Report of
The Interim Evaluation of the
Toxic Substances Research Initiative

Submitted by
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EXECUTIVE SUMMARY

Background

In 1998, the federal government established the Toxic Substances Research Initiative (TSRI) to focus research on toxic substances and their effect on the environment and human health. The Initiative funds research projects to enhance the knowledge base needed to improve policies, regulations and programs to define and reduce ecosystem and human health effects of toxic substances in Canada. TSRI has a total budget of $40 million over four years. Unless the government decides to renew it, the Initiative will sunset at the end of fiscal year 2001-2002.

The Minister of Health and the Minister of Environment are jointly responsible for overseeing the implementation of the TSRI. Health Canada was assigned the responsibility to manage and administer the Initiative.

In the fall of 2000, Health Canada commissioned this interim evaluation to examine the effectiveness and efficiency of the TSRI processes. The findings will be used in making recommendations for the future of the TSRI and as input to the decision process on the renewal of the TSRI. The main focus of the evaluation was on TSRI processes and not the effectiveness of the Initiative in meetings its intended objectives.

The TSRI

The main objective of TSRI is "to enhance the knowledge base needed to define and reduce ecosystem and human health effects of toxic substances in Canada". This knowledge is needed for risk assessments, risk management strategies, and evaluation of risk management options, and to provide Canadians with sound information on which to base their own decisions. Other objectives include enhancing: a) the contribution of science to national policies and priorities associated with toxic substances, b) the Canadian infrastructure dedicated to toxic substances research, c) the ability of the federal departments and agencies to manage toxic substances, d) cooperation between researchers engaged in research in toxic substances, and e) Canada's contribution to international programs on toxic substances.

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[1] The interim evaluation was carried out by Madhu Joshi and Associates for Health Canada under contract number No.2000-H4129-077.

The TSRI achieves its objectives by funding research projects on the following five priority areas and fostering collaboration between researchers within the public and private sectors:
 1) Persistent Organic Pollutants (POPs);
 2) Metals in the Environment (MIE);
 3) Endocrine disrupting chemicals (EDCs);
 4) Urban Air Quality (Urban Air); and
 5) Cumulative effects issues and issues involving multiple research areas (CUM).

The organization of the TSRI includes a) a Science Management Committee (SMC); b) five Technical Review Committees (TRCs) one for each priority area and c) a Secretariat located in the Healthy Environment and Consumer Safety Branch of Health Canada.

The SMC, appointed by the Ministers of Health and of Environment, is co-chaired by senior scientists from Health Canada and Environment Canada. Its functions are to make funding decisions and to provide strategic direction to the Initiative. The SMC appoints members of the TRCs.

The functions of the TRCs are to review research proposals and to recommend projects that meet the specified eligibility criteria and address the TSRI research priorities, and to review progress reports, status reports and final reports submitted by researchers.

The Secretariat provides administrative and program support to the SMC and TRCs and the responsible Ministers.

The $40 million budget of the TSRI includes over $17.5 million for research in federal departments, a similar amount for research projects in non-federal research institutions, and about $4.8 million for the administration of the Initiative. The TSRI conducted two competitions, one in 1999 and one in 2000, to fund research proposals. It received a total of 340 proposals and funded a total of 101 research projects.

Evaluation Methods and Information Collection

The interim evaluation addressed 10 questions, and in addition, examined the consistency of decision making processes employed by the TRCs.

Evaluation methods included: review of program documents, Internet Websites and TSRI application files; case studies; focus groups with nominal group technique; mail-out surveys and interviews. Samples of SMC and TRC members, principal investigators of funded projects, unsuccessful applicants, collaborating partners, contracting authorities of research agencies, representatives of Canadian Association of Research Administrators (CARA), and Association of Universities and Colleges of Canada (AUCC), and finance officers from two federal government Departments provided input through interviews, surveys and three focus groups. A total of 206

individuals were contacted for the evaluation, of which 146 provided input. In addition, eight officials of five other research funding agencies were contacted for input to the evaluation.

Qualitative methods and descriptive statistical methods were used for analysis.

Findings and Conclusions

The findings reported below are based on information collected to the end of February 2001, and do not reflect on-going decisions taken since then.

Almost all respondents supported the TSRI. They felt that the Initiative has filled a gap in toxic substance research that is increasingly important to improve the environment and human health, and that the Initiative has succeeded in bringing together researchers from federal government institutions, universities and other organizations to collaborate on toxic substances research projects. They also felt that the TSRI should be extended beyond 2002, and should be made into a permanent program. However, they also identified several aspects of the TSRI that require further attention and action.

TSRI processes for inviting applications

TSRI used many vehicles to inform potential toxic substances researchers about the Initiative and invite them to submit proposals. These included mailings to researchers and university research offices, a TSRI Website, press releases, and letters to other federal Departments. The Initiative has been over-subscribed and the focus and quality of the applications received correspond to its objectives and priorities.

More than 275 researchers (principal investigators) submitted 340 applications in response to the call for proposals. In all the priority areas there were more applications than could be funded. In addition, there were over 225 collaborating partners in the funded projects. Thus, the total number of researchers reached exceeded 500. Given the relatively small pool of Canadian researchers engaged in research on toxic substances, TSRI was successful in inviting applications for funding proposals.

About 42% of the applicants were from federal departments, 51% from universities and 7% from other agencies. Sixty-eight percent of the applicants were from Ontario and Quebec, 10 % from Atlantic provinces and 22% from western Provinces. Given that the funding was open to scientists in federal government departments, many of whom are located in Ontario and Quebec, the distribution of applicants is not unreasonable. These percentages are consistent with the national distribution of grants by the National Science and Engineering Research Council (NSERC).

Clarity of guidelines provided to the prospective applicants:

TSRI's guidelines for applicants were adapted from those used by other research funding agencies, and modified and supplemented to meet TSRI's specific needs. The SMC reviewed and modified the draft guidelines. Researchers and TRC chairs provided comments about the original guidelines to the SMC after the 1999 competition.

Researchers made many comments on the guidelines. Overall, a majority of the PIs who rated the guidelines felt they were either "somewhat clear" or "very clear". There was no significant difference in the ratings between those with approved or unapproved applications, or between government PIs and non-government PIs. However, 21 % of the PIs rated TSRI's guidelines less satisfactory than those of other programs they had experience with, and 18% rated TSRI's guidelines less complete than those of other programs. PIs identified a number of areas of the guidelines which they felt were unclear and would require modification. These included guidelines on budgeting and financial information, definitions of in-kind and other support, collaborating partners, etc.

The Focus Groups perceived TSRI's guidelines to be clear and straightforward, and fair in describing eligibility. However, they felt the guidelines should state clearly that the research was to focus on government priorities.

Effectiveness and Efficiency of TSRI Mechanisms for Processing Applications:

Despite variations in the number of applications each TRC received, and differences in the approaches used, TSRI's processes for reviewing applications work. The elapsed time between the application deadline and the SMC review of TRC recommendations is about three months, and compares favourably with other research funding programs that were examined. However, the processes for preparing contribution agreements for projects approved with reduced funding require considerable additional time. Although there was overall improvement in the time needed to process applications in the second intake, there was little difference in the longest elapsed time from the issuance of the approval notification by the TSRI joint SMC CO-chairs to the signing of a Contribution Agreement between the 1999 and 2000 competitions.

The evaluation found. variability within and among committees in how criteria were interpreted and applied. The TRCs did not apply guidelines or weights consistently in the first call for proposals. There were significants improvements in the second intake, but some lack of consistency in how the guidelines are applied still remains.

More than 50% of the PIs and 30% of the CPs felt that the TSRI processes were less transparent than those of other research funding programs. In comparing the fairness of the TSRI processes with that of other programs, more than 60% PIs with unsuccessful applications and 40% PIs with successful applications judged TSRI as less satisfactory than other programs.

The need to strengthen some TRCs was identified in the focus groups, in interviews with TRC members, and in the file review.

Databases and Mechanisms for Tracking TSRI Applications and Funded Projects:

The TSRI Secretariat has many computerized databases and files containing detailed information on applicants, applications, contribution agreements and financial transactions, which it uses to manage the Initiative, track funded projects and prepare periodic reports and summaries. There is a need for a comprehensive database(s) which can track applications and funded projects from their inception to the final stage. There is also a need to establish designated computer files containing official TSRI information.

The evaluation noted that the Secretariat has been working on a new database which is not yet operational.

TSRI Processes for Communication of Results of Research to Appropriate Public and Private Sector Policy Makers and Program Developers:

Effective communication with users of research was described as a huge challenge, because most researchers specialize in doing research instead of communicating and many intended users of research are not sufficiently trained in the sciences or are not current in their awareness of relevant research.

The TSRI Contribution Agreements include a clause stating that "The Recipient shall use its best efforts to make the results of the research conducted under this Agreement public within one (1) year of the Expiry Date of this Agreement".

All principal investigators who provided input to the evaluation stated that they plan to present their research results through publication in journals as well as presentations at conferences. In addition, 50% of them mentioned that they would use media and 25% would use Internet for presenting their findings. However, many respondents identified a need for more attention to ensure that the research produced is both usable and used. Suggestions for improving dialogue between researchers and policy makers and other users ranged from frequent and smaller scale exchanges between scientists and users, to allowing resources for projects to include expertise in translating and interpreting findings into laymen's language.

TSRI has targeted $245,000 for the 2001-2002 fiscal year for communication. Part of these funds are for a final symposium/conference to present and discuss the findings and knowledge that resulted from TSRI-funded research projects. Many projects may not be completed at the time of the symposium/conference. However, it is expected that a large number of projects would be able to present their preliminary findings or final results at the symposium/conference.

The area of disseminating research findings from scientist to users is weak and needs strengthening.

Mechanisms for Communication, Marketing and Public Information:

TSRI has developed a communications plan that includes a situation analysis of strengths, weaknesses and opportunities. It delimits three target markets and lays out objectives, strategies and tactics for each. It is an ambitious plan, and it would seem to require more resources than what currently exist in the TSRI budget.

TSRI relies heavily on the Internet to inform researchers and the public. There were 41,000 hits to the TSRI Website between March 1999 and March 2000, and it elicited over 200 recorded responses. A significant portion of the e-mail received from the Website were inquiries from Canadians regarding toxic compounds in general.

A major public opinion and awareness survey about toxic substance research completed in September, 2000, found that only one third of respondents to this survey were aware of the existence of toxic substance programs and, within this group, only one percent knew of the TSRI.

A number of public information instruments; e.g., an "Outreach and Stakeholder Liaison Proposal" were developed. Their use appears to have been very limited to date.

