

Contaminated Sites Management Working Group

**ANNUAL REPORT
1996 - 1997**

This document has been reviewed by the members of the federal interdepartmental Contaminated Sites Management Working Group (CSMWG), and approved for publication. Any reference to trade names or commercial products does not constitute recommendation or endorsement for use.

For a copy of this report, contact:
Environment Canada
Hazardous Waste Branch
Place Vincent Massey
351 St.-Joseph Blvd., 12th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-0458

Ce rapport est aussi disponible en français sous le titre:
Rapport annuel 1996 - 1997 du Groupe de Travail sur la Gestion des Lieux Contaminés

CONTAMINATED SITES MANAGEMENT WORKING GROUP ANNUAL REPORT 1996 - 1997

INTRODUCTION

In April of 1995, the Government of Canada approved a coordinated approach to greening of government operations which built on the requirements of the Federal Stewardship initiative of 1992. *A Guide to Green Government* and *Directions on Greening of Government Operations* committed federal organizations to address a number of specific issues in their sustainable development strategies (SDS) and environmental management systems (EMS). The federal contaminated lands issue is a priority under these initiatives.

The Contaminated Sites Management Working Group (CSMWG) is an interdepartmental committee which was established in the summer of 1995, under the auspices of the Federal Committee on Environmental Management Systems (FCEMS). The CSMWG was created to investigate and propose a common federal approach to the management of contaminated sites under federal custody. The committee also provides expert advice to the contaminated sites sub-committee of the Environmental Accountability Partnership (EAP) Steering Committee.

The CSMWG is co-chaired by Environment Canada and National Defence with secretariat services being provided by the Hazardous Waste Branch of Environment Canada. Activities of the working group are cost-shared between Environment Canada and participating members, which include the following departments:

Agriculture and Agri-Food Canada
Canadian Heritage/Parks Canada
Fisheries and Oceans/Canadian Coast Guard
Indian and Northern Affairs Canada
Public Works and Government Services Canada
Solicitor General/Royal Canadian Mounted Police

Department of Finance
National Defence
Transport Canada
Revenue Canada
Treasury Board Secretariat
Natural Resources Canada

The working group provides a forum for the exchange of information and since its inception, the working group has identified needs and priorities and worked towards the development of a consistent federal approach to the management of contaminated sites. The CSMWG is also working to better define the scope of the federal problem and to contribute to the establishment of the size and nature of the federal contaminated sites inventory, in terms of cost, liabilities and risks.

This report is intended to serve as a summary of the working group's various activities, initiatives and accomplishments over the course of 1996-97. These activities are briefly described in the following sections. For further details on the working group's mandate and each of its activities, the reader is directed to the appendices.

RESULTS/ACTIVITIES

CONTAMINATED SITES ON FEDERAL CROWN LANDS - A STATUS REPORT

The summary report was prepared after reviewing responses from 12 federal departments. The responses were provided via a questionnaire prepared by the Contaminated Sites Management Working Group (CSMWG) and the Office of the Auditor General (OAG). The questionnaire was intended to provide the CSMWG with “snap shot” information on the current status of federal contaminated lands as well as help the OAG in its current audit on federal contaminated sites. Excerpts of the summary report can be found in Appendix B.

The information gathered thus far has indicated that there are over 4,000 federal sites that have undergone some form of environmental site assessment. From those assessed, an estimated 2,680 contaminated sites have been identified and 1,395 to 1,595 are suspect. A total of 830 sites have been remediated and a further 167 sites are undergoing remediation efforts. Some of these site assessment and remediation efforts have been prompted by the divestiture of federal properties.

REPORT ON THE DEVELOPMENT OF A GENERIC DEFINITION AND INVENTORY REPORTING FORMAT FOR FEDERAL CONTAMINATED SITES

Following a review of the information provided by the 12 federal departments (described above), it became evident that a consistent method for the recording and reporting of information was needed. This point was subsequently reiterated by the Office of the Auditor General in its November 1996 report.

Consistency in the recording of information, for inventory purposes, will better assist departments in the management of those sites which pose an unacceptable risk to human health and the environment. Other reasons for collecting and collating consistent information include: the need to ensure that high-risk sites are among the first to be addressed, monitoring the status of sites, tracking and demonstrating progress and helping to estimate future clean up costs and possible liabilities.

Through a review of existing definitions and following numerous meetings and discussions, the CSMWG has developed and proposed a generic definition and a template for the consistent recording of information. A copy of the definition and template is located in Appendix C.

WORKSHOP ON THE MANAGEMENT OF FEDERAL CONTAMINATED SITES

In 1996/97, the CSMWG sponsored a series of workshops on the management of federal contaminated sites. Five workshops were held across Canada to present federal custodial departments with information on current approaches on assessment and remediation of contaminated sites in Canada and to solicit input on federal departmental needs in the area of contaminated site management. Over 200

participants, representing most of the federal departments, attended the workshops. The first two days of the workshops, focusing on risk assessment and risk management at contaminated sites, were presented by the Guidelines Division, Science Policy and Environmental Quality Branch of Environment Canada. On the third day of the workshops, technologies for the remediation of contaminated sites were presented by staff of Water Technology International Corp., Burlington, Ontario. A proceedings document was generated from the risk assessment/risk management workshop, a summary of which is presented in Appendix D.

The workshop participants have made several recommendations regarding risk assessment, risk management and the CCME framework. These recommendations can also be found in Appendix D. As well as providing recommendations, the participants have highlighted some outstanding needs such as increased access to training and communication, and the elaboration of a more concise, “user friendly” Risk Assessment/Risk Management manual.

TECHNOLOGIES

A summary of *Site Remediation Technologies: A Reference Manual* can be found in Appendix E. This manual was prepared for the CSMWG by Water Technology International Corp. The content of the manual is based on the presentations made at the workshops described above. The manual is a practical reference for federal employees involved with site remediation work. The purpose of the site remediation component of the workshop was to give a general overview of the types of remedial strategies and technologies available in Canada. The manual provides an overview of these technologies.

The manual begins with a discussion of general remedial strategies. The advantages, disadvantages and relative costs of the various remedial strategies are discussed chapter by chapter. These include: in-situ remediation, pump and treat, off-gas treatment, in-situ containment, and ex-situ treatment. The last chapter provides an overview of monitoring for site remediation. The manual also contains case studies which help to illustrate the various remedial options discussed.

RISK MANAGEMENT

Further to the information provided at the workshops, a Risk Management discussion paper has been prepared to serve as a starting point for the further development of a comprehensive and more descriptive framework for risk management at contaminated sites. A summary of this paper is presented in Appendix F. The risk management framework presented in the document has been separated into two components (Risk Evaluation and Management) which are integral to a coherent framework.

The Risk Evaluation stage of the framework uses either risk-based environmental quality guidelines or a risk assessment to establish remediation objectives for the site. The next step, Risk Management, will take into account various management

considerations as the key issues (as well as the degree of importance) will tend to vary from site to site. In the proposed Risk Management Approach the final decision for a contaminated site will require a balance between the many management considerations and the scientific evaluation of site conditions. The inclusion of non-scientific issues (Management) into the risk management framework will promote effective and accountable decision-making built on strong foundations of science (Risk Evaluation).

PREVENTING SITE CONTAMINATION AT FEDERAL FACILITIES: A GUIDANCE MANUAL

The CSMWG produced *Preventing Site Contamination at Federal Facilities: A Guidance Manual* to assist facility managers and operational personnel who are responsible for the operations of federal facilities. The manual focuses on pollution prevention strategies and highlights best practices currently in use by federal departments and agencies. The manual is divided into three subject areas: Management Practices, Common Operational Practices and Specific Operational Practices. The abstract for this manual can be found in Appendix G.

The manual concludes that a commitment to pollution prevention will be demonstrated in the development of departmental Environmental Management Systems even though federal departments often work independently on common environmental issues.

LEGAL SEMINAR

The CSMWG sponsored a one day legal seminar on January 10, 1997. The seminar was prepared and presented by Justice Canada. The seminar provided a general overview of legal issues associated with federal contaminated lands. Topics included: Land Management Practices of the Federal Crown, Liability of the Federal Crown, Management of Risk and Minimizing Liability. Besides the workshop itself, the deliverables included copies of overheads, a list of participants and a summary of the presentations (see Appendix H).

ACCOUNTING FOR ENVIRONMENTAL LIABILITY

The Auditor General of Canada has observed of the 1995 and 1996 Financial Statements of the Government of Canada, that environmental liabilities should be recognized. As well, the Canadian Institute of Chartered Accountants (CICA) has established the requirements to make provisions for future removal and site restoration costs (see Appendix I).

It is expected that by March 31, 1997, a draft policy on accounting for and reporting of environmental liabilities by the Government will be released for comment by departments and other stakeholders. The drafting of this policy will be the responsibility of the Government Accounting Policy Division, Financial and Contract Management Sector, Deputy Comptroller General Branch of the Treasury Board Secretariat.

FUNDING FOR THE REMEDIATION OF CONTAMINATED FEDERAL LANDS

During 1996/97, CSMWG representatives from Finance and Treasury Board Secretariat held several meetings to discuss the Expenditure Management System as it relates to contaminated sites. Further detail of these discussions is located in Appendix J.

The Expenditure Management System provides the overall direction for managing new funding pressures or priorities, including those that may arise related to liabilities for federal contaminated sites. A key feature of the Expenditure Management System is the requirement for Ministers to reallocate funds from their existing programs to fund new initiatives while ensuring that their spending plans are fully integrated into the Budget process.

