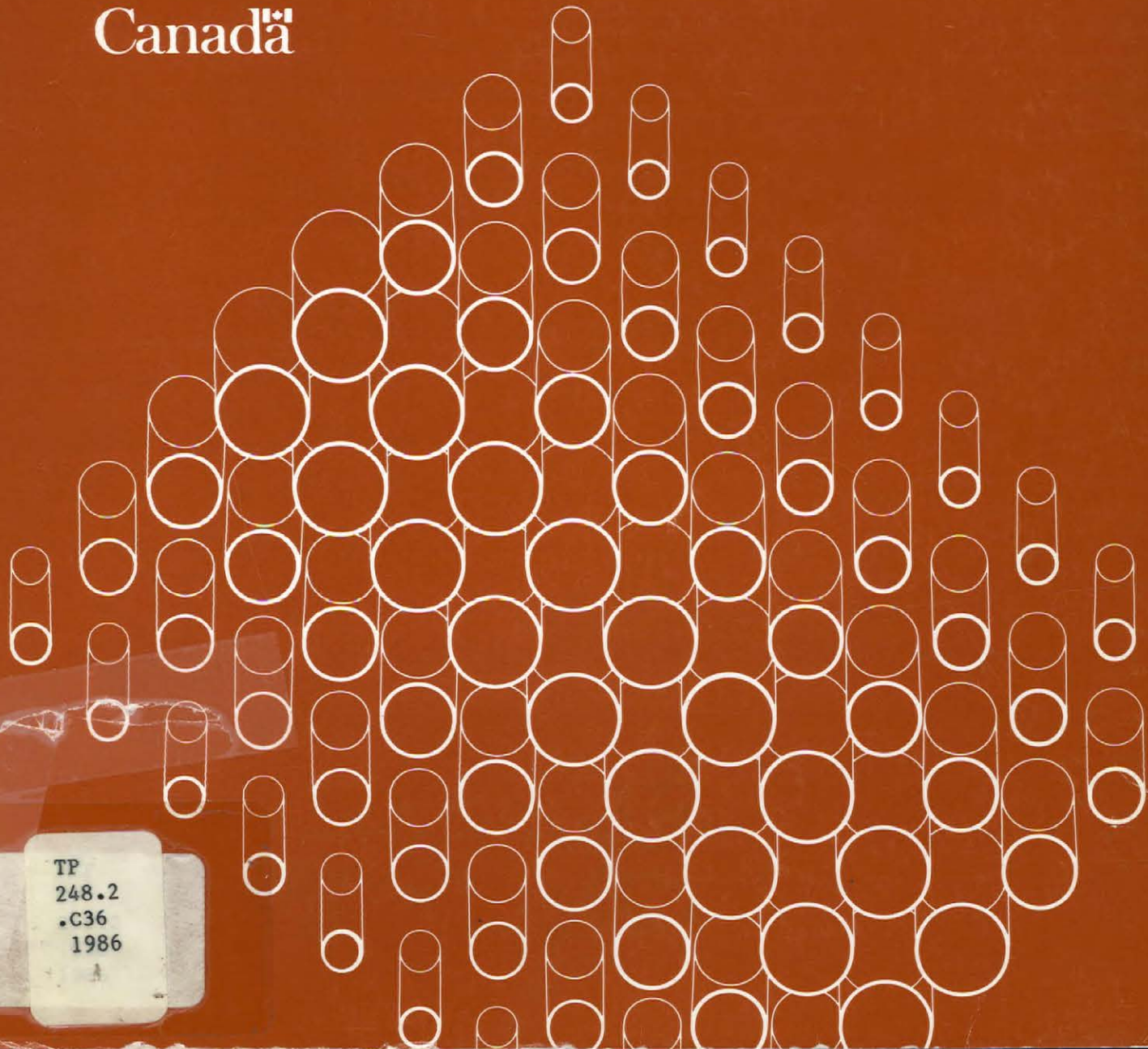


National
Biotechnology
Advisory
Committee

1986 CANADIAN BIOTECHNOLOGY
SOURCEBOOK

Commercial Organizations
Involved in Biotechnology
Research, Development or
Manufacturing

Canada



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1986



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**1986 CANADIAN BIOTECHNOLOGY
SOURCEBOOK**

Commercial Organizations
Involved in Biotechnology
Research, Development or
Manufacturing

36580

Prepared for: **THE NATIONAL BIOTECHNOLOGY ADVISORY COMMITTEE**

Prepared by:
Biotechnology Unit
Strategic Technologies Branch
Industry, Trade and Technology
Sector
Ministry of State
Science and Technology
Canada
August 1986
(613) 990-6322

1986 CANADIAN BIOTECHNOLOGY SOURCEBOOK

Commercial Organizations Involved in Biotechnology Research, Development or Manufacturing

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CANADIAN BIOTECHNOLOGY SOURCEBOOK

Commercial Organizations Involved in Biotechnology Research, Development or Manufacturing

INTRODUCTION

The objective of the 1986 Sourcebook is to provide data and information on Canadian private sector biotechnology activities. The Sourcebook is essentially a directory of commercial organizations which, during 1985, were involved in biotechnology research, development or manufacturing. As such, it should be useful in ensuring that information on commercial biotechnology is readily available. It also contains a brief analysis of the distribution of effort in various fields. Overall, this Sourcebook, and the previous background paper, "Biotechnology in Canada" (released in June of 1980), provide baseline data useful in analysing the Canadian biotechnology infrastructure and to monitor the progress of Canadian biotechnology.

The Sourcebook was assembled based on a survey carried out during 1985. Responses were voluntary, and organizations, in some cases, declined to participate. As is the case with surveys of this kind, it is not possible to ensure that coverage is complete, and we apologize for any inadvertent omissions. Although the information contained in the individual entries was confirmed, minor errors may be present. For the most current information, the reader is encouraged to contact the organizations listed.

Should the reader have any additions, corrections or suggestions for future editions of the Sourcebook, please contact:

Dr. David B. Shindler
Biotechnology Unit
Ministry of State for Science and Technology
240 Sparks Street, 8th Floor West
Ottawa, Ontario K1A 1A1
Tel: (613) 990-6322 Telex: 053-4123

In this regard, Appendix B contains forms for representatives of organizations to complete if they wish to be considered for inclusion in a tentatively planned 1987 update. As well, representatives of organizations already listed are welcome to send updated versions of their existing entries.

We would like to express appreciation to the organizations who devoted time to respond to the survey, to P. Robson, A. Levesque, and R. Fletcher for their work, and to the Ministry staff for their support.

Disponible en français

ANALYSIS

There are 110 organizations listed in this 1986 Sourcebook. To be included, an organization had to be a commercial operation, and involved in biotechnology research, development or manufacturing in the year 1985. About 200 organizations were initially contacted in connection with the survey.

For the purpose of this Sourcebook, biotechnology was defined as the utilization of biological processes be it via microbial, plant or animal cells or their constituents to provide goods and services. The stress was on new techniques such as genetic engineering, enzymes and enzyme systems, monoclonal antibodies, plant cell culture and fermentation process development.

Biotechnology was divided into 13 fields of application which are listed and described in Table I. Figure I shows the number of organizations involved in each field of application. Human Health Care, Food and Beverage, and Plant Agriculture are the major fields of activity. Fifty organizations reported being involved in more than 1 field.

Each organization's primary area of activity was the basis for further analysis. To simplify the analysis, the 13 fields of application in Table I were compressed into 8 distinct major sectors found in Table II.

The data in Table II represents a breakdown of biotechnology expenditures and the number of researchers. The total reported biotechnology research and development expenditures was nearly \$66 million in 1985. This total is based upon 78 of the 110 organizations (71%) reporting biotechnology expenditures. The largest contributors to this figure were: Allelix Inc., (\$15 million); Institut Armand Frappier, (\$6 million); and Bio-Mega Inc., (\$5 million). These three organizations accounted for 40% of the total reported expenditures.

The concentration of research expenditures was in the Health Care and Agricultural sectors, which accounted for 70% of the total R&D expenditures (Figure II). Forty-two percent of the organizations were involved in these two sectors.

Ninety (82%) organizations provided data on human resources, reporting 893 biotechnology research personnel (Table II). Most (85%) employ between 1 and 15 biotechnology researchers; however, a few organizations reported 50 to 150 researchers.

Biotechnology R&D activity is distributed across Canada with particular concentrations of activity in Ontario, Quebec and British Columbia (Figure III).

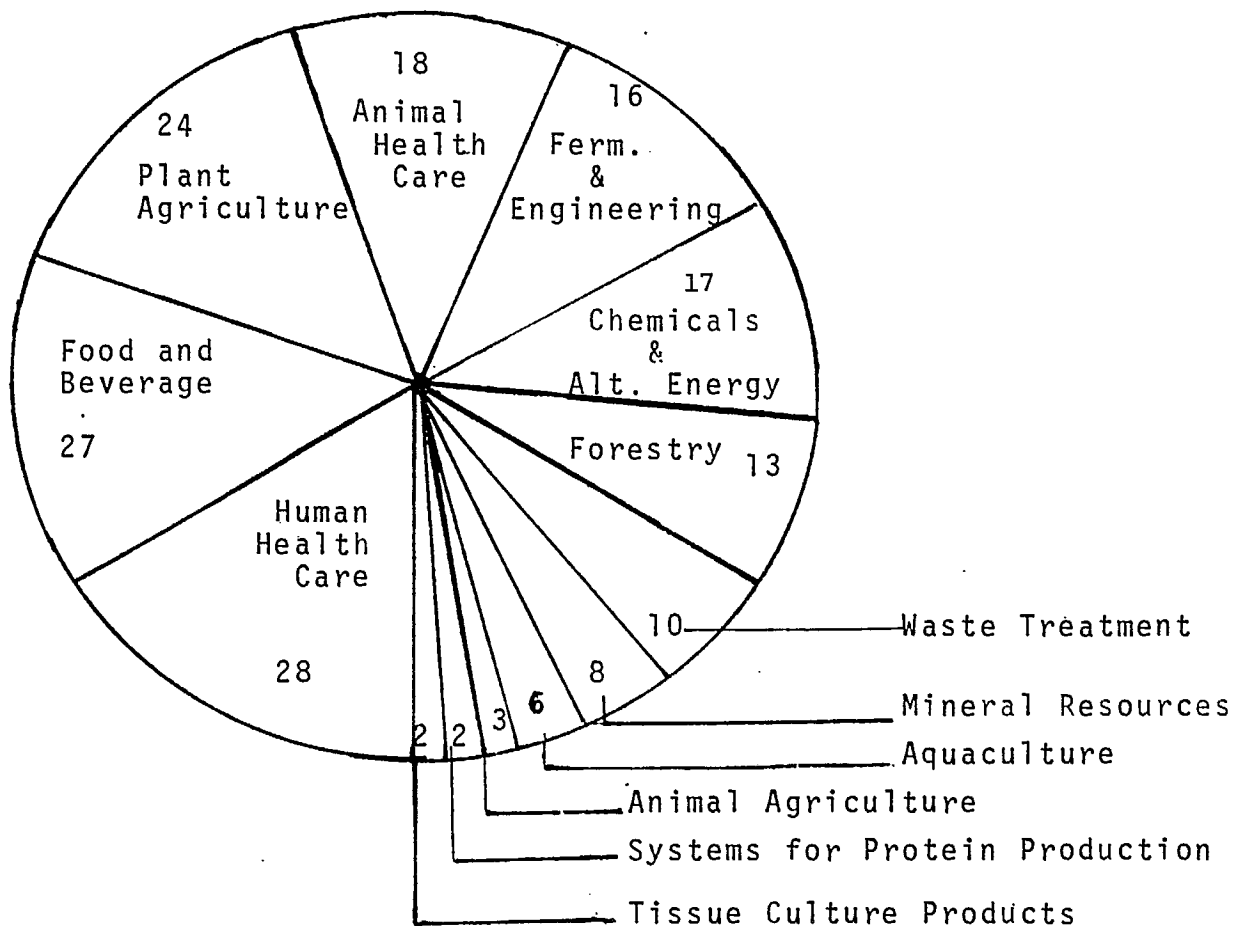
It is difficult to estimate the total 1985 expenditures for commercial biotechnology R&D because not all organizations reported their R&D figures, and some organizations may not have been included in the survey. By extrapolation, however, an estimation of R&D expenditures for the 110 organizations would be approximately \$90 million.

TABLE I

BIOTECHNOLOGY FIELDS OF APPLICATIONS

FIELD	EXAMPLES OF R&D OR MANUFACTURING ACTIVITIES
Agriculture, Animal	Livestock improvements, embryo transfers
Agriculture, Plant	New plant strains, herbicides pesticides, crop protection
Aquaculture	Marine products and protection of marine life (e.g. fish vaccines)
Chemicals, Biochemicals and Alternative Energy	Chemicals, enzymes and fuels
Fermentation and Engineering	Equipment, fermentation systems, engineering scale-up, process development, downstream purification and control systems
Food, Beverage and Animal Food	Food and beverage products, waste processing and quality control
Forestry and Forest Products	Improved tree strains, production of pulp, paper and new forest products, waste processing
Health Care, Animal	Animal vaccines, diagnostics and pharmaceuticals
Health Care, Human	Human vaccines, diagnostics, pharmaceuticals and medical instruments
Mineral and Oil Resources	Biological leaching of ores and techniques for enhanced oil recovery
Systems for Production of Biochemicals and Protein	Genetic systems to produce specific biochemicals and proteins
Tissue Culture Products	Tissue culture products for research, medical and industrial processes
Waste Treatment	Municipal and industrial treatment of waste (anaerobic and aerobic processes)

FIGURE I
DISTRIBUTION OF R&D ACTIVITIES BY FIELD OF APPLICATION BASED UPON REPORTS OF 110 ORGANIZATIONS*



* Fifty organizations reported involvement in more than one Field of Application.

TABLE II

R&D EXPENDITURES AND RESEARCHERS REPORTED BY ORGANIZATIONS LISTED IN THE 1986 BIOTECHNOLOGY SOURCEBOOK

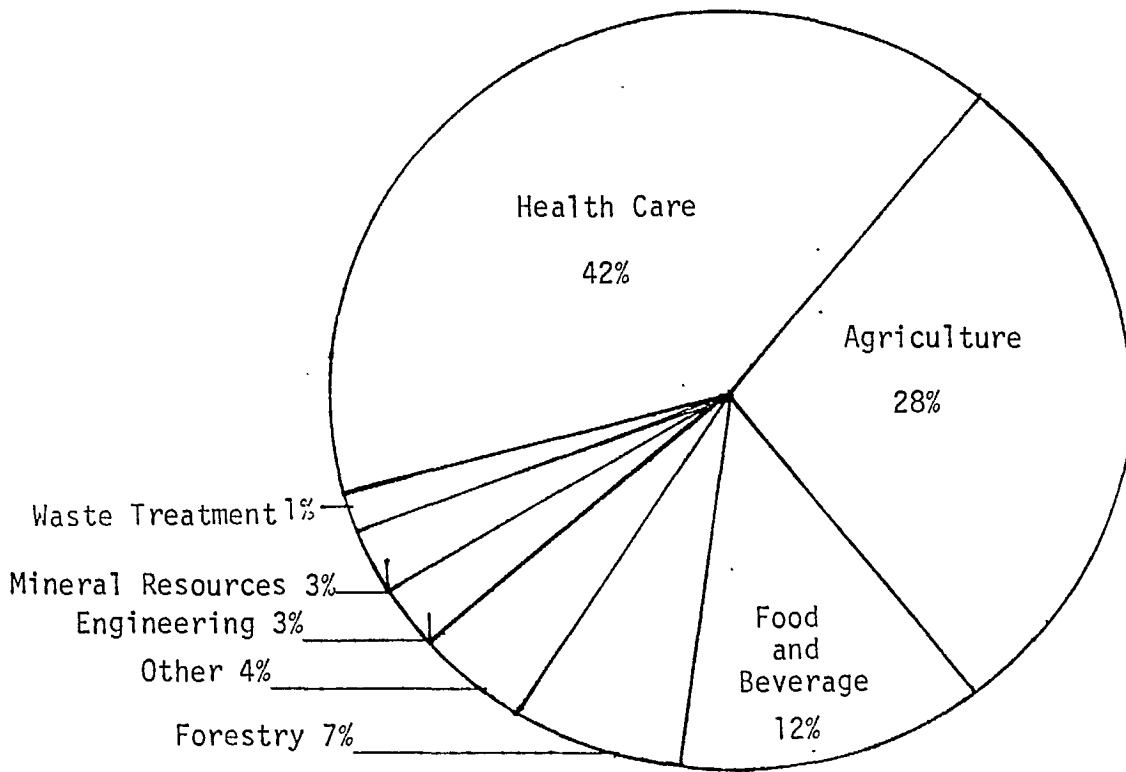
SECTOR	NUMBER OF ORGANIZATIONS	%	R&D EXPEND. REPORTED (78 ORG)* (\$000)	%	NUMBER OF RESEARCHERS REPORTED (90 ORG)*	%
Health Care	31	29	\$27,310	42	368	41
Food and Beverage	22	20	7,988	12	119	13
Agriculture	13	12	18,362	28	211	24
Forestry	11	10	4,475	7	49	6
Engineering	10	9	2,003	3	26	3
Waste Treatment	8	7	595	1	23	2
Mineral Resources	5	4	2,010	3	21	2
Other	10	9	2,850	4	76	9
TOTAL	110		\$65,593*		893*	

*The distribution is based upon each organization's primary activity

The R&D expenditure data is based upon information provided by 78 of the 110 organizations; the data on the number of researchers is based upon information provided by 90 organizations. By extrapolation, an estimation of R&D expenditures for the 110 organizations is \$90 million; and an estimation for the number of researchers is 1080.