The level of satisfaction of the applicants, members of the Committees, and the recipients of projects grants, with the administration of the TSRI:

The level of satisfaction with the administration of the TSRI varied from very satisfied to very dissatisfied. The main sources of dissatisfaction were: TSRI processes which caused delays in receiving funds, onerous financial and progress reporting requirements, seemingly inflexible constraints on capital expenditure, and less than satisfactory communication with the TSRI. Most respondents. described the administrative. reporting requirements as excessive, inflexible and micro-managed.

A large majority indicated a need for improving communication and feedback to the applicants and other stakeholders. The TSRI is aware of these sentiments and has begun to address them in preparation for the renewal of the Initiative.

Efficiency of the TSRI Processes in Comparison with Those Used by Similar Federal Government Programs:

Several other research funding programs were examined for purposes of comparison. They included two major funding councils, research funding programs of two federal departments, and a non-government, disease-centred national program. None was identical to the TSRI.

TSRI's use of contributions requires more stringent reporting and accountability than do grants, and sets it apart from most other funding programs. Moreover, TSRI funds research *projects,* which distinguishes it from other programs that tend to support *researchers* or on-going *programs* in selected fields of science. The TSRI also differs from most other federal research funding programs because it allows government scientists to participate in projects without requiring them to hold adjunct university appointments.

Given these differences, TSRI's processes compare reasonably well with those of the other research funders. The use of contributions that are renewable provides an enhanced degree of accountability, but it does create additional workload for the TRCs, researchers and the Secretariat.

There was some criticism that TSRI's evaluation criteria should be more clearly defined and their relative importance should be made explicit to applicants. Other funding programs do provide more detail about the criteria that will be used in the adjudication of proposals. Several specify which of their criteria are essential, and which are priorities.

The Extent to Which the TSRI Has Attracted Leveraged Resources for Research on Priority Toxic Substances in Canada:

Programs like TSRI can leverage resources at two levels: program level and project level. In program level leveraging other agencies participate by contributing funds to the program budget. Program leveraging increases the total financial scale of the program. The contributing agencies may get involved in overseeing the management of the program and in providing strategic directions. So far, the TSRI has not solicited funds through program level leveraging.

Project level leveraging involves obtaining resources from other sources to enhance the scope and depth of individual projects. However, project level leveraged funds cannot be counted on a continuing basis.

There is a widely held view that TSRI had succeeded in leveraging (project level) resources. Respondents noted that the program gave government scientists access to laboratory facilities and post-doctoral fellows in universities, and provided university researchers access to government facilities, equipment and data. However, there were no established uniform methods and definitions for reporting leveraged resources.

Effectiveness and Efficiency of the TSRI Governance Structure:

"Corporate governance" is used in the public and private sectors, nationally and internationally, to identify processes by which organizations are directed, controlled and held to account. The four key elements of governance are stewardship, leadership, direction and control. Corporate governance arrangements allocate responsibility for business functions and define the control and reporting mechanisms within entities.

TSRI was provided a mission, objectives and framework for its operation, though it is not a permanent organization. The evaluation found no evidence of a vision for TSRI, other than its stated objective. It might not be necessary for a three-year program to have a stated mission, but if the TSRI is to become a permanent program or a long-term initiative it will need to develop a vision that explains how it contributes to the thrusts and priorities of the federal government.

TSRI's mandate to fund research projects in toxic substances is consistent with the mandates of both Health Canada and Environment Canada. TSRI developed structures and processes to fulfill this mandate, and these appear to have worked well in the initial stages. However, the TSRI has not yet articulated how it plans to reach its intended users, the policy developers and regulators who need to be aware of the of the research findings to be able to benefit from them.

TSRI's committee structure seems to have worked well. The composition of the SMC omits representatives of users of the program's outputs and scientists/users from provinces/territories, even though the provinces/territories may be prime users of the results of TSRI-funded research results.

SMC has responsibility "to provide direction to the TSRI Secretariat". This may cause ambiguity regarding the reporting relationship between the Secretariat and the SMC, and it may create conflict with Health Canada's management responsibilities. For managerial accountability the SMC's role should be clarified to be that of providing strategic direction, but not operational direction, to the TSRI Secretariat.

The TSRI was placed in a federal Department for three main reasons: the Ministers of Health and Environment would retain joint accountability and control for the Initiative, the Initiative could maintain a focus on strong science policy, and the Ministers could be provided with a short progress report on the initiative on an annual basis. The TSRI has the necessary information for demonstrating accountability to the Ministers, but it has yet to provide such reports.

Consistency of TRC Decisions:

The interim evaluation found that the review criteria and guidelines had not been used uniformly across all committees, but substantial improvement in the consistency was observed for the second intake. The study found variability in the TRCs' recommendations. Some were unqualified, some recommended funding at a reduced level, and some were conditional on available funds. Some committees used categories of recommendations whereby some proposals were supported more strongly than others that were still highly meritorious. There were pronounced differences among the letters TSRI sent to provide feedback to applicants.

The evaluation found instances where the TRC recommendations were in variance with the eventual funding decision. The review did not find documents in either the applicant's files or TRC files explaining this difference. It is essential that the explanation of such variance be placed on applicant's files.

Concerns about potential conflict of interest in situations where TRC members have applications for TSRI funding could affect the integrity and credibility of the processes and governance.

RECOMMENDATIONS

Renewal and Long Term Strategies:

1.   TSRI should seek approval for its renewal for another four years.

2.   TSRI should dedicate funding to complete, before the end of the 2004-2005 fiscal year, an effectiveness evaluation. The evaluation should assess the relevance of TSRI-funded research to policy, regulatory and decision-making bodies and the actual use and impact of results of research on these activities. The evaluation should also determine the need for continuing funding for toxic substances research, and the most suitable program structure and placement for a continuing and permanent program.

3.   TSRI should review and clarify the priority areas in which it supports research, and develop suitable mechanisms for handling and assessing multi-disciplinary proposals that span several areas.

4.   TSRI should develop and implement specific strategies to increase participation by researchers in provincial/territorial institutions and researchers outside Ontario and Quebec in the toxic substances research projects that it supports.

5.   The Ministers of Health and Environment should explore approaches to involve their provincial/territorial counterparts in contributing to funding for the TSRI.

Governance:

6.   The Ministers of Health Canada and Environment Canada should broaden the membership of the SMC to include representatives from provincial/territorial government agencies and representatives from the intended users of TSRI-funded research findings, such as policy makers, regulators and managers of health promotion programs.

7.   The responsibility of the Science Management Committee should be to provide strategic direction to the Initiative and the TSRI Secretariat, including identifying the scientific and other expertise that it requires, but it should not extend to the operational responsibilities of Health Canada. The role of and relationship between SMC and the Secretariat should be clarified.

8.   The Science Management Committee should review the membership of the TRCs and ensure that they are more balanced in terms of the size of the committees and broaden the membership to include more young scientist and the full range of human health,

environment, epidemiological, chemical and biochemical specialties in toxic substances research.

9.   The membership and chair of the Technical Review Committees should be changed on a regular basis.

10.   The Science Management Committee should review the TSRI conflict of interest guidelines and consider disallowing or limiting the number of applications which members of the TRCs are involved as principal investigators or collaborating partners.

11.   TSRI should put into place visible processes to report on an annual basis to the Ministers of Health and Environment its planned activities and expenditures, and its actual achievements and outputs in relation to its plans. The performance reports should be in sufficient detail to describe major areas of expenditure, and to show and explain significant departures or variances from plans.

Review Processes:

12.   The Science Management Committee should review and clarify both the criteria and the relative importance or weight of each of those criteria that will be used for adjudication of research proposals, and ensure that the criteria and their weights are made known to all applicants and review committee members.

13.   The Science Management Committee should take the following measures to ensure that the technical review of proposals is, and can be seen to be, transparent and fair:
        1.   arrange for the TRC chairs to meet and agree on common review processes and interpretation and application of the rating criteria and their identified weights;
        b)   ensure that all TRCs use and retain common rating sheets in reviewing and adjudicating proposals; ensure that all TRCs document the reasons for their recommendations; and
        c)   direct the TSRI Secretariat to promptly provide to each unsuccessful applicant the TRC's written reasons for its decision.

Research Project Management:

14.   The TSRI should simplify the onerous and inflexible reporting requirements that are currently in place.

15.   The TSRI should provide more flexibility to Principal Investigators to reschedule activities and/or adjust spending plans to be able to meet the needs and objectives of approved projects in the face of contingencies that may arise.

16.   The TSRI should review and assess the cost implications of its present ceiling for

acquisition of minor capital equipment.

17.   The TSRI should streamline and simplify the financial agreements for collaborative
        projects that involve multiple institutions.

Reaching Users:

18.   The TSRI should ensure:
        a)   that researchers present the findings of TSRI-funded research in a form that is
                usable for policy formulation, regulatory functions and decision making, and
        b)   that it implements effective mechanisms for researchers to communicate their
                findings to users.

This may involve specifying a requirement for researchers to include in their proposals plans to
communicate with potential users of their research. It may also include dedicating some portion
of TSRI funding for periodic fora to allow researchers and policy- and decision-makers to
exchange information about what research information is needed and how expected research
findings can be used in relation to those needs.

19.   The TSRI should identify intended users of the research it funds and develop a data base
        for the purpose of assessing user needs and emerging issues, and communicating TSRI
        research activities and findings.

20.   The TSRI should review its role, responsibilities and capabilities to inform users about
        research activities and disseminate findings, and develop an appropriate communication
        strategy and plan.

Administration:

21.   The SMC should review the duration of projects for which it invites applications and take
        appropriate measures to smooth the workload of the TSRI Secretariat and the TRCs, and
        position the TSRI to become a continuing program.

22.   The TSRI should consider the adequacy of the Secretariat's resources, and enhance them
        as appropriate, commensurate with:
        a) the immediate needs of renewing the Initiative, concurrently with soliciting research
        proposals, coordinating their review, and ensuring that timely funding decisions are made
        so the next round of the Initiative starts on time; and
        b) the longer term needs of accommodating any expansion to its size and scope.

23.   The TSRI should develop and maintain comprehensive project databases to track both the

financial performance and the progress by achievement of milestones through all stages, and to provide periodic reports.

INTRODUCTION

Background

There is a growing realization that the substances we release into our environment will eventually be transferred back to us, in some cases with adverse consequences. Environmental contaminants of both natural and human origin in our air, water, food and soil can have many adverse effects on human health, including cancer, birth defects, and respiratory and gastrointestinal illness. There is growing concern and awareness among Canadians that their health is affected by pollution. Canadians continue to support strict environmental regulation to eradicate pollution to protect environment and human health.

The federal government recognized the need for focussed research on toxic substances and their effect on human health to improve its policies, regulations and programs to protect environment and health. In 1998, it established the Toxic Substances Research Initiative (TSRI) to fund research projects that would enhance the knowledge base needed to define and reduce ecosystem and human health effects of toxic substances in Canada. The Initiative started in 1998-99 and has a total budget of $40 million over four years.

The Minister of Health and the Minister of Environment are jointly responsible for the TSRI. However, the TSRI is located in Health Canada for the purpose of administration. Operational responsibility for the TSRI was assigned to the Toxic Substances Research Initiative Secretariat, which reports to both the Minister of Health and the Minister of Environment. By locating the Secretariat within a federal Department, accountable Ministers can be provided with regular progress and briefing updates.

TSRI will terminate at the end of fiscal year 2001-2002, unless it is renewed. Health Canada and Environment Canada are currently preparing a submission to the Cabinet for the renewal of TSRI.

Health Canada is responsible for evaluating the TSRI to determine the extent to which objectives and expected results are met. In 1999, the Toxic Substances Research Initiative commissioned an evaluation framework which was approved by the Science Management Committee (SMC). The framework specifies two evaluations: an interim evaluation (which focuses on processes) and a final evaluation. The framework identifies the issues to be addressed, the performance and results indicators to be used, the evaluation approach, and the time frame for the two evaluations. The final evaluation will be used in determining the advisability of continuing this Initiative as an ongoing program.

In the fall of 2000, Health Canada commissioned this interim evaluation with the approval of SMC. Its focus is the effectiveness and efficiency of the TSRI processes. The information derived will be used in making recommendations for the future of the TSRI and as input to the management decision process on the renewal of the TSRI.

The interim evaluation addressed 10 questions, consistent with the issues described in the Framework. It also examined the consistency of decision making processes employed by the Technical Review Committees for the review of applications for funding.

The report includes the following sections:
The Toxic Substances Research Initiative,
Evaluation Questions, Methods And Information Collection,
Findings And Conclusions, and
An Appendix describing details of evaluation methods and information collections.

THE TOXIC SUBSTANCES RESEARCH INITIATIVE

The TSRI is a program which funds targeted research projects in toxic substances, both within and outside the federal government. It does not provide funds as grants. Instead, it provides funds through contribution agreements to researchers in non-federal institutions and through memoranda of understanding to researchers in federal government Departments. These financial instruments permit ongoing monitoring of progress and provide for accountability. This funding mechanism differs from grants - which are used by most federal research funding programs.

The Objectives of the TSRI

The main objective of TSRI is "to enhance the knowledge base needed to define and reduce ecosystem and human health effects of toxic substances in Canada". This includes knowledge needed to conduct risk assessments, develop risk management strategies, evaluate risk management options, and provide Canadians with the sound science on which to base their own decisions.

Other TSRI objectives include:

– strengthening and accelerating the delivery and contribution of science to national policies and priorities associated with toxic substances,
– maintaining and maximizing the use of the Canadian infrastructure dedicated to toxic substances research,
– enhancing the ability of the federal departments and agencies to carry out their responsibilities to manage toxic substances,
– enhancing cooperation between researchers engaged in research in toxic substances, and
– strengthening Canada's contribution to international programs on toxic substances.

The TSRI achieves its objectives by funding research projects on the following priority areas and fostering collaboration between researchers within the public and private sectors:

1) Persistent Organic Pollutants (POPs);
2) Metals in the Environment (MIE);
3) Endocrine disrupting chemicals (EDCs);
4) Urban Air Quality (Urban Air); and
5) Cumulative effects issues and issues involving multiple research areas (CUM) .

Organizational Structure of the TSRI

For the purposes of management and administration, the Toxic Substances Research Initiative has been located in Health Canada. However, the Ministers of both Health and Environment have joint responsibility for overseeing the implementation of the TSRI. This joint responsibility follows from their mandates for ensuring the availability of strong scientific evidence to support key decisions concerning risk assessment and management of toxic substances, reflecting the important link between environmental and health protection as detailed in the Canadian Environmental Protection Act

The organization and governance structure of the TSRI includes a) a Science Management Committee; b) Technical Review Committees and c) a Secretariat, which are briefly described below.

a)   **Science Management Committee**

The Science Management Committee (SMC), appointed by the Ministers of Health and of Environment, is co-chaired by one senior scientist from Health Canada and one senior scientist from Environment Canada. The functions of the SMC are to make funding decisions and to provide strategic direction to the Initiative. It is responsible for overseeing the process of technical peer review for research proposals submitted to the Toxic Substances Research Initiative and for making final funding decisions. The SMC decision-making is by consensus. Where consensus is not possible, the co-chairs from Environment Canada and Health Canada are vested with deciding votes.

The SMC includes scientific experts in the area of toxic substance research from government and non-government agencies. Currently, the SMC has 21 members including the two co-chairs. The members are from the federal government, universities, industry/private sector, aboriginal research organizations, and other non-government organizations.

The principal responsibilities of the Science Management Committee are to:

–   ensure that annual objectives and research priorities are set for the Initiative;
–   approve the project submission process;

–   approve a common and clear set of criteria (including weights assigned to various criteria) that will be used to screen, evaluate and rank project proposals submitted for funding consideration;
–   call for research proposals on an annual basis;
–   approve and oversee the process of technical review for project proposals;
–   approve project proposals within the various priority research envelopes and specify funding allocations to approved projects within set limitations for the funding envelopes and the total program initiative;
–   review and recommend shifting of funds between priority research area funding envelope allocations, as well as the division of funding split between operating and contributions for each subsequent Fiscal Year; and
–   review annual progress made on approved research projects.

The SMC meets at least twice a year for the purposes of carrying out these functions.

b)   **Technical Review Committees (TRCs)**

Technical Review Committees are established by the Science Management Committee. Members of these committees are appointed by the SMC on the basis of their scientific credentials. Their function is to conduct reviews of research project proposals to ensure that proposed projects meet the specific eligibility criteria of the TSRI and address the research priorities. The TRCs make funding recommendations to the Science Management Committee. They also review progress reports, status reports and final reports submitted by researchers. The reviews of progress reports are used in decisions for continued funding of projects.

Currently, there are six conditions which define conflict of interest for TRC members. One of these applies when a member of a TRC is either an applicant, co-applicant, or co-signer of the proposed project. To avoid conflict of interest, the members of the TRCs are required to abstain from review of specific projects and any subsequent discussions and rating undertakings on these projects by the committee(s).

There are five Technical Review Committees, one for each priority area. The number of members vary for committee to committee. At present there a total of 31 members (including chairpersons) of these committees. In addition, six TRC members have left the committees.

The principal responsibilities of the Technical Review Committees are to:

–   review applications for research funding using criteria related to technical and scientific merit, including the feasibility and ethical soundness of research proposed and the extent to which the proposed research would advance scientific knowledge in each priority area. Technical review is based on identified research priorities for each research area;
–   ensure that projects being considered for funding by the Science Management Committee

are scientifically and technically sound; and
- assign a numerical ranking to the submitted proposals and note strong technical proposals which could still be considered for funding by the Science Management Committee should financial resources not be exhausted in other priority research envelopes.

TRC chairpersons present funding recommendations to the Science Management Committee.

c)   **The TSRI Secretariat**

The TSRI Secretariat, which reports to the Director of the Impact Bureau in the Safe Environments Directorate, Healthy Environment and Safe Consumer Products Branch, Health Canada **,** is responsible for administering the Initiative in accordance with the decisions made by the Science Management Committee. The Secretariat provides administrative and program support to the Science Management Committee and the responsible Ministers. The Secretariat is managed by a Research Manager.

The Secretariat is responsible for:

- Planning and administration for the Toxic Substances Research Initiative;
- developing and implementing a communications plan;
- developing an application process consistent with the Memorandum to Cabinet and the Treasury Board Submission to ensure a systematic approach to soliciting proposals;
- developing and implementing a technical peer review process under the direction of SMC;
- issuing calls for proposals and verifying them for compliance with eligibility criteria;
- tracking financial resources and measuring performance towards delivery of expected results; and
- providing scientific and administrative support to the Initiative.

TSRI Resources

A total of $40 million has been allocated to the TSRI. The following two tables provide the annual allocation of funds to the TSRI and human resources allocated to the Secretariat for the administration of the TSRI. Tables 1 and 2 on the next page provide details about the TSRI resources.

Table 1*
Resources Allocated for the Toxic Substances Research Initiative (1998-2002)

	1998/99	1999/00	2000/01	2001/02	Total
		Dollars (000)			
Funds for TSR projects in federal Departments	0.0	5566.0	6890.0	5195.0	17651.0
Funds for TSR projects in agencies outside federal government	0.0	5550.0	6750.0	5250.0	17550.0
Administration of TSRI	500.0	1384.0	1360.0	1555.0	4799.0
Total	500.0	12500.0	15000.0	12000.0	40000.0

. * Source: Submission to the Treasury Board for Supplementary Estimates (1998-1999).

Table 2**
Resources Allocated to the Administration of TSRI (1998-2002)

	1998/99	1999/00	2000/01	2001/02	Total
		Dollars (000)			
Secretariat Salary and Benefits	158.2	357.7	357.7	357.7	1231.4
Secretariat (Operating)	184.0	849.4	780.0	740.1	2553.6
Program Communications (Operating)	35.0	20.0	20.0	245.0	320.0
HC Corporate Services Levy[1]	122.7	156.9	202.3	212.2	694.1

** Source: Submission to the Treasury Board for Supplementary Estimates (1998-1999).

Accountability

The Ministers of Environment and of Health have joint accountability for the Toxic Substances Research Initiative. A short progress report on this Initiative is to be prepared and presented to the responsible Ministers on an annual basis.

Achievements to date

Since its establishment, the TSRI has conducted two competitions for funding research proposals, one in 1999 and one in 2000.

The TSRI issued the first call for research proposals in December 1998 for one, two and three year projects. It received 254 proposals from researchers across the country, of which 81 projects were selected for funding in the 1999-2000 fiscal year. The total funding was $10.94 million, and the amount in the five priority areas ranged from $2.05 million to $2.32 million. Approximately

60% of the funds was distributed to industry, academia, and non-government researchers, and the remaining 40% to researchers within the Canadian federal government. Many projects were of multi-year duration, but TSRI approves their funding on an year-by-year basis.

In the 1999-2000 fiscal year, 86% of the projects funded were of three years duration, while 11% were two years in length, and 3% were one year proposals. Multi-year projects were given conditional funding over the duration of the proposed study, subject to the approval of an annual progress report by the Technical Review and Science Management Committees.

The TSRI issued the second call for proposals in October 1999. The second call targeted one-year research proposals to address specific knowledge needs. A total of 81 proposals were received, of which 20 projects were selected (with funding of $1.9 million). In addition, a total of 77 multi-year projects (with $11.6 million in continuing funding) were approved based on satisfactory progress reports. The amount of funding for the 97 projects funded for 2000-2001 ranged from $2.07 million to $ 3.13 million across the five priority areas.

EVALUATION QUESTIONS, METHODS AND INFORMATION COLLECTION

Evaluation Questions

The interim evaluation addressed the following 10 questions and examined the consistency of decision-making processes employed by the TRCs:

1. How and to what extent have the processes for inviting proposals for research eligible for funding under the TSRI been effective in soliciting applications?
2. How clear are the guidelines provided to the prospective applicants in helping them complete their proposals, applications, and reporting requirements? What improvements could be made to the guidelines to make them clearer?
3. How effective and efficient have been the mechanisms for processing applications, having them reviewed by the Technical Review Committees and making funding decisions? Are there any lessons learned for the future?
4. Have all the necessary mechanisms and databases for tracking TSRI applications and funded projects been put in place?
5. What mechanisms has the TSRI developed to promote the dissemination of results of the research projects to appropriate public and private sector policy makers and program developers? Have the researchers been made aware of the need to provide the results of their research to potential users of information?

6. What mechanisms has the TSRI put in place for communication, marketing and public information? To what extent have these mechanisms been effective in meeting their objectives?
7. How satisfied are the applicants, members of the Technical Review Committees and the

Science Management Committee, and the recipients of projects funds, with the administration of the TSRI? What improvements could be made to make the processes more efficient and satisfactory to these partners and clients?
8. How efficient are the TSRI processes compared with those used by similar federal government programs?
9. To what extent has the TSRI attracted leveraged resources for research on priority toxic substances in Canada?
10. How effective and efficient is the governance structure of the Toxic Substances Research Initiative (TSRI) for managing the process?

In addition, the evaluation carried out "an analysis of review decisions" based on a sample of 40 applications made by both successful and non successful applicants to determine the consistency of the review process used by technical review committees.

Evaluation Methods and Information Collection

Evaluation methods included: review of program documents, Internet Websites and TSRI application files; case studies; focus groups with nominal group technique; mail-out surveys and interviews. Samples of SMC and TRC members, principal investigators of funded projects, unsuccessful applicants, collaborating partners, contracting authorities of research agencies, . representatives of Canadian Association of Research Administrators (CARA) and Association of Universities and Colleges of Canada (AUCC), and finance officers from two federal government Departments provided input through interviews, surveys and focus groups. A total of 206 individuals were contacted for the evaluation, of which 146 provided input. In addition, eight officials of five other research funding agencies were contacted for input to the evaluation. Three focus groups were conducted, in the National Capital region, Montreal and Toronto.

Analysis of Information: The analysis methods included qualitative methods and descriptive statistical methods.

See Appendix at the end of the report for a detailed discussion of Evaluation Methods and Information Collection.

FINDINGS AND CONCLUSIONS

The findings reported below are based on information collected to the end of February 2001, and do not reflect on-going decisions taken since then.

Almost everyone consulted in the evaluation supported the TSRI. They felt that the Initiative has filled a gap in toxic substance research that is increasingly important to improve the environment and human health. They felt that the Initiative had succeeded in bringing together researchers from federal government institutions, universities and other organizations to collaborate on toxic substances research projects. They felt that the TSRI should be extended beyond 2002, and should be made into a permanent program. They also identified several aspects of the TSRI that require further attention and action.

Question 1   How and to what extent have the processes for inviting applications for research eligible for funding under TSRI been effective in soliciting applications?

Four principal methods were used to inform potential researchers about TSRI and invite them to apply for funding. These included a mailing list of researchers and university research offices, information posted on the TSRI Website, press releases, and letters to other federal Departments.

It is not possible to estimate the total number of potential researchers reached by these means. For example, there is no information on how many people obtained information about TSRI through the Website as well as secondary sources such as Offices of Research Services at Canadian Universities and Deans of Science faculties at Canadian Universities.

The difficulty in assessing "reach" is common to other research funding programs. In the final analysis, the important questions are whether a program is fully subscribed and whether the focus and quality of the applications received correspond to program objectives and priorities. Judged on that basis, TSRI was effective.

As mentioned earlier, the TSRI received a total of 340 applications for funding from 279 applicants in its 1999 and 2000 calls for proposals. Some applicants submitted proposals in both 1999 and 2000, and some applied in one year only. In addition to the applicants, there were 228 collaborating partners (who were not principal investigators themselves) who were involved in TSRI funded projects in 2000-2001.

The above data show that, based on applications actually submitted, more than 500 Canadian researchers (applicants and collaborating partners) are aware of the TSRI. Given the relatively small pool of Canadian researchers engaged in research on toxic substances, the Initiative has been successful in inviting applications for funding proposals.

Some respondents expressed concern about the dominance of Ontario, followed by Quebec, in the nation-wide distribution of funding applications and approvals. About two thirds of the applications came from researchers in those two provinces. This may indicate need for more visible promotional efforts by TSRI in the eastern and western provinces. However, an examination of NSERC expenditures for 1998-99 shows that slightly more than 60 per cent of its research grants and scholarships were in Ontario and Quebec, which conforms with the concentration of researchers in central Canada. Moreover, TSRI was open to both government and non-government researchers, and because many of the former are based in the National Capital Region, it would skew the distribution accordingly.

There seem to have been few proposals focussing on effects of toxic substances on human health, compared with environmentally-oriented proposals. Some respondents suggested it was due to the fact that the Medical Research Council (now the CIHR) was calling for proposals simultaneously with the TSRI start-up, which may have attracted human health proposals that otherwise might have been directed to TSRI. Efforts to increase participation by researchers in human health aspects of toxic substances may be needed.

The TSRI has attracted both relatively new researchers and experienced researchers. Among the respondents to the PI interviews and survey, approximately 15% researchers had less than 5 years of experience and 45% had more than 15 years of experience in conducting research in toxic substances. Twenty percent of the PIs had applied for none or only one other source of funding for toxic substances research, and about the same proportion of the PIs had approached more than five sources. There was not much difference between the PIs with successful or unsuccessful project with respect to these attributes. Twenty-five percent of the collaborating partners were new to the area of toxic substances research. Almost all mentioned that they wish to continue in research in toxic substances.

Question 2:   How clear are the guidelines provided to the prospective applicants in helping them complete their proposals, applications and reporting requirements? What improvements could be made to the guidelines to make them clearer?

TSRI's guidelines for applicants were adapted from those used by other research funding agencies, and modified and supplemented to meet TSRI's specific needs. The draft guidelines were reviewed and modified by members of the Science Management Committee. The SMC also received comments about the original guidelines from researchers and TRCs after the 1999 competition. Subsequently, the guidelines were revised for the second competition held in 2000.

The researchers who were surveyed and interviewed made many comments on the guidelines. It should be noted that these respondents were familiar with the guidelines from other funding agencies (e.g., NSERC. MRC. NIH, etc.), and the TSRI guidelines represented a change to them. For example, the 1999 TSRI guidelines did not ask for CVs of researchers (although in 2000 these were requested).

Overall, a majority of the 70 PIs who rated the guidelines felt that they were either "somewhat clear" or "very clear". There was no significant difference in the ratings between PIs with approved and unapproved applications, or between government PIs and non-government PIs. However, 46 % of the PIs with approved applications felt that some parts of the guidelines were not clear, and 55% of percent of the PIs with unapproved applications felt the same way. The following parts of the guidelines were reported as "not clear" by these respondents: budget and finance section, definitions of in-kind and other support, proposal evaluation criteria, definitions of priority areas, and collaborating partners. In addition, few respondents felt that the forms were difficult to fill and information asked was too detailed.

When asked to compare TSRI's guidelines to those of other programs with which they were familiar, 21 % of the PIs rated TSRI guidelines less satisfactory than those of other programs, and 18% rated TSRI guidelines less complete than those of other programs.

The Focus Groups perceived TSRI's guidelines to be clear and straightforward, and fair in describing eligibility. However, it was felt the guidelines should state clearly that the research was to focus on government priorities. All focus groups mentioned there was some confusion regarding to which of the five priority areas proposal(s) should be submitted. It was felt that many categories over-lapped, and some projects were not clearly in one or another category. Some participants felt there was confusion about whether partners were essential, and what support of the community was required. They queried why the electoral district was needed in the application, and felt that there was a problem with the weighting criteria.

The guidelines, while clear in some respects, are deficient in others. The means by which research applications are adjudicated are not transparent. In particular, the weighting accorded to each criterion is not provided, so it is unclear what importance should be given to partnerships, collaboration or aboriginal interests. Nor is it totally clear what is embraced within the five Priority Areas. As a result, some respondents felt that government applicants had an advantage through knowing the real intentions of decision-makers more precisely than did outsiders.

All PIs and CPs were asked to rate their experience with the TSRI in comparison with other sources of funding. The following three tables show the comparative ratings provided by the respondents. Information from these three tables also relate to other evaluation questions on the level of satisfaction of applicants and collaborating partners, and the TRC review process.

Table 3
Comparison between TSRI and Other Sources of Funding
Ratings provided by PIs with Successful Applications

Satisfaction Level Compared to Other Sources of Funding

Category	Much Less	Somewhat Less	Same	Somewhat More	Much More	Total
1) Responsiveness of Agency	5	8	12	14	2	41
2) Clarity of Guidelines	5	3	23	9	1	41
3) Completeness of Guidelines	4	3	23	10	1	41
4) Transparency of Process	6	15	12	6	1	40
5) Fairness of Process	3	12	13	9	1	38
6) Efficiency	4	7	16	12	0	39
7) Time Allocation	6	7	17	8	1	39
8) Communication with TSRI	4	5	13	16	1	39

Table 4
Comparison between TSRI and Other Sources of Funding
Ratings provided by PIs with Unsuccessful Applications

Satisfaction Level Compared to Other Sources of Funding

Category	Much Less	Somewhat Less	Same	Somewhat More	Much More	Total
1) Responsiveness of Agency	5	8	9	5	0	27
2) Clarity of Guidelines	2	5	12	10	0	29
3) Completeness of Guidelines	1	5	12	11	0	29
4) Transparency of Process	11	5	10	3	0	29
5) Fairness of Process	9	8	7	3	0	27
6) Efficiency	5	7	8	8	0	28
7) Time Allocation	1	4	19	4	0	28
8) Communication with TSRI	6	5	13	4	1	29

Table 5
Comparison between TSRI and Other Sources of Funding
Ratings Provided by Collaborating Partners

| | Satisfaction Level Compared to Other Sources of Funding | | | | | |
Category	Much Less	Somewhat Less	Same	Somewhat More	Much More	Total
1) Clarity of Guidelines	0	9	16	2	1	28
2) Completeness of Guidelines	0	7	17	3	1	28
3) Transparency of Process	0	9	16	3	0	28
4) Fairness of Process	0	3	19	5	0	27
5) Time Allocation	1	6	20	1	0	28
6) Communication with TSRI	0	5	16	3	3	27

Over 50 percent of the PIs felt that the TSRI processes were less transparent than those of other research funding programs. Although collaborating partners have less contact with the TSRI processes, 30% of the CPs also thought that the TSRI processes were less transparent.

When it comes to comparing the fairness of the TSRI processes with that of other programs, over 60 % PIs with unsuccessful applications felt TSRI less satisfactory than other programs. Close to 40% PIs with successful applications felt the TSRI processes were less satisfactory than those of other programs.

TRCs did not apply the guidelines or weights consistently in the first call for proposals. The guidelines for the second intake significantly improved the situation. Nonetheless, examination of the TRC decision files demonstrated that there remains some lack of consistency in how the guidelines are applied across the full roster of TRCs. The guidelines should therefore be revisited with a view to further improvement.

The guidelines would also serve an important information role if they were expanded to explain to both researchers and administrators the differences among grants, contributions and contracts. There appears to be confusion and some resentment about what is meant by these terms and their implications. Expanded guidelines could help clarify the matter.

Question 3:   How effective and efficient have been the mechanisms for processing applications, having them reviewed by the Technical Review Committees and making funding decisions? Are there any lessons learned for the future?

Despite variations in the number of applications each Technical Review Committees received and differences in the approaches used by TRCs, the TSRI processes for reviewing applications

were effective. The elapsed time between the application deadline and the SMC review of recommendations from the TRC was about three months. That compares favourably with other research funding programs that were examined.

However, the processes of obtaining revised budget and project detail documents for projects approved with reduced funding, and for negotiating contribution agreements require additional time, which in some cases can be protracted. There was overall improvement in the time needed to process applications in the second intake. However, the file review showed that there was little difference in the longest elapsed time from the issuance of the approval notification by the TSRI joint SMC CO-chairs to the signing of a Contribution Agreement between the 1999 and 2000 competitions. It may be helpful to establishing a performance standard for use by all parties to discourage protracted negotiations.

Several TRC members would have liked more time to review applications. They suggested that this could be possible if the Secretariat distributed copies of applications as they were received, instead of waiting until they had been reviewed for completeness, or by scheduling extra time between the distribution of applications and the TRC meetings. The need for more time may be appropriate in committees that receive a large number of applications. But the practice in some committees of requiring all members to review all applications, rather than having each application reviewed by two committee members, might also have a bearing on the amount of time needed.

The file review and interviews with TRC members both provided evidence of variability within and among committees in how criteria were interpreted and applied. Clarifying the definitions and informing applicants about the weights assigned to criteria, and in particular, clarifying which criteria are essential, would help them in preparing proposals. Meetings of TRC chairs to discuss approaches and share techniques would aid consistency.

The need to strengthen some TRCs was identified in the focus groups, in interviews with TRC members, and in the file review. In some committees, because of the need to observe conflict of interest guidelines, there were cases where as few as only two members were left and required to evaluate proposals. In some of those cases, the critical subject matter expertise resided with the members who were absent. Some committees received applications in specialties that lay outside the collective expertise of their members. In some instances it was possible to refer the application to another committee, but the need for more human health scientists, among others, was noted. A possible method of enhancing consistency of reviews would be to examine the components of review which are common (e.g. scientific rigour and epidemiological issues) to all priority areas and have these assessments made by an independent panel. The results of these assessments could then be made available to all TRC for their reviews.

A related issue has to do with applications that did not fit neatly in any single priority area, but bridged the scope of several committees. Some applicants were concerned that their proposal might have been directed to a committee with more rather than less other proposals, or to one in

which criteria were applied more stringently, or to a committee that lacked the subject matter expertise to really understand the proposal. This is the type of situation that can give rise to a perception of unfairness or lack of transparency in the process. Some other funding programs confer with outside experts or use external reviewers in these types of situations.

The feedback to applicants, especially those who were unsuccessful, drew broad criticism. There were cases where helpful details were provided by the TSRI, but they were not the norm. The file review found that although some Technical Review Committees prepared cogent notes for inclusion in letters of rejection, these were often condensed into a brief paragraph, or not used by the Secretariat. In one of the programs in NSERC, the primary reviewer of a proposal is responsible for preparing feedback to the applicant, which is then included, unchanged, in the notification letter sent by NSERC staff.

The chairs of the TRCs assess the processes and practices for reviewing and adjudicating research proposals, and submit their observations to the SMC. It was evident that many of their observations are incorporated in the following year. Appraising and selecting the best proposals will impact on the participation by scientists in the TSRI and on its success and impact on health and the environment. It will be important to continually seek out how to improve this aspect of the Initiative.

Question 4:   Have all the databases and mechanisms for tracking TSRI applications and funded projects been put in place?

The TSRI Secretariat created a Microsoft Access database for applications. TSRI also maintains a number of Microsoft Excel and Corel Quattro Pro spreadsheet files which contain detailed information on applicants, applications, contribution agreements and financial transactions. These databases and files are used to prepare periodic reports and summaries.

Most of the documents and files generated by the TSRI are available on a common network drive shared by TSRI staff. Hard copy correspondence received from outside is maintained in non-computerized files. Hard copies of some e-mail messages received by the TSRI were found in applicant files.

The evaluation found more than 5000 files on the shared drive. Each individual in the Secretariat, including temporary staff, has her/his own directories and folders on the drive. There are many files (often both the same version and different versions) on the same subject on the shared drive. The presence of various drafts and superseded versions of documents, and variability in how they have been identified/coded and organized, can lead to inefficient use of time, or to confusion and error, especially when new employees join the Secretariat. It may be useful to have one designated directory with appropriate sub-directories, to hold all official documents and the last updated version of all official files of the TSRI.

The TSRI contribution agreements require recipients of funds to provide quarterly financial

reports and progress reports. These reports are used for making decisions on future payments (and recoveries, if necessary). The financial reports appear to be current The progress and annual reports are reviewed by the TSRI staff and by TRC committees for input to SMC for making decisions about the continuation of the projects.

The TSRI Secretariat does financial tracking and updating of the Access database. The electronic database captures information about financial matters and progress reports that are sent to the Secretariat. However, the ***project*** files, which include TRC recommendations regarding funding and all correspondence, are maintained in the applicants' hard copy files. These files include financial information in addition to the applications, amendments, copies of agreements, correspondence, and other documentation. It was noted in some files that original documents had been replaced when subsequent revisions were received, a practice which does not preserve the full history of an application. It may be useful to review what core information is necessary and must be retained on the hard copy files.

The evaluation noted that the Secretariat has been working on a new database which is not yet operational.

Question 5:   What mechanisms has the TSRI developed to promote the dissemination of results of the research projects to appropriate public and private sector policy makers and program developers? Have the researchers been made aware of the need to provide the results of their research to potential users of information?

TSRI funding for scientific research is intended to stimulate and support the production of knowledge for use by policy makers, decision makers and regulators. The expected results will provide scientific basis for sound risk assessment, risk management strategies and options.

TSRI has a total budget of $340,000 designated for communication, of which $245,000 is targeted for expenditure in the 2001-2002 fiscal year. Part of this amount is allocated for a final symposium/conference that will present and discuss the findings of the TSRI-funded research projects. At the time of this evaluation only two projects had been completed, whereas, all TSRI funded projects are to be completed by the end of March 2002. It is expected that a large number of projects would be able to present their preliminary findings at the final symposium/conference.

In the meantime, TSRI has other measures in place to ensure a flow of information about the program for use at a professional level. For example, the TSRI funds researchers to participate in scientific conferences. In the same vein, TSRI Secretariat scientists have given presentations about the program at professional meetings on nine occasions so far.

Although funds have been designated for the major conference/workshop, to inform potential users about the results of TSRI-funded projects, many evaluation respondents identified a need for more attention to ensure that the TSRI funded research is both usable and used. The need to communicate effectively was described as a huge challenge, because most researchers specialize

in doing research instead of communicating with non-researchers, and many intended users of research are not sufficiently trained in the sciences to interpret the significance of research findings and results, or do not have sufficient time to maintain a current awareness of relevant research.

Several respondents suggested that more frequent and smaller scale exchanges between scientists and users would be desirable. These exchanges would allow policy- and decision-makers and regulators to inform scientists what was on their radar screens, and allow scientists to inform the users about their research. Others suggested that TSRI should specify more precisely what dissemination of results to non-researchers it expected, and allow resources for projects to include expertise in translating and interpreting findings into laymen's language. This communication issue was identified as one that merits close attention to ensure that the expected benefits of TSRI are fully realized.

The TSRI Contribution Agreements include a clause stating that "The Recipient shall use its best efforts to make the results of the research conducted under this Agreement public within one (1) year of the Expiry Date of this Agreement".

PIs of successful applications were asked whether they were clearly informed the conditions attached to the funding agreements before they were signed and how were they planning to make the results of their research project available to their potential users. Eight of the 43 (or 19%) of these respondents stated that they were not clearly informed about the conditions related to the final report.

All respondents mentioned that they planned to present their research results through publication in journals as well as presentations at conferences. In addition, 20 stated that they will use media, 12 would use Internet and 27 mentioned other means for making their results known to the users.

Question 6. -   What mechanisms has the TSRI put in place for communication, marketing and public information? To what extent have these mechanisms been effective in meeting their objectives?

TSRI has developed a communications plan. It includes a situation analysis of strengths, weaknesses and opportunities. It delimits three target markets and lays out objectives, strategies and tactics for each. It is an ambitious plan, and it would seem to require more resources than what currently exist in the TSRI budget.

The first year of TSRI (1998-1999) was devoted to preparing the mechanisms and processes needed to put the Initiative into operation. The small staff of the Secretariat was able to prepare documents to communicate the establishment of TSRI to researchers, Ministers, other stakeholders and the public. They designed, developed and produced all the documentation needed for potential applicants to prepare and submit research proposals .

The TSRI used press releases and speeches by the Ministers of Health and Environment to announce the beginning of the program. TSRI uses its Website, participation by TSRI scientists in toxicology conferences, promotion of the TSRI by the Secretariat members at professional conferences, and commissions public information (e.g., "public interest stories" about air pollution and TSRI) to communicate information about TSRI.

TSRI relies heavily on the Internet and participation by TSRI scientists in professional conferences to inform researchers and the public. Its Website contains information for applicants about TSRI's objectives, guidelines and application forms, and information on approved projects and progress made by the TSRI. There were 41,000 hits to the TSRI Website between March 1999 and March 2000, and it has elicited over two hundred recorded responses. A significant portion of the e-mail received from the Website were inquiries from Canadians regarding toxic compounds in general. The Website has links to web pages of other federal departments, the Society of Toxicology, the Canadian Network of Toxicology Centres, some Canadian universities, and a number of search engines.

The TSRI commissioned a major public opinion and awareness survey about toxic substance research by the Angus Reid Group. It was tabled in September, 2000. The study found that only one third of respondents to this survey were aware of the existence of toxic substance programs and, within this group, only one percent knew of the TSRI. The Secretariat also commissioned an "Outreach and Stakeholder Liaison Proposal" as well as a small number of specialized texts on such subjects as urban air pollution and TSRI. The utilization of these documents and planning instruments appears to have been very limited to date.

Question 7.   How satisfied are the applicants, members of the Technical Review Committees and the Science Management Committee, and the recipients of projects funds with the administration of the TSRI? What improvements could be made to make the processes more efficient and satisfactory to these partners and clients?

All interviewees and survey respondents were asked how satisfied were they about TSRI processes and communication with TSRI. They were also asked to make suggestions to improve TSRI processes.

The assessment of TSRI's communication with applicants varied from very satisfied to extremely dissatisfied. This variability is readily apparent from the comments in the focus groups. All focus groups mentioned that communication regarding the refusal of funding was too curt and generally inadequate, compared to the amount of work put into the proposals. One participant of a focus group noted that the lack of substantive scientific post-TRC review comments to researchers, especially unsuccessful applicants, discourages researchers from applying again and does not provide a basis for future reference. In contrast, another participant stated that the TSRI Secretariat staff had been very helpful with budgetary concerns, both in direct communication and with the institution's administrative staff.

The review of applicants' files revealed considerable variability in feedback from the TSRI Secretariat to applicants. In some cases, the files contained detailed letters with constructive criticism and suggestions regarding other funding programs that an applicants might consider. In other cases, although the file included detailed comments prepared by a TRC, this information had been condensed to a few lines in the letter sent by the TSRI Secretariat. Some files had no record of any feedback to the applicant.

The interviews and survey of PIs provided corroborating findings. When PIs with successful applications were asked whether they were clearly informed as to the conditions attached to the funding agreements before they were signed, 35% said that they were not clearly informed about the payment schedule, and about 20% said the same about the need for status, progress and final reports. It is noted that the researchers did not sign the financial agreements. In the case of non-federal institutions, contribution agreements were signed by their financial authorities. In the case of other federal government Departments, memoranda of agreements were signed by their financial authorities.

When PIs with unsuccessful applications were asked whether the TSRI explained the reasons for not approving their application, over 40% said that they were not informed about the reasons. Further, among those who received the explanation, one-third were not satisfied with the reason. A major criticism about the communication was that it was often impersonal and did not provide adequate explanation of the reasons, and did not offer what improvements could be made or what other sources of funding would be available. The small sample sizes did not permit analysis of comments from PIs between the first and the second competition.

The interviews with financial officers of the non-federal contracting authorities provided further evidence about TSRI's communication of operational matters. Ten out of 22 said that they were not satisfied with communication with TSRI during negotiations for contribution agreements.

Many members of the SMC and the TRCs who were interviewed identified general need to improve communication. Suggestions from the focus groups also included the need to improve communications as one of their priority suggestions.

Some of the feedback from respondents might reflect their need to adjust to TSRI procedures and requirements that differed from other programs with which they were familiar and accustomed. Some of the feedback probably reflects growing pains that can be expected in any new enterprise. Some may reflect the intense pressures that were face by a small Secretariat staff working to very tight time frames. However, the consistency of the findings regarding TSRI's communication with its participants on operational matters indicate it is an area where attention and improvements are needed.

TRC members had widely divergent levels of satisfaction with the management and processes of the TSRI - centred mainly on the issues of delay in providing funding to researchers and financial reporting requirements described as excessive, inflexible and micro-managed. Some tempered

their comments with the observation that TSRI had a "rocky start-up" and was still learning, and indicated there had been improvement in the second year. Several mentioned that there had been insufficient time to review proposals and insufficient attention dedicated to reviewing research progress and results. In contrast, other respondents, who may have had assistance in responding to the administrative requirements, were very satisfied. However, there was general agreement about the need to simplify the administrative processes by reducing the number of forms and lessening the need for financial tracking and reporting.

The feedback from non-federal contracting authorities identified some areas of difficulty. Ten of 22 respondents said they were not satisfied with communication with TSRI during negotiations for contribution agreements, and 14 of 17 authorities felt that the TSRI was too unattuned to university contracting practices. Despite the criticism, attributed in part to TSRI's "teething process" and the fact that these officials were unfamiliar with contribution agreements and the nature of their accountability requirements, many non-federal contracting authorities indicated that TSRI filled a need and should be continued.

The focus groups also felt that the TSRI administrative requirements were somewhat onerous. The inflexibility regarding quarterly financial reports and progress reports drew the most comment. Some observed that the requirement to submit reports at the end of December was inconsistent with the practice of universities to close from before Christmas until early January. It was noted that the need to revise and resubmit documents for those projects approved with reduced funding, and the protracted delay involved in negotiating contribution agreements sometimes resulted in loss of a research season and failure to retain all members of the planned project team.

Among other concerns cited were the detailed and frequent financial reporting requirements, the inability to carry over funds from year to year, and the $1000.00 limit for capital equipment. Some researchers reported that the rental or contract costs for some relatively inexpensive items exceeded their actual purchase price, and no residual benefit was derived.

Many respondents commented on the complexity inherent in negotiating separate contribution agreements with members of a project team who were affiliated with different institutions. Some respondents suggested that the Principal Investigator should be responsible for the whole financial and scientific research management of the project team. Others indicated that present practice of
distributed/separate agreements provided greater flexibility and adaptability, and should not be changed. There is substantial diversity of views on the matter. Some respondents confided that differences among institutions, in terms of their established practices and capabilities, should not be overlooked as a factor.

It is clear that the roles and relationships of the PIs and their collaborating partners need to be discussed as part of an examination of whether the arranging of financial agreements can be streamlined. The capabilities of the financial offices at the research institutions and the workload

implication for TSRI of different options should also be taken into account.

References to insufficient communication between the SMC and TRCs, lack of sufficient lead time to review applications, insufficient time for meetings, agendas not received in time, failure to ensure all members of SMC got minutes of the meetings, and disproportionate time spent on review of financial details point to inadequate management of SMC operations. The processes need to be streamlined and feedback mechanisms should be improved from the SMC level down to the individual applicant level.

Several improvements were suggested. To encourage innovation and guard against or resistance to change and renewal, a proportion of the funding might be set aside for young scientists devoted to innovative projects and methods. This was one way to encourage young scientists to enter fields of research relevant to government policy priorities. The need to ensure a government commitment to long term funding for TSRI should be addressed as the highest strategic need to attract and retain high quality scientific researchers.

Question 8.   How efficient are the TSRI processes compared with those used by similar federal government programs?

Several other research funding programs were examined for purposes of comparison, but none was identical to the TSRI. They included two major funding councils, research funding programs of two other federal departments, and a non-government disease-centred national program. The study team reviewed and/or hard copy documents of the comparison programs. Telephone discussions and face-to-face consultations were arranged with officials of the Canadian Institute of Health Research (CIHR), the National Science and Engineering Research Council (NSERC), and the Research Partnerships for Sustainable Forest Management and the ENFOR (Energy from the Forest) programs of Natural Resources Canada (NRCAN). Information about the Northern Contaminants Program of Indian and Northern Affairs Canada and on the National Cancer Institute of Canada was taken from their respective Websites. The discussion under this question is restricted to those TSRI processes which are common to other research funding programs.

TSRI's use of contribution agreements require a more stringent reporting and accountability than is needed for grants, and sets it apart from most other funding programs. Moreover, TSRI funds research *projects,* which distinguishes it from other programs that tend to support *researchers* or on-going *programs* in selected fields of science. As a result, in evaluating applications for funding, TSRI places emphasis on the scientific merit and relevance of the research proposals, whereas NSERC and CIHR place primary emphasis on the quality and credentials of the researchers.

Given these differences, TSRI's processes compare reasonably well with those of the other research funders. The time required to review the scientific merit of applications is shorter and less time and labour intensive than other approaches that use external reviewers. However, this is offset by the additional time that is needed to negotiate contribution agreements, especially in

cases where the project funding has been reduced in the technical review.

TSRI approves multi-year projects but their continued funding must be approved yearly, based on a satisfactory review of an annual progress report. This entails an element that is found in some, but not all grant-based funding programs. This feature provides an enhanced degree of accountability, but it does create additional workload for the TRCs, researchers and the Secretariat. One of the comparison programs uses contracts to fund research, which also require more stringent monitoring, and receipt of satisfactory deliverables. One respondent observed that contributions were preferable to contracts because funds were available to researchers before they incurred expenses, whereas contracts are not paid until after work has been completed.

The TSRI differs from most other federal research funding programs because it allows government scientists to participate in projects without requiring them to hold adjunct university appointments. They compete with university-based researchers for funding, and must therefore be able to maintain high standards in their work. This aspect, and its emphasis on collaborative projects, gives TSRI an advantage over other programs in fostering inter-sectoral transfer of knowledge.

There was some criticism that TSRI's evaluation criteria for assessing proposals should be more clearly defined and their relative importance should be made explicit to applicants. Other funding programs do provide more detail about the criteria that will be used in the adjudication of proposals. Several specify which of their criteria are essential, and which are priorities. Other programs provide more detailed descriptions of how the criteria are applied. These practices allow researchers to incorporate and emphasize the more important features in their proposals.

A fundamental purpose of TSRI is to provide scientific knowledge to government officials to assist them carry out their policy, regulatory and risk management responsibilities. It will require effective dissemination of research findings from the scientist to the bureaucrats. Although TSRI invites applicants to identify dissemination costs in their applications, it provides little clarification or direction regarding what this embraces. Most of the applications reviewed showed either no projected costs for dissemination, or identified attendance at a professional conference. This is consistent with other programs that fund basic research. None of the applications reviewed included activities to bring the research findings to the attention of potential users outside the research community. By way of contrast, the Northern Contaminants Programs requires applicants to fully describe how they will involve potential users in both defining the research project, and how they will inform those users of the research results. The approach may be of interest to TSRI in ensuring that the users are informed of the results of research.

TSRI holds its own in comparison with other research funding programs. However, some have features that seem relevant to the Initiative, and may merit close study as ways to enhance its procedures and operations.

Question 9.   To what extent has the TSRI attracted leveraged resources for research on priority toxic substances in Canada?

There was widespread belief that TSRI had succeeded in leveraging resources. Respondents noted that the program gave government scientists access to laboratory facilities and post-doctoral fellows in universities, and provided university researchers access to government facilities, equipment and data. However, there were no established uniform methods for reporting leveraged resources. There is a need to develop and provide definitions of what constitutes "cash" and "in-kind" contributions and guidelines on how to report them.

The review of application files noted many projects identified "contributions (cash and in-kind) from other sources", but there was considerable variability among the data entered. Some applicants provided extensive detail about the ancillary support available to them and the project, but others provided little. It was unclear whether the value of facilities, technical services and support staff should be included or not. For example, some applications noted that post doctoral fellows and/or doctoral students funded under other programs would be part of the project team, but their salaries were not identified as "contributions from other sources". A number of respondents mentioned the need for clearer definition in this area.

It is noted that in programs like TSRI there can be leveraging at two levels: the program level and the project level. In *program* leveraging, other agencies participate by contributing funds for the program budget. This participation signals the motivation and commitment of agencies in the mission, objectives and operation of the program. Funds attracted through program leveraging increases the total size of the program. The contributing agencies may get involved in overseeing the management of the program and in providing strategic directions.

In contrast, leveraging at the project level enhances what is possible in terms of scope or duration, but it is of a "one-of" nature. It cannot be shared with other projects. It cannot be redirected to other priority areas. And it cannot be counted upon on a continuing basis. Thus far, TSRI has focussed on project-leveraging, and has clearly achieved a measure of success. The opportunity for program leveraging, which allows greater flexibility, and which does not preclude project leveraging but instead magnifies that potential, should be considered.

Question 10:   How effective and efficient is the governance structure of the Toxic Substances Research Initiative (TSRI) for managing the process?

"Corporate governance" is used in the public and private sectors, nationally and internationally, to identify processes by which organizations are directed, controlled and held to account. The four key elements of governance are stewardship, leadership, direction and control. Corporate governance arrangements allocate responsibility for business functions and define the control and

reporting mechanisms within entities. A sound governance framework provides the essential structure for Chief Executives of agencies and Directors of authorities to make informed decisions, with the assurance that all proper controls are in place and that risks are well managed. Corporate governance aims to maintain a sharp focus on organizational priorities. This is achieved by establishing clear lines of accountability and authority, the devolution of decision making, and the effective management of resources.

A well-governed initiative functions smoothly and achieves its objectives efficiently and effectively. The examination of the governance of the TSRI included an examination of its mandate, organization, delegation of responsibilities, reporting structure, inter-relationships between different parts, direction and resource allocation and accountability framework.

Mandate and Vision: TSRI was provided a mission, objectives and framework for its operation. However, it is not a permanent organization. The Initiative was established with a specific termination date, and it will wind down unless it is renewed. It is anticipated that the TSRI may be extended beyond its current mandate. Observations made about the governance question become more relevant in light of the possible renewal of the Initiative.

The evaluation found no evidence of a vision for TSRI other than its stated objective "to enhance the knowledge base needed to define and reduce ecosystem and human health effects of toxic substances in Canada". Perhaps it was not necessary for a three-year program to have an explicit vision. However, if TSRI is to be a permanent or a long term initiative, it will need to develop a vision for itself that explains how it is consistent with the vision and priorities of the federal government.

TSRI was given a mandate to fund research projects by both federal government and non-federal agencies to enhance the knowledge base needed to define and reduce ecosystem and human health effects of toxic substances in Canada. This mandate is consistent with the mandates of both Health Canada and Environment Canada. TSRI has brought support for federal and non-federal research under one umbrella and on a level playing field, and stimulated collaboration between these sectors.

Organization - Processes: TSRI developed structures and processes to fulfill this mandate, and these appear to have worked well in the initial stages. The TSRI was able, with limited resources and available time, to develop instruments for informing researchers about the establishment of TSRI, for receiving project proposals and reviewing them through a peer review process, and for entering into contribution agreements with non-federal research institutions and memoranda of agreements with federal government Departments. TSRI also developed elaborate procedures for monitoring the progress of the projects and project expenditures.

These procedures seem to have worked well. TSRI was oversubscribed in all five of its identified priority areas. The financial and progress reporting procedures have, however, been found to be excessive by PIs, CP and contracting authorities of research agencies.

While doing these foregoing activities, the TSRI has not been able to articulate how it plans to reach the potential users, the policy developers and regulators who need the findings of the research being undertaken. We have not seen any information describing the intended recipients of the results of the research and how to reach them.

Organization - Structures: TSRI's committee structure seems to have worked well. The Science Management Committee (SMC) is composed of scientific experts in the area of toxic substances research from government and non-government research agencies and organizations, who are appointed by the Ministers of Health and Environment. The composition of the SMC omits representatives of users of the program's outputs and scientists/users from provincial/territorial governments. Yet provinces/territories may be prime users of the results of TSRI-funded research. Both of these groups should have adequate presence on the SMC to bring users' needs to the table and to improve the visibility of TSRI among the users as well as researchers.

Direction and Control: The draft terms of reference for the SMC include responsibility "to provide direction to the TSRI Secretariat". This can cause some ambiguity regarding the reporting relationship between the Secretariat and the SMC, and it may create conflict with Health Canada's management responsibilities. This role needs to be clarified to specify whether it refers to strategic direction and/or operational direction. Clear managerial accountability dictates that the SMC role should be that of providing strategic directions and not operational directions.

There have been concerns and perceptions about conflict of interest in situations where a TRC member submits an application for funding. Continued perceptions (or misconceptions) about such matters could affect the integrity and credibility of the process. Credible governance of the program requires assessment of the proposals that are, *and are perceived to be*, impartial and unbiased. The conflict of interest guidelines and practices used by NSERC for its peer reviews may provide a useful model.

SMC provided guidelines to the TRCs covering the review of proposals. As noted elsewhere in the report, the TRCs did not follow the guidelines consistently in the first competition. To maintain better control over the review process, which is central to the credibility of the Initiative, mechanisms could put in place for approving any changes to the review guidelines before the applications are assessed. To fast track such changes, a sub-committee of the SMC could be formed to review and approve changes proposed by the TRCs.

Accountability: The TSRI was placed in a federal Department for three main reasons: the Ministers of Health and Environment could retain their joint accountability and control for the Initiative, the Initiative could maintain a focus on strong science policy, and the Ministers could be provided with a short progress report on the Initiative on an annual basis. In addition, it allowed for periodic review and fine-tuning of targeted research needed for risk assessment, management, and regulation to maintain the strategic direction of the Initiative.

TSRI has maintained, in its files, all the information that would be needed for accountability reports. A lot of information is reported through annual reports and Website. However, we found no regular progress reports showing accountability flowing up to the Ministers.

Other observation: TSRI needs to explore the possibility of leveraging resources from other funders, as well as users, of toxic substance research. TSRI needs to forge links with other similar organizations within and outside Canada.

Consistency of TRC Decisions:

The evaluation included a special analysis of the review processes for evaluating proposals. A sample of 40 applications was selected, eight from each of the five priority areas, with an equal number of approved proposals and rejected proposals in each subset. The sample comprised 28 applications from the first intake, and 12 from the second year, and contained 12 one-year projects and 28 two- or three- year projects. Slightly more than half of the applications were submitted by government scientists, but some of these researchers were based in universities or other research institutes at the time they submitted their proposals.

Application files and Technical Review Committee files were examined to assess the efficiency, effectiveness and consistency of the review processes. No attempt was made to critique the committee evaluations of the merit of applications, but the review did examine the TRC ratings and comments on proposals in relation to the final funding decisions. All available files for each application were thoroughly reviewed, and key information was logged. This included details related to TSRI evaluation criteria and administrative records used as procedural milestones.

TRC members who were interviewed indicated that the criteria and guidelines were clear, but mentioned that the criteria structure had been modified by some committees. The review of files found that the criteria had not been used uniformly across all committees, and committees used different procedures.

Many of the files did not include the TRC ratings. In the first year, for rejected applications examined, no ratings sheets were found for 3 committees. For funded proposals, there were no ratings sheets for two committees. Overall, there were no ratings sheets for more than half of the applications sampled. The situation was much better for the second intake - there were no TRC ratings in only two of the 12 files reviewed.

For the first intake of applications, the three committees for which there were rating sheets applied different rating schemes. Only one committee had used the criteria and suggested weights provided by the TSRI Secretariat, and applied them consistently. Another TRC retained the criteria, but adjusted some of the weights, and there was minor variation in the assigned weighting among rating sheets for some applications. A third committee for which ratings were found, applied the criteria inconsistently, using only some criteria in one case, adding an extra criterion in another, and giving equal weight to all criteria in all ratings. In one case the final

score did not reconcile with the sum of the individual criterion ratings.

As noted earlier, some TRC chairs provided written comments to the SMC on the process for evaluating proposals after the first intake of applications. The TSRI made some changes to the guidelines, the criteria and the weights for the second intake of applications. Substantial improvement in the consistency of using the identified criteria was observed for the second intake. Ratings sheets were found for all but two applications, and all committees appear to have used the same criteria and weights.

In both years, almost all files contained narrative comments on the proposals. Only a single file in each intake, both from the same TRC, did not have a review summary. However, there was much variability in the comments, and the number of raters for each proposal varied both among and within committees. Some files contained the committee's comments only, other files contained only the comments by individual raters, and some files contained both sets of comments. In the latter two situations, there were cases where divergent observations were noted. In general, the committees that used rating sheets and assigned numeric ratings for each criterion had more detailed comments. One committee prepared detailed feedback for each applicant, but as noted earlier, feedback to applicants was spotty.

The study team found variability in the recommendations. Some were unqualified, some recommended funding at a reduced level, and some were conditional on available funds. Some committees used categories of recommendations whereby some proposals were supported more strongly than others that were still highly meritorious. The review found instances where the TRC recommendations were in variance with the eventual funding decision. The review did not find documents in either the applicant's files or TRC files explaining this difference. It is essential that the explanation of such variance be placed on applicant's files.

In summary, this review found that the individual TRCs operated slightly differently. This supports an impression held by some TRC and SMC interview respondents, focus group participants, and applicants. One applicant raised concern that his broad multi-faceted proposal might have been directed to a committee that emphasized narrow hypothesis testing science, rather than to another committee that recognized the value of innovative exploratory studies that crossed traditional boundaries. Unless this uncertainty is visibly remedied, it may deter some very competent researchers with valuable research interests from applying to the TSRI.

There were pronounced differences among the letters TSRI sent to provide feedback to applicants. For the first intake, only two feedback letters were found, both sent to unsuccessful applicants, and both regarding proposals that had been reviewed by the same committee. That committee had prepared brief narratives to each applicant, in addition to preparing comments to justify its ratings and recommendations. Ironically, one of the two applicants in the sample who did receive any feedback commented about the briefness of the comments, and suggested that a more detailed critique was warranted given the length of the proposal and the time required to

prepare it.

The TSRI Secretariat has improved its performance in notifying applicants of TRC decisions and providing review comments on their proposals. In the second intake, the TSRI Secretariat sent feedback letters to all applicants, both those who had been successful and those whose proposals had been rejected. In some cases, TSRI feedback letters were found even though there were no TRC comments in the file. However, the feedback letters on file tended to be brief. Only one included a suggestion on how the proposal might be improved, and identified another research funding program to which it might be more relevant. Participants in some focus groups and some respondents stated that applicants would like to get more than a paragraph or two of comments. This points to a further measure that TSRI can take to assist researchers design better proposals and prepare better applications.

At the end of each year, TRCs are required to review the progress reports of projects that had been funded previously, as well as to review any new applications received. The file review was not specifically tasked with examining the progress review process, but that information was included in the files examined, and it is part of the role of the TRCs. A cursory examination of the progress review documents revealed differences among the TRC in the forms used, and the comments made. Recommendations for continued funding appeared to have been independent of the actual progress made or reported. This is understandable on the first round, given the initial delays in start-up, but it would be open to question in successive years.

Although the number of new applications in the second intake was smaller than in the first year, the workload of reviewing progress reports represents an extra demand on TRC members. Thorough review of progress reports would require examining the original proposal and any revisions made subsequent to the original TRC review, and assessing the extent to which planned activities had been successfully carried out. It is unclear how extensively this was done. It is also unclear how much time TRCs had left for reviewing the new proposals. Guidelines and standardized forms for use by all TRCs would add rigour to the process for reviewing progress reports.

A number of operational observations warrant mention. First, although each approved application file contains a "checklist" that records the contents of the file, the checklist does not indicate either the date of the item, or whether it is an original or a revised entry. Second, many files include all entries, both originals and all revisions, but in some files the original documents have been removed and replaced by a revised entry. Third, the project files contain a great deal of detailed financial detail, interspersed with "project" information.

In the first year, the start-up of many projects was delayed because of delays in confirming funding. Uncertainties in Contribution Agreements had to be resolved before many researchers could begin to incur project costs. In many cases researchers were asked to submit revised budgets, work plans, and costing details after their original proposals had been approved because of reduced funding allocated to the project and program accountability purposes. It is not clear

what the net effect of the adjusted funding levels was on either the TSRI budget or the scope and timing of the projects.

Appendix

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EVALUATION METHODS AND INFORMATION COLLECTION

A combination of methods was used to gather evidence for addressing evaluation questions. They included review of program documents, administrative records and TSRI application files, review of Internet Websites, case studies, focus groups with nominal group technique, mail-out survey, and face-to-face and telephone interviews.

Information was collected from electronically stored and hard copy documents, and from individuals who are currently, or who have been associated with the TSRI. The documents included TSRI procedures, administrative and financial records, applications, results of technical reviews processes, communication with various groups of individuals, minutes/notes of committee meetings, and reports from other agencies.

A number of customized interview guides and questionnaires were developed to capture information about selected individuals' perspectives and the experiences with TSRI and/or with other research funding programs. The individuals included members of the Science Management Committee, Technical Review Committees, applicants (successful and unsuccessful), collaborating partners, staff of the TSRI Secretariat, officials of research agencies who were responsible for negotiating and implementing funding agreements, officials of other research funding programs, and other Health Canada executives (See table A.1 for the distribution of individuals who provided input to the evaluation). A summary of these groups of respondents and the data collections methods used is presented below.

Members of Science Management Committee - In-depth interviews were held with the co-chairs and a sample of SMC members. These respondents included members from different types of organizations and different regions of Canada. Members of the SMC committee were the only individuals who were not eligible for funding under the TSRI. A total of seven interviews were held.

Members of the Technical Review Committees - Input from TRC members was obtained via four methods: in-depth interviews, participation in focus groups, inclusion in a mail survey in their capacity as principal investigators (successful or unsuccessful applications) and structured interviews in their capacity as principal investigators (successful or unsuccessful applications). Effort was made not to include an individual in more than one method for obtaining input. Members of TRCs are eligible for receiving funding from TSRI, and they are allowed to be collaborators on projects proposed by other applicants.

All TRC committee chairpersons were interviewed, but they were not included in focus groups or surveys. In-depth interviews were held with a total of 10 TRC members (including chairpersons), nine TRC members participated in focus groups, and 8 TRC members were included either in the mail survey or structured interviews in their capacity as principal investigators (successful or unsuccessful applications). . Thus, a total of 28 TRC members provided input to the evaluation.

Principal Investigators - Information was obtained from samples of Principal Investigators (PIs) through mail survey or structured interviews. The information related to the experiences, opinions and suggestions of the PIs, and was not specific to a sample of "projects", i.e., the sampling units were PIs and not projects.

The TSRI database for the two competitions contained a total 340 applications from 279 researchers (some applicants submitted more than one proposal) . A sampling frame of these 279 researchers was created by eliminating duplications in the applications data file so that each PI in the sampling frame had one associated application. The sampling frame was then stratified by priority area and by whether the application was successful or not. This process yielded 10 strata.

Some PIs had no unsuccessful applications, some had no successful applications and some had at least one successful and one or more unsuccessful applications. Because of the small population and the need to stratify by priority area, it was not feasible to create strata based on patterns of mixed success. As a result, it is possible that any PI in the category of "successful applications" may also have had an application which was not successful, and vice versa. This would attenuate observed difference in responses between successful and unsuccessful applicants.

Two random samples without replication, one comprising four PIs and the other consisting of five PIs were drawn from each of the 10 strata. The first sample of 40 PIs was used for structured interviews, and the second sample of 50 PIs was used for the mail survey. The total sample included 90 PIs. To ensure that a sufficient number of PIs were available for focus groups in Toronto, Montreal and Ottawa, some PIs from those locations were removed from the sample and replaced by PIs in the same strata from other locations (See Tables A.,2 and A.3 for distributions of the sampling frame and response rates).

i) **Structured interviews:** All interviews were conducted by telephone. Four of the sampled respondents were unavailable for interviews. They were replaced with PIs from the same strata, region and affiliation. The structured interview process yielded 40 responses.

ii) **Mail survey:** Appropriately customized questionnaires were mailed to PIs in the sample. They were provided self-addressed and stamped envelopes for returning completed questionnaires. The survey period included X-mas holidays, so two e-mail follow-ups were made to increase response rates. The survey yielded a total of 32 responses, 23 from successful PIs and 9 from unsuccessful PIs. The overall response rate was 64% (86% for successful PIs and 36% for unsuccessful PIs).

Collaborating partners: A sample survey was conducted for collaborating partners who were currently working on, or had worked on a TSRI funded project. The TSRI Secretariat provided a sampling frame of collaborating partners who were neither PIs themselves nor members of TRCs. There were 165 collaborators in this sampling frame. A questionnaire was mailed to 75 randomly selected collaborators. The respondents were provided self-addressed and stamped envelopes for returning completed questionnaires. No follow-up was made in this survey due to time constraints. . The survey yielded 34 responses (response rate of 45%)

Staff of the TSRI Secretariat: The evaluation team met with the entire Secretariat staff at the beginning of the study. Subsequently, the evaluation team members contacted the staff when necessary to obtain information and clarification.

Officials of research agencies responsible for negotiating and implementing funding agreements:. A total of 24 individuals were interviewed by telephone. These included 20 officials of non-federal research institutions, 2 officers from other federal government Departments and representatives of Canadian Association of Research Administrators and Association of Universities and Colleges of Canada. The purpose of these interviews was to obtain information on the level of administrative and financial burden on the research agencies related to negotiating and implementing agreements with TSRI, experience with TSRI processes, comparison of TSRI processes with other research funding organizations.

Focus groups: Three focus groups were conducted, one each in the National Capital Region, Montreal and Toronto. A total of 29 individuals (20 PIs with successful applications and 9 TRC members) were invited for focus groups. Seventeen persons attended the focus group sessions, and two provided answers by e-mail. This attendance rate is normal, in particular due to the holiday season and prior engagements of potential participants. Each focus group lasted about two and a half hours and addressed five questions.

Case Studies: In-depth case studies of a sample of 20 successful and 20 unsuccessful applications were conducted to determine the consistency of the review process used by technical review committees. Information for the review came from applicant files as well as information provided by TRC chairpersons. The sample of case studies examined involved the same PIs who were selected for the structured interviews.

The sample reviewed included 28 applications from the first intake, and 12 from the second year. There were 12 one-year projects and 28 two- or three- year projects. Slightly more than half of the applications were submitted by government scientists, but some of these researchers were based in universities or other research institutes.
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Other Research Funding Programs: The evaluation team was asked to compare the TSRI operations and procedures with those of other research funding programs to learn whether there were performance standards that could be used as benchmarks to assess the performance of the TSRI, and to ascertain whether learned lessons by these programs could benefit the TSRI. Given

the specific nature of the TSRI (the use of a targeted research program together with contribution/MOU based funding model), no directly comparable research funding programs were readily apparent. It was decided to exclude funding mechanisms from the comparisons and limit the study to common characteristics.

A total of five national research funders, both federal and non-government were used for comparison purposes. These included two national funding councils, research funding programs in two federal departments, and a non-government program. In one case, the information came from the organization's public web site. Information for the other four programs came from documents provided by those programs, their web sites, and interviews with their representatives.

Confidentiality: All participants were assured that their identity will be kept confidential and not revealed to the Program. Their names will not appear in the report; only aggregated data from their input will be presented.

Quality Control: To ensure quality of information obtained through interviews, interviews with Co-chairs of SMC, TRC and SMC members, representatives of CARA and AUCC, and a small sample of PIs, were conducted by more than one member of the team. The interviewers took independent notes, any differences were reconciled and then synthesized. To ensure consistency, a proportion of the case studies were done in duplicate and corroborated by the two reviewers. Coding of open ended questions in mail surveys were reviewed on a sample basis by an independent reviewer.

Analysis of Information: The analysis methods included qualitative methods and descriptive statistical methods. No attempt was made to calculate sampling variances and estimates due to constraints described earlier.

Table A.1
Distribution of Individuals who provided Input to the Interim Evaluation

Members of SMC	7
Members of TRC	10
Principal Investigators	
- Structured Interviews	40
- Mail Survey	32
Collaborating Partners	33
Contracting Authorities *	24
Total	146

* These are officials of research agencies responsible for negotiating and implementing funding agreements

Table A.2
Distribution of PIs in the Sampling Frame for Interviews and Mail Survey
by Priority Area and Whether the Application Was Successful or Not

	Approved	Not Approved	Total
POPs	16	40	56
Metals	15	68	83
EDCs	15	26	41
Air	20	21	41
Multiple	22	36	58
Total	88	191	279

Table A. 3
Distribution of Completed PI Interviews and Survey Questionnaires
by Priority Area and Whether the Application Was Successful or Not

	Approved	Not Approved	Total
POPs	8	5	13
Metals	9	7	16
EDCS	9	6	15
Air	8	5	13
Multiple	9	6	15
Total	43	29	72

1. Corporate levies will support corporate services in Health Canada only, since Health Canada will administer all contribution agreements associated with the Toxic Substances.