T5J 4C3
Tel: (403) 495-4782
Fax: (403) 495-4507

11th Floor
510-5th Street S.W.
Calgary, AB T5P 3S2
Tel: (403) 292-6660
Fax: (403) 292-4578

Northwest Territories: Precambrian Building
10th Floor
P.O. Box 6100
Yellowknife, NT X1A 2R3
Tel: (403) 920-8578
Fax: (403) 873-6228

Saskatchewan: Suite 401
119-4th Avenue South
Saskatoon, SK S7K 5X2
Tel: (306) 975-4400
Fax: (306) 975-5334

4th Floor
1955 Smith Street
Regina, SK S4P 2N8
Tel: (306) 780-7520
Fax: (306) 780-6679

* Formerly External Affairs and International Trade Canada.



Manitoba: 7th Floor
330 Portage Avenue
P.O. Box 981
Winnipeg, MB R3C 2V2
Tel: (204) 983-8036
Fax: (204) 983-2187

Ontario: Dominion Public Building
4th Floor
1 Front Street West
Toronto, ON M5J 1A4
Tel: (416) 973-5053
Fax: (416) 973-8714

Quebec: Stock Exchange Tower
Suite 3800
800 Victoria Square
P.O. Box 247
Montréal, PQ H4Z 1E8
Tel: (514) 283-8185
Fax: (514) 283-8794

New Brunswick: Assumption Place
770 Main Street
P.O. Box 1210
Moncton, NB E1C 8P9
Tel: (506) 857-6452
Fax: (506) 851-6429

Prince Edward Island: Confederation Court Mall
Suite 400
134 Kent Street
P.O. Box 1115
Charlottetown, PE C1A 7M8
Tel: (902) 566-7400
Fax: (902) 566-7450

Nova Scotia: Central Guarantec Trust Tower
5th Floor
1801 Hollis Street
P.O. Box 940, Stn M
Halifax, NS B3J 2V9
Tel: (902) 426-7540
Fax: (902) 426-2624

Newfoundland: Atlantic Place
Suite 504
215 Water Street
P.O. Box 8950
St. John's, NF A1B 3R9
Tel: (709) 772-5511
Fax: (709) 772-5093

WORLD INFORMATION NETWORK

FOR EXPORTS

The World Information Network for Exports (WIN Exports) is a computer-based information system designed by DFAIT to help Canada's trade development officers abroad match foreign needs to Canadian capabilities. It provides users with information on the capabilities, experience and interests of more than 30,000 Canadian exporters. To be registered on WIN Exports, call: (613) 996-5701.

PROGRAM FOR EXPORT MARKET DEVELOPMENT (PEMD)

This program seeks to increase export sales by sharing the costs of industry-initiated activities aimed at developing export markets. PEMD is administered by IC regional offices and funded by DFAIT. Activities eligible for PEMD financial support (up to 50 percent of the costs) include:

- participation in recognized foreign trade fairs outside of Canada;
- trips to identify export markets and visits by foreign buyers to Canada;
- project bidding or proposal preparation at the pre-contractual stage for projects outside Canada;
- the establishment of permanent sales offices abroad in order to undertake sustained marketing efforts;
- special activities for non-profit, non-sales food, agriculture and fish organizations, marketing boards and agencies, trade fairs, technical trials, and product demonstrations (for example); and
- new eligible costs include: product testing for market certification, legal fees for marketing agreements abroad, transportation costs for offshore company trainees, product demonstration costs and other costs necessary to execute the marketing plan.

Support is also provided for certain types of government-planned activities, such as outgoing trade missions of Canadian business representatives and incoming missions to Canada of foreign business and government officials who can influence export sales.

For information, call: (613) 954-2858.