FIGURE II

R&D EXPENDITURES PER SECTOR, 1985 *

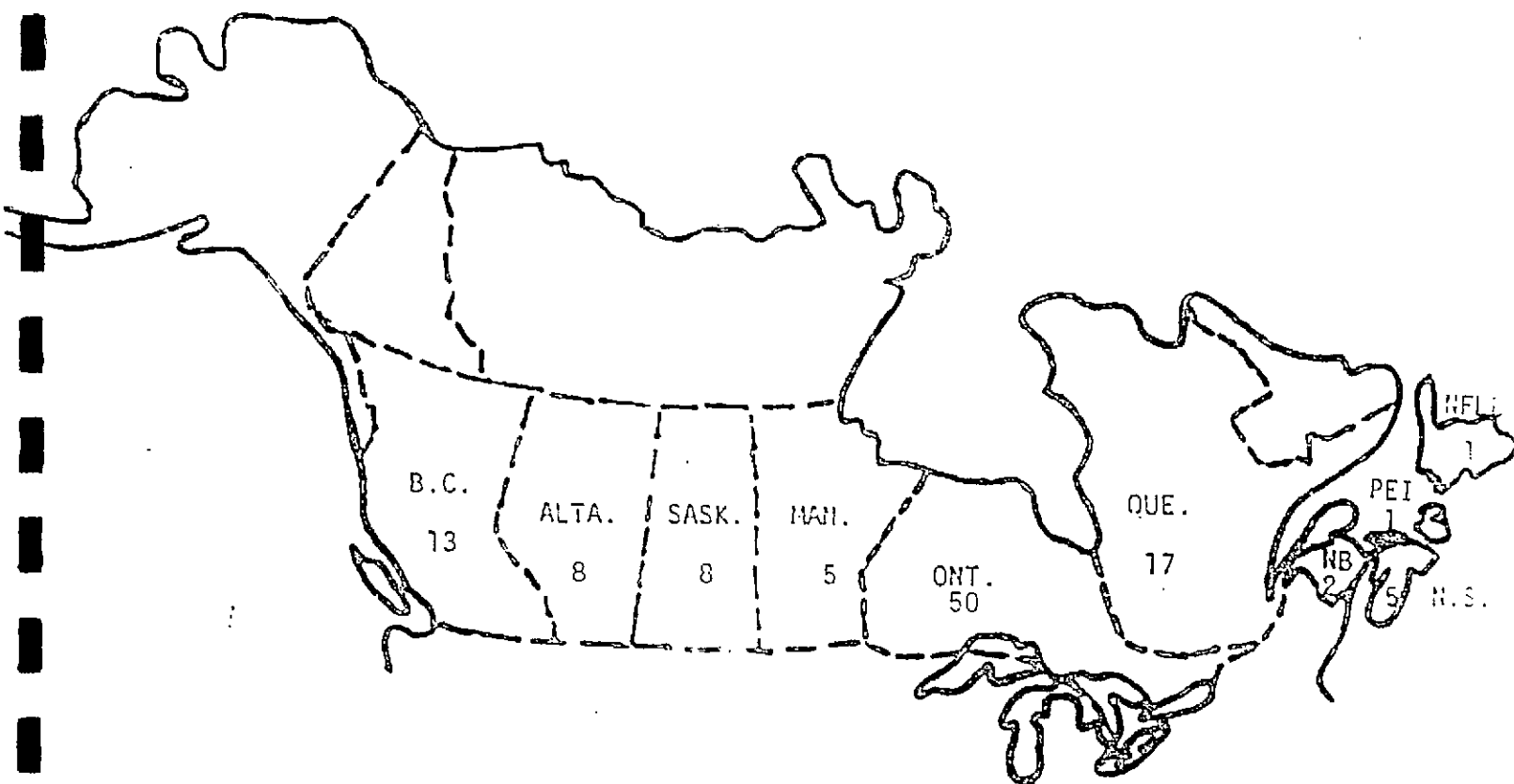


Total Reported Expenditures: \$65,593,000

* Based upon the 71% of the organizations that reported R&D expenditures

FIGURE III

LOCATION OF R&D ACTIVITIES CARRIED OUT BY
ORGANIZATIONS LISTED IN THE 1986 BIOTECHNOLOGY SOURCEBOOK



Total Number of Organizations: 110

INDEX OF ORGANIZATIONS BY FIELD OF APPLICATION

FIELD OF APPLICATION

ORGANIZATION

Agriculture, Animal

Alberta Livestock Transplants
Helix Biotech Inc.
SETL Embryo Transfers

Agriculture, Plant

Agri Forest Technologies
Agrogen Biotechnologies Inc.
Allelix Inc.
Better Yield Insects
Blueberry Acres Ltd.
C-I-L Inc.
Chateau des Charmes Wines Ltd.
Clay Nurseries
CSP Foods Ltd.
ELI Lilly Canada Inc.
Gemini Biochemical Research
Institut Armand Frappier
King Agro Inc.
Meiogenics Research Corp.
Northern Soil Technologies
Philom Bios Inc.
Pioneer Hi-Bred Ltd.
POS Pilot Plant Corp.
Rhizotech Inc.
Rosell (Institut) Inc.
Safer Agro-Chemical Ltd.
Serres A.M. Dion Ltée
W.G. Thompson and Sons Ltd.
(Les) Tourbières Premier Ltée

Aquaculture

Acadian Seaplants Ltd.
Aqua Health Ltd.
Fundy Isles Marine
Enterprises Ltd.
Helix Biotech Inc.
Scotia Marine Products Ltd.
Syndel Laboratories Ltd.

**Chemicals, Biochemicals and
Alternate Energy**

Allelix Inc.
C-I-L Inc.
Dearborn Environmental
Consulting Service

FIELD OF APPLICATION

ORGANIZATION

**Chemicals, Biochemicals and
Alternate Energy (cont'd)**

Diagnostic Chemicals Ltd.
Diversified Research
Laboratories Ltd.
Domtar Inc.
Export Packers Co. Ltd.
Forintek Canada Corp.
Gelda Scientific &
Industrial Dev. Inc.
Gemini Biochemical Research
INRAD Industrial Research
& Development Ltd.
IOTECH Corp. Ltd.
D.G. Malcolm & Associates Ltd.
Ontario Paper Company
Research Foods Ltd.
Sedary Research Laboratories Inc.
Stake Technology

**Fermentation and
Engineering**

ADI Ltd.
Bio-Frost Inc.
Canpolar Consultants Ltd.
Diversified Research
Laboratories Ltd.
INRAD Industrial Research
and Dev. Ltd.
Koppernaes Engineering Ltd.
D.G. Malcolm & Associates Ltd.
Pegasus Industrial
Specialties Ltd.
Rosell (Institut) Inc.
SNC Group (The)
Spectrex Limited Ltée.
St. Lawrence Reactor Ltd.
Stake Technology
Stearns Catalytic
Winnipeg RH Institute Inc. (The)
Zeton Technologies

**Food, Beverage and
Animal Food**

Acadian Seaplants Ltd.
Agropur Co-op Alimentaire
Bio-Feed Industries Ltd.
Brookside Farms
Canada Packers
Canada Starch Co. (The)
Chateau des Charmes Wines Ltd.

FIELD OF APPLICATION

ORGANIZATION

Food, Beverage and
Animal Food (cont'd)

CSP Foods Ltd.
Delisle Foods Ltd.
Diversified Research
Laboratories Ltd.
Export Packers Co. Ltd.
Fundy Isles Marine
Enterprises Ltd.
Gelda Scientific &
Industrial Dev. Inc.
Hillebrand Estates Winery
Joseph E. Seagram & Sons Ltd.
Julac Winery
Labatt Brewing Co. Ltd.
Lallemand Inc.
Lasonde
POS Pilot Plant Corp.
Research Foods Ltd.
Rieder Distillery Ltd.
Robin Hood Multifoods Ltd.
Rosell (Institut) Inc.
Scotia Marine Products Ltd.
St. Lawrence Reactor Ltd.
Stake Technology

Forestry and
Forest Products

Agri Forest Technologies
Agrogen Biotechnologies Inc.
Bio-Mega Inc.
C.I.P. Research Ltd.
Clay Nurseries
Domtar Inc.
Econotech Services Ltd.
Forintek Canada Corp.
John Stone & Associates
Ontario Paper Company
Phero Tech Inc.
Pulp & Paper Research
Institute Canada
Rhizotech Inc.

Health Care, Animal

Aqua Health Ltd.
Bio-Mega Inc.
Biostar Inc.
Brookside Farms
Canadian Bioclinical Ltd.
Dextran Products Ltd.
ELI Lilly Canada Inc.
Helix Biotech Inc.
Institut Armand Frappier

FIELD OF APPLICATION

ORGANIZATION

Health Care, Animal (cont'd)

Joldon Diagnostics
Kemic Bioresearch
Laboratories Ltd.
Langford Laboratories Ltd.
Meiogenics Research Corp.
Quadra-logic Technologies Inc.
Rosell (Institut) Inc.
Syndel Laboratories Ltd.
Vetrepharm Inc.
VIDO

Health Care, Human

A.B. Biological Supplies Inc.
ABI Biotechnology Inc.
Allelix Inc.
(ENS) Bio Logicals Inc.
Bio-Mega Inc.
Bioquest International
Canadian Bioclinical Ltd.
Cedarlane Laboratories Ltd.
Chembiomed Ltd.
Connaught Laboratories Ltd.
Diagnostic Chemicals Ltd.
ELI Lilly Canada Inc.
Helix Biotech Inc.
Institut Armand Frappier
Joldon Diagnostics
Kemic Bioresearch
Laboratories Inc.
MDS Health Group Ltd.
Meiogenics Research Corp.
Microbix Biosystems Inc.
Ortho Pharmaceutical Canada
Pacific Isotopes &
Pharmaceuticals Ltd.
Quadra-logic Technologies Inc.
Rosell (Institut) Inc.
Serdary Research Laboratories Inc.
Syndel Laboratories Ltd.
Syntex Ltd.
Travenol Canada Ltd.
Winnipeg R.H. Institute Inc. (The)

Mineral and Oil Resources

(ENS) Bio Logicals Inc.
Denison Mines Ltd.
Domtar Inc.
Gemini Biochemical Research
Nova Husky Research Corp.
Newsco Well Service Ltd.

FIELD OF APPLICATION

ORGANIZATION

Mineral and Oil Resources
(cont'd)

Rio Algom Ltd.
Sherritt Gordon Mines Ltd.

Systems for Production of
Biochemicals and Proteins

Allelix Inc.
Cangene Corp.

Tissue Culture Products

Canada Packers
Dextran Products Ltd.

Waste Treatment

ADI Ltd.
Beak Consultants Ltd.
Canber Industries Ltd.
Canviro Consultants Ltd.
Dearborn Environmental
Consulting Service
Eco-Research Inc.
INRAD Industrial Research
and Dev. Ltd.
John Stone & Associates
Microbe Inc.
Pulp & Paper Research
Institute Canada

INDEX OF ORGANIZATIONS

A.B. Biological Supplies Inc.
ABI Biotechnology Inc.
Acadian Seaplants Ltd.
ADI Ltd.
Agri Forest Technologies
Agrogen Biotechnologies Inc.
Agropur Co-op Alimentaire
Alberta Livestock Transplants
Allelix Inc.
Aqua Health Ltd.

Beak Consultants
Better Yield Insects
Biofeed Industries Ltd.
Bio Frost Inc.
(ENS) Bio Logicals Inc.
Bio Mega Inc.
Bioquest International
Biostar Inc.
Blueberry Acres Ltd.
Brookside Farms

Canada Packers
Canadian Bioclinical Ltd.
Canber Industries Ltd.
Cangene Corp.
Canpolar Consultants Ltd.
Canviro Consultants
Casco Company
Cedarlane Laboratories Ltd.
Chateau des Charmes Winery Ltd.
Chembiomed Ltd.
C-I-L Inc.
C.I.P. Research Ltd.
Clay Nurseries
Connaught Research Institute
CSP Foods Ltd.

Dearborn Environmental Consulting Services
Delisle Foods Ltd.
Denison Mines Ltd.
Dextran Products Ltd.
Diagnostic Chemicals Ltd.
Serres A.M. Dion Ltée.
Diversified Research Laboratories Ltd.
Domtar Inc.

INDEX OF ORGANIZATIONS

Econotech Services Ltd.
Eco-Research Inc.
ELI Lilly Canada Inc.
Export Packers Co. Ltd.

Forintek Canada Corp.
Fundy Isles Marine Enterprises Ltd.

Gelda Scientific and Industrial Dev. Inc.
Gemini Biochemical Research

Helix Biotech Ltd.
Hillebrand Estates Winery

Inrad Industrial Research and Dev. Ltd.
Institut Armand Frappier
Iotech Corp. Ltd.

Joldon Diagnostics
Julac Winery

Kemic BioResearch Laboratories
King Agro Inc.
Koppernaes Engineering Ltd.

Labatt Brewing Co. Ltd.
Lallemand Inc.
Langford Laboratories Ltd.
Lasonde

D.G. Malcolm and Associates
MDS Health Group Ltd.
Meiogenics Research Corp.
Microbe Inc.
Microbix Bio Systems Inc.

Northern Soil Technologies
Nova Husky Research Corp.
Nowasco Well Service Ltd.

Ontario Paper Co.
Ortho Pharmaceutical Canada

INDEX OF ORGANIZATIONS

Pacific Isotopes and Pharm. Ltd.
Pegasus Industrial Specialties Ltd.
Phero Tech Inc.
Philom Bios Inc.
Pioneer Hi-Bred Ltd.
POS Pilot Plant Corp.
Pulp and Paper Research Institute Canada

Quadra-Logic Technologies Inc.

Research Foods Ltd.
Rhizotech Inc.
Rieder Distillery Ltd.
Rio Algom Ltd.
Robin Hood Multifoods
Rosell (Institut) Inc.

Safer Agro-Chemical Ltd.
Scotia Marine Products Ltd.
Joseph Seagram and Sons Ltd.
Serdary Research Laboratories
SETL Embryo Transfers
Sherritt Gordon Mines Ltd.
SNC Group (The)
Spectrex Ltd.
St. Lawrence Reactor Ltd.
Stake Technology
Stearn's Catalytic
John Stone and Associates
Syndel Laboratories Ltd.
Syntex Inc.

W.G. Thompson and Sons Ltd.
(Les) Tourbières Premier Ltée
Travenol Canada Inc.

Veterinary Infectious Disease Organization (VIDO)
Vetrepharm Inc. Labs

Winnipeg RH Institute Inc. (The)

Zeton Technologies Corp.

SOURCEBOOK DIRECTORY

A.B. BIOLOGICAL SUPPLIES INC.

Head Office : Diagnostic Research Laboratories Chedoke-McMaster Hospitals Sanitarium Road, Southam Bldg. Station "A" Hamilton, Ontario L8N 3Z5		Research Facilities Same Address Telephone #: Telex : Contact :
Telephone # : (416) 575-0154 President : G. Machan Established : 1978 No. of Employees: 12 Main Activities : Diagnostic research- Development of monoclonal antibodies and diagnostic kits for human disease. Annual Sales : Confidential		
BIOTECHNOLOGY		OTHERS
RESEARCH Develop application for known processes into commercially applicable processes. Develop new kit formats-solid phase assays. Annual Expenditures: confidential Researchers: 10		
MANUFACTURING		
OTHER ACTIVITIES Sell raw (unprocessed reagents. Do contract work.		

Affiliation: Private independent company.

Comments :

ABI BIOTECHNOLOGY INC.

<p>Head Office : A-1150 Waverley St. Winnipeg, Manitoba R3T 0P4</p> <p>Telephone # : (204) 477-6413</p> <p>President : A.D. Friesen, Ph.D.</p> <p>Established : June, 1984</p> <p>No. of Employees: 10</p> <p>Main Activities : Biotechnology Research.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH: r-DNA Production of pharmaceuticals: human growth hormone. Factor VIII. Interleukin-2.</p> <p>Protein purification from plant and animal sources: blood fractions.</p> <p>Anti-cancer drugs: 4 demethoxydaunonyein. Instrumentation.</p> <p>Annual Expenditures: \$1,000 (000) Researchers: 12 (1985) 51 (1986)</p>	
<p>MANUFACTURING Instrumentation: UV monitor. Human Growth Hormone.</p>	
<p>OTHER ACTIVITIES Pilot Plant facilities available under contract.</p>	

Affiliation:

Comments :

ACADIAN SEAPLANTS LTD.

Head Office : P.O. Box 2368 Dartmouth, Nova Scotia B2W 3Y4		Research Facilities Charlesville, Nova Scotia	
Telephone # : (902) 434-2840 President : Mr. Louis E. Deveau Established : 1981 No. of Employees: 15 (50 in summer) Main Activities : Cultivation of marine plants.		Telephone #: (902) 723-2152 Telex : Contact : Bob Welland	
Annual Sales : Confidential			
BIOTECHNOLOGY		OTHERS	
RESEARCH Cultivation of marine plants. Annual Expenditures: confidential Researchers: 6 (with 6 part-time)			
MANUFACTURING Seaplant products.		Marketing seaplant products.	
OTHER ACTIVITIES			

Affiliation: None.

Comments :

ADI LIMITED

<p>Head Office : P.O. Box 44 Station "A" 1115 Regent Street Fredericton, N.B. E3B 4Y2</p> <p>Telephone # : (506) 452-9000</p> <p>President : John R. Dean</p> <p>Established : 1945</p> <p>No. of Employees: 121</p> <p>Main Activities : Consulting engineering (design, evaluation, construction, management, research and design).</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Anaerobic wastewater treatment (fermentation of food processing, pulp and paper, dairy, peat & distilleries wastewaters); Aerobic wastewater treatment (nitrification-denitrification). Annual Expenditures: \$100 (000) Researchers: 6</p>	<p>Microprocessor controls, energy conservation.</p>
<p>MANUFACTURING None.</p>	<p>None.</p>
<p>OTHER ACTIVITIES Consulting, investigation, evaluation, design, construction supervision, start-up, trouble-shooting.</p>	<p>Architectural, structural, industrial, geotechnical, surveying, urban planning, transportation, mechanical, electrical, municipal, construction, materials engineering.</p>

Affiliation:

Comments :

AGRI FOREST TECHNOLOGIES

<p>Head Office : 2330 Enterprise Way P.O. Box 178 Kelowna, B.C. V1Y 7N5</p> <p>Telephone # : (604) 860-5815</p> <p>President : Reg Tomiye</p> <p>Established : 1979</p> <p>No. of Employees: 5</p> <p>Main Activities : Micropropagation of fruit tree rootstocks, deciduous ornamentals and foliage plants.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Micropropagation of roses. Auxillary shoot formation in buds of conifer species. Adventitious shoot formation in immature needles of conifer forest species. Annual Expenditures: Researchers: 3</p>	<p>Micropropagation of conifer forest species from cotyledons. Contractual micropropagation of new plant varieties.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

AGROGEN BIOTECHNOLOGIES INC.

<p>Head Office : 520 West 6th Avenue Vancouver, B.C. V5Z 4H5</p> <p>Telephone # : (604) 877-1431</p> <p>President : Mr. J. Micallef</p> <p>Established : 1984</p> <p>No. of Employees: 600</p> <p>Main Activities : Horticultural production, sales and distribution of woody ornamentals, bedding, foliage and tropical plants; R&D in plant tissue culture and related biotechnologies.</p> <p>Annual Sales : \$ 30,000 (000)</p>	<p>Research Facilities Same</p> <p>Telephone #: (604) 877-1431</p> <p>Telex :</p> <p>Contact : Dr. D.P. Webb Director</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Plant tissue culture, micropropagation of woody ornamentals and forest tree species, cell culture and related biotechnologies.</p> <p>Annual Expenditures: \$2,500 (000) Researchers: 10 Prof. & support staff (January, 1986)</p>	<p>Tree improvement, disease and environmental resistance, mutant selection. Microbial symbiosis, genetics and molecular biology.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: Oregon Garden Products, Inc., Hillsboro, Oregon, U.S.A.
Florida Garden Products, Inc., Perrine, Florida, U.S.A.

Comments :

AGROPUR COOPERATIVE ALIMENTAIRE

<p>Head Office : 510 Principale Granby (Québec) J2G 7G2</p> <p>Telephone # : (514) 375-1991 President : Mr. Michel Lemire Established : Founded in 1938 No. of Employees: 2,160 Main Activities : Manufacturing of milk products.</p> <p>Annual Sales : \$715,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: (514) 375-1991 Telex : 05-832510 Contact : Roger N. Giroux</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Lactic acid fermentation.</p> <p>Annual Expenditures: \$400 (000) Researchers: 7</p>	
<p>MANUFACTURING Milk products, mainly cheese.</p>	
<p>OTHER ACTIVITIES Analyses: Control of milk product composition and microbial quality.</p>	

Affiliation:

Comments :

ALBERTA LIVESTOCK TRANSPLANTS

<p>Head Office : P.O. Box 22, Site 12 R.R. #4 Calgary, Alberta T2M 4L4</p> <p>Telephone # : (403) 239-0000</p> <p>President : David Dyrholm</p> <p>Established : 1971</p> <p>No. of Employees: 25</p> <p>Main Activities : Bovine embryo transfer and its associated technologies (i.e., embryo freezing, micromanipulation, etc.).</p> <p>Annual Sales : \$5,000 (000)</p>	<p>Research Facilities Same</p> <p>Telephone #: (403) 239-0000</p> <p>Telex :</p> <p>Contact : Dr. B.F. Shea</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Long-term cryopreservation of embryos. Micromanipulation of embryos for production of genetically identical twins.</p> <p>Annual Expenditures: \$1,000 (000) Researchers: 3</p>	<p>In-vitro-fertilization. Sexing of embryos.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Consulting and training programs on total embryo transfer procedures and herd development programs utilizing these new reproductive processes.</p>	

Affiliation: Advanced Genetic Research Ltd. (associated company)
Calgary, Alberta (same address as parent company).

