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Toxic Substances Research Initiative Annual Report 1999-2000

Canada

Toxic Substances Research Initiative Annual Report 1999-2000

Our mission is to help the people of Canada maintain and improve their health.

Health Canada

Environment Canada's mission is to make sustainable development a reality in Canada by helping Canadians live and prosper in an environment that needs to be respected, protected and conserved.

Environment Canada

Published by authority of the
Minister of Health

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NOTES FROM CO-CHAIRS: HEALTH CANADA/ENVIRONMENT CANADA

The creation of the Toxic Substances Research Initiative (TSRI) is a recognition that the health of Canadians is directly affected by the quality of their environment and that the ability to deal with complex health and environmental problems is heavily dependent on our investment in scientific research. When TSRI was established in 1998, the objective was to invest $40 million over four years to promote collaborative scientific research into the links amongst toxic substances, environmental damage and human health.

The 1999-2000 fiscal year has been a success. More than 340 researchers from universities and private-sector industry have come together under TSRI and a total of 81 research projects are advancing our knowledge in five priority research areas:

1. Persistent Organic Pollutants;
2. Specific Forms of Metals in the Environment;
3. Endocrine Disrupting Chemicals;
4. Urban Air Quality and Exposure to Airborne Pollutants; and
5. the Cumulative Effects of Toxic Substances.

TSRI is contributing to building a strong science foundation for regulatory authorities to carry-out science-based assessments and develop appropriate solutions. But, the influence of TSRI also extends beyond government policy. One of the attributes of this unique research initiative is the collaboration that it has established between university, private-sector and government researchers.

We believe that TSRI may serve as an important model and may influence the future of toxic substances research in Canada. As the government continues to support research into the effects of toxic substances, we look to our partners to help address an issue that is of great importance to the health of the Canadian public.

We look forward to another prosperous year for TSRI, and we would like to thank all our collaborators who have been involved with TSRI: the Science Management Committee (SMC), the Technical Review Committees (TRC), universities across Canada, the private sector and scientists from federal departments.

Co-Chairs

- Dr. John Carey
  Executive Director
  National Water Research Institute
  Environment Canada

- Mr. Rod Raphael
  Director General
  Safe Environments Programme*
  Healthy Environments and Consumer Safety Branch (HECS)
  Health Canada

* Formerly the Environmental Health Directorate, Health Protection Branch.

EXECUTIVE SUMMARY

TSRI was established in 1998 with the key objective of enhancing the knowledge base needed to define and reduce the risk of adverse effects of toxic substances on Canadians and their environment. The Ministers of Health and Environment hold joint responsibility for overseeing the implementation of this research initiative. The TSRI Secretariat which is housed within Health Canada, provides administrative and program support to the TSRI Science Management Committee (SMC) as well as the responsible Ministers. The SMC provides program direction to the Initiative and finalizes TSRI funding decisions. Five Technical Review Committees (TRCs), one per priority research area, were established by the SMC to provide scientific peer review, and ensure that only scientifically and technically sound projects are considered for funding.

The key program features of TSRI include providing funding for project-based research in the five priority areas; providing a framework for formulating projects for research on toxic substances; building research partnerships between federal government, academic and other non-governmental researchers; encouraging a multidisciplinary approach to research for those most at risk from toxic substances including children and Aboriginal people; involving appropriate community support; and organizing to provide scientific knowledge to inform on risk management policy and program development.

TSRI funds research in five priority areas as follows: persistent organic pollutants; specific forms of metals; endocrine disrupting chemicals; urban air quality and exposure to urban air pollutants; and the cumulative effects of toxic substances. In the 1999-2000 fiscal year, TSRI funded 81 research projects involving over 350 researchers for approximately $10.9 million in these priority research areas. Canadian research institutes, universities and provincial and federal departments contributed approximately $18.7 million through cash and in-kind amounts. This helped to ensure a maximum use of the Canadian infrastructure contributed to toxic substances research.

Preliminary research findings cover wide areas including pesticides in the ecosystem and at-risk populations such as aboriginal peoples, children and pregnant women and have shown excellent progress. A large number (86%) of the funded projects possessed strong partnerships among the government, industry, academic and non-governmental sectors across Canada. Seventy-one of the 81 research projects are three-year projects.

TSRI has come a long way since the first full year. In reviewing the many preliminary research findings for 1999-2000, TSRI has made an excellent start and holds a promising future for toxicology research in Canada with the expected completion of many projects and dissemination of results in years to come.

THE TOXIC SUBSTANCES RESEARCH INITIATIVE (TSRI)

Established in 1998, TSRI is a program jointly managed by Health Canada and Environment Canada. The Initiative is investing $40 million over four years (1998-2002) toward the funding of toxic substances research.

The research funded by TSRI will help to protect the health and environment of Canadians by improving and expanding the knowledge base of toxic substances and their adverse effects.