INTERNATIONAL FINANCING

DFAIT helps Canadian exporters interested in pursuing multilateral business opportunities financed by international financing institutions (IFI). Canadian exporters and trade associations can access market data, obtain a better understanding of the competition, and determine if an IFI-funded market opportunity is practical and worth pursuing. DFAIT can provide information and advice on the availability of Canadian government-funded assistance programs and can assist companies in developing effective export marketing. For further information contact:

International Finance Division
Department of Foreign Affairs and International Trade
Tel: (613) 995-7251
Fax: (613) 943-1100

TECHNOLOGY INFLOW PROGRAM

Managed by DFAIT and delivered domestically by the National Research Council, this program is designed to help Canadian companies locate, acquire and adopt foreign technologies by promoting international collaboration. IC also helps in program promotion. The program officers respond to requests to identify technology sources and opportunities for cooperation between Canadian and foreign firms. The program will also help Canadian firms make exploratory visits abroad to identify and gain first-hand knowledge of relevant foreign technologies as well as to negotiate to acquire them. For information, call: (613) 993-3996

INVESTMENT DEVELOPMENT PROGRAM

This program helps Canadian companies find the investment they need. It actively promotes investments that take the form of new plant and equipment, joint ventures or strategic partnerships. It is especially interested in attracting investment that introduces new technology into Canada, a key to creating new jobs and economic opportunities. Investment officers make contact with foreign investors and bring them together with Canadian companies. For information, call: (613) 996-8625.

INDUSTRY CANADA

Industry Canada (IC) was created with a broad mandate to improve the competitiveness of Canadian industry. In the area of small business, it has been given specific responsibility to:

- develop, implement and promote national policies to foster the international competitiveness of industry; the enhancement of industrial, scientific and technological development; and the improvement in the productivity and efficiency of industry;
- promote the mobility of goods, services, and factors of production within Canada;

- develop and implement national policies to foster entrepreneurship and the start-up, growth and expansion of small businesses;
- develop and implement national policies and programs respecting industrial benefits from procurement of goods and services by the government of Canada;
- promote and provide support services for the marketing of Canadian goods, services and technology; and
- promote investment in Canadian industry, science and technology.

IC REGIONAL OFFICES

The regional offices work directly with Canadian companies to promote industrial, scientific and technological development. They help clients recognize opportunities in a competitive international marketplace by providing services in the areas of business intelligence and information, technology and industrial development, and trade and market development. They also promote and manage a portfolio of programs and services.

The following are areas in which IC regional offices have special competence:

- access to trade and technology intelligence and expertise;
- entry points to national and international networks;
- industry sector knowledge base;
- co-location with International Trade Centres connected to DFAIT and Canadian posts abroad;
- client focus on emerging and threshold firms; and
- IC Business Intelligence.

THE BUSINESS OPPORTUNITIES SOURCING SYSTEM (BOSS)

BOSS is a computerized databank that profiles over 26,000 Canadian companies. It lists basic information on products, services and operations that is useful to potential customers. The system was established in 1980 by IC in cooperation with participating provincial governments. BOSS was originally established so that Trade Commissioners posted around the world by DFAIT could find Canadian companies that might be able to take advantage of foreign market opportunities. Today, more than 11,000 domestic and international subscribers use the system not only to locate Canadian suppliers but also to obtain market intelligence and identify market opportunities. The majority of subscribers are Canadian companies.

Call: (613) 954-5031.



MARKET INTELLIGENCE SERVICE

This service provides Canadian business with detailed market information on a product specific basis. The service assists Canadian companies in the exploitation of domestic, export, technology transfer, and new manufacturing investment opportunities. The intelligence is used by Canadian business in decisions regarding manufacturing, product development, marketing, and market expansion. The information includes values, volume and unit price of imports, characteristics of specific imports (e.g. material, grade, price range, etc.), names of importers, major countries of export, identification of foreign exporters to Canada, Canadian production, Canadian exports, and U.S. imports. Two-thirds of the clientele for this service are small businesses.
Call: (613) 954-4970.

CANADIAN INTERNATIONAL DEVELOPMENT AGENCY

An important possible source of financing for Canadian ventures in Mexico is the special fund available through the Canadian International Development Agency (CIDA) under the Industrial Cooperation Program or CIDA/INC. CIDA's Industrial Cooperation Program provides financial contributions to stimulate Canadian private-sector involvement in developing countries by supporting long-term business relationships such as joint ventures and licencing arrangements. INC supports the development of linkages with the private sector in Mexico encouraging Canadian enterprises to share their skills and experiences with partners in Mexico, and other countries. A series of INC mechanisms help enterprises to establish mutually beneficial collaborative arrangements for the transfer of technology and the creation of employment in Mexico. There are five INC mechanisms which help eligible Canadian firms to conduct studies and provide professional guidance and advice to potential clients. Where a project involves environmental improvement, technology transfer, developmental assistance to women, job training, or job creation, early contact with CIDA's Industrial Cooperation Division is suggested.