Comments :

ALLELIX INC.

<p>Head Office : 6850 Goreway Drive Mississauga, Ontario L4V 1P1</p> <p>Telephone # : (416) 677-0831</p> <p>Chairman and CEO: Dr. John Evans</p> <p>Established : 1981 (operations began in 1983)</p> <p>Main Activities : Diagnostics Division - Reagents, diagnostic kits for OTC/physicians' offices Agriculture Division - Canola, soil inoculants. Specialty Chemicals Division - Enzymes. Annual Sales : less than \$1,000(000)</p>	<p>Research Facilities Main Labs: (Main) 6850 Goreway Drive Mississauga, Ontario L4V 1P1 (Farm) Aloa Farm Georgetown, Ontario</p> <p>Telephone #: (416) 677-0831 Telex : 06-968036</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Plant Biology, Bioengineering/ Fermentation, Microbiology, Molecular Biology, Molecular Immunology.</p> <p>Annual Expenditures: \$15,000(000) Researchers: 140</p>	
<p>MANUFACTURING Synthetic Peptides. Diagnostic reagents for enzyme immunoassays.</p>	
<p>OTHER ACTIVITIES Extensive external collaborative research projects with other companies/universities in Canada, U.S. and overseas.</p>	

Affiliation: None.

Comments : Ownership 50% Canada Development Corp, 30% John Labatt Limited,
20% Ontario Government.

AQUA HEALTH LTD.

<p>Head Office : 1755 Steeles Ave. W. Willowdale, Ontario M2R 3T4</p> <p>Telephone # : (416) 667-2678</p> <p>President : W.D. Paterson</p> <p>Established : August 1, 1984</p> <p>No. of Employees: 12</p> <p>Main Activities : Research, development and manufacture of vaccines to prevent disease in fish.</p> <p>Annual Sales : \$150 (000)</p>	<p>Research Facilities 1755 Steeles Avenue West, Willowdale, Ontario M2R 3T4 1707 Lower Water St. Halifax, N.S. B3J 2S7</p> <p>Telephone #: (416) 667-2678</p> <p>Telex : 06-22184 CONTOX TOR</p> <p>Contact : W.D. Paterson</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH (present) Oral and immersion vaccine to prevent furunculosis in fish. Vaccine to prevent gaffreemia in the American Lobster.</p> <p>Annual Expenditures: Researchers: 7</p>	
<p>MANUFACTURING Vibrogen, Ermogen and Furogen vaccines.</p>	
<p>OTHER ACTIVITIES Aquaculture consulting, technology transfer program.</p>	

Affiliation: N/A

Comments :

BETTER YIELD INSECTS

<p>Head Office : P.O. Box 3451 Tecumseh Station Windsor, Ontario N8N 3C4</p> <p>Telephone # : (519) 735-0002</p> <p>President : Mrs. Pat Coristine</p> <p>Established : 1977</p> <p>No. of Employees: 3</p> <p>Main Activities : Rearing, marketing, beneficial insects and mass producing insects.</p> <p>Annual Sales : \$30 (000) - \$35 (000)</p>	<p>Research Facilities 1302 Highway #2 Emeryville, Ontario NOR 1C0</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Rearing, mass producing and integration of insects to pesticides. Spider mite predators, white fly parasites, aphid predators, thrip predators.</p> <p>Annual Expenditures: \$ 37 (000) Researchers: 1</p>	
<p>MANUFACTURING Beneficial insects.</p>	
<p>OTHER ACTIVITIES Rear 4 beneficial insects. Sell insect traps - attract insects by color (sticky insect strips).</p>	

Affiliation:

Comments : Insects replace pesticides at a much lower cost, with much higher plant yields - no toxicity.
Greenhouse workers prefer to use insects than toxic chemicals to control pests in greenhouses due to the reduced safety risk.

BIO-FEED INDUSTRIES LTD.

Head Office: : 809-675 West Hastings St. Vancouver, B.C. V6B 1N2		Research Facilities	
Telephone # : (604) 688-9695 President : Michael Scott Established : 1983 No. of Employees: 4 Main Activities : Production of single cell protein from molasses; third world only.		Telephone #: Telex : SAME Contact :	
Annual Sales :			
BIOTECHNOLOGY		OTHERS	
RESEARCH Low pH Fermentation. Livestock Feeding Trials. Annual Expenditures: Researchers: 2			
MANUFACTURING "Turn-Key" SCP Plants.			
OTHER ACTIVITIES			

Affiliation: None.

Comments :

BIO-FROST INC.

<p>Head Office : 14 Duke Street Hamilton, Ontario L8P 1X1</p> <p>Telephone # : (416) 522-3031</p> <p>President : John Unsworth</p> <p>Established : 1984</p> <p>No. of Employees: 18</p> <p>Main Activities :</p> <p>Scale-up and production of ice nucleating and frost inhibiting bacteria.</p> <p>Annual Sales : NIL</p>	<p>Research Facilities 250 Karl Clark Road Edmonton, Alberta T6N 1E4</p> <p>Telephone #:</p> <p>Telex : SAME</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Fermentation (aerobic).</p> <p>Annual Expenditures: \$600 (000) Researchers: 12</p>	
<p>MANUFACTURING Bacteria - ice nucleating and frost inhibiting.</p>	
<p>OTHER ACTIVITIES Development of fermentation know-how for full scale fermentation facility.</p>	

Affiliation:

Comments :

(ENS) BIO LOGICALS INC.

<p>Head Office : 20 Victoria Street Suite 304 Toronto, Ontario M5C 2N8</p> <p>Telephone # : (416) 366-4863</p> <p>President : Alan Grieve</p> <p>Established : 1978</p> <p>No. of Employees: 86</p> <p>Main Activities : R&D in biotechnology, manufacturing and sale of telecommunications equipment.</p> <p>Annual Sales : Approx. \$6,500 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Synthesis, cloning and expression of proteins. Biological leaching of sulphide ores to recover precious metals. Cultivation of exotic edible mushrooms.</p> <p>Annual Expenditures: \$1,100 (000) Researchers: 15-20</p>	<p>Tele-Radio Systems Limited, a wholly owned subsidiary, develops, manufactures and sells sophisticated equipment to the telecommunications industry.</p>
<p>MANUFACTURING</p>	<p>Tele-Radio as mentioned above.</p>
<p>OTHER ACTIVITIES Consulting.</p>	

Affiliation: Support research and development projects at McGill University, Laval University, University of Calgary, Queen's University and have a joint venture with the Alberta Research Council.

Comments :

BIO-MEGA INC.

<p>Head Office : 2100 Cunard Street Chomedey, Laval Quebec H3S 2G5</p> <p>Telephone # : (514) 682-4640</p> <p>President : Jacques Gauthier</p> <p>Established : January 4, 1984</p> <p>No. of Employees:</p> <p>Main Activities : Development, production and marketing of human health, agricultural, veterinary products and biological insecticides.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Bioconversion of bioactive products, enzyme synthesis, microbial metabolites, monoclonal antibodies for production of diagnostic kits, tissue culture. Annual Expenditures: \$5,000 (000) Researchers: 65</p>	<p>Bioactive peptides, leukotriene antagonists.</p>
<p>MANUFACTURING Production of immunodiagnostic kits, monoclonal and polyclonal antibodies, nucleotides as intermediaries in gene synthesis.</p>	<p>Bioactive peptides, amino acid derivatives, resins for peptide synthesis, leukotrienes and other eicasonoids.</p>
<p>OTHER ACTIVITIES Mutagenicity (Ames test), bio-insecticides and bioherbicides, antimicrobial biological evaluation.</p>	<p>Primary and secondary pharmacological evaluation, synthesis to specifications.</p>

Affiliation: Bio-Mega Diagnostic Inc.

Comments : The firm is working on projects in cooperation with Canadian universities.

BIOQUEST INTERNATIONAL

<p>Head Office : Suite 204 2989 Pembina Highway Winnipeg, Manitoba R3T 2H5</p> <p>Telephone # : (204) 269-3067</p> <p>President : T. Bogaert</p> <p>Established : 1983</p> <p>No. of Employees: 11</p> <p>Main Activities :</p> <p>Toxicological testing of complex mixtures from industrial activities and the use of specially constructed indicator organisms for evaluation of indoor air quality in workplaces and residences.</p> <p>Annual Sales : \$300 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development of indicator strains (e.g., aldehyde dehydrogenase deficient stocks for hypersensitivity to aldehydes in air).</p> <p>Annual Expenditures: \$30 (000) Researchers: 2</p>	<p>Development and configuration of absorbants for passive sampling.</p> <p>\$66 (000) 2</p>
<p>MANUFACTURING</p>	<p>Production of self-applied absorbant for removal of organics from indoor air.</p>
<p>OTHER ACTIVITIES Monitoring of toxicity of aqueous industrial effluants.</p> <p>Evaluation of indoor air quality in workplaces and hotels.</p>	

Affiliation:

Comments : Most research is subcontracted to university researchers.

BIOSTAR INC.

<p>Head Office : Biostar Inc. Box 1000, Sub P.O.#6 Saskatoon, Sask. S7N 0W0</p> <p>Telephone # : (306) 966-7473</p> <p>President : Dr. S.D. Acres</p> <p>Established : Feb. 16, 1983</p> <p>No. of Employees: 6</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p>Research, development, testing and marketing of animal and poultry health care products and technologies.</p> <p>Annual Revenues: \$200 (000) projected for 1985-86.</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Application of advanced technologies (molecular biology, biotechnology, gnotobiology) to develop animal health products. Peptide Synthesis.</p> <p>Annual Expenditures: \$120 (000) projected for 1985-86 Researchers: 2</p>	<p>Application of conventional technologies (microbiology, immunology, virology, epidemiology, veterinary science).</p>
<p>MANUFACTURING Under consideration.</p>	
<p>OTHER ACTIVITIES Perform contract research. Negotiate the sale of manufacturing rights for products/technologies developed at VIDO, BIOSTAR and other organizations to commercial biological production companies.</p>	

Affiliation: Veterinary Infectious Disease Organization (VIDO) - University of Saskatchewan.

Comments : BIOSTAR Inc. holds the exclusive rights to license all products.

BLUEBERRY ACRES LIMITED

<p>Head Office : R.R. #2 Centreville, N.S. BOP 1J0</p> <p>Telephone # : (902) 582-3832</p> <p>President : Robert P. Aucoin</p> <p>Established : 1974</p> <p>No. of Employees: 40 to (650)*</p> <p>Main Activities : Nursery and Highbush Blueberry Farming. * Staff increases to 650 during the picking season.</p> <p>Annual Sales : \$700 (000)</p>	<p>Research Facilities Sheffield Nurseries Limited Plant Tissue Culture Laboratory <u>SAME ADDRESS</u></p> <p>Telephone #: (902) 582-7902</p> <p>Telex:</p> <p>Contact: Donald Craig, Ph.D (Adv.) Susan Take, B.Sc. (Lab. Mgr.)</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Plant Tissue Culture Laboratory. Wide range of ornamentals and apples, pears, and a wide range of small berry plants, foliage and flowers.</p> <p>Annual Expenditures: \$250 (000) Researchers: 2</p>	
<p>MANUFACTURING Plants from tissue culture lab.</p>	<p>Fresh Highbush blueberries and cultivated raspberries 90% of which is shipped to the American Market in Boston.</p> <p>Fresh and frozen blueberries and raspberries packed, shipped and marketed by the Company.</p>
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments : Some research is subcontracted to University researchers.

BROOKSIDE FARMS

<p>Head Office : 200-2548 Clearbrook Rd. Clearbrook, B.C. V2T 3T8</p> <p>Telephone # : (604) 852-5940</p> <p>President : J. Hush Wiebe</p> <p>Established : 1956</p> <p>No. of Employees: 50</p> <p>Main Activities : Food, confections, pharmaceuticals.</p> <p>Annual Sales : \$10,000 (000)</p>	<p>Research Facilities 31212 Peardonville Road Abbotsford, B.C.</p> <p>Telephone #: (604) 852-5940</p> <p>Telex : 04-363512</p> <p>Contact : Stephen R. Smith</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Extractions of organic proteins for pharmaceutical use.</p> <p>Annual Expenditures: \$100 (000) Researchers: 4</p>	
<p>MANUFACTURING Extraction & refining of egg white proteins.</p>	
<p>OTHER ACTIVITIES Environmental and agricultural testing.</p>	

Affiliation:

Comments :

CANADA PACKERS

<p>Head Office : 95 St. Claire Avenue West Toronto, Ontario M4V 1P6</p> <p>Telephone # : (416) 766-4311</p> <p>President : Mr. Val Stock</p> <p>Established :</p> <p>No. of Employees: 14,000</p> <p>Main Activities : Meat packing. Edible oils processing. Animal feed.</p> <p>Annual Sales : \$ 3,000,000 (000)</p>	<p>Research Facilities 2211 St. Clair Avenue, West Toronto, Ontario M6N 1K4</p> <p>Telephone #: (416) 766-4311</p> <p>Telex :</p> <p>Contact : Dr. Robert Dickinson</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Supplying ingredients to Biotech - animal derived components for cell cultures, etc. Extraction, isolation, purification techniques both classified as state of the art. Annual Expenditures: \$500 (000) Researchers: 7</p>	
<p>MANUFACTURING Produce industrial scale biochemical animal derived products.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments : Making animal derived components to service biotech industry for mammalian cell growth factors - development of pharmaceuticals and diagnostics.

CANADIAN BIOCLINICAL LTD.

<p>Head Office : 81 Finchdene Square Scarborough, Ontario M1X 1B4</p> <p>Telephone # : (416) 293-4955 President : Dr. J. Clapp Established : 1975 No. of Employees : 12 Main Activities : Production of diagnostics kits.</p> <p>Annual Sales : \$400 (000)</p>	<p>Research Facilities</p> <p>Telephone #: Telex : Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Development work of scientific research leading to sell biochemicals for diagnosis or use in kits.</p> <p>Annual Expenditures: \$100 (000) Researchers: 3</p>	
<p>MANUFACTURING Kits. 90% Canadian product.</p>	
<p>OTHER ACTIVITIES Work with universities to make antibodies and sell them, and pay royalties.</p>	

Affiliation: Joldon Diagnostics - work together but are independently owned.

Comments : Interested in immunological processing.
Discussing possibility of doing project with U.S. firm in the veterinary field.
Presently being outcompeted by U.S. firms dumping in Canada in order to eliminate competition.

CANBER INDUSTRIES LTD.

<p>Head Office : Site 34, P.O. Box 58 6028 Mountainview Rd. Lantzville, B.C. VOR 2H0</p> <p>Telephone # : (604) 390-3113</p> <p>President : Allan J. McInnes</p> <p>Established : 1979</p> <p>No. of Employees: 3</p> <p>Main Activities : Manufacturing, research and development, marketing of genetic engineered products.</p> <p>Annual Sales : \$250 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Renewable energy: biogas (fermentation). Pollution control: waste treatment (fermentation - aerobic anaerobic). Annual Expenditures: \$100 (000) Researchers: 2</p>	<p>Anaerobic digester design.</p>
<p>MANUFACTURING Bio-catalytic seeding for increasing biogas production with higher methane gas content. Bio-catalytic seeding for increasing organic solids. Decomposition as applied to aerobic or anaerobic fermentation methods.</p>	<p>Drain line cleaning products. Sewage, farm agriculture, industrial waste management, by-product recovery.</p>
<p>OTHER ACTIVITIES Microbiology, genetic engineering.</p>	<p>Consulting: sewage waste handling; sanitary engineering.</p>

Affiliation: Canadian subsidiary A.Z. Manufacturing Ltd.

Comments : Bio-catalytic seeding. Products provide rapid decomposition of all organic matter in less time, controlled fermentation through microorganism biocenosis.

CANGENE CORPORATION

<p>Head Office : 3403 American Drive Mississauga, Ontario L4V 1T4</p> <p>Telephone # : (416) 673-0200 President : Dr. Eric James Established : April 1984 No. of Employees : 21 Main Activities :</p>	<p>Research Facilities SAME</p> <p>Telephone #: (416) 673-0200 Telex # : N/A Contact : Dr. Eric James or Dr. Robert T. Garvin</p>
<p>rDNA genetic engineering research & development.</p> <p>Annual Sales : NIL</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Recombinant DNA genetic engineering.</p> <p>Annual Expenditures: \$1,750 (000) Researchers: 18</p>	
MANUFACTURING	
OTHER ACTIVITIES	

Affiliation:

Comments :

CANPOLAR CONSULTANTS LTD.

<p>Head Office : 421 Eglinton Avenue West Toronto, Ontario M5N 1A4</p> <p>Telephone # : (416) 487-1581</p> <p>President : Dr. Rossiter</p> <p>Established : 1983</p> <p>No. of Employees: 4</p> <p>Main Activities : Research and development in intelligence sensing systems.</p> <p>Annual Sales : N/A</p>	<p>Research Facilities Ashley Building Peet Street St. John's, Newfoundland</p> <p>Telephone #: (709) 722-6067</p> <p>Telex :</p> <p>Contact : Dr. Reimer</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Enzyme mediated sensors for food production development systems (fermentation).</p> <p>Annual Expenditures: N/A Researchers: 2</p>	<p>Radar sensors for iceberg detection. Optical products for food quality control systems.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: Itera Ltd.

Comments :

CANVIRO CONSULTANTS

<p>Head Office : 178 Louisa Street Kitchener, Ontario N2H 5M5</p> <p>Telephone # : (519) 579-3500 President : Dr. Earl Shannon Established : 1977 No. of Employees: 50 Main Activities : Environmental consulting research.</p> <p>Annual Sales :</p>	<p>Research Facilities Nil</p> <p>Telephone #: (519) 579-3500 Telex : Contact : S.G. Nutt, Vice-President</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Consulting Research for: anaerobic treatment and biogas utilization. Also aerobic biological waste water treatment.</p> <p>Annual Expenditures: \$10 (000) Researchers:</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Process design.</p>	

Affiliation:

Comments : Process engineering firm specializing in waste water sludge.

CASCO COMPANY

<p>Head Office : 401 The West Mall Etobicoke, Ontario M9C 5H9</p> <p>Telephone # : (416) 620-2300</p> <p>President : W.T. Craig</p> <p>Established : 1858</p> <p>No. of Employees : 500</p> <p>Main Activities :</p> <p>Production and sale of starches and sweeteners from the wet milling of corn.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact : Mr. Gerald Fulford</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development work for process improvement.</p> <p>Annual Expenditures: \$250 (000) Researchers: 6 or 8 on part-time basis.</p>	
<p>MANUFACTURING Manufactures glucose and high fructose corn syrups using enzymes.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: The Canada Starch Company Inc.
 : C.P.C. International Inc. U.S.A.

Comments:

CEDARLANE LABORATORIES LIMITED

<p>Head Office : 5516 8th Line R.R. #2 Hornby, Ontario LOP 1EO</p> <p>Telephone # : (416) 878-8891</p> <p>President : Mr. R. Course</p> <p>Established : 1975</p> <p>No. of Employees: 7</p> <p>Main Activities : Serum for medical research.</p> <p>Annual Sales : \$750 (000)</p>	<p>Research Facilities 5516-8th Line R.R. #2 Hornby, Ontario LOP 1EO</p> <p>Telephone #: (416) 878-8891</p> <p>Telex : 06-982340 Cedarlane H.</p> <p>Contact : Ms. C. Greer</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Hybridoma technology.</p> <p>Annual Expenditures: \$25 (000) Researchers: 2</p>	
<p>MANUFACTURING</p>	<p>Processing of serum and immunological reagents for medical diagnostics and research.</p>
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

CHATEAU DES CHARMES WINES LTD.