In addition to the focus on funding new initiatives through reallocations, the Expenditure Management System provides Ministers with more autonomy and flexibility in managing the resources available to them. Departments are encouraged, for example, to explore innovative approaches to service delivery and to consider opportunities for cost recovery and user fees where appropriate.

Under Treasury Board real property policy, departments may request authority to retain a portion of the net proceeds from the sale of properties under their administration, provided that the funds are directed to recapitalisation of the asset base. Normally this retention would be at 50% but Treasury Board may approve up to 100% retention in cases where there are exceptionally high costs for disposal.

Aside from the flexibility provided under the Expenditure Management System and the potential to retain some of the net proceeds of property divestiture, Ministers have the opportunity to bring funding priorities forward for consideration during the Budget planning process. As well, departments have the option of approaching the Treasury Board for bridge-financing from the Operating Reserve which it manages. In this regard, however, the Treasury Board would function as a banker and departments as borrowers who would have to repay such advances with interest in future years.

DEPARTMENTAL PROGRESS REPORTS

In addition to their involvement in the CSMWG, federal departments have continued to make progress on contaminated sites in their custody during 1996/97. A summary of these advancements is located in Appendix K.

Each progress report outlines the management approach being used by the department, progress achieved and the linkages established with the departmental Environment Management System (EMS) and Sustainable Development Strategy (SDS).

CONCLUSIONS

The CSMWG has concluded the following:

- There is a need for a government policy on the management of federal contaminated sites, including a need for the consistent recording and long term tracking of information related to contaminated sites.
- The CSMWG has put forward a definition and a recording template that should be formally endorsed by the Environmental Accountability Partnership Steering Committee (EAP) and implemented by all custodial departments.
- There is a need for legal clarification on federal liability for contamination at former federal sites (ie. those sites for which ownership has been transferred to a province or the private sector prior to the coming into force of the Treasury Board Real Property Manual Chapter 1-8, Environment).
- There is a need for full participation by Justice Canada and Health Canada.
- There is a need for clarification of the policy requirements related to acquisition and disposal, as stated in Chapter 1-8 of the Treasury Board Manual on Real Property.
- There is a need for Justice Canada to provide more guidance on “due diligence”.
- The EAP should endorse the use of *Preventing Site Contamination at Federal Facilities: A Guidance Manual* and *Site Remediation Technologies: A Reference Manual*.
- There is a need for Health Canada to complete the document on human health risk assessment at contaminated sites.
- There is a need for Treasury Board to develop and promulgate a policy on the Accounting for Environmental Liabilities.
- There is a need for continued action on the management of federal contaminated sites and the CSMWG should continue to undertake its work program in a cost-shared manner.

NEXT STEPS

THE PROPOSED CSMWG WORKPLAN FOR 1997-98

As can be seen in the previous sections, advances have been made on several fronts over the course of the last year and the working group is conscious of the government's need to show continued and determined progress on the subject of federal contaminated sites.

The following list outlines some of the proposed areas of activity for next year:

- contribute towards the development of a framework and policy for the management of federal contaminated sites;
- develop guidance on risk assessment and risk management;
- provide guidance and disseminate information on legal issues associated with contaminated sites, with emphasis on 'due diligence';
- support the development of a federal policy on the accounting of environmental liabilities;
- facilitate information sharing on remediation technologies and support the demonstration of innovative technologies on federal sites; and
- develop a glossary of terminology relevant to contaminated site management in order to improve clarity and consistency.

Continued guidance in these and other areas will contribute to a consistent and coherent approach, across the federal government, to the management of contaminated sites.

LIST OF APPENDICES

- APPENDIX A: ORGANIZATION OF THE CONTAMINATED SITES
MANAGEMENT WORKING GROUP (CSMWG)
- APPENDIX B : CONTAMINATED SITES ON FEDERAL CROWN LAND
- A STATUS REPORT
- APPENDIX C: REPORT ON THE DEVELOPMENT OF A GENERIC
DEFINITION AND INVENTORY REPORTING FORMAT
FOR FEDERAL CONTAMINATED SITES
- APPENDIX D : PROCEEDINGS OF THE WORKSHOP ON THE MANAGEMENT
OF FEDERAL CONTAMINATED SITES
- APPENDIX E: SITE REMEDIATION TECHNOLOGIES:
A REFERENCE MANUAL
- APPENDIX F : RISK MANAGEMENT FRAMEWORK FOR CONTAMINATED
SITES - A DISCUSSION PAPER
- APPENDIX G: PREVENTING SITE CONTAMINATION AT FEDERAL
FACILITIES: A GUIDANCE MANUAL
- APPENDIX H: SUMMARY OF THE LEGAL SEMINAR
ON CONTAMINATED LANDS
- APPENDIX I : ACCOUNTING FOR ENVIRONMENTAL LIABILITIES
- APPENDIX J: FUNDING FOR THE REMEDIATION OF CONTAMINATED
FEDERAL LAND
- APPENDIX K: DEPARTMENTAL PROGRESS REPORTS

APPENDIX A :

ORGANIZATION OF THE CONTAMINATED SITES MANAGEMENT WORKING GROUP (CSMWG)

CONTAMINATED SITES MANAGEMENT WORKING GROUP

AN APPROACH FOR DEALING WITH FEDERAL CONTAMINATED SITES

PREFACE

Under current Greening of Government Operations initiatives, the contaminated sites issue has been listed as a government priority. With the goal of sustainable development in mind, and under current federal stewardship initiatives, custodial departments continue to strive in the areas of site assessment, remediation and the estimation of environmental liabilities. In the context of current budgetary constraints, the government recognizes the need for an efficient and consistent federal approach for dealing with contaminated site issues.

The Contaminated Sites Management Working Group (CSMWG) is an interdepartmental committee which provides expert advice to the Federal Committee on Environmental Management Systems (FCEMS) and the Environmental Accountability Partnership (EAP) Steering Committee. It was established to investigate and propose a common federal approach to the management of contaminated sites under federal custody.

Since its inception in the summer of 1995, the CSMWG has worked towards increasing its federal membership, defining its structure and determining the scope of the 'problem'. Through its activities, it has been able to complete an initial assessment of the current federal situation and identify key areas which need addressing. The following is a proposed approach, with objectives, for addressing the problem of federal contaminated sites in a consistent manner.

Understanding that the issues associated with contaminated sites can be dynamic and complex, the proposed approach is intended to be flexible and allow for the addressing of specific key issues in an efficient and timely manner.

MANDATE

In supporting the FCEMS and the EAP in promoting Greening of Government, the CSMWG's mandate is to investigate, propose and develop a common federal approach for dealing with contaminated sites under federal custody.

STRATEGIC GOAL

To promote and develop a strategically consistent federal approach for the management of contaminated site issues which integrates sustainable development and pollution prevention principles while meeting environmental regulations and protecting public health, safety and the environment.

STRATEGIC OBJECTIVES

The CSMWG will strive to meet the following strategic objectives:

- (1) To establish a forum for discussion and sharing, evaluation and rationalization of the various existing processes, guidelines and policies.
- (2) To better define the scope of the federal problem and to contribute to the establishment of the size and nature of the federal contaminated sites inventory, in terms of costs, liabilities and risks.
- (3) To demonstrate and promote due diligence in the management of contaminated sites.
- (4) To properly mitigate the potential risks to human health and the environment so as to relieve to an acceptable level public concern and liabilities to the government within a reasonable time frame and with the most effective use of affordable resources.
- (5) To develop and promote an overall management approach that will provide for the multi-year funding for the assessment and remediation of high-risk sites.
- (6) To develop proper risk management approaches considering technically, economically, socially and politically acceptable alternative actions tailored to respond to the specific probability and gravity of risks due to contamination or potential contamination.
- (7) To maintain to the extent possible the operational capacity of contaminated or suspected to be contaminated sites in order to disturb as little as possible the delivery of government services to Canadians and the cost to society as a whole.
- (8) To preserve the value of sites that are contaminated or suspected to be contaminated.

SPECIFIC OBJECTIVES

By meeting its strategic objectives, the CSMWG intends to promote a consistent federal approach to achieving the following specific objectives:

- (1) Identification/compilation of sites already known to be contaminated or suspected to be contaminated.
- (2) Assessment of sites suspected to be contaminated or sites that require further investigation to determine the means of remediation.
- (3) Remediation of contaminated sites in descending order of immediate risk to human health and the environment and legal compliance.
- (4) Identification and evaluation of operations that might be the source of further contamination and, once evaluated, modification of these operations where technically, operationally and economically feasible.
- (5) Establishment of federal funding to meet requirements for activities as sites as indicated in the priorities above.
- (6) Clarification of legal requirements.

- (7) Promotion of joint projects to share resources and knowledge processes and technologies.

THE ENVIRONMENTAL ACCOUNTABILITY PARTNERSHIP STEERING COMMITTEE (EAP)

The EAP is co-chaired by the Treasury Board Secretariat (TB) and Environment Canada (EC). It provides information and input to the Sustainable Development Coordinating Committee (an ADM-level working group). EAP fosters the development and application of best practices, such as environmental management systems, to support government sustainable development objectives. *For further information, please contact:* Lesley Wharton, EAP Secretariat (819) 997-7596

EAP SUB-COMMITTEE ON CONTAMINATED SITES

This sub-committee provides a forum for senior level discussion and policy development on issues related to contaminated sites. It is chaired by Transport Canada (TC). *For further information, please contact:* Vic Thom, Chair (613) 990-1401

FEDERAL COMMITTEE ON ENVIRONMENTAL MANAGEMENT SYSTEMS (FCEMS)

The FCEMS is an issue-based interdepartmental committee which advises EAP. It is co-chaired by Natural Resources Canada (NRCan) and Environment Canada (EC). The committee coordinates and disseminates information, shares "lessons learned" and advises EAP on technical matters relating to physical operations of government which have environmental aspects. *For further information, please contact:* Rick Delaney, FCEMS Secretariat (613) 837-5890

CONTAMINATED SITES MANAGEMENT WORKING GROUP DEPARTMENTAL REPRESENTATIVES

Contact Name	Organisation	Tel	Fax
<u>Co-Chairs:</u>			
George Cornwall	Environment Canada	953-1712	953-7643
Ginger Stones	National Defence	995-8850	992-9422
<u>Members:</u>			
Karen Anderson	Environment Canada	997-6798	953-5004
Mel Avery	Royal Canadian Mounted Police	993-3163	993-9003
Peter Boyle	Indian and Northern Affairs Canada	953-1188	953-1885
Jack Cole	DFO/Canadian Coast Guard	998-1614	995-4700
Sylvie Demers	Agriculture & Agri-Food Canada	759-6930	759-6857
Shantha De Silva	Natural Resources Canada	996-6774	995-5719
Esther Hault	Revenue Canada	952-4097	954-0503
Judy Larkin	Treasury Board Secretariat	957-9941	957-2405
Michèle Laurin	Public Works Government Services Canada	736-2851	736-2010
Charlotte Malowsky	Fisheries & Oceans	991-6359	954-5674
Mike M ^c Cormick	Treasury Board Secretariat	957-9678	952-9613
Gordon Owen	Environment Canada	953-0616	953-0509
Rhonda Preston	Transport Canada	990-0516	957-4260
Robert Therrien	Environment Canada	953-6033	953-0509
Jonathan Tigner	Indian and Northern Affairs Canada	953-0313	953-2590
Keltie Voutier	Finance	992-6516	992-3648
Brian Weller	Parks Canada (Heritage)	994-5529	997-3380

APPENDIX B :

CONTAMINATED SITES ON FEDERAL CROWN LAND - A STATUS REPORT

EXECUTIVE SUMMARY: CONTAMINATED SITES ON FEDERAL CROWN LAND - A STATUS REPORT

INTRODUCTION

In the fall of 1996 a Summary Report, "Contaminated Sites on Federal Crown Land - A Status Report" was prepared based on responses received from 16 respondents from a total of 12 federal departments.

Responses were provided to a 'combined' questionnaire prepared by the Contaminated Sites Management Working Group (CSMWG) and the Office of the Auditor General (OAG). A copy of the questionnaire can be found in appendix C of the full report. Information was mutually exchanged between the CSMWG and the OAG.

The questionnaire was intended to provide the CSMWG with a 'snap shot' of the current status of federal contaminated lands. Information was also required by the Auditor General, as part of its audit on Federal Contaminated Sites: Management Information on Environmental Costs and Liabilities. The questionnaire was provided to twelve (12) federal departments in January and February of 1996 and a report was completed in September 1996. The report was presented to the Federal Committee on Environmental Management Systems (FCEMS) and to the Environmental Accountability Partnership Steering Committee (EAP).

SUMMARY OF RESULTS

A summary of some of the salient points is provided in Table 2 and outlined below:

- Over 4000 federal department sites have undergone some form of environmental site assessment and 317 are currently being assessed.
- An estimated 2680 federal contaminated sites have been identified and an estimated 1395 to 1595 sites are suspect.
- At least \$134 M has been spent on the assessment and remediation of contaminated sites.
- 830 contaminated sites have been remediated and 167 are undergoing remediation.
- The use of Canadian Council of Ministers of the Environment (CCME) and other guidance documents, by federal departments, is widespread.
- Divestiture is one of the main driving forces leading to site assessment and remediation.

For a copy of the report contact: Environment Canada - Hazardous Waste Branch
Place Vincent Massey, 351 St.-Joseph Blvd., 12th Floor,
Hull, Quebec K1A 0H3 Telephone: (819) 953-0458

Table 2. Summary of Data

August 23, 1996

	Total Facilities	Contaminated Sites	Suspected Sites	Sites Assessed	Sites Remediated	Past Expenditures	Comments
AAFC	139	7 need remediation 133 low risk 17 non-cont.	0	157 waste disposal sites	10	- \$2.4 M for assess. and remediation - \$ 3.0 M for UGSTs	Completed inventory of 157 waste disposal sites. Replaced or removed 120 (of 150) storage tanks.
F&O (RAM)	1,011	5	37	13	5	NA	Revamping database (RAM). Remediation to date has involved removal of fuel storage tanks and clean-up of areas around these facilities (SCH).
F&O (SCH)	2, 128 harbours	NA. Protocol is being developed	8	Most sites	NA	NA	
F&O (CCG)	Pending ^a						
INAC (IIAP)	2,366 reserves	1930+ (~200 require remediation. ^b)		1,930 Phase II		\$ 40.4 M (ending March 1996)	Site identification to be completed by March 97.
INAC (NAP)	1,246	18	82	139	490	\$ 9.5 M	Remedial work at 10 highest priority sites completed in 1995.
DND	NA	527	500	259 complete 268 ongoing	62 complete 149 ongoing	\$ 56.4 M (ending 1996)	300 of the 500 suspected sites expected to be contaminated in excess of CCME criteria.
TC (OAG)	141 airports	17 Class I	5	97 complete	25 ongoing &/or complete	\$ 3.7 M	-Remaining sites to be assessed through property transfer.
TC (HPD) ^c	549 sites 204 harbours	25	5	21 complete 44 ongoing	4 complete 8 ongoing	\$ 2.5 M	-41 baseline assessments in NF region
TC (S&S)	1,420	NA	300-500	1,315 Phase I	197	est. \$ 4-6 M	-430 may require remediation ^d
NRCan	67 (also leases 62 bldgs from fed/prov.)	4	32	16	1.5	\$ 823 K	24 USTs in service, of which remaining 16 to be assessed over next 2 yrs.

	Total Facilities	Contaminated Sites	Suspected Sites	Sites Assessed	Sites Remediated	Past Expenditures	Comments
CH (Parks)	36 parks & 131 historical sites	8+	144	57	15 completed 8 ongoing	\$ 260 K (96/97)	49% of contamination from non-govt. activity. Electronic version of inventory by 1999.
EC	550 (~2000+ hydrometric stations)	2 class I 5 non cont.	144	148 initial screenings	1 1 ongoing	est. \$ 1.8 M (incl. Parks)	800 low risk (hydrometric) stations identified as having mercury manometers and low potential for contamination.
PWGSC	191		123	31 5 ongoing	15	\$ 6.4 M	Excludes costs for 2 former US military sites.
RCMP	1274 owned (343 leased)	4	NA	3 (ranges) 1 ongoing	3 (ranges)	NA	Will again conduct total land survey in 1996.
CSC	49 (approx.)	NA	NA	NA	NA	NA	
Health (MSB) (HPB)	757 total	NA NA	6 UGSTs NA	NA NA	NA NA	\$ 700 K NA	MSB currently completing evaluation. 6 UGSTs scheduled for removal 96/97.
Totals	12260 (owned)	2680	1395-1595	4183-6311 ^e 317 ongoing	830 167 ongoing	\$ 134 M ^f	Cost data for only 9/12 depts. & excludes F&O, RCMP, CSC

- a. Coast Guard could not provide information at this time but was reviewing its inventory. Response is pending.
 - b. Anywhere up to 10% of the sites assessed are estimated to require remediation.
 - c. Land boundaries at TC(HPD) are being verified in order to proceed to divestiture.
 - d. Of the 1315 known sites, over 50% never had storage tanks, 15% have received different degrees of remediation and based on past experiences, about 33% may require some remedial works.
 - e. 6311 would include most of F&O(SCH) sites.
 - f. Projected costs cannot be reasonably estimated at this time based on lack of data and unclear definition of types of costs reported.
- Note: NA means Not Available, UGST is Under Ground Storage Tank.

APPENDIX C:

REPORT ON THE DEVELOPMENT OF A GENERIC DEFINITION AND INVENTORY REPORTING FORMAT FOR FEDERAL CONTAMINATED SITES

**REPORT ON THE DEVELOPMENT OF
A GENERIC DEFINITION AND INVENTORY REPORTING FORMAT
FOR FEDERAL CONTAMINATED SITES**

Developed by:

The Contaminated Sites Management Working Group

September 1996

CONTAMINATED SITES MANAGEMENT WORKING GROUP

REPORT ON THE DEVELOPMENT OF A GENERIC DEFINITION AND INVENTORY REPORTING FORMAT FOR FEDERAL CONTAMINATED SITES

INTRODUCTION

A clear and simple definition of a contaminated site is required in order to ensure the appropriate and consistent reporting of inventory information. Consistency in reporting will better assist in the management of those sites which pose an unacceptable risk to human health and the environment.

A need for consistency in reporting was made evident following a review of information provided by 12 federal departments in response to a questionnaire (February, 1996) which was jointly developed by the Office of the Auditor General (OAG) and the Contaminated Sites Management Working Group (CSMWG).

Reasons for collecting and collating (consistent) inventory information include:

- ensuring high-risk federal sites are consistently among the first to be remediated
- monitoring and ensuring that the government discharges its stewardship of federal real property with due diligence and following principles of sustainable development.
- tracking progress
- could (eventually) assist in estimating and reporting the government's potential clean up costs

In the summer of 1996, the Contaminated Sites Management Working Group (CSMWG) assembled Task Groups to (1) investigate and develop a simple definition for a 'contaminated site' and (2) investigate and develop a template for the consistent reporting of federal department's (contaminated site) inventory information.

Following a review of existing definitions (from various jurisdictions across the world) and after several meetings, the following was ascertained:

- Not all contaminated sites are "equal". Some sites, although contaminated, pose less risk while others pose greater risk. Emphasis should be placed on those sites posing an unknown or unacceptable risk to human health and the environment.
- a simple definition should be developed, one which casts a broad net and captures a wide range (types) of contaminated sites. It would also be easier to obtain consensus on a simple definition.
- While the definition should remain generic, it should be closely linked to a simple reporting format which more easily allow for specific information to be presented. (Departments are responsible for their own inventories which would likely

- contain more detailed information. This generic format is intended to assist with compiling or collating overall inventory information.)
- A reporting structure would allow for (better) defining the various classes (risk) of sites and allow the status of the sites (ie. remediated, not remediated, being managed, unknown) to be presented.
 - The reporting structure would focus on reporting sites which are 'of concern'
 - The definition and reporting package should include the generic steps taken for addressing a site.
 - Historical cost data should be included for broad categories of work. Until the development (TBS) of better means to estimate 'liabilities', no such information will be currently provided.

The following generic definition and reporting structure are intended to facilitate the consistent reporting of inventory information and focus on listing sites where unknown or unacceptable risks exist. These sites are felt to be of primary concern.

A distinction has been made between (a) sites known to be contaminated, but which are managed in such a fashion as to pose an acceptable risk to human health and the environment versus (b) those sites which are suspected of being contaminated and (c) those sites which are known to be contaminated but have yet to be addressed.

CONTAMINATED SITE

Defined as a site at which substances occur at concentrations: **(1)** above background levels and pose or are likely to pose an immediate or long term hazard to human health or the environment, or **(2)** exceed levels specified in policies and regulations.

For the purposes of this definition:

- Background levels refer to the ambient levels of a contaminant in the local area of the site under consideration.
- The above term is intended to include sites which are contaminated but are being properly managed. It also includes sites that are known or suspected of being contaminated but have yet to be addressed. The later group are considered to be of concern and are contaminated sites requiring action.
- The above term was not intended to include sites which are only covered by debris, or are simply "aesthetically" unpleasant. Although such sites could be "hazardous", relative to occupational health and safety, they were not considered to be "contaminated" for the purposes of this definition. Similarly, heat, sound, vibration are excluded as "contaminants" within the scope of the above definition, although radioactive waste is considered.

STEPS FOR ADDRESSING A CONTAMINATED SITE

The following steps describe a generic approach for addressing contaminated sites. The steps were derived from documentation developed under the National Contaminated Sites Remediation Program. It is not necessary to proceed through all the steps before making a decision and the order of the steps can vary.

- Identify suspected site - based on activity on or near site
- Classify the site using the National Classification System for Contaminated Sites
- This can be repeated once detailed assessment and field testing information is available
- Site assessment - review of historical information and development of field testing program
- Field testing program - to characterise contamination and site conditions
- Detailed testing program - more in-depth study should more specific information be required
- Develop remediation or risk management plans - including costing
- Implement site remediation or risk management plans
- Confirmatory sampling and final reporting - will provide status of site
- Long term monitoring - if required

PROCESS FOR REPORTING ON THE MANAGEMENT STATUS OF CONTAMINATED SITE

The following information is geared towards improving the ability to report, in a consistent fashion, pertinent information related to the status of contaminated sites within a custodial departments inventory. For the purposes of this reporting format, the management status of contaminated sites should be presented, as follows:

Department Name:

Province/Region (optional):

Departmental Identification Number (optional):

Date: June 01, 19XX

Summary Table (example):

(A) Site Classification	(B) total number of sites	(C) number of remediated sites	(D) number of sites undergoing remediation	(E) number of managed sites	(F) contaminated Sites Requiring Action
Class 1					
Class 2	100	20	10	50	100-20-10-50=20
Class 3					
Class N		Not applicable		Not applicable	Not applicable
Class I (& all suspected sites)		Not applicable		Not applicable	
Totals					20

Summary of (Historical) Costs: (example)

	Assessment	Remediation	Management
FY 95/96	\$500K	\$3.5M	\$600K
FY 96/97			
Total	\$500K	\$3.5M	\$600K

For the purposes of the above:

Classification means: a site classified according the CCME National Classification System for Contaminated Sites (Report CCME EPC-CS39E). Types of classification include:

- Class 1: Action Required
- Class 2: Action Likely Required
- Class 3: Action May be Required
- Class N: Action Not Likely Required
- Class I: Insufficient Information

Remediation means: the clean up of the site to pre-determined objectives which allow for the safe and intended (land) use of the site (Objectives would be based on existing criteria, modified criteria or would be site specific and developed using risk assessment methods).

Risk Management means: the selection and implementation of a strategy for control of a risk, followed by monitoring and evaluation of the effectiveness of that strategy. The

decision to select a particular strategy may involve considering the information obtained during risk assessment. Implementation typically involves a commitment of resources and communication with affected parties. Monitoring and evaluation may include environmental sampling, post-remedial surveillance, prospective epidemiology, and analysis of new health risk information, as well as ensuring compliance. (A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines, CCME March 1996)

Suspected Site means: a site where there is reason to believe contamination may exist. Suspected sites would fall into Class I of the National Classification System.

CONCLUSIONS

A definition and reporting format have been developed to assist with the consistent reporting of federal contaminated site (inventory) information. The suggested definition is intended to be general and encompass a wide range of contaminated sites. Linked to the definition is a reporting format which allows for more detailed information to be provided. The intent is to indicate those sites where unknown or unacceptable risks exist.

RECOMMENDATIONS

The following recommendations are made by the Task Groups

- Approve definition and reporting requirements
- Have definition reviewed by CSMWG Task Group dealing with legal issues
- The level of acceptable risk is linked to the intended land use therefore changes in land use need to be tracked. Recommend tying pertinent inventory information in to a "land registry" system.
- Have OAG review the definition and reporting structure for comment
- Have departments begin reporting by June of 1998 (or earlier)

APPENDIX D :

PROCEEDINGS OF THE WORKSHOP ON THE MANAGEMENT OF FEDERAL CONTAMINATED SITES

EXECUTIVE SUMMARY: PROCEEDINGS OF THE WORKSHOP ON THE MANAGEMENT OF FEDERAL CONTAMINATED SITES

The Contaminated Sites Management Working Group sponsored a series of workshops on the management of federal contaminated sites. Five workshops were held across Canada to present federal custodial departments with information on current approaches on assessment and remediation of contaminated sites in Canada and to solicit input on federal departmental needs in the area of contaminated site management. Over 200 participants, representing most of the federal departments, attended the workshop. The first two days of the workshops presented the existing suite of CCME guidelines, focusing on general guidance for risk assessment and risk management at contaminated sites. This was presented by the Guidelines Division, Science Policy and Environmental Quality Branch of Environment Canada who led the development of scientific tools for contaminated sites assessment and remediation under the auspices of the Canadian Council of Ministers of the Environment (CCME). The workshops were held at the following dates and locations:

Ottawa	October 15-17, 1996
Halifax	November 12-14, 1996
Montreal	October 29-31, 1996
Edmonton	December 4 - 6, 1996
Vancouver	December 9-11, 1996

Several CCME tools are intended to deal with contaminated sites in Canada (i.e., National Classification System, 1991 Interim Criteria, 1997 Soil Quality Guidelines, Ecological Risk Assessment: General Guidance, etc.). These tools were presented to the participants with a special emphasis on how they relate to the step-wise assessment and remediation of contaminated sites. Finally, participants were involved in case study exercises to ensure adequate understanding of the key CCME scientific tools and their role in risk management.

Workshop participants made several recommendations regarding risk assessment and risk management at federal sites, and their existing and future needs in ensuring a consistent approach to contaminated site assessment and remediation. In general, the participants strongly supported the use of CCME scientific tools at federal sites. However, some outstanding needs were identified as important “next steps” for making consistent, science-based decisions at federal sites:

1. Access to training and communication particularly for Ecological Risk Assessment and Risk Management.
2. The need was expressed for additional soil quality guidelines and broader land use categories to address federal needs. Common priorities were the development of soil quality guidelines (TPH, PCBs, track 1 substances, pesticides) and the natural/wildland land use category.

3. A concise, user friendly Risk Assessment/Risk Management manual for use across departments which explains the steps and tools for identifying, assessing and managing sites. The information from these workshops will provide a basis for the development of a risk management framework.

More information can be found in the workshop proceedings available from:

Environment Canada
Hazardous Waste Branch
Place Vincent Massey
351 St.-Joseph Blvd., 12th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-0458

OR

Environment Canada
Science Policy and
Environmental Quality Branch
Guidelines Division
Place Vincent Massey
351 St.-Joseph Blvd., 8th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-7919

**APPENDIX E:
SITE REMEDIATION TECHNOLOGIES:
A REFERENCE MANUAL**

EXECUTIVE SUMMARY:

SITE REMEDIATION TECHNOLOGIES: A REFERENCE MANUAL

In 1996, the CSMWG presented a series of workshops titled "Workshop on the Management of Federal Contaminated Sites". The third day of the workshops was prepared and delivered by Water Technology International Corp. to employees of federal departments interested in site remediation. Five workshops were held, one in each of the geographic regions of Canada. This manual was written following the delivery of the workshops and contains all of the material presented in the technology section of each workshop. The basic presentation at each workshop was the same but the presentations were modified slightly over time based on feedback received and the case studies changed from location to location. The workshops were held at the following dates and locations:

Ottawa	October 15-17, 1996
Halifax	November 12-14, 1996
Montreal	October 29-31, 1996
Edmonton	December 4 - 6, 1996
Vancouver	December 9-11, 1996

The manual is intended to be a useful reference for federal employees involved with site remediation work. The purpose of the workshops was to provide a general overview of the types of remedial strategies and technologies available in Canada. This purpose was reflected in the manual.

Another purpose of the workshops was to promote technology based solutions to site remediation problems. Most site remediation technology is relatively new and is not well known by consulting firms and government administrators. By presenting the new generation of technical solutions, use of these solutions may increase.

The manual introduces general remedial strategies. This includes a description of the general types of contaminated sites, the classes of contaminants, and the mechanisms of subsurface contaminant transport.

Each general remedial option and its advantages, disadvantages and relative costs are discussed chapter by chapter:

In-situ Remediation: technology types discussed are soil vacuum extraction, bioventing, bioslurping, land farming, soil flushing, thermal, electrokinetic extraction, phytoremediation, natural attenuation, soil mixing, pump and re-inject, air sparging, and treatment walls.

Pump and Treat: technology types discussed for treatment of extracted groundwater are oil/water separators, pre-treatment, air stripping, steam stripping, advanced oxidation, carbon adsorption,

biological, membrane separation, oxidation/reduction, ion exchange, precipitation, coagulation/flocculation and filtration.

Off-gas Treatment: technology types discussed for treatment of off-gases and vapours are dust removal technologies, carbon adsorption, condensation, incineration, flaring, catalytic oxidation, thermal reduction, photo-oxidation, biofilters and recycling.

In-situ Containment: technology types discussed to contain groundwater and contamination are pumping, cut-off trenches/drains, slurry walls, grout curtains, sheet piles and surface caps.

Ex-situ Treatment: technology types discussed for the treatment of excavated materials (soil, sediment, etc.) are pre-treatment, biological, chemical treatment of organics, metal extraction, thermal and immobilization.

The last chapter includes an overview of monitoring required in site remediation work. Monitoring is divided into two broad types: project monitoring and post-project monitoring. Project monitoring occurs while the site is being remediated. Post-project monitoring occurs in the weeks, months and years after the remediation phase is completed. Some tips on planning the monitoring of a project are given.

The Site Remediation Technology Manual appendices contain the case studies presented at the workshops. The case studies included are the Gloucester (Ont.) pump and treat project, the CFB Borden (Ont.) in-situ remediation research project, the ex-situ bioremediation pilot project at CFB Trenton (Ont.), the remediation of a fire-fighter training area at Sept-Iles Airport (PQ), the pump and treat project at Rigaud (Que.), the soil washing project at Ste-Annes-des-Plaines (Que.), the ex-situ bioremediation of soil at a Coast Guard station (Nfld), the Hamilton Harbour (Ont.) sediment bioremediation pilot project and the Lyell Island (BC) ex-situ bioremediation project.

For a copy of the manual contact:

Environment Canada
Hazardous Waste Branch
Place Vincent Massey
351 St.-Joseph Blvd., 12th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-0458

OR Water Technology International Corp.
Site Remediation Division
867 Lakeshore Road
Burlington, Ontario L7R 4L7
Telephone: (905) 336-4855

APPENDIX F :

RISK MANAGEMENT FRAMEWORK FOR CONTAMINATED SITES - A DISCUSSION PAPER

EXECUTIVE SUMMARY: RISK MANAGEMENT FRAMEWORK FOR CONTAMINATED SITES - A DISCUSSION PAPER

Risk management for contaminated sites is inevitably a balancing act of many diverse factors such as social, economic, political, legal, technical, and scientific issues. In the risk management framework presented in “Risk Management Framework for Contaminated Sites - A Discussion Paper”, risk management has been separated into two components which are integral to a coherent risk management framework: **Risk Evaluation** and **Management**. The discussion and guidance for these components are not definitive although the use of CCME (Canadian Council of Ministers of the Environment) scientific tools is explicitly explained. This discussion paper is intended to serve as a starting point for the further development of a comprehensive and more prescriptive framework for risk management at contaminated sites.

The planning stage of a risk management strategy is critical to the overall success of the remediation of the contaminated site. In the planning stage, site managers must articulate the departmental mandates and policies, identify the departmental roles and responsibilities, solicit public/stakeholder input, identify the problems, set protection goals and identify any logistic or resource restrictions. The scientific components of the planning phase include classifying and characterising the site, and assessing the degree of contamination for the site’s intended land/water uses. These management and scientific components are then integrated into a problem statement and goals for a remediation strategy.

The **Risk Evaluation** stage of the framework uses either risk-based environmental quality guidelines or a risk assessment to establish remediation objectives for the site.

The next step is the **Management** stage where management considerations are evaluated. Key issues for consideration will vary from site to site as will the degree of importance of any issue. In this stage of the framework, site managers should evaluate the remediation options available and their potential to increase risk at the site, the costs and benefits associated with each remediation option, the degree of uncertainty associated with the risk-based remediation objectives, and the balance between human and ecological health that can be achieved with remediation. Also, any remediation strategy should comply with any legal/regulatory obligations, address public/stakeholder concerns and suggestions, and ensure auditing and monitoring mechanisms are included in the strategy.

In the proposed framework, the final **Risk Management** decision for a contaminated site requires a balance between management considerations and the scientific evaluation of conditions required at the site for human health and environmental protection. To ensure that the best decision has been implemented at a site, all decisions and rationale need to be clearly documented and the results of any remediation strategy must be compared to the goals established for the remediation of the contaminated site. The auditing and/or monitoring mechanisms will indicate

whether the goals for the site have been met, whether the risk management decisions should be re-evaluated and whether any residual risk at the site must be documented and managed.

At present, the role of science in risk management is relatively well developed. The suite of CCME scientific tools (such as the National Classification System, the 1991 Interim Criteria, the 1997 Soil Quality Guidelines, Guidance for Risk Assessment) can be used to classify, characterise, and assess sites, and to develop site-specific remediation objectives. These tools have been developed for application at most sites across the country and therefore are valuable for providing a consistent scientific basis for risk management decision-making.

It is much more difficult to achieve the same consistency when addressing the non-scientific issues associated with contaminated site management because not all issues will be a concern at all sites, and their relative significance can vary across sites and across departments. Therefore the guidance provided here on management considerations is necessarily general, but their inclusion in this risk management framework is important for effective and accountable decision-making built on a strong foundation of science.

For a copy of the discussion paper contact:

Environment Canada
Hazardous Waste Branch
Place Vincent Massey
351 St.-Joseph Blvd., 12th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-0458

OR

Environment Canada - Guidelines Division
Science Policy and Environment Quality Branch
Place Vincent Massey
351 St.-Joseph Blvd., 8th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-7919

APPENDIX G:

PREVENTING SITE CONTAMINATION AT FEDERAL FACILITIES: A GUIDANCE MANUAL

EXECUTIVE SUMMARY:

PREVENTING SITE CONTAMINATION AT FEDERAL FACILITIES: A GUIDANCE MANUAL

"Preventing Site Contamination at Federal Facilities: A Guidance Manual" is a product of the Contaminated Sites Management Working Group (CSMWG). The intended audience for this manual is facility managers and operational personnel who are responsible for the operation of federal facilities.

The objective of this manual is to address pollution prevention practices for the most common activities on federal properties which may lead to the formation of contaminated sites. The manual focuses on pollution prevention strategies for the prevention of site contamination and highlights best practices currently being used by federal departments and agencies so that others within the federal government may utilize them.

The manual is divided into three subject areas: Management Practices, Common Operational Practices and Specific Operational Practices.

Each chapter is designed to stand alone and to outline key concepts for pollution prevention for each operational activity. The information contained in each chapter has been solicited from representatives of the CSMWG and the best practices presented have been derived from a number of sources including existing federal regulatory practice and literature.

Management Practices addresses the following topics: operational procedures; emergency procedures; training and communication; health and safety; record keeping; preventative maintenance; land transfer; land leasing; land use; selection of contractors; and environmental review. Each section addresses initiatives aimed at preventing site contamination.

Common Operational Practices includes chapters on the following topics: spill response; chemical use, storage and handling; petroleum product use, storage and handling; maintenance, construction and deconstruction; fleet maintenance; solid and hazardous waste disposal; and wastewater handling.

Specific Operational Practices includes chapters pertaining to: pesticide use, storage, handling and disposal; fire fighter training facilities; firing ranges/unexploded ordnance; organic waste disposal; dredge materials handling; and aircraft deicing.

Chapters addressing operational practices identify selected compliance standards applicable to the subject area, as well as best practices from the perspectives of minimizing toxic materials use and waste generation through materials substitution or process alteration, facility design and operation and maintenance procedures.

The manual concludes that although federal departments often work independently from each other on common environmental issues, the government commitment to pollution prevention is being demonstrated in the development of departmental Environmental Management Systems. The manual recommends that projects which promote sharing of interdepartmental expertise be encouraged. The manual also recommends that federal guidance be updated and further developed for wastewater treatment and water conservation, hazardous waste management, solid waste minimization, pesticide management and firing ranges and unexploded ordnance.

The manual will be distributed to all federal departments. Additional copies are available from:

Environment Canada
Hazardous Waste Branch
Place Vincent Massey
351 St.-Joseph Blvd., 12th Floor
Hull, Quebec K1A 0H3
Telephone: (819) 953-0458

APPENDIX H:

SUMMARY OF THE LEGAL SEMINAR ON CONTAMINATED LANDS

The CSMWG sponsored a one day legal seminar on contaminated lands on January 10, 1997. The seminar was prepared and presented by Justice Canada to federal staff. The following summary of the seminar was prepared by Justice Canada.

SUMMARY OF THE LEGAL SEMINAR ON CONTAMINATED LANDS

Constitutional Framework of Land

The *Constitution Act, 1867* specifically grants the federal government the power to legislate in respect of lands which it owns or has an interest in. On the other hand, Provinces have constitutional control over property and land management within their respective province. They have exclusive power to legislate regarding contaminated sites on non-federal land within their boundaries.

Provinces cannot legislate regarding federal Crown property nor can they abridge federal property rights. However, the federal government may pass laws applicable to federal land within provincial boundaries on matters which normally only the provinces have jurisdiction over.

Provincial legislation cannot bind federal Crown lands. As a result, the provincial legislation of general application will very unlikely apply directly to federal land use or clean-up requirements.

Legislative authority

The principal statute governing acquisition, disposition, leasing and licensing of land is known as the *Federal Real Property Act* (F.R.P.A.). Subsection 18(1) of the F.R.P.A. provides for the administration of federal real property by the Minister for the purpose of that department. Consequently, this provision works with Departmental Acts to provide that Ministers administering programs have administration of those lands held by that program for the program purposes. Section 4 of the F.R.P.A. provides the Minister with the authority to enter into an acquisition, a disposition, including a lease, etc. and also provides authority to give or acquire a license.

Federal and provincial government relationship

Title is vested in the Crown. There is only one Crown although it may be termed as in Right of Canada or in Right of a Province. Therefore, what is transferred between the federal government and the provincial government is not title but rather administration and control.

Federal Liability

Certain transactions such as acquisitions, leasing and dispositions may give rise to liabilities. Further, where land poses danger to health and safety, liabilities arise.

1. Contractual solutions

The federal government can deal with private parties in regard to land and can negotiate conditions governing the transfer of land to those parties. There are five elements that should be incorporated into Agreements of purchase and sale: (i) representations and warranties; (ii) exclusions; (iii) covenants; (iv) indemnities; (v) conditions of closing. Financial security arrangements should also be provided for.

There also exists an unusual form of transaction: the “As Is” transaction. The purchaser usually assumes all liabilities relating to the property. However, due to liability concerns in regard to government land there is a limited use of “As Is” clause where the federal government is disposing of property.

Leasing usually covers an extended period of time and involves substantial rental payments. A lease can provide that the tenants will comply with the provisions of federal and provincial enactments. A lease can also provide that on its termination, the tenant surrenders the premises to the landlord in the conditions required in the lease. There can also be express or implied covenants in a lease respecting the fitness of the property for the purpose lease. The interpretation of these and other covenants will depend on all the relevant circumstances relating to the landlord-tenant relationship.

There are various factors to be considered in interpreting environmental obligations in regard to a lease: (i) respective positions of landlord-tenant, i.e. their expertise; (ii) terms of lease; (iii) context, i.e. factual circumstances of the leasing relationship.

In some Court cases, based on the context of the fact situation, the Courts have viewed today’s commercial world to be such that, unless a lease otherwise provides, it is to be implied within the lease that lands are to be returned uncontaminated.

Overview of the Environmental Liability of the Federal Crown for Contaminated Sites

Real property activities can give rise to liability implications. Here are some examples:

- where the federal Crown disposes or acquires real property that is contaminated;
- a discovery of contamination on federal real property;
- a spill or discharge of a contaminant that occurs on federal real property.

There are two types of liability: civil liability and criminal liability.

1. Civil Liability:

Environmental statutes include provisions that make persons subject to civil liability for loss or damage resulting from pollution. Loss or damage can include injury to persons, loss of use or enjoyment of property and pecuniary loss.

In addition, common law causes of action may be used to address environmental wrongs in nuisance, trespass, negligence and strict liability.

The current liability of the Crown in tort is provided under the *Crown Liability and Proceedings Act* (C.L.P.A.)

Section 3 of the C.L.P.A. states that the Crown is liable in tort for damages in respect of a breach of duty attaching to the ownership, occupation, possession or control of property.

Thus, where the federal Crown owns and occupies the premises, or occupies but does not own the premises, liability could be incurred by the federal Crown in circumstances where contaminants escape from landfill sites and cause harm or damage to the surrounding environment.

2. Criminal liability:

In recent years, Parliament has passed statutes which are expressly binding on the Crown (e.g. *Canadian Environmental Protection Act*, *Fisheries Act* or *Transportation of Dangerous Goods Act*). Consequently, express provisions remove the immunity enjoyed by the Crown, Crown servants and agents.

There are three categories of offenses under environmental legislation for which the Crown may be liable:

- offenses in which mens rea (the guilty mind) must be established;
- offenses of strict liability in which mens rea need not be established but where the defense of reasonable belief in a mistaken set of facts or the defense of due diligence (reasonable care) is available;
- offenses of absolute liability where it is not open to the accused to exculpate himself.

Most environmental offenses are in the second category. Courts have established factors to consider when determining what constitutes “reasonable care”:

- the standard practice of care and whether or not the accused acted in accordance with that standard of care;
- the degree of knowledge or expertise of the accused;
- the alternatives available to the accused to avoid harm;
- the matters beyond the control of the accused; and
- the likelihood and gravity of the harm, etc.

R. v. R.

If the statute is expressly binding on the Crown, government departments can enforce legislation against other departments for violations of these statutes. Consequently, federal departments can prosecute other federal departments for breaches of environmental legislation.

Environmental Liability at Common Law

The common law is a body of legal principles that has evolved through decisions made by judges in our civil courts. In many instances these principles have been replaced by statute law. However, statutes have not replaced all of the common law principles.

The most commonly used tort to redress wrongs to the environment are nuisance actions. These type of actions have been allowed for the closure of a licensed garbage dump, oil spills in public navigable waters. Private nuisance involve actual physical damage to property, injury to health, etc. For a private action to succeed, the plaintiff must have a legal interest in the property affected and demonstrate the unreasonableness of the character and extent of the interference.

An action in negligence is based on a duty of care owed by the defendant to the plaintiff. In negligence three elements exist: (i) a duty of care; (ii) a breach of that duty; and (iii) damages or injuries arising from the breach. The standard of care in negligence actions is what the reasonable person of ordinary prudence would do in the circumstances. For government to be found liable for improper regulatory enforcement, elements of negligence must be proven.

There are other principles or rules that can give rise to liability implications. They are: (i) fiduciary obligations of the federal Crown; (ii) nature of the disclosure to the purchaser; (iii) Treasury Board Policy pertaining to environmental considerations and real property management; and (iv) successor liability.

For a successful defence of due diligence in an environmental prosecution, departments must be able to show that all reasonable care was taken to prevent the prohibited act, etc.

Steps that may be taken within the federal departments:

- verify if there are any physical signs of contamination, i.e. stained soil;
- monitor areas that are likely to be contaminated;
- conduct, if necessary, the relevant technical tests for areas of concern;
- produce a history of site and business activity;
- develop surveys of the area;
- describe the adjoining properties;
- verify to see if there are any legal proceeding in respect to that real estate, etc.

The Proposed Revisions to the *Canadian Environmental Protection Act*

The original *Canadian Environmental Protection Act* (CEPA) was proclaimed in 1988. Following a mandatory review which started in 1994, a revised Act was proposed in December, 1996.

As legislation, CEPA has general application and therefore applies to all individuals, companies and governments in Canada. However, the proposed Part IX (actual Part IV), is an exception in that it applies exclusively to the "Federal House". This Part has not changed in its application. Consequently, it applies to all federal departments, boards and agencies of the Government of Canada; federal works and undertakings and aboriginal land, federal land and Crown corporations as defined in the *Financial Administration Act*. Proposed revisions to the Act specifically mentions that it applies to aboriginal lands.

Section 208 of the proposed CEPA was expanded to cover objectives of the Codes of Practice. This section imposes a new duty on the Minister of the Environment. This duty consists of establishing objectives, guidelines and Codes of Practice for the purpose of carrying out the Minister's duties and functions related to the quality of the environment. However, when applied to Crown corporations, objectives, guidelines and Codes of Practice shall not impose any requirements that are more stringent than those applicable to persons in the private sector.

In the proposed CEPA, the requirement for ministerial concurrence has been deleted as it constituted a barrier to the development of regulations. However, the Department of the Environment (D.O.E.) has agreed to consult all concerned and affected departments before any regulations are proposed to the Governor in Council for approval.

The Regulatory powers have been expanded to cover 24 different aspects of the management of a substance. This revised Part has a direct application on the clean up of contaminated federal lands.

Here are the improvements made in the proposed Part IX of CEPA:

(i) the revised CEPA will provide primary and not residual authority to develop environmental regulations; (ii) it is not enough, any more, for other statutes to have the regulatory authority to preclude regulatory action by D.O.E.; (iii) regulatory action by D.O.E. will be permitted if no regulations have been made under another statute; (iv) the regulations made under Part IX will not take precedence over Regulations made under other federal legislation; and (v) CEPA does not have express overriding authority over other federal legislation.

APPENDIX I :

ACCOUNTING FOR ENVIRONMENTAL LIABILITIES

ACCOUNTING FOR ENVIRONMENTAL LIABILITIES

Environmental liabilities are currently disclosed in a note to the Consolidated Financial Statements of the Government of Canada. The Auditor General of Canada has observed in a number of chapters in his report to Parliament and in his opinion on the 1995 and 1996 Financial Statements of the Government of Canada that environmental liabilities should be recognized. The Canadian Institute of Chartered Accountants (CICA) has established the requirement to make provision for future removal and site restoration costs, has published a research report into accounting and financial reporting issues relating to environmental costs and liabilities and has issued a draft statement of principles in this area.

The gist of the CICA's position is that a liability exists when damage occurs to the environment and should be recognized in the financial statements when the entity is obligated to incur the costs of remediation. In view of the difficulty of estimating the amount of the liability, the amount to be accrued should be management's best estimate, based on current and existing legislation and technology, of the cost of remediation of the obligations existing at year end. Quantification is a natural extension of the contaminated site assessment process where required remediation is determined and a cost estimate prepared.

The existence and recognition or disclosure of an environmental liability is independent from the funding process. Liabilities which meet the test of recognition must be booked even though no funding has been identified for their remediation.

The Government Accounting Policy Division, Financial and Contract Management Sector, Deputy Comptroller General Branch of the Treasury Board Secretariat is responsible to develop, obtain approval and promulgate the policy on accounting for environmental liabilities. By March 31, 1997, a draft policy on accounting for and reporting of environmental liabilities by the Government will be released for comment by departments and other stakeholders. The draft will include guidelines to assist departments in determining if a liability is to be recognized and in quantifying the liability.

APPENDIX J:

FUNDING FOR THE REMEDIATION OF CONTAMINATED FEDERAL LAND

FUNDING FOR THE REMEDIATION OF CONTAMINATED FEDERAL LAND

The Expenditure Management System provides the overall direction for managing new funding pressures or priorities, including those that may arise related to liabilities for federal contaminated sites. The purpose of the Expenditure Management System is to assist the government achieve its fiscal targets and manage priorities by fostering greater fiscal responsibility across departments. A key feature of the Expenditure Management System is the requirement for Ministers to reallocate funds from their existing programs to fund new initiatives while ensuring that their spending plans are fully integrated into the Budget process.

Departments are accountable for funding the remediation of their contaminated sites by reallocating resources from lower order priorities. Custodial departments should therefore incorporate information on significant anticipated costs and time lines for environmental clean-up into their Business Plans. Early identification of remediation requirements will assist departmental managers in accommodating these pressures from within existing resource levels.

In addition to the focus on funding new initiatives through reallocations, the Expenditure Management System provides Ministers with more autonomy and flexibility in managing the resources available to them. Departments are encouraged, for example, to explore innovative approaches to service delivery and to consider opportunities for cost recovery and user fees where appropriate. Under the Expenditure Management System, departments may also propose to carry forward a portion of unspent operating budget funds from one fiscal year to the next. These aspects of the Expenditure Management System could be useful to departments in managing their environmental remediation obligations.

Property divestiture is also an option that departments could find useful in funding clean-up costs. Under Treasury Board real property policy, departments may request authority to retain a portion of the net proceeds from the sale of properties under their administration, provided that the funds are directed to recapitalisation of the asset base. Authority may be requested through a Business Plan or a Long Term Capital Plan and must be backed up with an asset divestiture or renewal strategy that fully justifies the retention of proceeds. Normally this retention would be at 50% but Treasury Board may approve up to 100% retention in cases where there are exceptionally high costs to disposal.

Aside from the flexibility provided under the Expenditure Management System and the potential to retain some of the net proceeds of property divestiture, Ministers have the opportunity to bring funding priorities forward for consideration during the Budget planning process. As well, departments have the option of approaching the Treasury Board for bridge-financing from the Operating Reserve which it manages. Funds may be advanced from this Reserve to meet urgent health and safety requirements and to protect the capital asset base. In this regard, however, the Treasury Board would

function as a banker and departments as borrowers who would have to repay such advances with interest in future years.

APPENDIX K:

DEPARTMENTAL PROGRESS REPORTS

DEPARTMENTAL PROGRESS REPORTS

INTRODUCTION

The following progress reports have been provided by participating federal departments in the Contaminated Sites Management Working Group (CSMWG). The progress reports are intended to discuss the progress achieved (status), provide management information, and a description of the departmental Environmental Management Systems (EMS)/Sustainable Development Strategy (SDS) linkages used to facilitate the creation of a consistent approach towards the management of federal contaminated sites.

CANADIAN HERITAGE/PARKS CANADA (CH/PC)

Contaminated sites management at Parks Canada is administered by Professional and Technical staff located in Service Centers which support field unit operations.

The inventory of contaminated sites is compiled using the CCME National Classification System for Contaminated Sites. This inventory is complete with the exception that new sites are discovered occasionally.

Site assessments are conducted on the highest risk sites and, wherever possible, site assessment time lines have been established for lesser risk sites.

Risk assessment is used to determine appropriate remedial action. Remedial action has been undertaken at all sites known to pose high risk to the environment or human health. Risk assessment projects are currently underway at several sites.

A national reporting framework has not been developed, however, reporting to Service Center Managers is undertaken as required. Parks Canada will adopt the contaminated sites reporting framework being developed by CSMWG.

Funding for contaminated sites management is obtained from A-Base monies. Wherever possible, future site management costs have been established.

Contaminated sites management is included as a component of the Parks Canada Environmental Management System (under development). It is not yet known if contaminated sites management will be reported in the Parks Canada/Canadian Heritage Sustainable Development annual reports.

ENVIRONMENT CANADA (EC)

APPROACH

Environment Canada's site inventory identifies sites through a listing approach, ranging from sites classified under the NCS through sites suspected of being contaminated due to past or present activities as well as sites which have the potential of becoming contaminated due to present activities. Sites representative of broad categories such as weather stations, upper air stations, wildlife areas have been selected for assessments. Results from the assessments are extrapolated and applied to all 'like' sites. Environment Canada also has in place a comprehensive program to replace the mercury manometers located at hydrometric stations across the country.

PROGRESS ACHIEVED/STATUS

Environment Canada has developed a contaminated sites remediation framework. A comprehensive site inventory has been completed. Assessment and/or remediation work are ongoing at two major contaminated sites. Assessments have started at several other sites and some funding has been allocated to continue with initial assessments and some remediation at high priority sites.

MANAGEMENT INFORMATION

Regular updates are provided to the Environment Management Board (EMB), chaired by the Deputy Minister and comprised of all RDG's and ADM's. A five year action plan is currently being prepared for presentation to EMB early in 97/98.

EMS/SDS LINKAGES

Environment Canada's EMS is organized around a set of priority environmental risk and opportunity areas. Contaminated sites is identified as one of these areas. A working group has been set up to complete the planning, implementation and measurement steps of sound environmental management as it relates to contaminated sites by developing environmental objectives and targets; developing performance indicators, action plans and procedures to reach those targets; and measuring and reporting on results using the indicators selected.

FISHERIES AND OCEANS/CANADIAN COAST GUARD (DFO/CCG)

APPROACH

An Environmental Scan was conducted on the Department of Fisheries and Oceans (DFO)/Canadian Coast Guard (CCG) fixed facilities in the spring of 1996, which focused on the identification of the current status of a number of environmental issues

within DFO/CCG. This initiative was aimed at capturing a quick picture of the overall environmental performance of the department.

A departmental inventory of contaminated sites is continuously being updated as Phase 1 Environmental Site Assessments (ESA) are being conducted and documented for all DFO/CCG properties. Where contamination is suspected a Phase II ESA is considered and implemented based on an evaluation of the potential risk associated with the site. The following criteria has been established to assist in determining the relative priority of undertaking environmental activities, including remediation. Risk of issues are ranked using the following system:

- a) Risk to Human Health, either direct or indirect;
- b) Non-compliance with Legislation and Regulations;
- c) Risk to the Environment;
- d) Key Component in the Demonstration of Due Diligence;
- e) Non-Compliance with Government Policy; and
- f) Restoration/Enhancement of the Environment.

PROGRESS ACHIEVED/STATUS

The Environmental Scan identified that most major facilities have conducted compliance audits in the past five years and that Phase I and Phase II site assessments determined there were a number of potentially contaminated sites and more are expected.

For DFO/CCG, the following represents the initiatives to date:

Region	Number of Sites Assessed	Number of Sites Possessing Risks	Number of Sites Remediated / Managed	Number of Projects Registered (CEAA)
Newfoundland	107	96	28	24
Maritimes	91	54	3	10
Laurentians	55	41	21	24
Central & Arctic	34	30	1	19
Pacific	45	56	3	18

MANAGEMENT INFORMATION

Annual Regional Status Reports are submitted to HQ. The report is a per-site or environmental project cost breakdown for all regional activities. The regions also submit a Funding Request Report for next fiscal year activities and for an estimation of the resources required.

EMS/SDS LINKAGES

Contaminated Site Management is a prominent component of the environmental program. For sites requiring remediation, the EMS emphasizes that an objective, logical, cost-effective and efficient approach be used and supported. This means that the contaminated soil and groundwater either be remediated to levels consistent with CCME criteria levels or that the sites be risk managed with the aim of remediating the site over a longer period of time.

INDIAN AND NORTHERN AFFAIRS CANADA **INDIAN AND INUIT AFFAIRS PROGRAM (INAC/IIAP)**

APPROACH

Since 1992 IIAP has undertaken an Environmental Issues Inventory and Remediation Plan (EIIRP) on all inhabited reserves across the provinces. The EIIRP includes four Phases:

- Phase I: examination of records of past and present activities on reserves.
- Phase II: visits to reserves, accompanied by First Nations residents and by teams of experts to conduct sampling of suspicious sites.
- Phase III: in-depth testing of those sites discovered to be contaminated by a particular hazardous or toxic substance.
- Phase IV: preparation of a report documenting Phase II and III findings with recommendations for follow-up action.

PROGRESS ACHIEVED/STATUS

To date over 2,000 issues have been identified in the inventory. The assessment (Phase II and III) of the majority of these sites have been completed. Approximately 20% to 25% of the total number of issues have been remediated, the majority of these being high risk sites. The remaining remediation work will be dealt with through a long term remediation strategy and implementation plan. The costs for this will not be known until the regions receive final results of their Phase III testing and the Phase IV report completed by April 1997.

MANAGEMENT INFORMATION

Status report on the EIIRP has been submitted to the Deputy Minister on a yearly basis outlining the progress being made and identifying the associated costs of these activities. This year the Phase IV report will be distributed to the Deputy Minister and Treasury Board. It will identify the methodologies to be used and the firm cost estimates for any remaining site remediation.

EMS/SDS LINKAGES

The continual remediation of contaminated sites will be included in one of the phases of the departmental SDS. The information/strategy will be developed from the results of the EIIRP.

INDIAN AND NORTHERN AFFAIRS CANADA **NORTHERN AFFAIRS PROGRAM (INAC/NAP)**

APPROACH

Under the Northern Affairs Program (NAP), suspected contaminated sites are undergoing investigation using the following approach:

- Phase I: examination of records of past and present activities on reserves.
- Phase II: visits to reserves, accompanied by First Nations residents and by teams of experts to conduct sampling of suspicious sites.
- Phase III: in-depth testing of those sites discovered to be contaminated by a particular hazardous or toxic substance.
- Phase IV: preparation of a report documenting Phase II and III findings with recommendations for follow-up action.

PROGRESS ACHIEVED/STATUS

The Northern affairs Program (NAP) has assessed its sites suspected of having significant environmental liabilities. Results are being documented and priorities determined. Plans will then be prepared for either further study or the remediation of high priority sites.

MANAGEMENT INFORMATION

A report of the activities of the Action on Waste Program, under the Arctic Environmental Strategy, is being prepared for release in March 1997.

NATIONAL DEFENCE (DND)

APPROACH

DND is currently developing an inventory of its contaminated sites by following the steps of the Contaminated Sites Remediation Framework. The Framework involves site identification, characterization of the contaminated areas, risk evaluation, and the implementation of a remediation or risk management strategy on a priority basis. The characterization stage incorporates several steps including: a) historical review of

activities to identify areas of potential environmental concern, b) field survey to determine whether or not contamination is present, and c) site investigation to delineate the extent of contamination and establish the potential risks posed to the environment and human health.

PROGRESS ACHIEVED/STATUS

During the first year of the Framework, a total of 348 additional potential contaminated sites were identified on DND property. Field surveys were completed at 110 sites and site investigations were carried out at 59 of the high priority sites. In addition, site remediation was initiated at 14 of the sites and risk management strategies were employed at 9 others.

Any remaining potential contaminated sites will be identified by the end of fiscal year 97/98 and initial assessment of all sites should be completed by the end of fiscal year 98/99.

The Contaminated Sites Database is used by the department to maintain an inventory of its contaminated sites. The database information is updated twice a year by the bases and contains financial information, the contaminated site priority, status of the project, and proposed work schedule.

EMS/SDS LINKAGES

The Contaminated Sites Database will be an integral part of an EMS and SDS currently being developed by DND. The database will also be linked to financial information as well as the Storage Tank Management System.

NATURAL RESOURCES CANADA (NRCAN)

APPROACH

The Office of Environmental Affairs of Natural Resources Canada (NRCAN) maintains an environmental database which holds environmental information in various areas including contaminated sites and underground storage tanks. The department has been actively taking steps to assess the sites identified as having potential for contamination.

PROGRESS ACHIEVED/STATUS

As reported in February 1996, two out of the three identified contaminated sites were remediated in 1996 and no action was taken with respect to the remaining site as it does not require immediate remedial action (low risk site). There will be further monitoring activities at the two remediated sites.

Seven out of the remaining 16 underground storage tank (UST) sites were assessed during 1996. Seven USTs were removed, two were replaced with USTs and one replaced with an aboveground storage tank (AST). Thus, the current inventory holds only 21 USTs.

MANAGEMENT INFORMATION

The management has been informed of the clean-up cost for the remaining site. Management has not yet taken a decision on the future use of the site.

EMS/SDS LINKAGES

The departmental Environmental Protection Policy, which is the basis of NRCan's Environmental Management System(EMS), commits the Department to conduct the assessment and rehabilitation of contaminated sites following a risk-based approach.

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA (PWGSC)

APPROACH

The management of contaminated sites rests with individual regions. RDGs are accountable to the ADM of Real Property Services for all projects including environmental ones. Specialized environmental groups within the department are proceeding with the assessment, analysis and remediation of sites at the request of project managers/officers. Various tools are used such as CCME Guidelines, CSA Standards and internal protocols.

A national inventory of contaminated sites was officially compiled starting in 1995. It is divided up by regions and identifies sites and costs incurred/anticipated for both analysis and remediation steps. As of 1997, new parameters will be added in order to meet the OAG and CSMWG requirements.

PROGRESS ACHIEVED/STATUS

Given the recent establishment of a comprehensive national compilation of contaminated sites, it is not possible to establish long term progress made. It is expected that the identification and initial assessment of all sites will be completed by the end of 1997. A special funding program is available to support regions in meeting this objective. Guidelines are being finalized to help regions prioritize projects and allocate funds. No specific timeline is established for decontamination/remediation; however, remediation plans will be required by 1997/98.

MANAGEMENT INFORMATION

The national inventory is compiled annually and sent to the ADM of Real Property Services. Monthly financial reports are provided to the National Office. Additional reporting could also exist within regions.

EMS/SDS LINKAGES

The contaminated site element is included in both the EMS and SDS. Specific objectives and actions are indicated.

ROYAL CANADIAN MOUNTED POLICE (RCMP)

In June of 1995, the RCMP conducted a Force wide annual survey and subsequent clean up of potential and contaminated sites. Again in the spring of 1996, a more stringent Environmental Site Survey was utilized requiring the identification of all forms of contamination in all aspects of operations. This included an assessment and cost estimate for the removal and clean up of all contaminants and the degree of urgency by which each site was to be addressed. The results of this survey were compiled into a database in September 1996 at which time they were reviewed, establishing priorities and time frame with consideration of funding. Subsequently a program was proposed and put forward to senior management to deal with the contaminated sites over a three year period. To date, twenty three sites were identified in the program with an estimated clean up cost of \$3.4 million.

Additionally, the RCMP has established an environmental services unit which is responsible for the incorporation of all legislation, acts and guidelines into the Forces administrative and operational activities. This unit is also part of the RCMP's National Advisory Committee on the Environment (NACE) and is tasked with the development of the Forces SDS and EMS. The effective management of sites is one of the many aspects that has been identified by the committee for inclusion in the SDS.

In Summary, the RCMP's continuing annual survey program will identify existing and potential contaminated sites and provide the basic mechanism for remediation .

TRANSPORT CANADA (TC)

APPROACH

Transport Canada divestiture initiatives are moving ahead and leaving the department with less and less property to manage. To balance the demands of the divestiture

programs with the need for a contaminated sites inventory the department will focus its inventory efforts on the residual properties which will remain in its portfolio.

The department will continue to invest resources in the evaluation of suspected contaminated sites. Each site will be classified in accordance with the National Classification System to assign relative priority. Mitigative or remedial action will be initiated where adverse environmental effects are identified.

PROGRESS ACHIEVED/STATUS

A departmental database for recording the inventory information has been developed. The database will be distributed to Transport Canada regional offices in February 1997 for their use.

It is anticipated that the existing information on departmental property holdings can be transcribed into the database by the end of FY 97/98. Additional information will be gathered as priorities warrant. A more complete picture will be assembled in the post transition period, once the divestiture programs are completed.

MANAGEMENT INFORMATION

An internal reporting schedule has not yet been established for the status of contaminated sites management. A schedule will likely emerge from the development of the Departmental Environmental Management System (EMS).

EMS/SDS LINKAGES

The Department is in the process of developing an Environmental Management System and a Sustainable Transportation Strategy. Although the specific details of the frameworks have not been finalized, contaminated sites management and pollution prevention will be incorporated as key components of the EMS.