An important CIDA criterion is that the project creates jobs in Mexico without threatening jobs in Canada. In fact, most CIDA-assisted projects have produced net increases in Canadian jobs.

Industrial Cooperation Division
Canadian International Development Agency
200, Promenade du Portage
Hull, PQ K1A 0G4
Tel: (819) 997-7905/7906
Fax: (819) 953-5024

ATLANTIC CANADA OPPORTUNITIES AGENCY

Atlantic Canadian companies seeking to develop exports to Mexico may be eligible for assistance from the Atlantic Canada Opportunities Agency (ACOA). The Agency works in partnership with entrepreneurs from the Atlantic region to promote self-sustaining economic activity in Atlantic Canada.

The ACOA Action Program provides support to businesses as they look to expand existing markets through the development of Marketing Plans. Efforts include monitoring trade opportunities arising from global economic change; communications efforts to promote the region; trade missions and associated activities, as well as better coordination with federal and provincial bodies that influence trade and investment opportunities.

ACOA Head Office: Blue Cross Centre
644 Main Street
P.O. Box 6051
Moncton, NB E1C 9J8
Toll free: 1-800-561-7862
Fax: (506) 851-7403

Newfoundland and Labrador: Suite 801, Atlantic Place
215 Water Street
P.O. Box 1060, Station C
St. John's, NF A1C 5M5
Tel: (709) 772-2751
Toll free: 1-800-563-5766
Fax: (709) 772-2712

Nova Scotia: Suite 600
1801 Hollis Street
P.O. Box 2284, Station M
Halifax, NS B3J 3M5
Tel: (902) 426-8361
Toll free: 1-800-565-1228
Fax: (902) 426-2054

Prince Edward Island: 75 Fitzroy Street
3rd Floor
Charlottetown, PE C1A 1R6
Tel: (902) 566-7492
Toll free: 1-800-565-0228
Fax: (902) 566-7098

New Brunswick: 570 Queen Street
P.O. Box 578
Fredericton, NB E3B 5A6
Tel: (506) 452-3184
Toll free: 1-800-561-4030
Fax: (506) 452-3285



WESTERN ECONOMIC

DIVERSIFICATION CANADA

Western Canadian companies interested in Mexico may be able to secure assistance from Western Economic Diversification Canada (WD). This agency provides financial assistance for projects which contribute to the diversification of the western economy. It acts as a pathfinder to ensure that western businesses are aware of and receive assistance from the most appropriate source of funding, federal or other, for their projects. It acts as an advocate for the west in national economic decision-making and it coordinates federal activities that have an impact on economic growth in the west. It also plays a role in promoting trade between western Canada and markets around the world. Inquiries about the Western Diversification Program and other activities of the department can be directed to any of the following regional offices:

- Manitoba:** P.O. Box 777
Suite 712
The Cargill Building
240 Graham Avenue
Winnipeg, MB R3C 2L4
Tel: (204) 983-4472
Fax: (204) 983-4694
- Saskatchewan:** P.O. Box 2025
Suite 601
S.J. Cohen Building
119-4th Avenue South
Saskatoon, SK S7K 5X2
Tel: (306) 975-4373
Fax: (306) 975-5484
- Toll free within Regina
city limits
Tel: (306) 780-6725
- Alberta:** Suite 1500
Canada Place
9700 Jasper Avenue
Edmonton, AB T5J 4H7
Tel: (403) 495-4164
Fax: (403) 495-7725
- Toll free within Calgary
city limits
Tel: (403) 292-5382
- British Columbia:** P.O. Box 49276
Bentall Tower 4
1200-1055 Dunsmuir Street
Vancouver, BC V7X 1L3
Tel: (604) 666-6256
Fax: (604) 666-2353
- Toll free within the Province
Tel: 1-800-663-2008

EXPORT DEVELOPMENT CORPORATION

EDC is a unique financial institution that helps Canadian business compete internationally. EDC facilitates export trade and foreign investment by providing risk management services, including insurance and financing, to Canadian companies and their global customers.