TSRI reinforces the federal government's commitment to enhance the health and environment of Canadians, through funding a variety of research projects on toxic substances. TSRI also enhances existing research partnerships and fosters the development of collaborations between non-government and federal government researchers, to focus on emerging issues not adequately addressed by existing research.

TSRI Funding Allocations:

Fiscal Year	Amount
1998-1999	$500,000
1999-2000	$12.5 million
2000-2001	$15 million
2001-2002	$12 million

MANAGEMENT OVERVIEW

The TSRI Science Management Committee (SMC)

The SMC provides program direction to the Initiative and finalizes TSRI funding decisions. The members of the Committee were appointed by the Ministers of the Environment and Health in December 1998.

The SMC is co-chaired by Mr. Rod Raphael, Director General, Safe Environments, Health Canada and Dr. John Carey, Executive Director, National Water Research Institute, Environment Canada.

Members of the SMC include senior scientists from industry, academic and private sectors, non-government organizations, and six federal departments (Environment Canada, Health Canada, Fisheries and Oceans Canada, Natural Resources Canada, Indian and Northern Affairs Canada, and Agriculture and Agri-Food Canada).

The SMC allocates the funding based on an overview of the Technical Review Committees' recommendations, as well as the degree to which each specific proposal addresses the aims, criteria, and priorities of the overall research Initiative.

The SMC meets on a semi-annual basis to make a variety of program and funding decisions.

The composition of the SMC is outlined in Annex C.

The TSRI Technical Review Committees (TRCs)

Five TRCs, one per priority research area, were established in December 1998 by the Science Management Committee. The TRCs provide scientific peer review, and ensure that only scientifically and technically sound projects are considered for funding by the SMC.

The TRCs meet annually to assess the extent to which the proposed research would advance the scientific knowledge in each priority area and would make use of the criteria related to technical and scientific merit.

The composition of the TRCs are outlined in Annex D.

The Toxic Substances Research Initiative Secretariat

The TSRI Secretariat was formed in December 1998 mainly to initiate the TSRI Program. The Secretariat consisted of five staff members, housed within the Safe Environments Directorate (formerly known as the Environmental Health Directorate) of Health Canada.

To date, the Secretariat has implemented and managed all aspects of the Initiative, including the coordination of research proposals, tracking research funding expenditures, providing assistance to the applicants, coordinating proposal evaluations, and developing the terms and conditions of the contribution agreement.

The Secretariat also provides expertise in the areas of physical sciences and biological sciences. The staff members also communicate on a scientific basis with the applicants, and track the latest developments relevant to TSRI.

The staff members have attended scientific conferences and functions to promote TSRI to the scientific community. These members are available to answer questions regarding TSRI, and to provide other information on the Initiative, such as funded project lists and research progress.

Daily correspondence with funded researchers, potential applicants, and the general public has also been an integral part of the Secretariat's functions. Print documents, such as news releases, background material, application information, and funded project lists are readily available and accessible from the TSRI Secretariat.

The TSRI Secretariat is also responsible for supporting the SMC, the TRCs and the responsible Ministers.

For a composition of the TSRI Secretariat staff members see Annex E.

Priority Research Areas Funded by TSRI

TSRI supports five priority research areas which were established by scientific experts in the private and the public sectors. The research funded by TSRI includes projects designed to benefit ecosystems and specific populations at risk such as Aboriginal peoples and children.

The five priority research areas are:

- **Persistent Organic Pollutants (POPs)**

  POPs are chemicals which can exist in the environment for long periods of time, can concentrate and accumulate in the food chain, and can travel great distances through the atmosphere.

- **Specific forms of Metals in the Environment (Metals)**

  Metals are naturally occurring substances, some of which have been linked to adverse effects on human health and wildlife (i.e., cadmium, lead).

- **Endocrine Disrupting Chemicals (EDCs)**

  Endocrine disrupting chemicals are substances which have the ability to alter or disrupt hormone or endocrine systems.

- **Urban Air Quality and Exposure to Airborne Pollutants (Urban Air)**

  Air pollutants have an effect on the quality of urban air. Exposure to airborne pollutants has been linked to a variety of respiratory and cardiac health effects.

- **Cumulative Effects of Toxic Substances (Cumulative Effects)**

  Cumulative effects are the accumulation of multiple and diverse toxic substances found in the environment that affect at-risk populations.

1999-2000 FISCAL YEAR

First Call for Proposals

On December 7, 1998, the Ministers of Health and the Environment announced the federal government's contribution of $40 million to fund research on toxic substances through the development of TSRI. Researchers were invited to submit multi-year strategic research proposals which focussed on the five priority research areas.

Following the initial call for proposals, the TSRI Secretariat received 254 research proposals from candidates across the country.

Each of the proposals was sent for technical peer review (in April 1999), which evaluated the proposals' scientific and technical merit. The SMC finalized the funding decisions in May 1999 at a meeting in Ottawa.