<p>Head Office : Creek Road & Line 7 St. David's, Ontario LOS 1P0</p> <p>Telephone # : (416) 262-4219</p> <p>President : Rodger A. Gordon</p> <p>Established : 1977</p> <p>No. of Employees : 22</p> <p>Main Activities : Winery, vineyards.</p> <p>Annual Sales : \$1,350 (000)</p>	<p>Research Facilities Same Address</p> <p>Telephone #: (416) 262-5202</p> <p>Telex :</p> <p>Contact : Ron Cartwright</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Strain improvement and species development.</p> <p>Annual Expenditures: \$150 (000) Researchers: 6</p>	
MANUFACTURING	
OTHER ACTIVITIES	

Affiliation:

Comments :

CHEMBIOMED LTD.

<p>Head Office : W5-56 Chemistry Bldg. University of Alberta Edmonton, Alberta T6G 2G2</p> <p>Telephone # : (403) 432-2053</p> <p>President : Dr. H.R. Hutchings</p> <p>Established : 1977</p> <p>No. of Employees: 25</p> <p>Main Activities : Production of monoclonal antibody based diagnostic reagents, and synthetic immunoadsorbents.</p> <p>Annual Sales : N/A</p>	<p>Research Facilities W5-56 Chemistry Building University of Alberta Edmonton, Alberta T6G 2G2</p> <p>Telephone #: (403) 432-2053</p> <p>Telex : 037-3886</p> <p>Contact : Dr. H.R. Hutchings</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Synthetic carbohydrate haptens, lectins and antigens. Scaled-up high volume in vitro monoclonal antibody production processes. Bacterial adherence modulation.</p> <p>Annual Expenditures: \$1,000 (000) Researchers: 10</p>	<p>Identification and elucidation of carbohydrates from natural sources. Synthetic procedures for producing artificial haptens and antigens.</p>
<p>MANUFACTURING Synthetic immunoadsorbents. Blood typing monoclonal antibodies. Affinity purified monoclonal antibodies.</p>	<p>Lectins, haptens, antigens. Affinity purified lectins, etc. Latex coated with artificial antigens for agglutination tests. Bio-Synsorb (T.M.), Synsorb (T.M.).</p>
<p>OTHER ACTIVITIES</p>	<p>Radio-labelling of artificial antigens.</p>

Affiliation: University of Alberta.

Comments :

C-I-L INC.

<p>Head Office : P.O. Box 200 Station "A" North York, Ontario M2N 6H2</p> <p>Telephone # : (416) 229-7000</p> <p>President : C.H. Hantho</p> <p>Established : 1910</p> <p>No. of Employees: 6,306</p> <p>Main Activities : Chemicals.</p>	<p>Research Facilities Chemicals Research Laboratory 2010 Hadwen Road Sheridan Park Mississauga, Ont. L5K 2G3</p> <p>Telephone #: (416) 823-7160</p> <p>Telex : 069-86505</p> <p>Contact : Dr. David Gannon, Corporate Biotech- nology Advisor</p>
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Annual Sales : \$1,176,000 (000)

BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development of microbial products for agricultural and forestry applications. Exploratory research and feasibility studies into other bioproducts.</p> <p>Annual Expenditures: \$700 (000) Researchers: 5</p>	<p>Biological wastewater treatment process (Deep Shaft process).</p>
<p>MANUFACTURING Commodity chemicals.</p>	<p>Speciality chemicals.</p>
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

CIP RESEARCH LTD.

<p>Head Office : 179 Main St. West Hawkesbury, Ontario K6A 2H4</p> <p>Telephone # : (613) 632-4121</p> <p>President : W.R. Saxton</p> <p>Established : 1948</p> <p>No. of Employees: 63</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex : SAME</p> <p>Contact :</p>
<p>Research and development in pulp and paper technology.</p> <p>Annual Sales : N.A.</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Utilization of wood waste.</p> <p>Annual Expenditures: N.A. Researchers: 1 (part time)</p>	<p>Mechanical pulping. Chemical pulping. Bleaching. Process control. Health and pollution control. Papermaking. Packaging. Product development.</p>
<p>MANUFACTURING N.A.</p>	<p>N.A.</p>
<p>OTHER ACTIVITIES N.A.</p>	<p>N.A.</p>

Affiliation:

Comments :

CLAY NURSERIES

Head Office : P.O. Box 3040 Langley, B.C. V3A 4R3		Research Facilities 3666-244th Street Langley, B.C. V3A 4R3	
Telephone # : (604) 530-5188 President : Leslie K.C. Clay Established : 1956 No. of Employees: 14 Main Activities : Tissue culture, laboratory and nursery.		Telephone #: (604) 530-5188 Telex : 04 352 848 VCR Contact : Leslie K.C. Clay	
Annual Sales :			
BIOTECHNOLOGY		OTHERS	
RESEARCH Tissue culture of ornamental and horticultural species. Annual Expenditures: \$125 (000) Researchers: 1		Tissue culture of forestry species: <u>Pseudotsuga menziesii</u> ; <u>Picea glauca</u> ; <u>Chamaecyparis nootkatensis</u> . \$45 (000) 1	
MANUFACTURING			
OTHER ACTIVITIES Production of ornamental lining out stock. Production of finished nursery stock.			

Affiliation: Division of Les Clay & Son Limited.

Comments : The Company sponsors the universities on research of tissue culture related topics through a PILP grant.

CONNAUGHT RESEARCH INSTITUTE

Head Office : 1755 Steeles Ave. W. Willowdale, Ont. M2N 5T8		Research Facilities Connaught Research Institute	
Telephone # : (416) 667-2701 President : Mr. A. Davies Established : 1914 No. of Employees : 600 Main Activities :		Telephone # : (416) 667-2826 Telex : Contact : Dr. K.J. Dorrington	
Manufacturers - vaccines, insulin, blood products, diagnostics.			
Annual Sales : \$90,000 (000)			
BIOTECHNOLOGY		OTHERS	
RESEARCH Insulin - by genetic engineering. Vaccines - by genetic engineering. Monoclonal antibodies for diagnostic use. Annual Expenditures: \$3,300 (000) Researchers: 20		Diagnostics. New vaccines - human microencapsulation. Wildlife rabies vaccine. \$11,700 (000) 70	
MANUFACTURING		Human viral vaccines. Human bacterial vaccines. Plasma products. Diagnostics.	
OTHER ACTIVITIES			

Affiliation: Subsidiary of C.D.C. Life Sciences Inc.

Comments :

GSP FOODS LTD.

<p>Head Office : 500-119 4th Ave. S. Saskatoon, Sask. S7K 3K7</p> <p>Telephone # : (306) 244-1335</p> <p>President : Ray Siemens</p> <p>Established : 1975</p> <p>No. of Employees: 550</p> <p>Main Activities : Production of canola, sunflower and speciality oils. Manufacture of edible oil products, flour and bakery mixes.</p> <p>Annual Sales : \$180,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: (306) 934-3273</p> <p>Telex : 074-2730</p> <p>Contact : Mark Pickard</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Enzymatic processes. Plant cytogenetics and tissue culture.</p> <p>Annual Expenditures: \$100 (000) Researchers: 3</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: Cooperative Crop Development Group.
Enersearch.

Comments :

DEARBORN ENVIRONMENTAL CONSULTING SERVICES (DEARBORN CHEMICAL COMPANY LIMITED)

<p>Head Office : P.O. Box 3060 Station 'A' Mississauga, Ontario L5A 3T5</p> <p>Telephone # : (416) 828-9111</p> <p>President : H. Shymko</p> <p>Established : 1913</p> <p>No. of Employees: 260</p> <p>Main Activities : Contract research for federal, provincial, municipal governments; process technology assessment for industrial applications; contract research for CEA and other private sector organizations, water/wastewater treatment chemical field sales support.</p> <p>Annual Sales :</p>	<p>Research Facilities 3451 Erindale Station Road, Mississauga, Ontario</p> <p>Telephone #: (416) 279-2222</p> <p>Telex : 06-961145</p> <p>Contact : Igor Marvan</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Fuel & Energy: biogas (anaerobic fermentation). Pollution Control: anaerobic treatment of toxic wastewater. Enzymes: enzymes for biotreatment enhancement. Annual Expenditures: Researchers:</p>	<p>Novel solid and liquid wastes treatment technology development (lab-to-pilot scale). Analytical Laboratory: complete inorganics microbiology. All organics except GC/MS Lab-to-pilot plant facilities.</p>
<p>MANUFACTURING Automated process control software for anaerobic and aerobic wastewater treatment.</p>	<p>Wastewater treatment chemicals (biocides, polymers, etc.).</p>
<p>OTHER ACTIVITIES Sales of freeze-dried speciality organisms for toxic industrial wastewater bio-treatment systems.</p>	<p>Water/Wastewater treatment chemical sales support. Computer-aided modelling of advanced wastewater treatment systems. Process instrumentation assessment and demonstration. Coal utilization solid wastes handling. Analytical protocols development.</p>

Affiliation:

Comments : **Manager:** Igor Marvan
Project Managers: David Young, Ray Kissel
Total Staff: 20

ALIMENTS DELISLE LIMITEE/DELISLE FOODS LTD.

Head Office : 100 De Lauzon Street Boucherville, Québec J4B 1E6		Research Facilities Telephone #: (514) 655-7331 Telex : 05-25899 Contact : B. Arouze
Telephone # : (514) 665-7331 President : Leslie Jonas Established : (1931) 1963 No. of Employees: 340 Main Activities : Production and sale of milk products.		
Annual Sales : \$55,000 (000)		
BIOTECHNOLOGY		OTHERS
RESEARCH New milk product fermentation techniques. Enzyme hydrolysis of milk components. Annual Expenditures: \$50 (000) Researchers: 1		New products. New processes (membrane processes). \$250 (000) 5
MANUFACTURING Active cultures as intermediate products in milk product manufacturing processes. Cultured milk products.		Wide range of milk products for consumers and industrial market.
OTHER ACTIVITIES Analyses: Control of milk product composition and microbial quality.		

Affiliation:

Comments :

DENISON MINES LIMITED

Head Office : Royal Bank Plaza Box 40, Suite 3900 Toronto, Ontario M5J 2K2		Research Facilities: Elliot Lake Operations Box B-2600 Elliot Lake, Ontario P5A 2K2	
Telephone # : (416) 865-1991 President : Mr. John Fowler Established : No. of Employees: 2,025 Main Activities : Mining and production of U ₃ O ₈ .		Telephone #: (705) 848-9111 Telex : 067-7511 Contact : A.C. Rickaby Vice-President	
Annual Sales :			
BIOTECHNOLOGY		OTHERS	
RESEARCH Underground biological in-place leaching of uranium ore (using flood and sprinkle leaching techniques). Annual Expenditures: \$1,600 (000) Researchers: Footnote		Underground laboratory to carry in-house research. \$50 (000) 1	
MANUFACTURING			
OTHER ACTIVITIES			

Affiliation:

Comments : Denison and CANMET jointly funded contracts to universities and research establishments.
 Bacterial nutrients - Dalhousie University, bio-adsorption-Waterloo University, cold adaptation by Laurentian University, reverse osmosis/pelletized biomass feasibility by Zenon Environments.

DEXTRAN PRODUCTS LIMITED

<p>Head Office : 421 Comstock Road Scarborough, Ontario M1L 2H5</p> <p>Telephone # : (416) 755-2231</p> <p>President : Mr. Natu Patel</p> <p>Established : 1966</p> <p>No. of Employees: 15</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p>Veterinary pharmaceuticals, tissue culture products, high performance liquid chromatography columns.</p> <p>Annual Sales :</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Production of substitutes for fetal bovine serum, and improving said substitutes. New HPLC products.</p> <p>Annual Expenditures: Researchers:</p>	<p>Improved fermentation procedures for the production of dextran.</p>
<p>MANUFACTURING Production of tissue culture media supplements. Production of high pressure liquid chromatography columns.</p>	<p>Production of veterinary products, custom filling, and dextran derivatives.</p>
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

DIAGNOSTIC CHEMICALS LIMITED

Head Office : West Royalty Ind. Park Charlottetown, P.E.I. C1E 1B0		Research Facilities Telephone #: Telex : Contact :
Telephone # : (902) 566-1396 President : J. Regis Duffy Established : 1970 No. of Employees: 35 Main Activities : Manufacturer of specialty chemicals, enzymes and diagnostic kits for the determination of various components in blood.		
Annual Sales : \$1,750 (000)		
BIOTECHNOLOGY		OTHERS
RESEARCH Immunochemical methods for pregnancy testing. Annual Expenditures: \$150 (000) Researchers: 3		
MANUFACTURING Isolation of a number of enzymes, i.e. peroxidase, GLDH, urease, cholesterol esterase, etc.		
OTHER ACTIVITIES Manufacturer of diagnostic kits for various components in blood, i.e., glucose, cholesterol, etc.		

Affiliation: DLC (USA)
 Monroe, Connecticut, U.S.A.

Comments :

SERRES A.M. DION LTEE (LES)

Head Office : 3793 Rivière Cachée Boisbriand (Québec) J7E 4H4		Research Facilities Laboratoire de plantes A.M. Dion Inc.	
Telephone # : (514) 625-9516 President : André Dion Established : September 1, 1970 No. of Employees : 23 Main Activities : Plant propagation.		Telephone #: (514) 437-1768 Telex : Contact : Pierre Hegedus	
Annual Sales : \$1,000 (000)			
BIOTECHNOLOGY		OTHERS	
RESEARCH Micropropagation in vitro of fruit trees and small fruits. Annual Expenditures: \$129 (000) Researchers: 2		Micropropagation of ornamental plants.	
MANUFACTURING		Production and acclimatization of economical and disease-free seedlings.	
OTHER ACTIVITIES Consultation with producers.		Hydroponics and greenhouse cultivation of plants.	

Affiliation: Microviv S.A.F.I. et Cie.

Comments :

DIVERSIFIED RESEARCH LABORATORIES LTD.

<p>Head Office : 1047 Yonge Street Toronto, Ontario M4W 2L3</p> <p>Telephone # : (416) 922-5100</p> <p>Director : Dr. Ross Lawford</p> <p>Established : 1947</p> <p>No. of Employees: 85</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p>Research, development, consulting and testing for George Weston Ltd. companies as well as other companies on a contract basis.</p> <p>Annual Sales : \$4,400 (000)</p>	
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Fuel/Energy: ethanol fermentations Food: - microbial lipids - single cell proteins. Chemicals/Materials: microbial polysaccharides. Equipment: laboratory & pilot scale fermentation/bioprocessing.</p> <p>Annual Expenditures: \$750 (000) Researchers: 8</p>	<p>Other food processing research e.g., membrane technologies. Ligno-cellulose hydrolysis.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Contract research. Consulting. Contract pilot scale fermentation/bioprocessing.</p>	

Affiliation: Division of George Weston Ltd. and operator of: Bio-Hol Developments (a joint venture project of George Weston Limited and Ontario Energy Corporation).

Comments : Diversified Research Laboratories are also known as Weston Research Centre.

DOMTAR INC.

<p>Head Office : 395 de Maisonneuve Blvd. West Montréal, Quebec H3C 3M1</p> <p>Telephone # : (514) 848-5400</p> <p>President : J.H. Smith</p> <p>Established :</p> <p>No. of Employees: 15,200</p> <p>Main Activities :</p> <p>Natural resource based company producing products in pulp and paper, packaging, construction materials, chemicals and investments in oil and gas exploration.</p> <p>Annual Sales : \$2,000,000 (000)</p>	<p>Research Facilities Domtar Inc. P.O. Box 300 Senneville, Québec H9X 3L7</p> <p>Telephone #: (514) 457-6810</p> <p>Telex :</p> <p>Contact : M.M. Avedesian</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Biological modification of lignin. New separation process systems for biological products.</p> <p>Annual Expenditures: Researchers:</p>	<p>Research activities in pulp and paper, construction materials, salt, gypsum, organics, inorganic products and new process development.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

ECONOTECH SERVICES LTD

Head Office : 852 Derwent Way Annacis Island New Westminister, B.C.		Research Facilities 852 Derwent Way Annacis Island New Westminister, B.C.	
Telephone # : (604) 526-4221 President : Paul R. Thomas Established : 1972 No. of Employees: 30 Main Activities : Contract R&D.		Telephone #: (604) 526-4221 Telex : CXL 35405 Contact : Dr. P.R. Thomas	
Annual Sales : \$1,200 (000)			
BIOTECHNOLOGY		OTHERS	
RESEARCH Fuel from forest resource pulping liquids, new processes.		Pulp and paper, and forest resources.	
Annual Expenditures: \$100 (000) Researchers: Dr. R.I.C. Michie Dr. P.R. Thomas		\$1,000 (000)	
MANUFACTURING			
OTHER ACTIVITIES			

Affiliation: None.

Comments : A completely independent, private, employee owned company.

ECO-RESEARCH INC.

<p>Head Office : 121 Hymus Blvd. Pointe Claire, P.Q. H9H 1E6</p> <p>Telephone # : (514) 697-3273</p> <p>President : André Dumouchel</p> <p>Established :</p> <p>No. of Employees: 40</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p>Developing aerobic and anaerobic biological effluent-treatment technologies.</p> <p>Annual Sales :</p>	
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Blue-green algae as nitrogen fixation agent in soil-determination of bio-fertilization viability under local conditions in Québec.</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Laboratory analysis of air, soil, water for contents - organic and inorganic, ecotoxicology pollution analysis and consultative services.</p>	

Affiliation:

Comments :

ELI LILLY CANADA INC.

<p>Head Office : 3650 Danforth Avenue Scarborough, Ontario M1N 2E8</p> <p>Telephone # : (416) 694-3221</p> <p>President : David E. Thompson</p> <p>Established : July 12, 1938</p> <p>No. of Employees: 458</p> <p>Main Activities : Manufacturer of pharmaceuticals, agricultural chemicals, animal health products, cosmetics.</p> <p>Annual Sales : \$141,705 (000)</p>	<p>Research Facilities Elanco Division 1020 Hargrieve Road London, Ontario N6E 1P5</p> <p>Telephone #: (519) 681-5261</p> <p>Telex :</p> <p>Contact : Dr. Gerry F. McManus</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Studies regarding three separate DNA compounds. Poultry, swine in-house trials. Experiments designed to support new product registration, and existing product supplemental registrations for animal health and agricultural chemical products.</p> <p>Annual Expenditures: \$2,481 (000) Researchers: 22</p>	<p>Ongoing pharmaceutical clinical trials.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: Canadian subsidiary of Eli Lilly and Company,
Indianapolis, Indiana.

Comments :

EXPORT PACKERS CO. LTD.

<p>Head Office : 250 Summerlea Road Bramalea, Ontario L6T 3V6</p> <p>Telephone # : (416) 792-9700</p> <p>President : John H. Lee</p> <p>Established : 1973</p> <p>No. of Employees: 105</p> <p>Main Activities : Egg Processing.</p> <p>Annual Sales :</p>	<p>Research Facilities Science & Technology 70 Irene Street Winnipeg, Manitoba R3T 4E1</p> <p>Telephone #: (204) 477-1830</p> <p>Telex : 07587641</p> <p>Contact : May Town</p>
BIOTECHNOLOGY	
<p>RESEARCH Enzymes. Egg Products. Filtration Systems. Waste Processing.</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING Egg Products. Enzymes.</p>	
<p>OTHER ACTIVITIES Analytical.</p>	

Affiliation:

Comments :

FORINTEK CANADA CORP.