EDC's programs fall into four major categories:

- Export credit insurance, covering short- and medium-sized credits.
- Performance-related guarantees and insurance, providing cover for exporters and financial institutions against calls on various performance bonds and obligations normally issued either by banks or surety companies
- Foreign investment insurance, providing political risk protection for new Canadian investments abroad.
- Export financing, providing medium- and long-term export financing to foreign buyers of Canadian goods and services.

For information on the full range of EDC services, contact any of the following EDC offices:

- Ottawa (Head Office):** 151 O'Connor Street
Ottawa, ON K1A 1K3
Tel: (613) 598-2500
Fax: (613) 237-2690
- Public Information:** Tel: (613) 598-2739
- Vancouver:** Suite 1030
One Bentall Centre
505 Burrard Street
Vancouver, BC V7X 1M5
Tel: (604) 666-6234
Fax: (604) 666-7550
- Calgary:** Suite 1030
510-5th Street S.W.
Calgary, AB T2P 3S2
Tel: (403) 292-6898
Fax: (403) 292-6902
- Winnipeg:** 8th Floor
330 Portage Avenue
Winnipeg, MB R3C 0C4
Tel: (204) 983-5114
Fax: (204) 983-2187
(serving Manitoba and
Saskatchewan)



Toronto: Suite 810
National Bank Building
150 York Street
P.O. Box 810
Toronto, ON M5H 3S5
Tel: (416) 973-6211
Fax: (416) 862-1267

London: Suite 1512
Talbot Centre
148 Fullarton Street
London, ON N6A 5P3
Tel: (519) 645-5828
Fax: (519) 645-5580

Montreal: Suite 4520
800 Victoria Square
P.O. Box 124
Tour de la Bourse
Montreal, PQ H4Z 1C3
Tel: (514) 283-3013
Fax: (514) 878-9891

Halifax: Purdy's Wharf, Tower 2
Suite 1410
1969 Upper Water Street
Halifax, NS B3J 3R7
Tel: (902) 429-0426
Fax: (902) 423-0881

NATIONAL RESEARCH COUNCIL

Canadian companies hoping to succeed in the Mexican marketplace may require additional technology to improve their competitiveness. The National Research Council (NRC) works with Canadian firms of all sizes to develop and apply technology for economic benefit. The Council supervises the Industrial Research Assistance Program (IRAP), a national network for the diffusion and transfer of technology.

The IRAP network supports the process of developing, accessing, acquiring, implanting, and using technology throughout Canadian industry. IRAP has been in existence for 40 years and has acquired a reputation as one of the more flexible and effective federal programs. IRAP takes advantage of an extensive network that includes more than 120 regional and local offices, 20 provincial technology centres, the Council's own laboratories and research institutes, federal government departments, and technology transfer offices in Canadian universities. The IRAP network also extends abroad through the technology counsellors attached to Canadian posts in some 18 foreign countries. For more information or the name of the IRAP officer nearest you, contact the following:

IRAP Office
National Research Council
Montreal Road
Building M-55
Ottawa, ON K1A 0R6
Tel: (613) 993-5326
Fax: (613) 952-1086



KEY CONTACTS IN CANADA

BUSINESS ASSOCIATIONS

The Canadian Council for the Americas (CCA) is a non-profit organization formed in 1987 to promote business interests in Latin American and Caribbean countries. The CCA promotes events and programs targeted at expanding business and building networking contacts between Canada and the countries of the region. It also publishes a bimonthly newsletter.