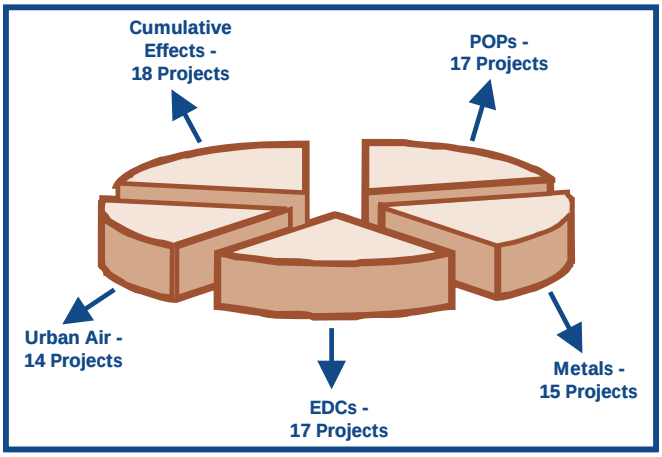
1999-2000 Funding Decisions

A total of 81 research projects were selected for funding over the 1999-2000 fiscal year, allocating $10.94 million toward the first phase of research projects under TSRI.

The projects chosen for funding during the 1999-2000 fiscal year were distributed among TSRI's five priority research areas:

Persistent Organic Pollutants (POPs)	**$2.32 million**
Specific Forms of Metals in the Environment (Metals)	**$2.05 million**
Endocrine Disrupting Chemicals (EDCs)	**$2.16 million**
Urban Air Quality and Human Exposure to Airborne Pollutants (Urban Air)	**$2.19 million**
Cumulative Effects of Toxic Substances (Cumulative Effects)	**$2.22 million**

1999-2000 Projects Per Priority Area



Approximately 60% ($6.64 million) of the funds were allocated to industry, academia, and other non-government researchers. The remaining 40% ($4.30 million) of the funding was allotted to researchers within the Canadian federal government.

Over 50 separate institutions, mostly Canadian universities, and six federal government departments were approved for funding through TSRI. A summary of the institutions, and the government departments is provided in Annex A.

In addition to the funding provided to the researchers by TSRI, approximately $18,731,055 more was contributed through cash and in-kind amounts from other sources.

The following is a breakdown of TSRI funding approved to non-governmental institutions:

Contribution Agreement Transfers	
Institution	**1999-2000 TSRI Funding**
Non-Governmental Organizations	$382,097
Private Consultants	$39,700
Provincial Government Departments	$41,475
Universities	$6,183,330

The following is a breakdown of TSRI funding approved to government departments:

Government Transfers	
Government Department	**1999-2000 TSRI Funding**
Agriculture and Agri-Food Canada	$38,200
Fisheries and Oceans Canada	$720,327
Environment Canada	$2,324,455
Health Canada	$889,568
National Research Council Canada	$73,700
Natural Resources Canada	$233,325

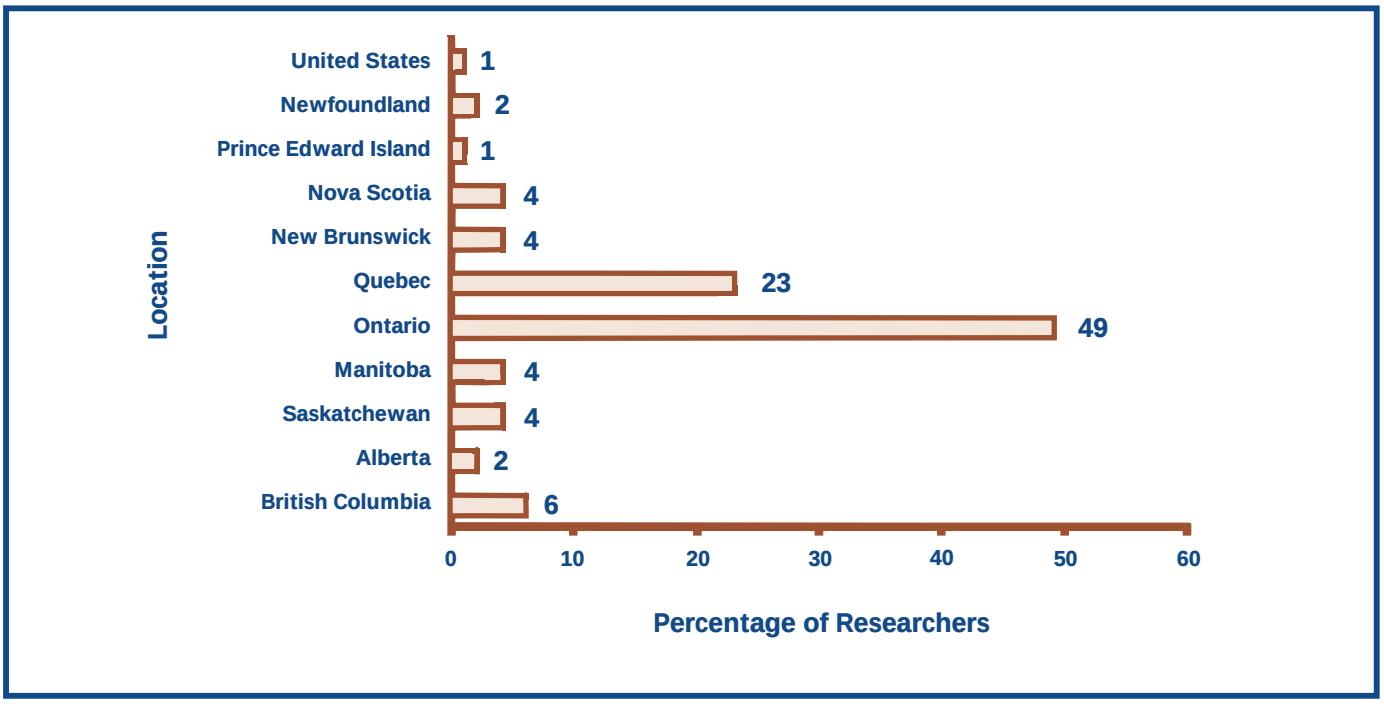
In the first year of operation, there were lengthy negotiations on the content of contribution agreement between the TSRI Secretariat and the university community. As a result, the signing of contribution agreements and the transfer of TSRI funds to non-federal organizations was delayed. This is expected to be minimized in the 2000-2001 fiscal year.