Head Office : 6620 N.W. Marine Dr. Vancouver, B.C. V6T 1X2		Research Facilities 800 Montreal Road Ottawa, Ontario K1G 3Z5	
Telephone # : (604) 224-3221 President : Mr. T. French Established : 1979 No. of Employees: 200 Main Activities : Research and development for Canada's wood products industries.		Telephone #: (613) 744-0963 Telex : 053-3606 Contact : Dr. J. Saddler	
Annual Sales : N/A			
BIOTECHNOLOGY		OTHERS	
RESEARCH Fuels and chemicals from forest biomass. Novel products from biomass lignin. Enzyme production for cellulose related products. Annual Expenditures: \$1,500 (000) Researchers: 20		Control of fungal degradation of lumber. Maintenance of wood-destroying fungal collection.	
MANUFACTURING			
OTHER ACTIVITIES			

Affiliation: Private, non-profit Research Corporation to support the wood products industries in Canada.

Comments :

FUNDY ISLES MARINE ENTERPRISES LTD.

<p>Head Office : P.O. Box 381 St. Andrews, N.B. EOG 2X0</p> <p>Telephone # : (506) 529-8887</p> <p>President : Dr. Chris Frantsi</p> <p>Established : 1977</p> <p>No. of Employees: 8</p> <p>Main Activities : Harvesting of shellfish from contaminated areas and cleansing for marketing. Biological Research.</p> <p>Annual Sales : \$500 (000)</p>	<p>Research Facilities 14 Montagne Street St. Andrews, N.B. EOG 2X0</p> <p>Telephone #: (506) 529-8887</p> <p>Telex :</p> <p>Contact : Chris Frantsi</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Microbiological product improvement in shellfish. Biological contracts and services.</p> <p>Annual Expenditures: \$100 (000) Researchers: 2</p>	<p>Mussel culture.</p> <p>\$20 (000)</p>
<p>MANUFACTURING Processing of shellfish from contaminated areas. Harvesting and cleansing for market.</p>	
<p>OTHER ACTIVITIES Consulting - Aquaculture and resource exploitation.</p>	

Affiliation:

Comments :

GELDA SCIENTIFIC & INDUSTRIAL DEV. INC.

<p>Head Office : Suite 8 5266 General Road Mississauga, Ontario L4W 1Z7</p> <p>Telephone # : (416) 624-2779</p> <p>President : Dr. C.S. Gelda</p> <p>Established : 1979</p> <p>No. of Employees: 7</p> <p>Main Activities : Science and technology development, government grant programs, development of human resources.</p> <p>Annual Sales : \$500 (000)</p>	<p>Research Facilities</p> <p>Telephone #: (416) 624-2779</p> <p>Telex : 065-2821OMSGA</p> <p>Contact : Dr. C. S Gelda</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Aseptic systems. Fermented products. Industrial enzymes.</p> <p>Annual Expenditures: \$100 (000) Researchers: 3</p>	
<p>MANUFACTURING Tropical ice-cream. Fermented dairy products.</p>	
<p>OTHER ACTIVITIES Consulting to small and medium size companies in the area of research and development. Laboratory services - chemical and microbiological.</p>	

Affiliation:

Comments : The company sponsors university research in the area of
beneficial health effects of Bifido bacteria.

GEMINI BIOCHEMICAL RESEARCH

<p>Head Office : #12 3610-29th St. N.E. Calgary, Alberta T1Y 5Z7</p> <p>Telephone # : (403) 291-1178</p> <p>President : Dr. Ian Forrester</p> <p>Established : 1981</p> <p>No. of Employees: 4</p> <p>Main Activities : Contract research, biotechnology, applied chemistry and environmental sciences.</p> <p>Annual Sales : \$150 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Methane control in coal mines. Production of microbial pesticides. Biological nitrogen fixation. Novel fermentors.</p> <p>Annual Expenditures: \$150 (000) Researchers: 4</p>	
<p>MANUFACTURING None at present.</p>	
<p>OTHER ACTIVITIES Consulting.</p>	

Affiliation: None.

Comments :

HELIX BIOTECH LTD.

Head Office : #217-7080 River Rd. Richmond, B.C. V6X 1X5		Research Facilities SAME	
Telephone # : (604) 270-7468 President : Terrance G. Owen, Ph.D. Established : December 1980 No. of Employees: 9 Main Activities : Biochemical manufacturing, contract research and development.		Telephone #: Telex : Contact :	
Annual Sales : \$500 (000)			
BIOTECHNOLOGY		OTHERS	
RESEARCH Veterinary and clinical diagnostic systems. Annual Expenditures: \$150 (000) Researchers: 5			
MANUFACTURING Purification of rare proteins, enzyme-antibody conjugates and diagnostic systems.			
OTHER ACTIVITIES Genetic analysis of marine fish populations.		Marketing of chemical standards for pulp & paper research.	

Affiliation: Associated with Joldon Diagnostics of Toronto, Ontario.

Comments : Helix is Canada's most experienced company in the purification of rare, clinically important proteins and in the development of novel immunoassay systems. The company has a record of successful completion of many research and development contracts for government and industry and seeks collaboration with other groups in the field of biotechnology.

HILLEBRAND ESTATES WINERY

<p>Head Office : Niagara-on-the-Lake Ontario LOS 1J0</p> <p>Telephone # : (416) 468-7123</p> <p>President : Joseph E. Pohorly</p> <p>Established : 1979</p> <p>No. of Employees: 24</p> <p>Main Activities : Production of premium wines.</p> <p>Annual Sales : \$2,000 (000)</p>	<p>Research Facilities Same Address</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH</p> <p>Annual Expenditures: Researchers:</p>	<p>Computerized fermentation, fruit juice stablization and conservation.</p> <p>\$50 (000) 2</p>
<p>MANUFACTURING</p>	<p>Wine Production, fermentation, aging, clarification, bottling, marketing.</p>
<p>OTHER ACTIVITIES Sell raw (unprocessed) reagents. Contract work.</p>	<p>Viticultural research.</p>

Affiliation: Underberg Laboratories, Dietlikon CH-8305
University of Guelph.

Comments : The Company sponsors university research to obtain a malo-ethanolic fermentation.

INRAD INDUSTRIAL RESEARCH AND DEVELOPMENT LTD.

<p>Head Office : 128 Adelaide Street Winnipeg, Manitoba R3A 0W5</p> <p>Telephone # : (204) 943-6870</p> <p>President : Edward A. Speers, P. Eng.</p> <p>Established : 1975</p> <p>No. of Employees: 6</p> <p>Main Activities : New product development.</p> <p>Annual Sales : \$500 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Immobilized enzyme, membrane separations and control - release technology, including microencapsulation, reverse osmosis, ultrafiltration, microfiltration, enzymatic membrane reactors; development and applications for real-world separation, concentration, fractionation and bioconversion problems.</p> <p>Annual Expenditures: \$200,000 Researchers : 4</p>	<p>Heat exchangers. Scale up -- pilot plant breakdown of cellulose, lignin.</p>
<p>MANUFACTURING Machine shop. Automatic controls.</p>	<p>Process equipment.</p>
<p>OTHER ACTIVITIES Consulting - chemical engineering, electrical/mechanical, bioprocess engineering.</p>	<p>Consultation: plant design.</p>

Affiliation: Speers McGonigal (1980) Ltd.
Edward A. Speers & Associates, Consulting Engineers.

Comments :

INSTITUT ARMAND-FRAPPIER

Head Office : 531 Boulevard des Prairies P.O. Box 100 Laval-des-Rapides Québec H7V 1B7 Telephone # : (514) 687-5010 President : Dr. Aurèl Beaulnes Established : No. of Employees: Main Activities : Production of vaccines and diagnostic kits; research and post graduate education. Annual Sales : \$7,000 (000)		Research Facilities Same Address Telephone #: (514) 687-5010 Telex : INSTFRAP VDL 055-62171 Contact :
BIOTECHNOLOGY	OTHERS	
RESEARCH Development of monoclonal antibodies, viral insecticides, synthetic vaccines and viral sub-unit vaccines, molecular probes. Trans-formation of biomass. Cell culture. Annual Expenditures: \$6,250 (000) Researchers: 46	Immunological studies. Chemical synthesis. Irradiation of food. Virology. Cell culture. Production of vaccines . \$860 (000)	
MANUFACTURING Human and veterinary bacterial and viral vaccines. Monoclonal antibodies.	Peptides and biological products. Peptides synthesis software. Synthetizers and reagents.	
OTHER ACTIVITIES Consultation: fermentation technology transfer. Research contracts. Patenting.	Quality control: Microbiology. Chemistry. Virology. Conditioning. Filling. Shipping.	

Affiliation: Université du Québec.

Comments :

IOTECH CORPORATION LTD. (OWNED BY TECHTROL)

<p>Head Office : 400 Hunt Club Road R.R. # 5 Gloucester, Ontario K1G 3N3</p> <p>Telephone # : (613) 526-2667</p> <p>President : P. Foody</p> <p>Established : 1975</p> <p>No. of Employees :</p> <p>Main Activities :</p> <p>Development of fermentation processes, i.e. lignocellulose to sugar onwards into chemicals.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Biomass conversion into fuels and chemicals: cellulases and lignases.</p> <p>Annual Expenditures: Confidential Researchers: 25</p>	
MANUFACTURING	
OTHER ACTIVITIES	

Affiliation: Owned by Techtrol.

Comments : Claim to be one of the largest private biotechnological operations in Canada. Considered to be the front runners in their field in the world.

JOLDON DIAGNOSTICS

<p>Head Office : 3015 Kennedy Road Suite 207 Agincourt, Ontario M1V 1E7</p> <p>Telephone # : (416) 292-1699</p> <p>President : Dr. Donald H. Segal</p> <p>Established : 1980</p> <p>No. of Employees : 7</p> <p>Main Activities : Diagnostic kits.</p> <p>Annual Sales : N/A</p>	<p>Research Facilities</p> <p>Telephone #: (416) 292-1699</p> <p>Telex : N/A</p> <p>Contact : Dr. Donald H. Segal</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development of immunodiagnostic kits.</p> <p>Annual Expenditures: \$125 (000) Researchers: 2</p>	
<p>MANUFACTURING Diagnostic kits.</p>	
<p>OTHER ACTIVITIES N/A.</p>	

Affiliation:

Comments :

JULAC WINERY

<p>Head Office : P.O. Box 10 Industrial Park Dolbeau, Québec G8L 2P9</p> <p>Telephone # : (418) 276-4120 President : André Bussièrre Established : 1972 No. of Employees : 15 Main Activities : Wine manufacturer.</p> <p>Annual Sales : \$2,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: Telex : Contact : Michel Gagnon</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Fermentation: New work methods for producing blueberry wine.</p> <p>Annual Expenditures: Researchers:</p>	<p>Blueberry wine (manufacturing and preservation). Grape wine (preservation and bottling).</p>
<p>MANUFACTURING</p>	<p>Production of blueberry wine: Fermentation, classification, preservation and bottling.</p>
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments : We have a university research program for the study of blueberries and their processing.

KEMIC BIORESEARCH LABORATORIES LIMITED

<p>Head Office : Unit 7 The Industrial Mall P.O. Box 878 Kentville, N.S. B4N 4H8</p> <p>Telephone # : (902) 678-8195</p> <p>President : Dr. P.W. Mullen</p> <p>Established : 1980</p> <p>No. of Employees : 6</p> <p>Main Activities : Biomedical research, testing & consultancy. Development of immuno-assay procedures for drugs and other xenobiotics. Immunopharmacology.</p> <p>Annual Sales : \$200 (000)</p>	<p>Research Facilities (as per head office)</p> <p>Telephone #: Envoy 100 : Kemic Contact : Dr. Peter W. Mullen</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH New analytical techniques (e.g., ELISA) for determination of drugs, mycotoxins, etc., in biological samples.</p> <p>Annual Expenditures: \$20 (000) Researchers: 3</p>	<p>Pharmacokinetics of drugs in animals & human volunteers. Toxicological studies. Analytical methods development.</p>
<p>MANUFACTURING</p>	<p>"Kemic Formaldehyde Assay Kit" Future: kit for determining Cannabinoids (Cannabis).</p>
<p>OTHER ACTIVITIES</p>	<p>Organizing scientific courses & seminars.</p>

Affiliation: BioQuest International, Winnipeg, Manitoba. (Companies are each independent but undertake joint ventures, etc.)

Comments :

KING AGRO INC (Subsidiary of KINGROUP INC.)

Head Office : P.O. Box 1088 Chatham, Ontario N7M 5L6		Research Facilities Chatham and Listowel, Ontario	
Telephone # : (519) 354-3210 President : Mr. Napoleon King Established : 1934 No. of Employees: 130 Main Activities : Production and wholesale - seeds, agricultural chemicals.		Telephone #: (519) 354-3210 Telex : 064-78548 Contact : F. Scott-Pearse	
Annual Sales :			
BIOTECHNOLOGY		OTHERS	
RESEARCH Doubled haploids in rapeseed breeding.		Corn breeding. Soybean breeding. Mung bean breeding. Wheat, barley, oats breeding.	
Annual Expenditures: \$150 (000) Researchers: 2		\$850 (000) 12	
MANUFACTURING		Seed production: hybrid corn, soybeans & rapeseed, cereals, forage crops. Special quality soy & mung beans for food.	
OTHER ACTIVITIES		Seed distribution. Pesticide distribution.	

Affiliation: King Grain (1985) Ltd., King Agri-Serve Inc., King Grain Limited, Canada, France Canada Semences Inc., King Grain Inc. (U.S.A.).

Comments :

KOPPERNAES ENGINEERING LTD.

<p>Head Office : 1248 Bedford Hwy. Bedford, Nova Scotia B4A 1C6</p> <p>Telephone # : (902) 835-8348</p> <p>President : Mr. Peter Mitchell</p> <p>Established : 1957 inc. 1971</p> <p>No. of Employees: 16</p> <p>Main Activities : Food plant design, dairies, fish processing plant, water front designs, plant feasibility and economic impact studies.</p> <p>Annual Sales : \$650 (000)</p>	<p>Research Facilities Affiliate American Composite Technology Inc. 60 State Street, Suite 3330, Boston, Mass.</p> <p>Telephone #: (617) 742-8606</p> <p>Telex : 940-485</p> <p>Contact : J.D. Koppernaes</p>												
BIOTECHNOLOGY	OTHERS												
<p>RESEARCH Composite material lab in Boston and in Bedford. Comp. mat. production design and testing. Water flow by air agitation for aquaculture. Testing and examination of effluent waste waters using NRC Mobile Anaerobic Digester.</p> <p>Annual Expenditures:\$154 (000) up to \$200 (000) in 1986 Researchers: sub-contract</p>	<p>Design of Fisheries Complexes:</p> <table border="0"> <tr> <td>. Louisbourg</td> <td>. Boston</td> </tr> <tr> <td>. Cheticamp</td> <td>. Greenport, L.T.</td> </tr> <tr> <td>. Lunenburg</td> <td>. Seattle</td> </tr> <tr> <td>. Nassau</td> <td>. N.S., N.B.,</td> </tr> <tr> <td>. St. Lucia</td> <td>P.E.I., etc.</td> </tr> <tr> <td>. Barbados</td> <td></td> </tr> </table>	. Louisbourg	. Boston	. Cheticamp	. Greenport, L.T.	. Lunenburg	. Seattle	. Nassau	. N.S., N.B.,	. St. Lucia	P.E.I., etc.	. Barbados	
. Louisbourg	. Boston												
. Cheticamp	. Greenport, L.T.												
. Lunenburg	. Seattle												
. Nassau	. N.S., N.B.,												
. St. Lucia	P.E.I., etc.												
. Barbados													
<p>MANUFACTURING Composite material products. Composite material machines. Methane gas from reduction of BOD in effluents. Hands-on application of research by American Composite Technology and by affiliated universities and research establishments.</p>	<p>Composite Material Plant. Nordic Supply, Skodje, Norway. American Composite Technology Inc. Boston, U.S.A.</p>												
<p>OTHER ACTIVITIES Research on: Freeze dried fish solubles. Fish protein concentrates, sponsor needed to finish the project. Ensilage of fish wastes.</p>													

Affiliation: American Composite Technology Inc., Boston
Nordic Supply A/S - Skodje, Norway
Technical University of Nova Scotia and
Dr. Paul LaGrace of M.I.T.

Comments: J.D. Koppernaes Engineering Ltd. has been involved in composite material research since 1957. The work has resulted in the establishment of composite material plants in many countries including Norway, Sweden, Finland, Denmark, England, West Germany, France, Spain, India, and the United States. The machinery for the plants was supplied by Nordic Supply, a one time subsidiary of Koppernaes Engineering Ltd. The plant design is performed by Koppernaes Engineering Ltd., in Bedford. The product research is conducted by American Composite Technology in Boston.

LABATT BREWING CO. LTD.

<p>Head Office : 150 Simcoe Street London, Ontario N6A 4M3</p> <p>Telephone # : (519) 673-5050</p> <p>President :</p> <p>Established : 1847</p> <p>No. of Employees : 4,200</p> <p>Main Activities :</p>	<p>Research Facilities Same Address</p> <p>Telephone #: (519) 673-5317</p> <p>Telex : 064-7244</p> <p>Contact : Dr. G.G. Stewart Director, Technical Affairs</p>
<p>Production of beer and flavoured (beer-based) beverages.</p>	
<p>Annual Sales : \$1,149,000 (000)</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Yeast strains: genetic engineering and species development. Physical and flavour stability of beer.</p> <p>Annual Expenditures: \$1,600(000) Researchers: 35</p>	
<p>MANUFACTURING Beer production.</p>	
<p>OTHER ACTIVITIES Consulting: Sale of technology with regards to genetic manipulation of yeast.</p>	

Affiliation: Hold associate laboratory status with the National Research Council of Canada.

Comments : The Labatt Brewing Co. is a wholly owned subsidiary of John Labatt Limited which is a broadly based food processing corporation with annual sales of \$3 Billion.

LALLEMAND INC.

<p>Head Office : 1620 Préfontaine Street Montréal, Québec H1W 2N8</p> <p>Telephone # : (514) 522-2133</p> <p>President : Mr. Jean Chagnon</p> <p>Established : 1915</p> <p>No. of Employees: 90</p> <p>Main Activities : Production of yeast.</p> <p>Annual Sales : \$25,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex : 05-24824</p> <p>Contact : Dr. R. Degré</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Fermentation control. Wine yeast. Resistance of yeast to freezing and ethanol.</p> <p>Annual Expenditures: \$600 (000) Researchers: 8</p>	<p>Drying of active yeast.</p>
<p>MANUFACTURING Bakers' yeast. Distillery yeast. Wine yeast.</p>	
<p>OTHER ACTIVITIES</p>	<p>Distribution of bakery products.</p>

Affiliation: Setric Biologie, France. (Subsidiary of Lallemand Inc.)

Comments : The firm subsidizes various research projects at universities and research facilities.

LANGFORD LABORATORIES INC.

<p>Head Office : 400 Michener Road Guelph, Ontario N1K 1E4</p> <p>Telephone # : (519) 837-2040</p> <p>President : R.C. Povey</p> <p>Established : 1975</p> <p>No. of Employees : 45</p> <p>Main Activities :</p>	<p>Research Facilities 131 Malcolm Road Guelph, Ontario N1K 1A8</p> <p>Telephone #: (519) 823-5490</p> <p>Telex :</p> <p>Contact : Mrs Anne Behnan</p>
<p>Development, manufacture and marketing of animal health products, especially vaccines.</p> <p>Annual Sales : Not announced</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Vaccines. Pharmaceuticals.</p> <p>Annual Expenditures: \$300 (000) Researchers: 4</p>	
<p>MANUFACTURING Animal health vaccines.</p>	<p>Some finishing of pharmaceutical products received in bulk.</p>
<p>OTHER ACTIVITIES Consulting and training in vaccine production for developing countries.</p>	<p>Marketing animal health products.</p>

Affiliation: 49.9% owned by Cyanamid Canada Inc.