The Canadian Council for the Americas (CCA)

Executive Offices, Third Floor
145 Richmond Street West
Toronto, ON M5H 2L2
Tel: (416) 367-4313
Fax: (416) 367-5460

Canadian Exporters' Association (CEA)

99 Bank Street, Suite 250
Ottawa, ON K1P 6B9
Tel: (613) 238-8888
Fax: (613) 563-9218

Canadian Manufacturers' Association (CMA)

75 International Boulevard, Fourth floor
Etobicoke, ON M9W 6L9
Tel: (416) 798-8000
Fax: (416) 798-8050

The Canadian Chamber of Commerce (CCC)

55 Metcalfe Street, Suite 1160
Ottawa, ON K1P 6N4
Tel: (613) 238-4000
Fax: (613) 238-7643

Forum for International Trade and Training (FITT)

155 Queen Street, Suite 608
Ottawa, ON K1P 6L1
Tel: (613) 230-3553
Fax: (613) 230-6808

Language Information Centre

240 Sparks Street, RPO
Box 55011
Ottawa, ON K1P 1A1
Tel: (613) 523-3510

Canadian Freight Forwarders Association (CIFFA)

Box 929
Streetsville, ON L5M 2C5
Tel: (905) 567-4633
Fax: (905) 542-2716

BANK OF MONTREAL

INTERNATIONAL OFFICES IN CANADA

The Bank of Montreal is the longest-serving Canadian bank in Mexico. It offers a wide range of international banking services and trade financing through its Trade Finance offices across Canada.

Trade Finance Offices:

129 St. James Street West, 12th Floor
Montreal, PQ H2Y 1L6
Tel: (514) 877-9465
Fax: (514) 877-6933

First Canadian Place, 23rd Floor
Toronto, ON M5X 1A1
Tel: (416) 867-5584
Fax: (416) 867-7635

599 Burrard Street, 6th Floor
P.O. Box 49350
Vancouver, BC V7X 1L5
Tel: (604) 665-2740
Fax: (604) 665-7283

International Operations Offices:

599 Burrard Street, 7th floor
P.O. Box 49500
Vancouver, BC V7X 1L5
Tel: (604) 665-3705
Fax: (604) 665-7120

B1 Level, FCC, 340-7th Avenue South West
Calgary, AB T2P 0X4
Tel: (403) 234-3775
Fax: (403) 234-3777

335 Main Street, P.O. Box 844
Winnipeg, MB R3C 2R6
Tel: (204) 985-2202
Fax: (204) 985-2739

234 Simcoe Street, 3rd Floor
Toronto, ON M5T 1T1
Tel: (416) 867-6567
Fax: (416) 867-7162

288 St. James St. West
Montreal, PQ H2Y 1N1
Tel: (514) 877-7317
Fax: (514) 877-7155



BAKER & MCKENZIE OFFICES

Baker & McKenzie is one of the largest international law firms with offices in 35 countries. They presently have four offices in Mexico, in the cities of Juárez, Mexico City, Monterrey and Tijuana. In addition to providing legal advice, the firm's offices in Canada and Mexico work to assist Canadian companies to find the right partner to enable them to establish or expand their activities in Mexico.

Baker & McKenzie
Barristers & Solicitors
112 Adelaide Street East
Toronto, ON M5C 1K9
Tel: (416) 865-6910/6903
Fax: (416) 863-6275

MEXICAN GOVERNMENT OFFICES

The Embassy of Mexico, Mexican Trade Commissioners in Canada, and Mexican consulates can provide assistance and guidance to Canadian companies in need of information about doing business in Mexico.

Embassy of Mexico
130 Albert Street, Suite 1800
Ottawa, ON K1P 5G4
Tel: (613) 233-8988
Fax: (613) 235-9123

Mexican Consulate in Ottawa
Tel: (613) 235-7782

SECOFI
130 Albert Street, Suite 1700
Ottawa, ON K1P 5G4
Tel: (613) 235-7782
Fax: (613) 235-1129

Other Mexican Consulates General in Canada

Consulate General of Mexico
2000 Mansfield Street, Suite 1015
Montreal, PQ H3A 2Z7
Tel: (514) 288-2502/4916
Fax: (514) 288-8287

Consulate General of Mexico
60 Bloor Street West, Suite 203
Toronto, ON M4W 3B8
Tel: (416) 922-2718/3196
Fax: (416) 922-8867

Consulate General of Mexico
810-1139 West Pender Street
Vancouver, BC V6E 4A4
Tel: (604) 684-3547/1859
Fax: (604) 684-2485

Mexican Honorary Consulate
380, Chemin St. Louis
No. 1407
Québec, PQ G1S 4M1
Tel: (418) 681-3192
Fax: (418) 683-7843

Mexican Honorary Consulate
830-540 5th Avenue, S.W.
Calgary, AB T2P 0M2
Tel: (403) 263-7077/7078
Fax: (403) 263-7075

For the Mexican Trade Commission offices in Montreal, Toronto and Vancouver see the following listing for Bancomext.

MEXICAN BANKS WITH OFFICES IN CANADA

Bancomext offers credits, export guarantees and counselling services for those seeking to do business in Mexico. Credits are available for export, import and project financing. Counselling covers fiscal, financial, marketing and legal aspects of commercial transactions. Bancomext also sponsors trade fairs, international exhibitions and trade missions.

Bancomext
Trade Commission of Mexico
P.O. Box 32, Suite 2712
TD Bank Tower
66 Wellington Street
Toronto, ON M5K 1A1
Tel: (416) 867-9292
Fax: (416) 867-1847

Bancomext
Trade Commission of Mexico
200 Granville Street, Suite 1365
Vancouver, BC V6C 1S4
Tel: (604) 682-3648
Fax: (604) 682-1355

Bancomext
Trade Commission of Mexico
1501 McGill College, Suite 1540
Montreal, PQ H3A 3M8
Tel: (514) 287-1669
Fax: (514) 287-1844

Banamex and Banca Serfin are private sector banks which offer specialized services through their international trade information centres. The centres participate in a computerized communications network with access to numerous economic, governmental and financial data bases throughout the world. These banks are located throughout Mexico, and maintain offices in Toronto.

Banamex (*Banco Nacional de México*)
Suite 3430
1 First Canadian Place
P.O. Box 299
Toronto, ON M5X 1C9
Tel: (416) 368-1399
Fax: (416) 367-2543

Banca Serfin
161 Bay Street
BCE Place
Canada Trust Tower
Suite 4360
P.O. Box 606
Toronto, ON M5J 2S1
Tel: (416) 360-8900
Fax: (416) 360-1760



CANADIAN GOVERNMENT DEPARTMENTS AND SERVICES IN MEXICO

Commercial Division The Embassy of Canada in Mexico

The Commercial Division of the Canadian Embassy in Mexico can provide vital assistance to Canadians venturing into the Mexican market. The trade commissioners are well informed about the market and will respond in whatever measure possible to support a Canadian firm's presence in Mexico.

Note: to telephone Mexico, D.F. dial: 011-52-5 before the number shown; for contacts in other cities in Mexico, consult the international code listing at the front of your local telephone directory for the appropriate regional codes.

Commercial Division
The Embassy of Canada in Mexico
Schiller No. 529
Col. Polanco
Apartado Postal 105-05
11560 México, D.F.
México
Tel: 724-7900
Fax: 724-7982

Canadian Consulate
Edificio Kalos, Piso C-1
Local 108A
Zaragoza y Constitucion
64000 Monterrey
México
Tel: 443-200
Fax: 443-048

KEY CONTACTS IN MEXICO

MEXICAN GOVERNMENT

National Institute of Ecology
SEDESOL
Instituto Nacional de Ecología
Río Elba No. 20
Col. Cuauhtémoc
06500 México D.F.
México

President
Tel: 553-9647/9538
Fax: 286-9925
President's Secretary
Tel: 553-9548/9558

Federal Attorney General for Environmental
Protection
SEDESOL
Procuraduría Federal de Protección al Ambiente
Blv. El Pípila No. 1
Col. Tecamachálc
53950 Naucalpan de Juárez
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CANADA-MEXICO INDUSTRY PROFILE:
OPPORTUNITIES IN MEXICO - THE ENVIRONMENTAL SECTOR

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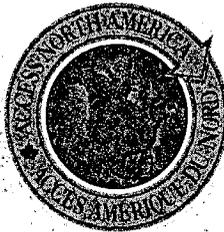
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