Research Profiles of TSRI Projects

As indicated by the opposite chart, TSRI projects involved more than 340 researchers, with strong representation in each research area.

Research Area	Number of Researchers
POPs	77
Metals	61
EDCs	91
Urban Air	47
Cumulative Effects	67

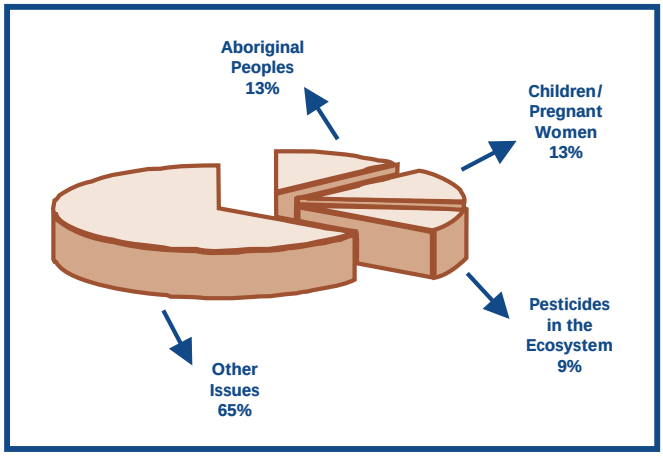
Geographical Breakdown of 1999-2000 Funded Researchers



All regions of Canada were represented with the exception of the Territories. As shown above, the majority of TSRI researchers were concentrated in the Quebec and Ontario regions, however close distribution among the other Canadian provinces was observed.

Ecosystem Health and Priority Population Groups

In meeting the guiding principles of TSRI, many of the 1999-2000 funded projects placed emphasis on biological and chemical research which will benefit ecosystem health and priority population groups at risk. The following chart shows the distribution of projects. In addition, to the indicated percentages, there are numerous projects in which the findings will directly benefit at-risk populations.



The following are examples of some projects, which over a three-year period, will address various emerging issues and at-risk populations. These projects will:

- measure the concentrations and effects of exposure to chemicals such as polychlorinated biphenyls (PCBs), pesticides and phytoestrogens in the amniotic fluid, the blood of mothers, the cord blood and in breast milk;
- determine the health effects of exposure to fine particulate matter ($PM_{2.5}$) on both healthy and asthmatic populations;
- examine the long-term neurological consequences of Aboriginal children who have been exposed to PCBs and methylmercury (MeHG) through fish consumption;
- examine whether the presence of banned pesticides in the Canadian environment is due to recycling existing soil and water, or is due to migration from the use of these pesticides in other countries;
- determine the environmental and health effects of applying animal wastes, sewage sludge, and pesticides to agricultural fields;
- determine the impact of endocrine disrupting chemicals (EDCs) from sewage treatment plant effluents on fish development and reproduction;
- assess the effects of the toxic substances in Sydney Harbour, Nova Scotia and to identify remediation opportunities;
- address the toxic action of lead and cadmium on developing and mature kidneys.

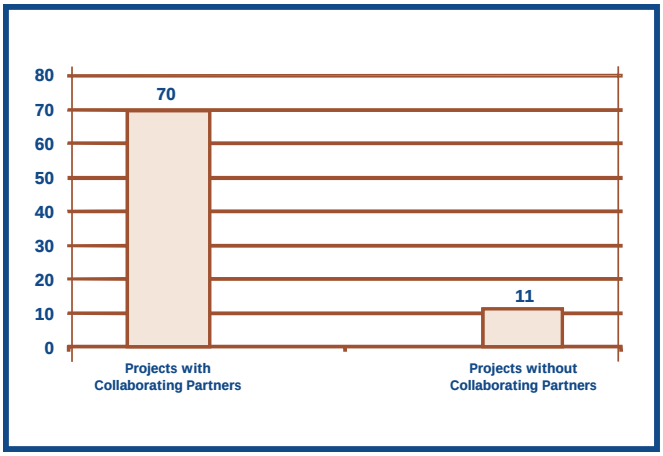
Although most of the TSRI projects had been conducting research for only six months before reporting progress, many projects have made excellent preliminary findings.

The two one-year projects have been completed. They addressed:

- the effects of endocrine disrupting chemicals in polar bears as part of an ongoing study of the effects of toxic substances on Arctic wildlife;
- the potential effects from contaminant exposure on the reproductive and endocrine systems of Beluga whales and polar bears.

A vast majority (86%) of the projects possessed strong partnerships among government, industry, academia, and non-governmental sectors across Canada, meeting TSRI's commitment to supporting broad-based collaboration on toxic substances research and management.

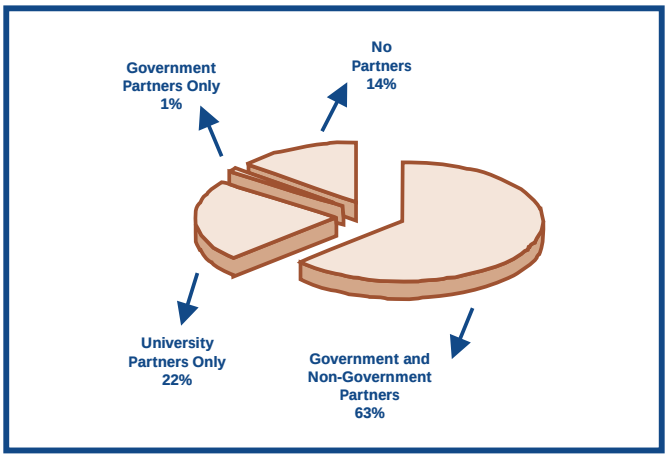
Number of Projects with Collaborating Partners



The following chart outlines the types of collaboration among the funded projects, which are essential to minimize the duplication of research being conducted under other programs. Most (63%)

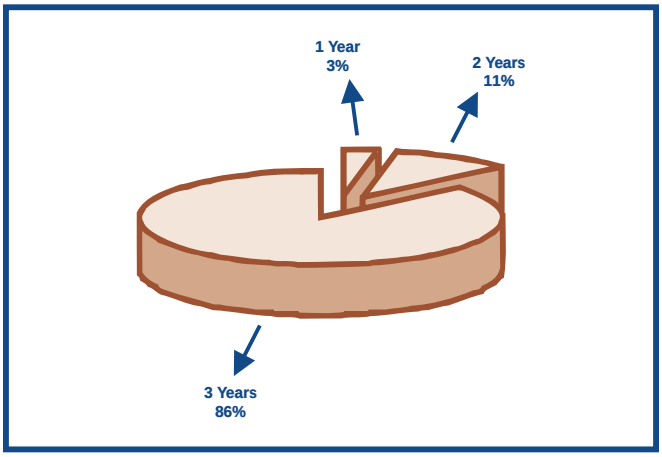
of the partnerships are between government and non-government researchers, followed by projects with only university partners (22%).

Types of Collaborating Partners



Two of the proposals funded in the 1999-2000 fiscal year were one-year projects ending March 31, 2000. Eight of the proposals are two-year projects terminated March 31, 2001. The other seventy-one are three-year projects which are expected to terminate on March 31, 2002.

1999-2000 Funded Project Durations



In cases where multi-year projects were approved for funding, the lead researcher is required to submit an annual progress report. The subsequent year's research funding is renewed only for those projects which the Science Management Committee deems to be making suitable progress. This process will ensure that the research funding is used to deliver results associated with the proposed projects.

Call for Proposals and Project Status

The two one-year projects approved in 1999-2000 were completed. Seventy-seven (77) of the initial multi-year projects had their funding reviewed. One project failed to use the allocated money and a second was terminated after review of first year results.

A second call for one-year research proposals was issued in October 1999. The second call targeted one-year research proposals to address specific knowledge needs.

Following the second-call deadline, the TSRI Secretariat received 81 eligible research proposals from candidates across the country. Each of the proposals was sent for technical peer review which evaluated the proposals' scientific and technical merit. Twenty of the 81 new proposals were recommended for funding.

Therefore, a total of 97 research projects received funding in the 2000-2001 fiscal year, allocating $13,509,494 toward the second phase of research projects under TSRI.

For additional information on the Toxic Substances Research Initiative and individual projects, please write to:

Toxic Substances Research Initiative
Safe Environments Programme
Healthy Environments and Consumer Safety Branch (HECS)
Health Canada
A/L 0800D
Environmental Health Centre
Tunney's Pasture
OTTAWA, Ontario
K1A 0L2

Tel.: (613) 941-6084
Fax.: (613) 946-3570
Web: hc-sc.gc.ca/tsri

ANNEX A
1999-2000 Budgetary Allocations

Allocations			**1999-2000**
Salaries		**Note 1** (see page 15)	$357,712
Operating	**Vote 1**[1] Secretariat		$1,206,111
	Research funds to Other Government Departments	**Note 2** (see page 15)	$4,289,575
Contributions	**Vote 5**[2]	**Note 3** (see page 15	$6,646,602
Total Expenditures			**$12,500,000**
Expenditures			
Salaries			$293,198
Operating	**Vote 1** Support Services		$156,858
	Secretariat		$916,292
	Science Review		$197,475
	Research Funds to Other Government Departments	**Note 2** (see page 15)	$4,289,575
Contributions	**Vote 5**	**Note 3** (see page 15)	$6,646,602
Total Expenditures			**$12,500,000**

(1) **Vote 1**: Monies expended to support research by the Federal Government researchers.
(2) **Vote 5**: Monies expended to support research by private sector researchers.

Notes to Financial Operations 1999-2000

Note 1	1999-2000: FTEs: 5	
	1998-1999: FTEs: 3	
Note 2	**Research Funds to Other Government Departments**:	
	Agriculture and Agri-Food Canada	$38,200
	Environment Canada	$2,324,455
	Fisheries and Oceans Canada	$720,327
	Department of Health	$899,568
	Natural Resources Canada	$233,325
	National Research Council of Canada	$73,700
Note 3	**Contributions:**	
	Association du Cancer de l'est du Québec	$16,000
	Carleton University	$50,950
	Concordia University	$12,300
	Dalhousie University	$108,000
	Dartmouth College	$30,100
	Direction de la santé publique	$27,975
	Dr. Thomas Harner	$35,000
	École Polytechnique de Montréal	$2,000
	Hôpital Sainte-Justine	$53,540
	Hospital for Sick Children	$50,500
	Innu Nation	$29,500
	INRS	$580,316
	IWK Grace Health Centre	$43,700
	Loeb Health Research Institute	$98,532
	McGill University	$352,150
	McMaster University	$399,850
	Memorial University of Newfoundland	$15,000
	Nova Scotia Department of Natural Resources	$13,500

Notes to Financial Operations 1999-2000 (cont'd)

Ottawa Heart Institute	$6,000	
Princess Margaret Hospital	$11,000	
Queen's University	$236,900	
Ryerson Polytechnic University	$43,700	
Saint Mary's University	$17,000	
Simon Fraser University	$205,600	
St. Lawrence River Institute of Environmental Sciences	$10,000	
Sunny Szeto	$4,700	
Trent University	$285,720	
Université de Laval	$46,740	
Université de Laval-CHUQ	$410,220	
Université de Montréal	$324,550	
Université du Québec à Montréal	$296,600	
Université du Québec à Rimouski	$33,100	
University of Alberta	$70,900	
University of British Columbia	$114,000	
University of Calgary	$200,000	
University of Guelph	$364,425	
University of Manitoba	$59,700	
University of New Brunswick	$94,650	
University of Ottawa	$297,559	
University of Prince Edward Island	$41,000	
University of Saskatchewan	$116,100	
University of Toronto	$786,700	
University of Victoria	$122,700	
University of Waterloo	$146,600	
University of Western Ontario	$189,600	
University of Windsor	$109,600	
Wellington Laboratories	$3,325	
Wilfrid Laurier University	$19,000	
World Wildlife Fund Canada	$60,000	$6,646,602

ANNEX B
Objective of the Toxic Substances Research Initiative

The objective of the Initiative is to enhance the scientific knowledge base needed to define and reduce emerging ecosystem and human health effects of toxic substances in Canada.

Goals of the Toxic Substances Research Initiative

- To strengthen and accelerate the contribution of science to national policies and priorities associated with toxic substances.
- To identify critical emerging issues, and respond in a timely fashion to new issues that may be identified during the three years of research funding.
- To enhance the ability of the federal departments and agencies to carry out their responsibilities to manage toxic substances in an effective and efficient manner through the acquisition of a sound scientific knowledge base for decision making, policy development, and the promotion of health and environment issues.
- To enhance cooperation between researchers in federal science departments and agencies, provincial and territorial governments, universities, communities, Aboriginal organizations, and non-government institutions involved in research on toxic substances.
- To strengthen Canada's contribution to international programs on toxic substances.

Guiding Principles of the Toxic Substances Research Initiative:

The Initiative supports scientific excellence and federal public policy objectives by:

- contributing to the protection and preservation of human health and the environment for current and future generations of Canadians;
- placing emphasis on biological and chemical research which would benefit ecosystem health and priority population groups at risk, (i.e., children, Aboriginal people and the elderly);
- encouraging and promoting multi-disciplinary research approaches to address the risks and roles of toxic substances in the complex chain of causation leading to adverse environmental consequences and adverse human health effects;
- placing emphasis on research partnerships and leveraged resources to meet the rigorous demands of the Canadian and international scientific communities;
- promoting and enhancing public understanding of and involvement in toxic substances research by placing emphasis on community consultation, communications, and the use of research results; and
- applying a target-based approach to research deliverables and determining Initiative success through rigorous project evaluation and tracking of indicators of achievement.

ANNEX C
TSRI Science Management Committee

Co-Chairpersons:

Dr. John Carey
Executive Director
National Water Research Institute
Environment Canada

Mr. Rod Raphael
Director General
Safe Environments Programme*
Healthy Environments and Consumer Safety Branch (HECSB)
Health Canada

Committee Members:

Dr. Don McKay
Director, Air Quality Research Branch
Atmospheric Environment Service
Environment Canada

Dr. Keith Marshall
Chief, Wildlife Toxicology
National Wildlife Research Centre
Environment Canada

Dr. David Stone
Environment and Renewable Resources Directorate
Indian Affairs and Northern Development Canada

Dr. Ron Pierce
Environmental Science Branch
Fisheries and Oceans Canada

Dr. Murray Duke
Minerals and Regional Geoscience Branch
Natural Resources Canada

Dr. Christian De Kimpe
Research Coordinator, Natural Resources
Agriculture and Agri-food Canada

Dr. Gail Bellward
Associate Dean, Research and Graduate Studies
University of British Columbia

Dr. Richard P. Gallagher
Cancer Control Research Leader
British Columbia Cancer Agency

Dr. Theo Colborn
Director, Wildlife and Contaminants Program
World Wildlife Fund (U.S.A.)

Mr. Michael Gilbertson
International Joint Commission
Great Lakes Regional Office

Dr. Geoff Granville
Manager, Toxicology & Material Safety
Shell Canada

Dr. Bruce Conard
Vice President, Health Sciences
Inco Limited

Ms. Minnie Grey
Executive Director
Ungava Tulattavik Health Centre

* Formerly the Environmental Health Directorate, Health Protection Branch.

Dr. Pierre Lundahl
President
SNC - Lavalin Enviornnement inc.

Dr. Michel Slivitzky
Institut national de la recherche scientifique

Dr. Barry Thomas
Senior Scientific Advisor
Bureau of Chemical Hazards
Environmental Health Directorate
Health Canada

Dr. George Paterson
Director General
Foods Directorate
Health Protection Branch
Health Canada

Ex-Officio Members:

Mr. John Buccini
Commercial Chemicals Branch
Environmental Protection Service
Environment Canada

Mr. Roy Hickman
Senior Director General
Health Protection Branch
Health Canada

ANNEX D
TSRI Technical Review Committees

POPs Technical Review Committee

Chairperson:

Dr. Donald Mackay
Department of Environmental and
Resource Studies
Trent University

Committee Members:

Dr. Pierre Ayotte
Public Health Research Unit
Laval University

Dr. Stelvio Bandiera
Faculty of Pharmaceutical Sciences
University of British Columbia

Dr. John Bend
Department of Pharmacology and Toxicology
University of Western Ontario

Dr. Christina Cowan-Ellsberry
Environmental Safety Department
Proctor and Gamble Company

Dr. Frank Gobas
Department of Resource and Environmental
Management
Simon Fraser University

Dr. Derek Muir
National Water Research Institute
Environment Canada

Dr. Allan Okey
Department of Pharmacology
University of Toronto

Metals Technical Review Committee

Chairperson:

Dr. Beverley Hale
Department of Land Resource Science
University of Guelph

Committee Members:

Dr. Grant Edwards
School of Engineering
University of Guelph

Dr. Robert Garrett
Geochemical Research
Natural Resources Canada

Dr. Ken Hall
Westwater Institute for Resources and Environment
University of British Columbia

Dr. Robert Prairie
Environmental Department
Noranda Technology Centre

Dr. Laurie Chan
Centre for Indigenous Peoples' Nutrition and
Environment
McGill University

Dr. Kunnuth Subramanian
A/Director
Product Safety Bureau
Health Canada

EDCs Technical Review Committee

Chairperson:

Dr. Warren Foster
Safe Environments Programme
Health Environments and Consumer Safety Branch (HECSB)
Health Canada

Committee Members:

Dr. Pamela Campbell
Canadian Scientific, External and Regulatory Affairs
Proctor and Gamble Company

Dr. Glen Fox
National Wildlife Research Centre
Environment Canada

Dr. Barbara Hales
Medical Sciences
McGill University

Dr. Alice Hontela
Department of Biological Sciences
University of Quebec at Montreal

Dr. Kelly Munkittrick
Environment Canada
c/o Department of Biology
University of New Brunswick

Urban Air Technical Review Committee

Chairperson:

Dr. Daniel Krewski
Centre for Population Health
Risk Assessment and Risk Management
University of Ottawa

Committee Members:

Dr. Jeff Brook
Atmospheric Environmental Service
Environment Canada

Dr. Rick Burnett
Environmental Health Directorate
Health Canada

Dr. Keith Puckett
Atmospheric Environmental Service
Environment Canada

Dr. Claude Viau
Département de médicine du travail et hygiène du milieu
University of Montreal

Dr. Vern Seligy
Environmental Health Directorate
Health Canada

Dr. Svere Vedal
Department of Medicine
University of British Columbia

Cumulative Effects Technical Review Committee

Chairperson:

Dr. Peter Hodson
Department of Biology
Queen's University

Committee Members:

Dr. Pierre Band
Health Protection Branch
Health Canada

Dr. Christine Bishop
Canadian Wildlife Service
Canadian Centre for Inland Waters
Environment Canada

Dr. Joseph Culp
National Hydrology Research Centre
Environment Canada

Dr. Kannan Krishnan
Département de médicine du travail et hygiène du milieu
University of Montreal

Dr. Ken Lee
Bedford Institute of Oceanography
Fisheries and Oceans Canada

Dr. Stella Swanson
Golder Associates

Dr. Bill Taylor
Department of Biology
University of Waterloo

ANNEX E
TSRI Secretariat Staff Members

Mr. Eric Stephen
Program Manager

Dr. David Kane
Scientific Advisor

Mr. Serge Lamy
Scientific Advisor

Ms. Janet Mrenica
Secretariat Officer

Ms. Amie Mahoney
Communications Officer

ANNEX F

Health Canada Santé Canada

It's Your Health

Toxic Substances Research Initiative (TSRI)

Introduction

All Canadians are exposed to toxic substances to some degree through food, water, and air. The nature and degree of exposure vary significantly from region to region and with human behaviour.

A variety of health problems are associated with toxic substances, such as various forms of cancer, respiratory and cardiovascular diseases, neurological disorders, diseases of aging, and reproductive problems. Ecosystem problems include the contamination of wildlife, fish, plants, water, and soil, as well as associated wildlife disease, population reductions, reduced biodiversity, and habitat destruction.

In recognition of these concerns, Canadian researchers have made substantial contributions to enhance the science in the field of toxic substances.

What is the Toxic Substances Research Initiative (TSRI)?

The Toxic Substances Research Initiative (TSRI) is a program managed by Health Canada and Environment Canada, which was launched in 1998. The TSRI reinforces the federal government's commitment to enhance the health and environment of Canadians through funding a variety of research projects on toxic substances.

Canada

Our mission is
to help the people of Canada
maintain and improve their health.
Health Canada

Research funded by the TSRI will help to protect the health and environment of Canadians by enhancing our knowledge of toxic substances and their adverse effects.

The TSRI promotes existing research partnerships and fosters the development of new collaborations between non-government and federal government researchers. These new joint projects focus on emerging issues not adequately addressed by existing research.

What Type of Research is Supported by the TSRI?

There are five priority research areas supported by the TSRI, which were established by scientific experts in the private and the public sectors. The research funded by the TSRI includes projects designed to benefit ecosystems and specific populations at risk such as children, Aboriginal people, and the elderly.

The five priority research areas are as follows:

Persistent Organic Pollutants (POPs)
POPs are chemicals which exist in the environment for long periods of time, can concentrate and accumulate in the food chain, and can travel great distances through the atmosphere.

Specific Forms of Metals in the Environment (Metals)
Metals are naturally occurring substances which have been linked to adverse effects on human health and wildlife.

Endocrine Disrupting Chemicals (EDCs)
Endocrine disrupting chemicals are substances which have the ability to alter or disrupt hormone or endocrine systems.

Urban Air Quality and Exposure to Airborne Pollutants (Urban Air)
Air pollutants have an effect on the quality of urban air. Exposure to airborne pollutants has been linked to a variety of respiratory and cardiac health effects.

Cumulative Effects of Toxic Substances (Cumulative Effects)
Cumulative effects are the accumulation of multiple and diverse toxic substances found in the environment and that affect at-risk populations.

What are Some Examples of Projects Funded through the TSRI?

The TSRI has funded over 95 research projects since the Initiative's inception, representing more than 350 researchers from both the public and the private sectors.

Examples of projects funded through the TSRI include:

- one-year study to investigate if ozone air pollution enhances pre-existing inflammation in the airways of children and adolescents with asthma;
- a three-year study to determine the environmental and health effects of applying animal wastes, sewage sludge, and pesticides to agricultural fields;
- a three-year study comparing the variations of airborne pollutants and hospital admission rates in Canadian cities to identify the types of air pollution affecting human health;
- a one-year study to determine how chemicals are affecting the health of killer whales in British Columbia coastal waters; and
- a one-year study to determine if the use of leaded ammunition constitutes a health risk among Aboriginal communities.

Each of the TSRI projects undergoes scientific technical peer review. A Science Management Committee, composed of senior scientists and science managers from both government and non-government organizations, oversees the peer review process and finalizes the funding decisions.

For additional information on the Toxic Substances Research Initiative and individual projects, please visit the Web site at http://www.hc-sc.gc.ca/tsri.

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