Comments :

LASONDE

<p>Head Office : 170-5th Avenue Rougefont, Québec JOL 1M0</p> <p>Telephone # : (514) 469-3122</p> <p>President : Mr. Jean-Paul Barré</p> <p>Established :</p> <p>No. of Employees : 200</p> <p>Main Activities : Juice manufacturer.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #: (514) 469-3122</p> <p>Telex : 05-832553</p> <p>Contact : Yves Dumont</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Study of enzymes in relation to reactions involved in juice clarification. Study of reactions during clarification. Recovery of food colouring. Extended juice preservation.</p> <p>Annual Expenditures: \$800 (000) Researchers: 6</p>	<p>Drying of active yeast.</p>
<p>MANUFACTURING Clarifruit system: Juice clarification by flotation.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

D.G. MALCOLM & ASSOCIATES INC.

<p>Head Office : 440-333 3rd Ave. N. Saskatoon, Sask. S7K 2H9</p> <p>Telephone # : (306) 652-2066 President : Dr. D.G. Malcolm Established : 1978 No. of Employees : 5 Main Activities : Engineering consulting and market research.</p> <p>Annual Sales : \$350 (000)</p>	<p>Research Facilities</p> <p>Telephone #: Telex : Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Process development in renewable fuel and energy: banana fermentation to produce ethanol and animal feed; processing of low- quality agricultural wastes to useful products by fermentation.</p> <p>Annual Expenditures: \$ 10 (000) Researchers: 2</p>	<p>Liquid MHD control of crystal growth.</p> <p>\$30 (000) 2</p>
<p>MANUFACTURING N/A.</p>	
<p>OTHER ACTIVITIES Consulting: bioprocess and engineering. Feasibility studies: renewable energy.</p>	<p>Market and feasibility studies for new products. Industrial Technology Advisor for Assoc. of Consulting Engineers of Canada. Mechanical engineering.</p>

Affiliation: Solmecs Corporation.

Comments :

MDS HEALTH GROUP INC.

<p>Head Office : 30 Meridian Road Rexdale, Ontario M9W 4Z9</p> <p>Telephone # : (416) 675-7661</p> <p>President : Mr. W.G. Lewitt</p> <p>Established : 1969</p> <p>No. of Employees: 2500 .</p> <p>Main Activities : Provision of medical and diagnostic services.</p> <p>Annual Sales : \$110,000 (000)</p>	<p>Research Facilities Same</p> <p>Telephone #: (416) 675-7661</p> <p>Telex :</p> <p>Contact : Dr. John Nixon</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development of monoclonal antibodies and diagnostic systems for the detection of gonorrhoea.</p> <p>Annual Expenditures: N/A Researchers: 3</p>	
<p>MANUFACTURING Monoclonal antibodies.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

MEIOGENICS RESEARCH CORPORATIONS

<p>Head Office : 1716 Woodward Dr. Ottawa, Ontario K2C 0P8</p> <p>Telephone # : (613) 727-8395 President : Dr. Peter Duck Established : 1982 No. of Employees : 7 Main Activities : The development of nucleic acid hybridization based diagnostic products for agriculture, food and medicine.</p> <p>Annual Sales :</p>	<p>Research Facilities SAME</p> <p>Telephone #: Telex : Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Hybridization based user friendly read-out systems.</p> <p>Annual Expenditures: \$500 (000) Researchers: 5</p>	
<p>MANUFACTURING DNA/RNA Synthesis.</p>	
<p>OTHER ACTIVITIES Consulting/Research Contracts.</p>	

Affiliation:

Comments :

MICROBE INC.

<p>Head Office : 85 Midpark Road London, Ontario N6N 1B2</p> <p>Telephone # : (519) 668-1005 President : Dr. J.P. Insell Established : 1983 No. of Employees : 8 Main Activities :</p>	<p>Research Facilities Same</p> <p>Telephone #: (519) 668-1005 Telex : Contact : Mike Robertson General Manager</p>
<p>Inhanced microbial degradation of toxic and non-toxic environmental pollutants. Environmental biotechnology.</p> <p>Annual Sales : Confidential</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Microbial degradation of pollutants. Plant tissue culture. Biological pesticides.</p> <p>Annual Expenditures: Confidential Researchers: 5</p>	
<p>MANUFACTURING Bacteria: manufacture types of bacteria as requested by clients. Bacteria are non-genetically engineered.</p>	
<p>OTHER ACTIVITIES Biochemical, chemical and microbial analyses for companies.</p>	

Affiliation: None.

Comments : Independently owned company. Presently, a strong activity in the degradation of food wastes. Also a strong laboratory and plan project for rDNA engineering.

NORTHERN SOIL TECHNOLOGIES LTD.

<p>Head Office : #4-110 Research Drive Innovation Place Saskatoon, Sask. S7N 2X8</p> <p>Telephone # : (306) 343-9548</p> <p>President : David K. Grayson</p> <p>Established : 1984</p> <p>No. of Employees: 5</p> <p>Main Activities : R&D of algae as green crops for soil improvement and rhizobia for nitrogen fixation.</p> <p>Annual Sales : N/A</p>	<p>Research Facilities Northern Soil Technologies Ltd.</p> <p>Telephone #: (306) 343-9548</p> <p>Telex :</p> <p>Contact : Dr. J.H. Stephens</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Algae strain selection and modification; effect of algae on soil properties.</p> <p>Annual Expenditures: N/A Researchers 2</p>	
<p>MANUFACTURING Algae for green manure crops for agricultural land.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: None.

Comments :

NOVA HUSKY RESEARCH CORPORATION

<p>Head Office : 1411 25th Ave. N.E. Calgary, Alberta T2E 7L6</p> <p>Telephone # : (403) 291-4544 President : George B. Miller Established : 1982 No. of Employees: 60 Main Activities : Basic and applied research for the oil and gas sector activities of Nova, an Alberta Corporation and Husky Oil Operations Ltd.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #: (403) 291-4544 Telex : Contact : Dr. Tom Jack</p>
<p>BIOTECHNOLOGY</p>	<p>OTHERS</p>
<p>RESEARCH Petroleum microbiology; biologically induced corrosion; biodeterioration of materials; microbially enhanced oil recovery.</p> <p>Annual Expenditures: Researchers: 4</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: NOVA/Husky Research Corporation Ltd. is a wholly owned subsidiary of Nova, an Alberta Corporation and Husky Oil Operations Ltd.

Comments :

NOWSCO WELL SERVICE LIMITED

Head Office : 1300, 801-6th Ave S.W. Calgary, Alberta T2P 3W2		Research Facilities 6820 36th Street S.E. Calgary, Alberta T2C 2G4	
Telephone # : (403) 261-2990 President : Mr. J.P. Shouldice Established : 1962 No. of Employees : 800 Main Activities : Oil Well Service Co. involved in cementing and simulation of oil and gas wells. Annual Sales : \$196,800,000 (1984)		Telephone #: (403) 279-8841 Telex : 03-821370 Contact : John Delorey	
BIOTECHNOLOGY		OTHERS	
RESEARCH Studying organisms suitable for degradation of polymers by bacteria. Applying and studying effects on polymers. Annual Expenditures: \$100,000/yr. Researchers: 10		Cementing problems. Product development in gelling, foaming, etc. Computer simulation of wells. \$2,910,000 30	
MANUFACTURING			
OTHER ACTIVITIES		OTHER ACTIVITIES Coal mine related work. Computer simulation of fracturing. Basically a pumping company.	

Affiliation: 63% owned by Big 3 Industries of U.S.A.

Comments : Building new 7000 ft² research center.
 Traded on T.S.E. and NASDAQ.
 Research is for worldwide operations.

ONTARIO PAPER COMPANY

<p>Head Office : P.O. Box 3026 St. Catharines, Ont. L2R 7G2</p> <p>Telephone # : (416) 688-5030</p> <p>President : J. E. Houghton</p> <p>Established :</p> <p>No. of Employees : 2,500</p> <p>Main Activities :</p> <p>Manufacturer of newsprints, ethanol, vanillin, salt cake.</p> <p>Annual Sales : \$410,000 (000)</p>	<p>Research Facilities Allanburg Road Thorold, Ontario L2V 3Z5</p> <p>Telephone #: (416) 227-1121</p> <p>Telex : 061-5110</p> <p>Contact : Anthony Yeu</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Co-operative study with university of Toronto on commercial fermentation of hexoses and pentoses from waste sulphite liquor.</p> <p>Annual Expenditures: \$50 (000) Researchers: 0</p>	<p>Research and Development in pulp and newsprint areas.</p> <p>Approx. \$1,000 (000) 15</p>
<p>MANUFACTURING Ethanol (industrial).</p>	<p>Newsprints. Vanillin (flavoring agent and for pharmaceutical uses). Salt cake.</p>
OTHER ACTIVITIES	

Affiliation: Canadian subsidiary of Tribune Company, Chicago, Illinois.

Comments :

ORTHO PHARMACEUTICAL CANADA

Head Office : 19 Green Belt Drive Don Mills, Ontario M3C 1L9		Research Facilities Same	
Telephone # : (416) 449-9444 President : Mr. P. Skuy Established : 1941 No. of Employees : 350 Main Activities : Manufactures pharmaceutical products.		Telephone #: (416) 449-9444 Telex : 06-966516 Contact : Laurence J. Russ, Ph.D. Vice-President, Research	
Annual Sales : N/A			
BIOTECHNOLOGY		OTHERS	
RESEARCH Development of tissue culture and recombinant DNA technology for the production of immunopharmacologically active proteins and peptides. Applications in therapeutic medicine. Annual Expenditures: \$600 (000) Researchers: 8		Development of antiviral and antifungal agents. Development of new contraceptive technology. \$4,000 (000) 42	
MANUFACTURING Under development.		Production of a wide variety of pharmaceutical products and medical devices.	
OTHER ACTIVITIES			

Affiliation:

Comments : Active program at the research level in collaboration with Canadian universities and institutions. Active collaboration with NRC through:
 (a) IRAP
 (b) Biotechnology Program (Biological Sciences Division).

PACIFIC ISOTOPES & PHARMACEUTICALS LTD

<p>Head Office : 1176 W. Georgia St. Suite 1130 Vancouver, B.C. V6E 4A2</p> <p>Telephone # : (604) 683-8566</p> <p>President & C.E.O. : Terrance A. Mailloux</p> <p>Established : April, 1980</p> <p>No. of Employees: 4</p> <p>Main Activities : To research, develop, manufacture, and market new drugs and diagnostic products.</p> <p>Annual Sales : 0 (R&D)</p>	<p>Research Facilities Nil</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH To distribute interferon (Wellferon) to physicians across Canada to conduct clinical trials against various cancers and viral diseases.</p> <p>Annual Expenditures: Not reported. Researchers: 60-80</p>	
<p>MANUFACTURING Wellferon manufacturing plant in planning stage.</p>	
<p>OTHER ACTIVITIES Joint venture for further biomedical research in planning stage.</p>	

Affiliation:

Comments : Pacific Isotopes & Pharmaceuticals Ltd. is the operating arm and a wholly-owned subsidiary of The Terry Fox Medical Research Foundation. Its activities encompass the development of biologicals and other pharmaceuticals. Its principal project is to distribute interferon (Wellferon) to physicians across Canada to conduct clinical trials against various cancers and viral diseases.

Upon completion of interferon clinical trials and approval by the Health Protection Branch, Health & Welfare Canada, Pacific Isotopes will manufacture and market alpha interferon as well as produce and market quantities of other therapeutic biological products.

PEGASUS INDUSTRIAL SPECIALTIES LTD.

<p>Head Office : 4490 Sheppard Ave. E. Agincourt, Ontario M1S 4J9</p> <p>Telephone # : (416) 298-3141 President : Neal Trent Established : 1968 No. of Employees: 15 Main Activities : Designing, engineering and building research pilot and production unit for distillation, extraction, absorption, fermentation; reactors and evaporators.</p> <p>Annual Sales : \$2,200 (000)</p>	<p>Research Facilities SAME</p> <p>Telephone #: (416) 298-3141 Telex : 065-26147 Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Bio-reactor design. Alcohol concentration process.</p> <p>Annual Expenditures: \$39 (000) Researchers: 1 part-time</p>	<p>Distillation and extraction design.</p> <p>\$8 (000) 1 part-time</p>
<p>MANUFACTURING General. Fermentors (Laboratory): custom designed fluidized bed fermentor, special external loop air lift fermentor.</p>	<p>Pilot plants for distillation, reaction, extraction, absorption and evaporation processes.</p>
<p>OTHER ACTIVITIES Representative for Chemap AG ferm- entations and downstream process equipment. Maintenance.</p>	<p>Specialize in process design for distillation and extraction systems.</p>

Affiliation:

Comments :

PHERO TECH INC.

<p>Head Office : 1140 Clark Dr. Vancouver, B.C. V5L 3K3</p> <p>Telephone # : (604) 255-7381</p> <p>President : Stephen Burke</p> <p>Established : 1982</p> <p>No. of Employees : 15</p> <p>Main Activities :</p> <p>Insect pest management for the forestry sector.</p> <p>Annual Sales : \$600 (000) - \$700 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Forest insect pest management with respect to 1) bark beetles, 2) ambrosia beetles, 3) flies, 4) cockroaches, and 5) nematodes in the future. Mammal repellants to protect saplings from rabbits, deer, etc.</p> <p>Annual Expenditures: \$150-175 (000) Researchers: 3-6</p>	<p>Market research.</p> <p>\$40 (000) 1½</p>
<p>MANUFACTURING Manufacture pest management agents such as semiochemicals, scents, etc.</p>	
<p>OTHER ACTIVITIES Provide a comprehensive level of service, create an insect pest management program, institute or monitor the program which is applicable to each specific problem.</p>	

Affiliation:

Comments : N.R.C. and B.C.R.C. fund 20-30% of the non-market research funds.

PHILOM BIOS INC.

<p>Head Office : #15 Innovation Blvd. Saskatoon, Sask. S7N 2X8</p> <p>Telephone # : (306) 665-6211</p> <p>President : John V. Cross</p> <p>Established : 1980</p> <p>No. of Employees:</p> <p>Main Activities : Development of biological input systems for the agricultural industry.</p> <p>Annual Sales : N/A</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Improved insect pest control and problem weed control. Reduced input costs for agricultural production. Safe environmentally harmonious biological products for agricultural use.</p> <p>Annual Expenditures: N/A Researchers: 6</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: Private company.

Comments :

PIONEER HI-BRED LIMITED

Head Office : Highway #2 West Chatham, Ontario N7M 5L1 Telephone # : (519) 352-6350 President : Mr. W.W. Parks Established : July 9, 1946 No. of Employees : 125 Main Activities : Wholesales of corn. Annual Sales :		Research Facilities Hwy. #59 R.R. #6 Woodstock, Ontario N4S 7W8 Telephone #: (519) 462-2307 Telex : Contact : Vlado Puskaric
BIOTECHNOLOGY	OTHERS	
RESEARCH Corn Research to support plant breeding efforts to improve product performance Annual Expenditures: Researchers:	Hybrid or Variety Testing of corn, wheat, soybeans, alfalfa.	
MANUFACTURING Seed Production - corn, soybeans and alfalfa.		
OTHER ACTIVITIES Marketing of sorghum, 1177 silage inoculant and animal vaccines.		

Affiliation: Subsidiary of Pioneer Hi-Bred International, Inc.
Des Moines, Iowa.

Comments :

POS PILOT PLANT CORPORATION

<p>Head Office : 118 Veterinary Road Saskatoon, Sask. S7N 2R4</p> <p>Telephone # : (306) 665-7791</p> <p>President : Roy A. Carr</p> <p>Established : 1977</p> <p>No. of Employees : 28</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #: (306) 665-7791</p> <p>Telex : 074-2882 (POS SKN)</p> <p>Contact : Roy Carr</p>
<p>Research and development, analytical services, information services, custom processing.</p> <p>Annual Sales : N/A</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Enzyme aided aqueous extraction of oils and fats from oilseeds. Enzymic modification of oils and fats. Pilot test run of immobilized enzymes.</p> <p>Annual Expenditures: Researchers:</p>	<p>Extrusion as an enzymic aided hydrolytic bioreactor.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

PULP & PAPER RESEARCH INSTITUTE CANADA (PAPRICAN)

Head Office : 570 St. John Blvd. Pointe-Claire Québec H9R 3J9 Telephone # : (514) 630-4100 President : Mr. P.E. Wrist Established : 1925 No. of Employees : 320 Main Activities : Miscellaneous services, research institute. Budget : \$19,000 (000)		Research Facilities Same as head office Telephone #: Telex : 05-821541 Contact : Dr. L. Jurasek
BIOTECHNOLOGY	OTHERS	
RESEARCH Pollution control: waste treatment. Studies on ligninolytic and cellulolytic enzymes. Cloning of genes of industrial interest. Annual Expenditures: Researchers: 5	The institute carries out fundamental and applied research related to pulp and paper mill operations, and it trains graduate students in fundamental research related to pulp and paper technolog	
MANUFACTURING		
OTHER ACTIVITIES	Student program in collaboration with the University of Montréal and École Polytechnique de Montréal, y. McGill University and University of British Columbia.	

Affiliation:

Comments : Partnership between Canadian Government, Canadian Pulp and Paper Association, McGill University and University of British Columbia.

QUADRA LOGIC TECHNOLOGIES INC.

<p>Head Office : 2660 Oak Street Vancouver, B.C. V6H 3Z6</p> <p>Telephone # : (604) 266-2365</p> <p>President : Dr. James J. Miller</p> <p>Established : February 1981</p> <p>No. of Employees: 10</p> <p>Main Activities : Development of diagnostic tests for the human and veterinary markets using monoclonal antibody/hybridoma technology.</p> <p>Annual Sales :</p>	<p>Research Facilities</p> <p>Telephone #: (604) 266-3522</p> <p>Telex : 04-352848 VCR</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Monoclonal antibody/hybridoma technology.</p> <p>Annual Expenditures: \$624 (000) Researchers: 6</p>	N/A.
<p>MANUFACTURING Diagnostic kits.</p>	N/A.
<p>OTHER ACTIVITIES N/A.</p>	N/A.

Affiliation:

Comments :

RESEARCH FOODS LIMITED

Head Office : 77 Champagne Drive Downsview, Ontario M3J 2C6		Research Facilities	
Telephone # : (416) 635-8434 President : H. Tenenbaum Established : 1961 No. of Employees : 110 Main Activities : R & D in foods.		Telephone #: (416) 635-8692 Telex : Contact : Dr. Alan Ganhary	
Annual Sales : N/A			
BIOTECHNOLOGY		OTHERS	
RESEARCH Production and purification of microtoxins. Vomitoxin 3-acetyl-vomitoxin. Others. Annual Expenditures: \$2,000 (000) Researchers: 15		Food processing methodology and formulations.	
MANUFACTURING		Food products.	
OTHER ACTIVITIES			

Affiliation:

Comments :

RHIZOTECH INC. (LES LABORATORIES)

<p>Head Office : P.O. Box 797 St. Jean Chrysostome, Québec G6Z 2L9</p> <p>Telephone # : (418) 839-5931 President : Mr. Lalonde Established : 1981 No. of Employees : 7 Main Activities : Biofertilizers. Biopesticides. Cultivation in vitro of wild and cultivated plants.</p> <p>Annual Sales : \$100 (000)</p>	<p>Research Facilities</p> <p>Telephone #: Telex : Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Selection and improvement of inoculant strains. Plants: New clones.</p> <p>Annual Expenditures: \$50 (000) Researchers: 2</p>	
<p>MANUFACTURING Microbial inoculants: Rhizobium, Frankia, mycorrhizal fungi. Seedlings in vitro. Biopesticides: BT.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

RIEDER DISTILLERY LTD.

<p>Head Office : 297 South Service Rd. Grimsby, Ontario L3M 4E9</p> <p>Telephone # : (416) 621-3773 President : Otto E. Rieder Established : 1970 No. of Employees: 42 Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #: (416) 621-3773 Telex : Contact : Mr. Ludwig Babjak</p>
<p>Distilled beverages and natural essences.</p> <p>Annual Sales :</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH: Natural flavours via bio-conversion. Membrane processes for separating food and beverage.</p> <p>Annual Expenditures: confidential Researchers: 5 (2 professional, 2 technical, 1 part time)</p>	
<p>MANUFACTURING Distilled beverages and natural essences.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: None.

Comments : Independent Canadian Company.

RIO ALGOM LTD. (ELLIOT LAKE OPERATIONS)

<p>Head Office : 120 Adelaide St. W. Toronto, Ontario M5H 1W5</p> <p>Telephone # : (416) 365-6880</p> <p>President : Mr. G.A. Albinos</p> <p>Established : June 30, 1960</p> <p>No. of Employees : 2,800</p> <p>Main Activities : Uranium mining.</p> <p>Annual Sales : N/A</p>	<p>Research Facilities Process Development Dept., Box 1500 Elliot Lake, Ont. P5A 2K1</p> <p>Telephone #: (705) 461-4455</p> <p>Telex :</p> <p>Contact : Mr. E. Barnes</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Improvement in mineral leaching (bacterial) techniques. Development of techniques designed to prevent pyrite oxidation by bacteria in tailings management areas.</p> <p>Annual Expenditures: \$100 (000) Researchers: 6</p>	
<p>MANUFACTURING To extend recovery of uranium by bacterial leaching in our underground mines. To improve and optimize conditions for bacterial recovery of uranium.</p>	
<p>OTHER ACTIVITIES Technology transfer sessions with interested parties.</p>	

Affiliation: Rio Algom Ltd. - Rio Tinto Zinc.

Comments :

ROBIN HOOD MULTI FOODS LIMITED

Head Office : P.O. Box 4000 Station "A" 243 Consumers Road Willowdale, Ontario M2N 5T5		Research Facilities Technical Centre 191 Attwell Drive Rexdale, Ontario M9W 5Z2 Telephone #: (416) 675-2541 Telex : 06989506 Contact : M.W. O'Connor	
Telephone # : (416) 496-1515 President : Mr. L.R. Brown Established : 1912 No. of Employees : 1918 Main Activities : Food processing.			
Annual Sales : \$370,000 (000)			
BIOTECHNOLOGY		OTHERS	
RESEARCH Biofermentation of by-products.		Food product development.	
Annual Expenditures: \$140 (000) Researchers: 2		\$800 (000) 15	
MANUFACTURING		Flour milling. Pickle processing. Meat processing. Cereal processing. Baking & specialty mixes. Agricultural feed. Poultry processing. Egg hatcheries.	
OTHER ACTIVITIES		Restaurants.	

Affiliation: Canadian subsidiary of International Multifoods Inc.,
 Minneapolis.

Comments : The company sponsors university research on biofermentation of
 by-products.

ROSELL (INSTITUT) INC.

<p>Head Office : 8480, boul. St-Laurent Montréal (Québec) H2P 2M6</p> <p>Telephone # : (514) 381-5631</p> <p>President : Edouard Brochu</p> <p>Established : 1934</p> <p>No. of Employees : 30</p> <p>Main Activities :</p> <p>Production of bacteria, yeast and molds used in the food industry, dietetics, medicine and agriculture.</p> <p>Annual Sales : \$1,500 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Nitrogen-fixing bacteria: industrial production tests using cheese whey.</p> <p>Annual Expenditures: \$48 (000) Researchers: 4 part-time</p>	<p>Sporulation of sporogenous lactobacilli. Lactic acid bacteria in silage <u>Bacillus thuringiensis</u>.</p> <p>\$100 (000) 5 part-time</p>
<p>MANUFACTURING Production of bacteria, yeast and molds for the milk and food industries agriculture, human and animal nutrition, prophylaxis and therapy.</p>	<p>Effects of <u>Streptococcus faecium</u> on growth and health of piglets.</p> <p>Study of bacteria specific to malolactic fermentation of wine and champagnes.</p>
<p>OTHER ACTIVITIES</p>	<p>All projects are partially financed by Government of Quebec, Canadian National Research Council and Agriculture Canada.</p>

Affiliation:

Comments: The firm subsidizes a university research project concerning nitrogen-fixing bacteria. It receives a federal government grant for the Rhizobium project.

SAFER AGRO-CHEMICAL LTD.

<p>Head Office : 6761 Kirkpatrick Cres R.R. # 3 Victoria, B.C. V8X 3X1</p> <p>Telephone # : (604) 652-4426</p> <p>President : J. Hesse</p> <p>Established : 1976</p> <p>No. of Employees: 24</p> <p>Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #: (604) 652-4426</p> <p>Telex : 049-7289</p> <p>Contact : G.S. Puritch</p>
<p>Research, development and marketing of pest control products.</p> <p>Annual Sales :</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Natural plant and animal oils as pest control products formulation of biological organisms for pest control.</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING Pest control products.</p>	<p>Marketing in lawn and garden industry in Canada, U.S. and overseas.</p>
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

SCOTIA MARINE PRODUCTS LTD.

<p>Head Office : P.O. Box 100 Lr. Woods Harbour Shelb. Co., N.S. BOW 2E0</p> <p>Telephone # : (902) 723-2080</p> <p>President : J.T. Zolper</p> <p>Established : 1959</p> <p>No. of Employees: 65</p> <p>Main Activities : Manufacturer of alginates.</p> <p>Annual Sales : \$3,500(000)</p>	<p>Research Facilities</p> <p>Telephone #: (902) 723-2080</p> <p>Telex : 019-38550</p> <p>Contact : C.F. MacConnell</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING</p> <p>Manufacturer of sodium alginates, ammonium alginates, calcium alginates, and potassium alginates from seaweed (<u>Ascophyllum nodosum</u>).</p>	<p>Seaweed harvesting.</p>
<p>OTHER ACTIVITIES</p> <p>Grain handling and marketing.</p>	

Affiliation: Canadian Subsidiary of Protan A/S, Norway.

Comments :

JOSEPH E. SEAGRAM & SONS LTD.

<p>Head Office : 1430 Peel Street Montréal, Québec H3A 1S9</p> <p>Telephone # : (514) 849-5271</p> <p>President : Mr. Gabor Jellinek</p> <p>Established :</p> <p>No. of Employees:</p> <p>Main Activities : Production of distilled spirits and wine.</p> <p>Annual Sales :</p>	<p>Research Facilities 225 Lafleur Avenue Lasalle, Québec H8R 3H2</p> <p>Telephone #: (514) 366-2410</p> <p>Telex :</p> <p>Contact : A. Peterson</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Selection and evaluation of yeast strains. Evaluation of extracellular enzymes.</p> <p>Annual Expenditures: Researchers:</p>	<p>Process development and process improvement relating to substrate processing and fermentation; flavour chemistry; new product development.</p>
MANUFACTURING	
OTHER ACTIVITIES	

Affiliation: Subsidiary of The Seagram Company Ltd.

Comments :

SERDARY RESEARCH LABORATORIES INC.

<p>Head Office : P.O. Box 5036 1643 Kathryn Drive London, Ontario N6G 2R7</p> <p>Telephone # : (519) 434-4419</p> <p>President : B. Serdarevich, Ph.D.</p> <p>Established : 1969</p> <p>No. of Employees: 5</p> <p>Main Activities : Production of high technology biochemicals for medical research.</p> <p>Annual Sales : \$150 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development of new biochemicals in the lipid field, required for medical research and the development of new drugs and diagnostics.</p> <p>Annual Expenditures: \$25 (000) Researchers: 2</p>	
<p>MANUFACTURING Production of approximately 500 biochemicals in small quantities but of high purity.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: None.

Comments :

SETL EMBRYO TRANSFERS

<p>Head Office : R.R. #5 Saskatoon, Sask. S7K 3J8</p> <p>Telephone # : (306) 373-4050</p> <p>President : Blain Canitz, P. Ag.</p> <p>Established : 1975</p> <p>No. of Employees: 6 + subcontracts</p> <p>Main Activities : Bovine embryo transfers.</p> <p>Annual Sales : Confidential</p>		<p>Research Facilities Same as Head Office</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>	
BIOTECHNOLOGY		OTHERS	
<p>RESEARCH Related to embryo transfer: Embryo sexing. Methods of transfer and freezing. Multiple micro-surgical division. Other species of animals.</p> <p>Annual Expenditures: Confidential Researchers:</p>			
<p>MANUFACTURING We provide commercial bovine (beef and dairy)embryo transfers including: superovulation, non-surgical collection, freezing, storage, splitting (micro-surgical division of embryo producing identical twins), preparation for export, plus surgical and non-surgical implantations.</p>			
<p>OTHER ACTIVITIES Prepared to assist foreign nations with obtaining embryo transfer technology.</p>			

Affiliation:

Comments :

SHERRITT GORDON MINES LIMITED

<p>Head Office : Commerce Court West Toronto, Ontario M5L 1B1</p> <p>Telephone # : (416) 363-9241</p> <p>President : Mr. Russell Latham</p> <p>Established : 1927</p> <p>No. of Employees: 1770</p> <p>Main Activities : Mining - copper, zinc. Refining - nickel, cobalt. Fertilizers - Ammonia urea phosphates.</p> <p>Annual Sales : \$397,000 (000)</p>	<p>Research Facilities Sherritt Research Centre Fort Saskatchewan, Alberta T8L 2P2</p> <p>Telephone #: (403) 998-6911</p> <p>Telex : 037-2290</p> <p>Contact : Mr. Herbert Veltman Research Director</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Extractive metallurgy: leaching. Effluent treatment: mining, metal refining.</p> <p>Annual Expenditures: \$10 (000) Researchers: 0.15</p>	
<p>MANUFACTURING N/A.</p>	
<p>OTHER ACTIVITIES N/A.</p>	

Affiliation: None.

Comments : Biotechnology research has been monitored since 1985, and this activity will continue. Active biotechnology research may be carried out in the future.

SNC GROUP (THE)

Head Office : 1 Complex Desjardins Montréal (Québec) H5E 1C8		Research Facilities	
Telephone # : (514) 282-9551 President : Mr. J.P. Goudreau Established : 1911 No. of Employees : 4,200 Main Activities : Miscellaneous services - engineering, construction, management services.		Telephone # : (514) 282-9551 Telex : 055-60042-SNCMIL Contact : Dr. B. Safi	
Annual Sales : \$200,000 (000)			
BIOTECHNOLOGY		OTHERS	
RESEARCH Bioenergy (fermentation and bio-treatment). Food (protein). Bioreactors. Annual Expenditures: \$100 (000) Researchers: 1		Engineering, supply and construction. \$200 (000)	
MANUFACTURING Biotreatment processes. Fermentation processes. Bioreactors.			
OTHER ACTIVITIES Consultation: Biological processes, engineering, control, etc.		Various technical activities world-wide.	

Affiliation: None.

Comments : SNC is developing a new bioreactor in association with Ontario Paper.

SPECTREX LIMITED/LTEE

<p>Head Office : 5250 Ferrier Suite 508 Montréal, Québec H4P 1L6</p> <p>Telephone # : (514) 738-3377</p> <p>President : Charles Salama</p> <p>Established : 1968</p> <p>No. of Employees: 10</p> <p>Main Activities : Producers of fermentation equipment and supplies for Biotechnology and Genetic Engineering.</p> <p>Annual Sales : \$2,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: Toronto (416) 283-2977</p> <p>Telex : 05-5-825543</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING Holding S.S. vessels for fermentation racks, piping, etc., for above.</p>	
<p>OTHER ACTIVITIES In addition distributors & agents of: Bioengineering A.G. Ingold Electrodes; Schleicher & Schuell; Brandel; Lab-Line Instruments; Labin Co.; Osmonics.</p>	<p><u>Products</u> Fermenters (Lab, Pilot & Production) Fermentation electrodes. Nitrocellulose for genetic Engineering. Cell harvesters. Shakers, incubators, ovens, etc. Freeze drying equipment. Ultra-Filtration Equip.</p>

Affiliation: Spectrex-Bioengineering, Division of Spectrex Limited.

Comments :

ST. LAWRENCE REACTOR LTD.

<p>Head Office : 50 Elmwood Avenue S. Mississauga, Ontario L5G 3J7</p> <p>Telephone # : (416) 271-1100</p> <p>President : Mr. Hank Krech</p> <p>Established : 1980</p> <p>No. of Employees: 15</p> <p>Main Activities :</p>	<p>Research Facilities SAME</p> <p>Telephone #: (416) 271-1100</p> <p>Telex : 06-961142</p> <p>Contact : Dr. P.G. Assarsson</p>
<p>Specializing in conversion of carbohydrate feedstocks to value-added products such as glucose syrups, and fermentable substrates for fuel ethanol production.</p> <p>Annual Sales : \$1,000 (000)</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Acid catalysts. Enzyme catalysts. Yeast fermentations. Biomass conversions.</p> <p>Annual Expenditures: \$500 (000) Researchers:</p>	
<p>MANUFACTURING Conversion equipment. Fermentation equipment.</p>	
<p>OTHER ACTIVITIES Engineering services.</p>	

Affiliation: St. Lawrence Starch Company Limited.

Comments :

STAKE TECHNOLOGY

<p>Head Office : 208 Wycroft Road Oakville, Ontario L6K 3T8</p> <p>Telephone # : (416) 842-4560</p> <p>President : J.N. Kendall</p> <p>Established : 1973</p> <p>No. of Employees: 12</p> <p>Main Activities : Development and manufacture of equipment for the conversion of biomass into feed, fibres and chemicals.</p> <p>Annual Sales : \$5,000 (000)</p>		<p>Research Facilities</p> <p>Telephone #: (416) 842-4560</p> <p>Telex : 06-982285</p> <p>Contact : J.D. Taylor</p>
BIOTECHNOLOGY	OTHERS	
<p>RESEARCH Feed from wood and crop residues. Hemicellulose, lignin products. Cellulose products as a feedstock for ethanol.</p> <p>Annual Expenditures: \$1,000 (000) Researchers: 7</p>	<p>Mechanical dewatering of biomass pressurized feeders for gasification. High temperature pulping process.</p>	
<p>MANUFACTURING Stake Co-Ax Feeders and Stake II Digesters.</p>	<p>Stake Co-Ax Feeders and Stake II Digesters.</p>	
<p>OTHER ACTIVITIES Contract research in specialty areas listed above.</p>		

Affiliation:

Comments : A public company which welcomes cooperative development projects.

STEARNS CATALYTIC

<p>Head Office : 200, 10333 Southport Road S.W. Calgary, Alberta T2H 2N2</p> <p>Telephone # : (403) 258-4700</p> <p>President : O.G. Knopp</p> <p>Established : 1951</p> <p>No. of Employees: Salaried: 638</p> <p>Main Activities : Hourly: 3200</p> <p>Engineering, procurement, construction, contract maintenance and tool supply and service for all types of chemical and biochemical facilities.</p> <p>Annual Sales : \$256 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Feasibility studies and major project work on all main aspects of fermentation-based manufacturing, including continuous media sterilization, uniform aeration and heat transfer, energy conservation, broth separation, product recovery, offgas odour control and treatment of fermentation waste. Projects include engineering, procurement and construction management of the first commercial, world-scale production complex to produce interferon by using recombinant DNA technology.</p>	<p>Plant operation, startup and maintenance services to a wide range of process industries.</p>

Affiliation: Canadian subsidiary of Air Products and Chemicals, Inc., of Allentown, Pennsylvania, USA.

Comments :

JOHN STONE & ASSOCIATES

<p>Head Office : 19 Saguenay Drive Aylmer, Québec J9J 1A3</p> <p>Telephone # : (819) 777-5135</p> <p>President : J.E. Stone</p> <p>Established : January 1, 1980</p> <p>No. of Employees : 2</p> <p>Main Activities : Consulting.</p> <p>Annual Sales : \$50,000</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Yeast fermentation of wood sugars. Biogas production from wood waste. Ethanol production from wood waste.</p> <p>Annual Expenditures: \$35,000 Researchers: 1</p>	<p>Acid hydrolysis of wood and production of chemicals.</p>
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Consulting. Biochemical processing of wood and agricultural residues.</p>	<p>Consulting. Chemical processing of wood and agricultural residues.</p>

Affiliation: Stone & Whitworth Ltd. Vancouver.
Whitston Ethanol Ltd. Vancouver.
Venture Resources Ltd. Auckland, New Zealand.

Comments : Consulting activities shifting to commercial application through the above-noted affiliated companies. In transition, so no quantitative data available.

SYNDEL LABORATORIES LTD.

<p>Head Office : 8879 Selkirk Street Vancouver, B.C. V6P 4J6</p> <p>Telephone # : (604) 266-7131 President : Mr. J.M. Little Established : 1977 No. of Employees: 6 Main Activities : Manufacturing pharmaceuticals for fish health; human diagnostics; raw materials for genetic engineering.</p> <p>Annual Sales : \$500 (000)</p>	<p>Research Facilities</p> <p>Telephone #: Telex : Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Deoxyribonucleoside production (Enzymes). Natural product pesticides.</p> <p>Annual Expenditures: \$50 (000) Researchers: 2</p>	<p>Pharmaceuticals from fish waste. Fish drugs and feed supplements.</p>
<p>MANUFACTURING Sex reversal hormones. Hormones for induced breeding for fish.</p>	<p>Pharmaceuticals. Drugs.</p>
<p>OTHER ACTIVITIES</p>	<p>Consulting; fisheries and aquaculture.</p>

Affiliation:

Comments :

SYNTEX INC.

<p>Head Office : 2100 Syntex Court Mississauga, Ontario L5M 2B3</p> <p>Telephone # : (416) 821-4000</p> <p>President : Mr. Howard Jeffrey</p> <p>Established : 1962</p> <p>No. of Employees: 228</p> <p>Main Activities : Wholesale pharmaceuticals.</p> <p>Annual Sales : \$25,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: (416) 821-4000 - 265</p> <p>Telex :</p> <p>Contact : Dr. A. Krantz</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Development of novel strategies for the design, preparation and testing of enzyme inhibitors. There is a high premium on novelty in both organic chemical synthesis, drug design, and mechanistic biochemistry.</p> <p>Annual Expenditures: \$2,000(000) Researchers: 15</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

W.G. THOMPSON & SONS LTD.

Head Office : P.O. Box 250 122 George Street Blenheim, Ontario NOP 1A0 Telephone # : (519) 676-5411 President : W.D. Thompson Established : 1924 No. of Employees: 200 Main Activities : Agribusiness. Annual Sales : \$150,000 (000)		Research Facilities Telephone #: (519) 676-8146 Telex : 064-78529 Contact : D.A. Littlejohns
BIOTECHNOLOGY	OTHERS	
RESEARCH Double haploid in barley. Annual Expenditures: \$450 (000) Researchers: 15	Conventional breeding programs in corn, soybeans, wheat, oats and barley, white beans.	
MANUFACTURING		
OTHER ACTIVITIES Grain handling and marketing.		

Affiliation:

Comments :

LES TOURBIERES PREMIERES LTEE.

<p>Head Office : Route Temiscouata Rivière-du-Loup Quebec G5R 3Z1</p> <p>Telephone # : (418) 862-6356</p> <p>President : B. Bélanger</p> <p>Established : 1933</p> <p>No. of Employees: 200</p> <p>Main Activities : Production of peat, peat substrate and compost.</p> <p>Annual Sales : \$46,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: (418) 862-6356</p> <p>Telex : 051-3964</p> <p>Contact : Dr. Michel Caron</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Plant symbioses (endomycorrhiza). Biofilters</p> <p>Annual Expenditures: \$1,000 (000) Researchers: 2 Ph.D. - 2 M.Sc. 2 B.S.A. - 10 Tech. Agriculture</p>	<p>Substrates (quality control). Development of new peat products. Research contracts.</p>
<p>MANUFACTURING Equipment for: peat harvesting, peat packaging, storage of packed peat. Peat mix (main activity).</p>	
<p>OTHER ACTIVITIES Consultation - exploitation of peat deposits outside America.</p>	

Affiliation: None.

Comments :

TRAVENOL CANADA INC.

<p>Head Office : 6695 Airport Road Mississauga, Ontario L4V 1T7</p> <p>Telephone # : (416) 673-2255 President : Richard T. Daly Established : 1938 No. of Employees: 900 Main Activities :</p>	<p>Research Facilities Nil</p> <p>Telephone #: Telex : Contact :</p>
<p>Production and sale of health care products.</p> <p>Annual Sales :</p>	
BIOTECHNOLOGY	OTHERS
<p>RESEARCH All research in Canada is done through grants on specific requests by researchers associated with universities and health care institutions in areas of interest to the corporation.</p> <p>Annual Expenditures: Researchers:</p>	
<p>MANUFACTURING Plants located at Allison, Ontario and Sherbrooke, Quebec.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation: Canadian subsidiary of Baxter Travenol Laboratories Inc., Deerfield, Illinois.

Comments : Research on world wide basis in many health care areas with particular interest in intravenous therapy, dialysis, diagnostics, blood collection, storage and transfusion, medical devices and medical instrumentation.

VETERINARY INFECTIOUS DISEASE ORGANIZATION

<p>Head Office : VIDO 124 Veterinary Road Saskatoon, Sask. S7N 0W0</p> <p>Telephone # : (306) 966-7465 President : Dr. S.D. Acres Established : Sept. 25, 1975 No. of Employees: 40 Main Activities :</p>	<p>Research Facilities</p> <p>Telephone #: Telex : Contact :</p>
<p>Conducts applied research on the common infectious diseases of food animals and poultry.</p> <p>Annual Sales : Non profit research organization - Revenue = \$1,800 (000) (estimated 1984/85)</p>	
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Monoclonal antibodies, genetic engineering (recombinant DNA), synthetic peptides, interferon, immunomodulators, diagnostic reagents.</p> <p>Annual Expenditures: \$1,800 (000) Researchers: 15</p>	
<p>MANUFACTURING</p>	
<p>OTHER ACTIVITIES Development of conventional and recombinant DNA vaccines. Preventive Medicine (Management) Information. Construction plans for animal housing. Product testing. International symposia. Technology transfer to the livestock and poultry industries. Gnotobiotic animal facilities.</p>	

Affiliation: University of Saskatchewan, BIOSTAR Inc.

Comments : Located at Innovation Place on the University of Saskatchewan Campus, VIDO's 36,000 sq. ft. facility contains offices, laboratories, a media preparation area, specialized animal isolation rooms and germ-free isolation units. Technologies and products developed at VIDO are marketed through BIOSTAR Inc.

VETREPHARM INC. LABS.

<p>Head Office : Vetrepharm Inc. Unit 27 69 Bessemer Road London, Ontario</p> <p>Telephone # : (519) 685-5800</p> <p>President : Mr. A. McCray</p> <p>Established : 1979</p> <p>No. of Employees: 28</p> <p>Main Activities : Production and distribution of veterinary products.</p> <p>Annual Sales : \$1,500 (000)</p>	<p>Research Facilities Vetrepharm Inc. c/o Mrs. R. Merchant RR #1, Box 19 Putnam, Ontario NOL 2B0</p> <p>Telephone #: (519) 485-4731</p> <p>Telex :</p> <p>Contact : Mrs. R. Merchant</p>
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BIOTECHNOLOGY	OTHERS
<p>RESEARCH Production of pleuropneumonia and rhinitis vaccine for farm animals. Immunostimulants. Parabiologics.</p> <p>Annual Expenditures: \$360 (000) Researchers: 4</p>	
<p>MANUFACTURING Rhinitis vaccine. Pleuropneumonia vaccines. Autogenous vaccine. Immunostimulants.</p>	
<p>OTHER ACTIVITIES Hormone production for farm animals. Pharmaceuticals for veterinary process.</p>	

Affiliation:

Comments :

WINNIPEG RH INSTITUTE INC. (THE)

<p>Head Office : University of Manitoba Winnipeg, Manitoba R3T 2N2</p> <p>Telephone # : (204) 269-7291</p> <p>President : A.D. Friesen, Ph.D.</p> <p>Established : 1969</p> <p>No. of Employees: 40</p> <p>Main Activities : Plasma fractionation.</p> <p>Annual Sales : \$1,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #:</p> <p>Telex :</p> <p>Contact :</p>
<p align="center">BIOTECHNOLOGY</p>	<p align="center">OTHERS</p>
<p>RESEARCH Downstream processing. Protein separation.</p> <p>Annual Expenditures: \$250 (000) Researchers: 6</p>	
<p>MANUFACTURING Plasma protein fractions.</p>	
<p>OTHER ACTIVITIES</p>	

Affiliation:

Comments :

ZETON TECHNOLOGIES CORPORATION

<p>Head Office : 4129 Harvester Rd. Burlington, Ontario L7L 5M3</p> <p>Telephone # : (416) 632-1341 President : Kenny Persad Established : 1981 No. of Employees: 26 Main Activities : Process development of R&D, scale up of new technologies.</p> <p>Annual Sales : \$3,000 (000)</p>	<p>Research Facilities</p> <p>Telephone #: (416) 632-1341 Telex : 061-8678 Contact : D. Beckman</p>
BIOTECHNOLOGY	OTHERS
<p>RESEARCH Equipment: state of art controllers, etc.</p> <p>Annual Expenditures: \$100 (000) Researchers: 1</p>	
<p>MANUFACTURING Pilot plants: manual or computer. Controlled: 5,000 to 10,000 litre capacity.</p>	<p>Fabrication testing and building of process & plants from 15cc to 100 tonnes per day.</p>
<p>OTHER ACTIVITIES Consultation, evaluation feasibility studies.</p>	<p>Consultation, evaluation feasibility studies.</p>

Affiliation: Waterloo, Biotechnology Research Institute
McMaster Institute of Polymer Research.

Comments :

APPENDIX A: THE NATIONAL BIOTECHNOLOGY STRATEGY:

AN OUTLINE OF THE FEDERAL POLICY TO DEVELOP
BIOTECHNOLOGY IN CANADA

Elements of Canada's National Biotechnology Strategy

Canada's industrial and research sectors are facing the challenge and promise of a powerful new form of technology: biotechnology.

Today, the biological processes of microbial, plant, and animal cells are being applied in increasingly sophisticated ways to develop new products and to improve production processes. Food, drugs, medical diagnostics, chemicals, agriculture, mining techniques, and waste processing are being transformed by the new biological technologies. Canada's ability to remain competitive in the resource sectors, and to build new industries will depend on a strong capability in biotechnology.

The federal government has committed \$11 million per year to support a National Biotechnology Strategy, and the Ministry of State for Science and Technology has been given responsibility for the Strategy.

The goals of the Strategy are to enhance scientific research and industrial applications, encourage skilled human resource development, increase scientific cooperation and technology transfer, and foster an economic and regulatory climate conducive to commercial biotechnology investment and activity. To achieve these goals, several activities have been initiated.

First, a National Biotechnology Advisory Committee has been established to advise the Minister of State for Science and Technology on the development of biotechnology in Canada and to report on the National Strategy. Representatives drawn from industry, university and federal government departments ensure that there is a broad base for policy development.

As part of its activities the Committee has organized a series of policy workshops on topics such as Engineering and Fermentation (Vancouver), Agriculture (Saskatoon and Ottawa) along with regional biotechnology seminars (Halifax, Edmonton). The Committee is currently giving special attention to the impact of biotechnology on specific sectors such as agriculture and food, health care, and forestry, and to policies designed to accelerate technology transfer and commercialization. Publications and reports are available from the Secretariat.

Second, the Strategy has established biotechnology R&D networks in areas of potential benefit to Canadian industry. The networks are intended to foster links between the performers and users of research. Each network is administered by a federal science department and membership is open to industry, university and government representatives actively working in relevant fields. A list of the networks is attached.

Third, the Strategy includes a federal cost-sharing program administered by the National Research Council through the Program for Industry/Laboratory Projects (PILP). Under the program, industries collaborating with or sub-contracting biotechnology research to universities or provincial research organizations are eligible to apply for federal government grants. The program encourages technology transfer from university and provincial government laboratories, where the research base for future development currently exists, to industry.

Fourth, the Strategy encourages scientific collaboration through equipment sharing and personnel exchanges between research and development groups in various sectors, and through international cooperation. Joint research projects between industry, and government or university labs are particularly encouraged. The federal biotechnology research capacity is being strengthened to facilitate these interactions. The federal commitment to biotechnology is also indicated by the establishment of the Biotechnology Research Institute in Montreal. Agriculture Canada is also expanding its activities in plant, animal and food biotechnology. Other federal departments such as Health and Welfare and Energy, Mines and Resources also have biotechnology research programs.

Finally, a federal Interdepartmental Committee has been formed to coordinate National Strategy activities. Representatives of key federal departments involved in biotechnology meet regularly to consider scientific, budgetary, international, and regulatory aspects. In cooperation with these departments, the Ministry of State for Science and Technology has been directed to review regulatory issues and accordingly, has been examining patenting, and safety and regulations issues.

NATIONAL BIOTECHNOLOGY STRATEGY-CONTACTS:

BIOTECHNOLOGY SECRETARIAT

Ministry of State for Science and Technology,
240 Sparks St., 8th Floor West, Ottawa, Canada, K1A 1A1

- National Biotechnology Advisory Committee
- Interdepartmental Committee on Biotechnology
Dr. David B. Shindler - 613/990-6322

PILP - BIOTECHNOLOGY FUNDING PROGRAM

Dr. John Vose - 613/993-1790
General Manager, Program for Industry/Laboratory Projects
National Research Council of Canada

BIOTECHNOLOGY NETWORKS

AREA	DEPARTMENT(S)	COORDINATOR(S)	TELEPHONE
<u>Nitrogen Fixation BioNif and Plant Strain Development BioCrop</u>	Agriculture Canada	Dr. R.W. Miller	613/995-3700
		Dr. W. Kellar	613/995-9761
<u>Human and Animal Health Care Products BIONET</u>	National Health and Welfare	Dr. Keith Bailey	613/993-7301
	Agriculture	Dr. Charlotte Rigby	613/998-9320
<u>Mineral Leaching and Metal Recovery BIOMINET</u>	Energy, Mines and Resources	Dr. R.G.L. McCreedy	613/990-6945
<u>Forestry and Forest Products BIOFOR</u>	National Research Council	Dr. Lou Visentin	613/993-6371
<u>Waste Treatment BIOQUAL</u>	Environment Canada	Mr. Al Townshend	613/997-1823

APPENDIX B: ENTRY FORMS

FOR THE 1987 CANADIAN
BIOTECHNOLOGY SOURCEBOOK

Head Office :	Research Facilities	
Telephone # :	Telephone #:	
President :	Telex :	
Established :	Contact :	
No. of Employees :		
Main Activities :		
Annual Sales :		
	BIOTECHNOLOGY	OTHER
RESEARCH		
Annual Expenditures:		
Researchers:		
MANUFACTURING		
OTHER ACTIVITIES		

Affiliation:

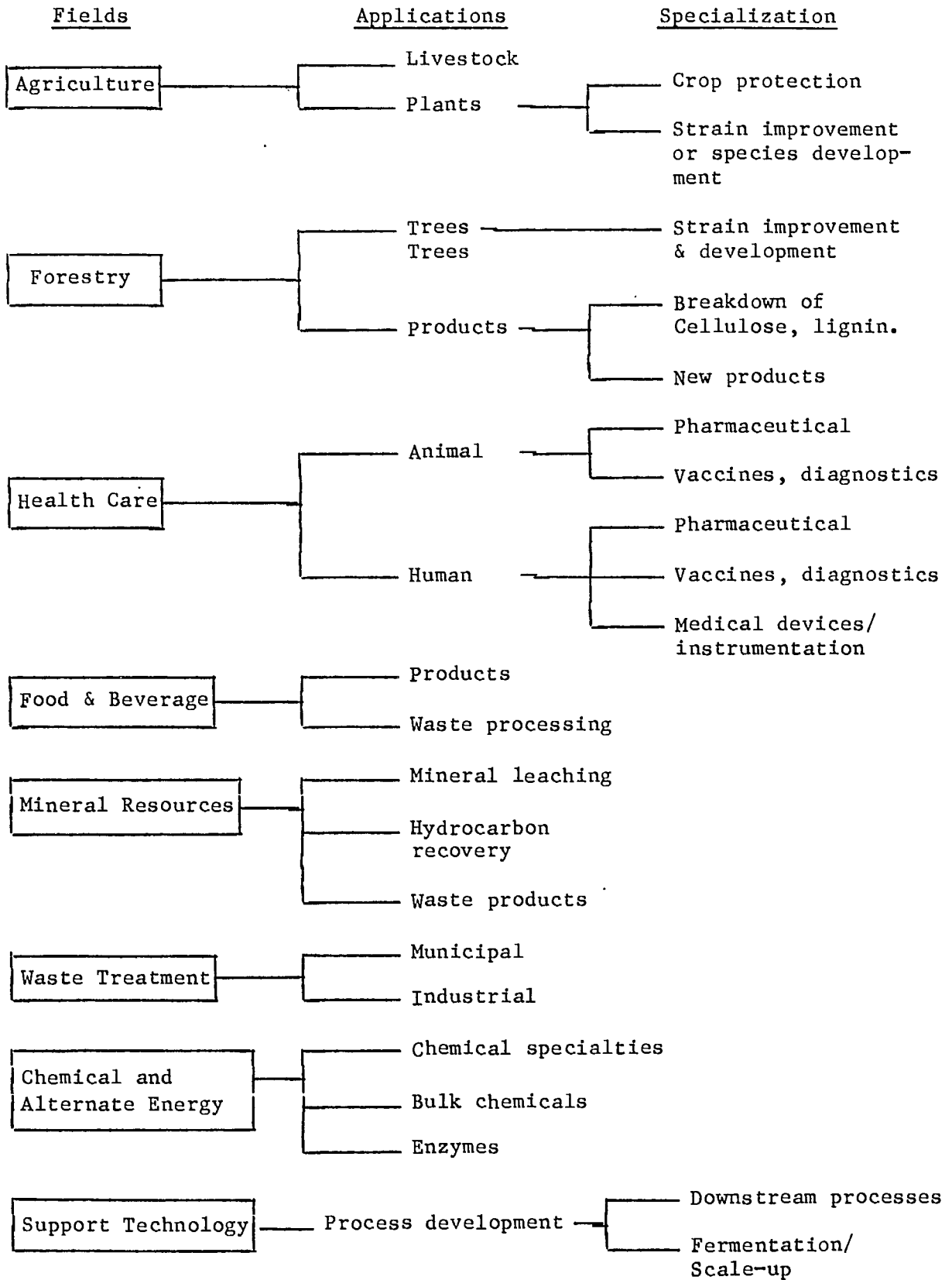
Comments :

Head Office :	Research Facilities	
Telephone # :	Telephone #:	
President :	Telex :	
Established :	Contact :	
No. of Employees :		
Main Activities :		
Annual Sales :		
	BIOTECHNOLOGY	OTHER
RESEARCH		
Annual Expenditures:		
Researchers:		
MANUFACTURING		
OTHER ACTIVITIES		

Affiliation:

Comments :

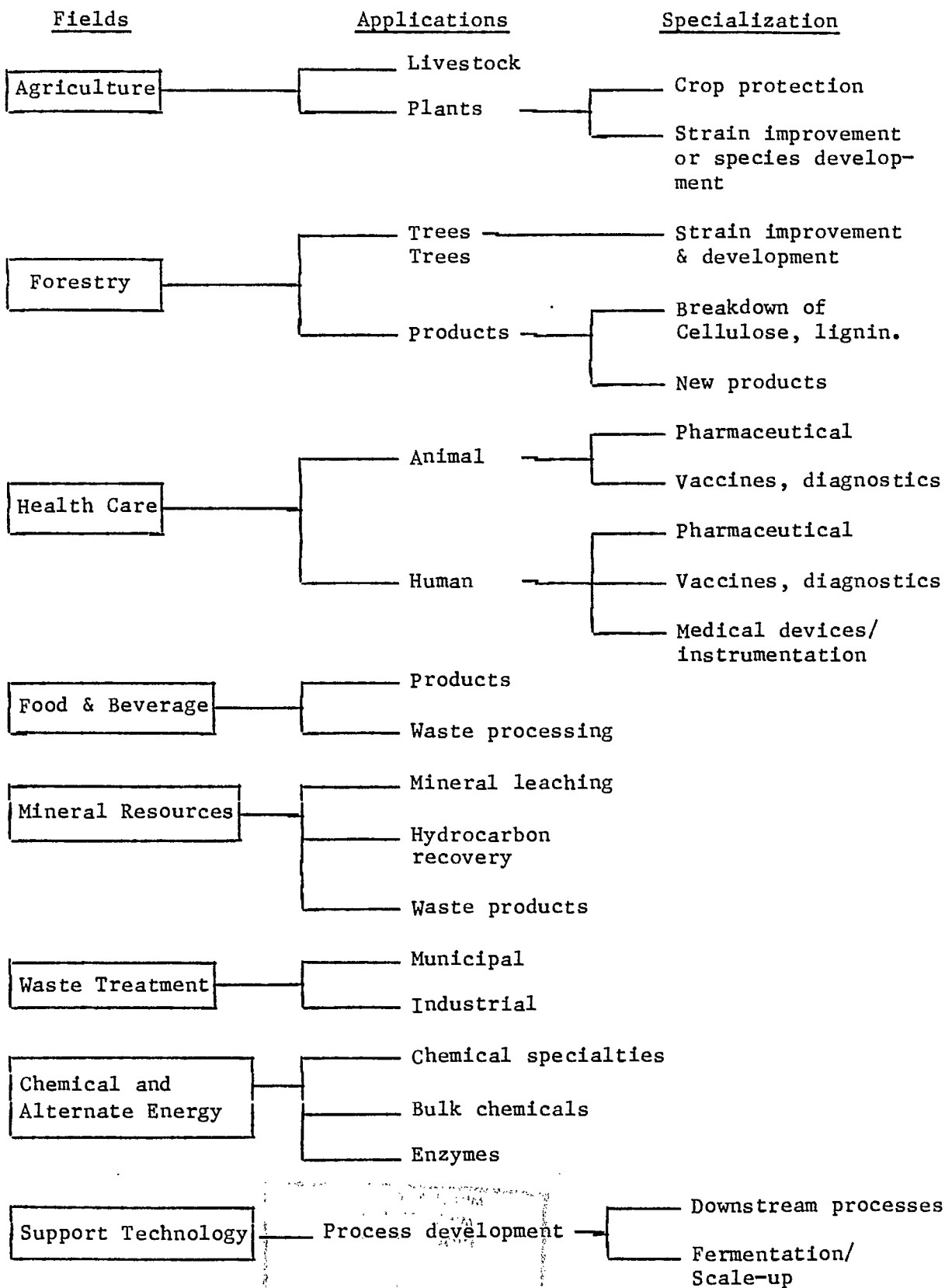
BIOTECHNOLOGY



Other:

Primary Research Activity:

BIOTECHNOLOGY



Other:

Primary Research Activity:

