



<p>RETURN BIDS TO: RETOURNER LES SOUMISSIONS À:</p> <p>Bid Receiving - Environment Canada / Réception des soumissions – Environnement Canada</p> <p>Environment Canada (BIDS) Mailroom 171 Jean-Proulx Gatineau, Quebec J8Z 1W5</p> <p>BID SOLICITATION DEMANDE DE SOUMISSIONS</p> <p>PROPOSAL TO: ENVIRONMENT CANADA</p> <p>We offer to perform or provide to Canada the services detailed in the document including any attachments and annexes, in accordance with the terms and conditions set out or referred to in the document, at the price(s) provided.</p> <p>SOUSSION À: ENVIRONNEMENT CANADA</p> <p>Nous offrons d'effectuer ou de fournir au Canada, aux conditions énoncées ou incluses par référence dans le document incluant toutes pièces jointes et annexes, les services détaillés dans le document, au(x) prix indiqué(s).</p>	<p>Title – Titre DEVELOPMENT OF ENVIRONMENTAL QUALITY GUIDELINES FOR PERFLUOROCTANOIC ACID (PFOA)</p>	
	<p>EC Bid Solicitation No. /SAP No. – N° de la demande de soumissions EC / N° SAP K8A45-14-0004 (supersedes K8A45-13-9018)</p>	
	<p>Date of Bid solicitation (YYYY-MM-DD) – Date de la demande de soumissions (AAAA-MM-JJ) 2014-11-04</p>	
	<p>Bid Solicitation Closes (YEAR-MM-DD) - La demande de soumissions prend fin (AAAA-MM-JJ)</p> <p>at – à 2:00 P.M. on – le 2014-11-26</p>	<p>Time Zone – Fuseau horaire</p> <p><i>EDT</i></p>
	<p>F.O.B – F.A.B</p>	
	<p>Address Enquiries to - Adresser toutes questions à Josée Francoeur</p>	
	<p>Telephone No. – N° de téléphone 819-938-4855</p>	<p>Fax No. – N° de Fax 819-938-4855</p>
	<p>Delivery Required (YEAR-MM-DD) – Livraison exigée (AAAA-MM-JJ)</p>	
	<p>Destination - of Services / Destination des services</p> <p>Philippa Cureton Unit Head 200, boul. Sacré-Coeur Gatineau, Quebec K1A 0H3 Canada</p>	
	<p>Security / Sécurité <i>N/A</i></p>	
<p>Vendor/Firm Name and Address - Raison sociale et adresse du fournisseur/de l'entrepreneur</p>		
<p>Telephone No. – N° de téléphone</p>	<p>Fax No. – N° de Fax</p>	
<p>Name and title of person authorized to sign on behalf of Vendor/Firm: (type or print) / Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</p>		
<p>Signature</p>	<p>Date</p>	

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DEVELOPMENT OF ENVIRONMENTAL QUALITY GUIDELINES FOR PERFLUOROCTANOIC ACID (PFOA)

PART 1 – GENERAL INFORMATION

1. Security Requirement

1.1 There is no security requirement associated with this requirement.

2. Statement of Work

The Work to be performed is detailed in Annex “A” Statement of Work.

3. Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 – BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the PWGSC *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2014-09-25) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

The standard instructions 2003 are modified as follows:

Under “Text” at 02:

Delete: “Procurement Business Number”

Insert: “Deleted”

At Section 02 Procurement Business Number

Delete: In its entirety

Insert: “Deleted”

At Section 05 Submission of Bids, Subsection 05 (2d):

Delete: In its entirety

Insert: “send its bid only to Environment Canada (EC) as specified on page 1 of the bid solicitation or to the address specified in the bid solicitation;”

At Section 06 Late Bids:

Delete: “PWGSC”

Insert: "Environment Canada"

At Section 07 Delayed Bids:

Delete: "PWGSC"

Insert: "Environment Canada"

At Section 08 Transmission by Facsimile, Subsection 08 (1):

Delete: In its entirety

Insert: "Bids may be submitted by facsimile if specified in the bid solicitation."

At Section 12 Rejection of Bid, Subsection 12 (1) a. and b.:

Delete: In their entirety

Insert: "Deleted"

At Section 17 Joint Venture, Subsection 17 (1) b.:

Delete: "the Procurement Business Number of each member of the joint venture,"

Insert: "Deleted"

At Section 20 Further Information, Subsection 20 (2):

Delete: In its entirety

Insert: "Deleted"

At Section 05 Submission of Bids, Subsection 05 (4)

Delete: "sixty (60) days"

Insert: "one hundred and twenty (120) days"

2. Submission of Bids

- 2.1** Bids must be submitted to Environment Canada (EC) at the address and by the date, time and place indicated on page 1 of the bid solicitation.

3. Former Public Servant – Competitive Bid

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPS, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the *Financial Administration Act*, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;

- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the *Public Service Superannuation Act* (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the *Supplementary Retirement Benefits Act*, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the *Canadian Forces Superannuation Act*, R.S., 1985, c.C-17, the *Defence Services Pension Continuation Act*, 1970, c.D-3, the *Royal Canadian Mounted Police Pension Continuation Act*, 1970, c.R-10, and the *Royal Canadian Mounted Police Superannuation Act*, R.S., 1985, c.R-11, the *Members of Parliament Retiring Allowances Act*, R.S., 1985, c.M-5, and that portion of pension payable to the *Canada Pension Plan Act*, R.S., 1985, c.C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder a FPS in receipt of a pension? **Yes () No ()**

If so, the Bidder must provide the following information, for all FPS in receipt of a pension, as applicable:

- a. name of former public servant;
- b. date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **Yes () No ()**

If so, the Bidder must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;

- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based;
- f. period of lump sum payment including start date, end date and number of weeks;
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

4. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

5. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

6. Basis for Canada's Ownership of Intellectual Property

Environment Canada has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following grounds:

The main purpose of the contract, or of the deliverables contracted for, is to generate knowledge and information for public dissemination.

PART 3 – BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (3 hard copies)

Section II: Financial Bid (1 hard copies)

Section III: Certifications (1 hard copies)

Section IV: Additional Information (1 hard copies)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders; and
- (3) print on both sides of the paper.

Section I: Technical Bid

In their technical bid, bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will carry out the Work

Section II: Financial Bid

- 1. Bidders must submit their financial bid in accordance with the Basis of Payment in Annex B. The total amount of Applicable Taxes must be shown separately.

1.1 Price Breakdown

In their financial bid, the bidders are requested to provide a detailed breakdown of the price for each task to complete the work, as applicable:

- (a) Professional fees: For each individual and (or) labour category to be assigned to the Work, the bidders should indicate: i) the firm hourly rate or the firm daily rate, inclusive of overhead and profit; and ii) the estimated number of hours or days, as applicable. The bidders should indicate the number of hours in one working day.
- (b) Equipment (if applicable): The bidders should specify each item required to complete the Work and provide the pricing basis of each one, Canadian customs duty and excise taxes included, as applicable.
- (c) Materials and Supplies (if applicable): The bidders should identify each category of materials and supplies required to complete the Work and provide the pricing basis. The Bidder should indicate, on a per category basis, whether the items are likely to be consumed during the performance of any resulting contract.
- (d) Travel and Living Expenses (if applicable): The bidders should indicate the number of trips and the number of days for each trip, the cost, destination and purpose of each journey, together with the basis of these costs without exceeding the meal, private vehicle and incidental expenses provided in Appendices B, C and D of the *National Joint Council Travel Directive* and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".
- (e) Subcontracts (if applicable): The bidders should identify all of the proposed subcontractors and provide in their financial bid for each one a price breakdown.
- (f) Other Direct Charges (if applicable): The bidders should identify all of the categories of other direct charges anticipated, such as long distance communications and rentals, providing the pricing basis for each and explaining the relevance to the work described in the resultant contract in part 6 of the bid solicitation.
- (g) Applicable Taxes: The bidders should indicate the Applicable Taxes separately.

1.2 Bidders should include the following information in their financial bid:

- (a) Their legal name; and
- (b) The name of the contact person (including this person's mailing address, phone and facsimile numbers and email address) authorized by the Bidder to enter into communications with Canada with regards to their bid; and any contract that may result from their bid.

Section III - Certifications

1. Certifications Required Precedent to Contract Award

Bidders must provide the required certifications Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures

Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

1.1 Technical Evaluation

Except where expressly provided otherwise, the experience described in the bid must be the experience of the Bidder itself (which includes the experience of any companies that formed the

	<p>bioaccumulation and guidelines in other jurisdictions for PFOA.</p> <p>b) Critical evaluation of ecotoxicity data for guideline derivation.</p> <p>c) Relationship between fate and behaviour of PFOA and the choice of environmental pathways to consider in guideline derivation.</p> <p>d) Deriving environmental quality guidelines, including identifying acceptable and unacceptable data, critical data gaps, tabulating data in searchable format, guideline calculations, assumptions and rationale for any data exclusion.</p> <p>e) Writing technical document summarizing the guideline derivation.</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p>	
<p>2. APPROACH, METHODOLOGY, WORKPLAN</p> <p>MAX. 30 POINTS; MINIMUM 20 POINTS REQUIRED</p>	<p>R2. Are the approach and methodology logical, thorough and well defined for each of the following tasks in the Statement of Work?</p> <p>a) Identification of approach for literature search for data on terrestrial and aquatic toxicity, levels in the environment, fate, behaviour, bioaccumulation and guidelines in other jurisdictions for PFOA.</p> <p>The approach to the task is logical (1 point) and well defined (1 point);</p> <p>The steps in the methodology for the task are logical (1 point);</p> <p>Any challenges presented by the task are identified (1 point) and addressed (1 point).</p> <p>b) Identification of approach to critically evaluate ecotoxicity data for PFOA</p> <p>The approach to the task is logical (1 point) and well defined (1 point);</p> <p>The steps in the methodology for the task are logical (1 point);</p> <p>Any challenges presented by the task are identified (1 point) and addressed (1 point).</p>	<p>Max. 5 points</p> <p>Max. 5 points</p>	

	<p>c) Approach to derive soil, sediment, water, groundwater guidelines and tissue residue guidelines to protect wildlife that consume aquatic life for PFOA, including approach if some data gaps exist, approach to record calculations, assumptions and rationale for excluding any PFOA toxicity data.</p> <p>The approach to the task is logical (1 point) and well defined (1 point);</p> <p>The steps in the methodology for the task are logical (1 point);</p> <p>Any challenges presented by the task are identified (1 point) and addressed (1 point).</p> <p>d) Approach to synthesize data, including writing report on derivation of environmental guidelines for PFOA for soil, water, groundwater and wildlife protection.</p> <p>The approach to the task is logical (1 point) and well defined (1 point);</p> <p>The steps in the methodology for the task are logical (1 point);</p> <p>Any challenges presented by the task are identified (1 point) and addressed (1 point).</p> <p>R3. Does the workplan identify milestones and how the contractor will achieve the objectives?</p> <p>The approach to the task is logical (1 point) and well defined (1 point);</p> <p>The steps in the methodology for the task are logical (1 point);</p> <p>Any challenges presented by the task are identified (1 point) and addressed (1 point).</p>	<p>Max. 5 points</p> <p>Max. 5 points</p> <p>Max. 5 points</p>	
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	<p>R4. Does the workplan recognize possible problems, propose solutions and additional innovative suggestions?</p> <p>The approach to the task is logical (1 point) and well defined (1 point);</p> <p>The steps in the methodology for the task are logical (1 point);</p> <p>Any challenges presented by the task are identified (1 point) and addressed (1 point).</p>	<p>Max 5 points</p>	
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<p>3. PROJECT TEAM EXPERIENCE</p> <p>MAX. 28 POINTS, MIN 15 POINTS REQUIRED</p>	<p>R5. Does the Project Leader have the appropriate experience and skill set to manage this project? (See instructions on how to present projects in “Submission of Proposals: Qualifications of Bidding Firm and Resources” above.)</p> <p>How many projects has the Project Leader led in the past 6 years in the following 5 areas:</p> <ul style="list-style-type: none"> - ecological toxicity data collection and evaluation - environmental chemistry data collection and analysis - soil quality guideline development - water quality guideline development - statistics <p>(1 point per project falling in each area. A maximum of 2 points per area will be awarded).</p> <p>R6. Does the Project Team have a balance of team members who have the experience required to meet the objectives of this requirement? (See instructions on how to present projects in “Submission of Proposals: Qualifications of Bidding Firm and Resources” above)</p> <p>a) Does the team have experience in conducting literature searches for data on terrestrial and aquatic toxicity, levels in the environment, fate/ behaviour/ bioaccumulation and guidelines in other jurisdictions?</p> <p>(1 point per project. A maximum of 2 points can be contributed by the Project Leader).</p>	<p>Max. 10 points; Min. 6</p> <p>Max 4; Min 2</p>	
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	<p>b) Does the team have experience in the critical evaluation of ecotoxicity data for guideline derivation?</p> <p>(1 point per project. A maximum of 2 points can be contributed by the Project Leader).</p> <p>c) Does the team have experience in deriving CCME environmental quality guidelines, including identifying acceptable and unacceptable data, tabulating data in searchable format, presenting guideline calculations and data, assumptions and rationale for any data exclusion?</p> <p>(1 point per project. A maximum of 2 points can be contributed by the Project Leader).</p> <p>d) Does the team have experience in writing technical documents summarizing environmental quality guideline derivation?</p> <p>(1 point per project. A maximum of 2 points can be contributed by the designated Project Leader).</p> <p>e) Does the proposal include a contingency plan in the event the Project Leader is unable to complete the project?</p> <p>(1 point for plan. A maximum of 2 points if contingency involves team member with same level of experience as Project Leader).</p>	<p>Max 4; Min 2</p> <p>Max 4; Min 2</p> <p>Max 4; Min 2</p> <p>Max 2; Min 1</p>	
<p>4. CORPORATE EXPERIENCE OF THE BIDDING COMPANY</p> <p>MAXIMUM 24 POINTS, MINIMUM 16 POINTS REQUIRED.</p>	<p>R7. Does the bidding firm have experience in projects or studies completed since January 2006 related to CCME environmental quality guideline development? (See instructions on how to present projects in "Submission of Proposals: Qualifications of Bidding Firm and Resources" above.)</p> <p>a) Topics addressed in the projects are within the following 6 areas relevant to the contract:</p> <ul style="list-style-type: none"> -literature review -ecotoxicity data evaluation -soil guideline derivation -water quality guideline derivation -groundwater quality guideline derivation 	<p>Max. 12 points Min. 8 points</p>	

	<p>- wildlife environmental quality guideline derivation</p> <p>1 point per project falling into each area. A maximum of 2 points per area will be awarded.</p> <p>b) The projects were completed under or at budget.</p> <p>1 point per project listed in R7.a) above.</p> <p>c) The deliverables were accepted by the project's authority by the expected delivery date.</p> <p>1 point per project listed in R7.b) above.</p>	<p>Max. 6 points, Min. 4 points</p> <p>Max. 6 points, Min. 4 points</p>	
Total Possible Points		92	

1.3 Financial Evaluation

1.3.1 Evaluation of Price

The price of the bid will be evaluated in Canadian dollars, the Applicable Taxes excluded, Canadian customs and excise taxes included.

2. Basis of Selection (highest technical merit with the evaluated price within the budget)

For a proposal to be deemed technically compliant, a bid must:

- a) comply with all the requirements of the bid solicitation;
- b) meet all of the mandatory criteria;
- c) obtain the required minimum in **EACH** of the Technical Evaluation Criteria which are subject to point rating.

Bids not meeting **a) or b) or c)** will be declared non responsive. The responsive bid with the highest number of points will be recommended for award of a contract, provided that the total evaluated price does not exceed the budget available for this requirement.

In the event of a tie for the Technical Score, the contract will be awarded to the lowest financial offer.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and associated information to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default in carrying out any of its obligations under the Contract, if any certification made by the Bidder is

found to be untrue whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

1. Certifications Required Precedent to Contract Award

1.1 Integrity Provisions - Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

1.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from Employment and Social Development Canada (ESDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

2. Additional Certifications Required Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to comply with the request of the Contracting Authority and to provide the certifications within the time frame provided will render the bid non-responsive.

2.1 Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

2.2 Education and Experience

SACC Manual clause A3010T (2010-08-16) Education and Experience.

PART 6 - RESULTING CONTRACT

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation

Title: DEVELOPMENT OF ENVIRONMENTAL QUALITY GUIDELINES FOR PERFLUOROCTANOIC ACID (PFOA)

1.1 There is no security requirement associated with this requirement.

2. Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex "A".

3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the PWGSC *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

3.1 General Conditions

2010B (2014-09-25) General Conditions - Professional Services (Medium Complexity), as modified below, apply to and form part of the Contract.

General conditions 2010B is modified as follows:

At Section 12 Transportation Costs

Delete: In its entirety

Insert: "Deleted"

At Section 13 Transportation Carriers' Liability

Delete: In its entirety.

Insert: "Deleted"

At Section 18, Confidentiality:

Delete: In its entirety

Insert: "Deleted"

Insert Subsection: "35 Liability"

"The Contractor is liable for any damage caused by the Contractor, its employees, subcontractors, or agents to Canada or any third party. Canada is liable for any damage caused by Canada, its employees or agents to the Contractor or any third party. The Parties agree that no limitation of liability or indemnity provision applies to the Contract unless it is specifically incorporated in full text in the Articles of Agreement. Damage includes any injury to persons (including injury resulting in death) or loss of or damage to property (including real property) caused as a result of or during the performance of the Contract."

4. Term of Contract

4.1 Period of the Contract

The period of the Contract is from date of Contract to **June 30th, 2015** inclusive

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Josée Francoeur
Title: Contracting Officer
Environment Canada
NCR Procurement and Contracting
Finance Branch
351 St-Joseph Blvd.
Gatineau, Quebec

Telephone: 819-938-4855

E-mail address: josee.francoeur@ec.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

5.2 Technical Authority (To be disclosed upon contract award)

The Technical Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-_____

Facsimile: ____-____-_____

E-mail address: _____

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor's Representative

Name: _____

Title: _____

Organization: _____

Address: _____

Telephone: ____-____-_____

Facsimile: ____-____-_____

E-mail address: _____

6. Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2012-2 of the Treasury Board Secretariat of Canada.

7. Payment

7.1 Basis of Payment

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work as determined in accordance with the Basis of Payment in Annex B , to a limitation of expenditure of \$_____ (*insert the amount at contract award*). Customs duties are included and Applicable Taxes are extra.

7.2 Limitation of Expenditure

- (a) Canada's total liability to the Contractor under the Contract must not exceed \$ _____. Customs duties are included and Applicable Taxes are extra.
- (b) No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:

- (i) when it is 75 percent committed, or
- (ii) four (4) months before the contract expiry date, or
- (iii) as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,

whichever comes first.

- (c) If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

7.3 PWGSC SACC Manual clauses

A9117C (2007-11-30) T1204 - Direct Request by Customer Department.

8 Invoicing Instructions

8.1 Milestone Payments

- (a) Canada will make milestone payments in accordance with the Schedule of Milestones detailed below and the payment provisions of the Contract if:
 - (i) an accurate and complete claim for payment and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - (ii) all such documents have been verified by Canada;
 - (iii) all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.

8.2 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

Deliverables	Payment Amount (% of proposed contract value)	Target Date (from awarding contract)
1. F/Y 2014/2015 Submit a bibliography of papers collected from the literature search of eco-toxicity, bioaccumulation, levels in the Canadian environment (soil, sediment, water and groundwater, wildlife), and guidelines in other jurisdictions for PFOA as described in Task 2.	40%	Week 6

Submit a brief summary of the findings of the fate, behavior, use and occurrence data (Task 3) and results of the evaluation of toxicity data (Task 4) to the Departmental Representative.		
2. F/Y 2014/2015 Develop environmental quality guidelines for soil, sediment, water, groundwater and tissue residue to protect wildlife that consumer aquatic life (Task 5), review environmental quality guidelines from other jurisdictions (Task 6) and submit draft environmental quality guidelines development report for review (Task 7).	30%	Week 14
3. F/Y 2015/2016 Revise draft report and submit the final report (Task 8) together with all deliverables described in Task 9 to Departmental Representative.	30%	Week 21

9. Certifications

9.1 Compliance

Compliance with the certifications provided by the Contractor in its bid is a **condition** of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

10. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

11. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) Modified 2010B General Conditions - Professional Services (Medium Complexity) (2014-09-25)
- (c) Annex A, Statement of Work;
- (d) the Contractor's bid dated _____, (*insert date of bid*) (*If the bid was clarified or amended, insert at the time of contract award: "as clarified on _____" or "as amended on _____" and insert date(s) of clarification(s) or amendment(s).*)

ANNEX A

STATEMENT OF WORK

DEVELOPMENT OF ENVIRONMENTAL QUALITY GUIDELINES FOR PERFLUOROCTANOIC ACID (PFOA)

Background:

Perfluorooctanoic acid (PFOA) is an anthropogenic substance belonging to a class of chemicals known as perfluorocarboxylic acids (PFCAs) which belong to the broader class of chemicals known as perfluoroalkyls (PFAs). Historical uses of PFOA include applications in industrial processes and in commercial and consumer products. PFOA and its salts are used as polymerization aids in the production of fluoropolymers and fluoroelastomers. Under the *Canadian Environmental Protection Act, 1999* (CEPA 1999) the Government of Canada (2012)¹ determined that PFOA (CAS 335-67-1), its salts and its precursors are entering or may be entering the environment in a quantity or concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity. In addition, it is concluded that PFOA and its salts meet the criteria for persistence as set out in the *Persistence and Bioaccumulation Regulations*, but do not meet the criteria for bioaccumulation.

Scope:

The scope of this contract is to search, evaluate and summarize the ecotoxicity of PFOA to aquatic and terrestrial organisms and to develop environmental quality guidelines to protect soil, sediment, water, groundwater and wildlife that consumer aquatic life for PFOA covering relevant exposure pathways. The following protocols of the Canadian Council of Ministers of the Environment (CCME) will be followed to the extent possible to develop the environmental quality guidelines:

- “Protocol for the Derivation of Environmental Quality and Human Health Soil Quality Guidelines (CCME 2006)² ,
- Protocol for the Derivation of Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CCME 1999)³,
- A Protocol for the Derivation of Water Quality Guidelines for the Protection of Aquatic Life (CCME 2007)⁴ and
- the “Protocol for Derivation of Canadian Tissue Residue Guidelines for the Protection of Wildlife that Consume Aquatic Biota” (CCME 1997)⁵

Existing soil, sediment, water, groundwater, and wildlife environmental quality guidelines for PFOA from other jurisdictions will also be critically evaluated, presented and their potential

¹Government of Canada. 2012. Screening Assessment Report - Perfluorooctanoic Acid, its Salts, and its Precursors. <http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=370AB133-1>

²Canadian Council of Ministers of the Environment (CCME). 2006. Protocol for the Derivation of Environmental Quality and Human Health Soil Quality Guidelines. Winnipeg, Manitoba. 186 pp.

Canadian Council of Ministers of the Environment 1999. Protocol for the Derivation of Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Winnipeg, Manitoba. 35 pp.

³Canadian Council of Ministers of the Environment. 2007. A protocol for the derivation of water quality guidelines for the protection of aquatic life 2007. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, 1999, Winnipeg.

⁴Canadian Council of Ministers of the Environment (CCME). 1997. Protocol for the Derivation of Tissue Residue Guidelines for the Protection of Wildlife that Consume Aquatic Life . Winnipeg, Manitoba.

application to the Canadian guidelines evaluated. This work requires knowledge and expertise in terrestrial and aquatic toxicology, chemistry, statistics, and the development of environmental quality guidelines to protect soil, water, sediment and wildlife that consume aquatic life.

Objectives: The objective is to conduct an extensive literature search and critically evaluate the terrestrial and aquatic toxicity data for PFOA and develop soil, sediment, water, groundwater and wildlife quality guidelines for all relevant land uses and/or pathways. The project will involve researching the scientific literature; critically evaluating toxicological studies for acceptability in guideline development and related bioaccumulation, bioconcentration, and biomagnification data, levels in the environment and synthesizing all collected information in a format that is pre-approved by the Departmental Representative (see Annexes 1 and 2). The Contractor will use the acceptable relevant information in developing guidelines following the procedures provided in CCME (1997, 1999, 2006, 2007) protocols. A technical document summarizing the critical evaluation of toxicity data (identifying acceptable and unacceptable toxicity data), critical data gaps, guideline calculations, assumptions, rationale for exclusion of any data on PFOA toxicity and resulting guidelines will be prepared. All references will be compiled in a format identified by the Departmental Representative. A review and comparison of environmental quality guidelines for PFOA in soil, sediment, water, groundwater and wildlife from other jurisdictions together with their scientific basis and level of protection for the guidelines will be prepared.

The following background reports must also be consulted:

1. Screening Assessment Report for Perfluorooctanoic Acid, its Salts, and its Precursors. Environment Canada and Health Canada, August 2012.
2. Ecological Toxicity Criteria Derivation for Perfluorinated Compounds. Reference: 12-318. Prepared for Transport Canada under Contract with Public Works and Government Services Canada, December 2012. (Available in the original language of publication).
3. Gewurtz 2013. Perfluoroalkyl Acids in the Canadian Environment: Multi-media assessment of current status and trends. *Environment International* 59 (2013) 183–200.

It is expected that the Contractor will be in regular contact with the Departmental Representative throughout the duration of the contract.

Statement of Work:

The Contractor must search, critically evaluate and summarize the scientific literature for all relevant ecotoxicology, bioaccumulation, bioconcentration, biomagnification, fate, behaviour and levels of PFOA in Canadian soil, sediment, tissue, water and groundwater pertaining to PFOA in the terrestrial and aquatic environments and develop environmental quality guidelines for soil, sediment, water, groundwater and tissue residue to protect environmental receptors. The Contractor must evaluate existing soil, sediment, water, groundwater, and tissue residue environmental quality guidelines for PFOA from other jurisdictions. A scientific supporting document must be prepared by the Contractor.

Project Description and Tasks:

The Contractor must complete the following tasks:

Task 1. Start-up Meeting/teleconference Call

An initial meeting or telephone conference call with the Departmental Representative and the Project Team will be held to review and finalize the work schedule. At that time, the Contractor will be provided with any relevant materials related to the project.

Task 2: Literature Search and Cataloguing of References

The Contractor shall obtain all relevant ecotoxicology, bioaccumulation/ bioconcentration/ biomagnification and levels in Canadian soil, sediment, water, tissue and groundwater data on PFOA and catalogue all references in a format identified by the Departmental Representative. The Contractor must also search and present all environmental quality guidelines for PFOA from other jurisdictions and sources.

Task 3: Search Fate, Behavior, Use, and Occurrence of PFOA in Canadian Environment

Perform the necessary searches and summarize the details on fate, behavior, use, and occurrence of PFOA in Canadian environment. The recent Government of Canada (2012) publication can provide the basic information from data surveys conducted in 2000 and 2004. The Contractor's efforts must also include more recent data. The information on fate and behaviour of PFOA will inform the selection of the environmentally relevant pathways to consider in the development of the environmental quality guidelines.

Task 4: Search and Evaluate Toxicity Data

Compile, evaluate and summarize toxicology, bioaccumulation/bioconcentration/ biomagnification, fate, behaviour and levels in Canadian soil, sediment, water, groundwater and wildlife tissue for PFOA. This must include data for direct contact to plants and algae, invertebrates, fish, birds, mammals and other wildlife, and effects on the food chain. Present all relevant data in spreadsheets, including all available information on exposure and test conditions and evaluate the acceptability of each study using the Robust Study Summary (RSS) forms. See Annex 1 for list of fields for soil toxicity studies and Annex 2-RSS for soil toxicity tests. See Annex 3 list of fields for aquatic toxicity tests and Annex 4 Robust Study Summary form for aquatic toxicity tests. Data tables must clearly identify all toxicity test parameters as well as whether toxicity tests were ranked "Acceptable" (termed "Selected" in the soil protocol) or "Unacceptable" (termed "Consulted" in the soil protocol). The Contractor must provide the rationale for why a study was deemed "Unacceptable" for use in guideline development.

The following sources of variability must be compiled to evaluate the appropriateness of the toxicity data:

- test conditions/design (e.g., single species study, community study, mesocosm, etc.)
- test duration
- test concentrations (measured, nominal, appropriate series)
- test containers
- measurements of abiotic variables such as pH, soil organic matter content, soil texture
- form of PFOA tested (e.g. salt, etc.)
- solubility limit of substance tested
- experimental design (i.e., analytical methodology, QA/QC, controls, and number of replicates)
- species name of organisms tested
- description and appropriateness of statistics used in evaluating the data, and
- other factors deemed appropriate in consultation with Departmental Representative.

Task 5: Derive Soil, Sediment, Water, Groundwater and Tissue Residue Quality Guidelines

Develop soil quality guidelines following the CCME protocol (2006) for all land uses for all relevant pathways, including groundwater. This must include a clear rationale for which environmental pathways must be considered based on the physical and chemical properties of PFOA.

Develop guidelines for the protection of aquatic life following the CCME protocol (2007).

Develop guidelines for the protection of sediment biota following CCME protocol (1999).

Develop tissue residue guidelines for the protection of wildlife that consume aquatic life following the CCME protocol (1997).

For all guideline derivation, all calculations must be clearly shown and all assumptions regarding input parameters (e.g., daily threshold effect dose, body weight, soil intake rate, water intake rate, food intake rate, etc.) must be clearly presented and justified.

In the event that there are insufficient acceptable data to derive a full CCME environmental quality guideline for a particular medium, the Contractor must attempt to derive an interim guideline to the degree possible. The derivation procedure, data gaps or other limitations of the interim guideline must be clearly identified.

Task 6: Review of Soil, Water and Groundwater and Tissue Residue Guidelines in Other Jurisdictions and Publications

Other governmental agencies and researchers may have developed soil, sediment, water, groundwater or tissue residue quality guidelines for PFOA. The Contractor must collate these values, conduct a critical review of the scientific basis and data used in generating these guidelines and describe their similarities and differences from the CCME protocol.

Task 7: Prepare Draft Report

Prepare a draft scientific supporting document summarizing the literature search strategy, fate, behavior, use and occurrence in the environment, the acceptable and unacceptable toxicity data, description of details on steps taken in developing the soil, sediment, water, groundwater and tissue residue quality guidelines prepared under Tasks 4 and 5. The draft report must also include an analysis of the basis for soil, sediment, water, groundwater and wildlife quality guidelines for PFOA from other jurisdictions/publications (from Task 6). Finally, identify any gaps in the toxicity data set relative to minimum data sets identified in CCME 2006, 2007 and 1997 and 1999.

Task 8: Address Review Comments

The Contractor must make revisions to the datasets and draft report in response to review comments provided by the Departmental Representative. As well, the Contractor must prepare disposition tables indicating how each review comment was addressed, and submit the revised version of the report.

Task 9: Submit Documents, Files, References

The Contractor must submit to the Departmental Representative the following items as per the milestones identified in the Deliverables section below:

- unprotected electronic files (in MS Word) containing draft and final reports, Robust Study summaries of toxicity studies, detailed tables of acceptable and unacceptable toxicity studies, references and other relevant documentation, and disposition tables.
- unprotected electronic spreadsheets (in MS Excel or Access database) detailing all the toxicity data (acceptable and unacceptable) and the calculation of the soil, water, groundwater and wildlife quality guidelines,
- electronic files of all literature cited.

Deliverables:

The Contractor must provide the following deliverables:

Deliverables
<p># 1 - F/Y 2014/2015 Submit a bibliography of papers collected from the literature search of eco-toxicity, bioaccumulation, levels in the Canadian environment (soil, sediment, water and groundwater, wildlife), and guidelines in other jurisdictions for PFOA as described in Task 2.</p> <p>Submit a brief summary of the findings of the fate, behavior, use and occurrence data (Task 3) and results of the evaluation of toxicity data (Task 4) to the Departmental Representative.</p>
<p># 2 - F/Y 2014/2015 Develop environmental quality guidelines for soil, sediment, water, groundwater and tissue residue to protect wildlife that consumer aquatic life (Task 5), review environmental quality guidelines from other jurisdictions (Task 6) and submit draft environmental quality guidelines development report for review (Task 7).</p>
<p># 3 - F/Y 2015/2016 Revise draft report and submit the final report (Task 8) together with all deliverables described in Task 9 to Departmental Representative.</p>

All deliverables are to be provided to the Departmental Representative no later than the dates specified above. All documents, reports, briefing notes and correspondence generated by the Contractor during the course of this project shall be prepared in English using *Microsoft Word* for word processing, *Microsoft Excel* or *MS Access* for data management, and *Microsoft Power Point* for presentations and other graphics.

The Contractor is to advise the Departmental Representative of any information provided by a third party on a confidential basis (e.g. confidential information related to contaminated sites or

confidential chemical-specific data) for the purpose of the study and is to transmit the original documents containing any such information to the Departmental Representative under separate cover.

All discussion papers, reports and correspondence produced by the Contractor are subject to review by the Departmental Representative or his or her designate. All work is to be performed to the satisfaction of the Departmental Representative.

The Contractor is required to demonstrate sufficient flexibility in order to respond to changing schedules and developments.

Project Cost

Environment Canada has established funding for this project at a maximum amount of \$24,500.00 for F/Y 2014-2015 (excluding applicable taxes) and a maximum amount of \$10,500.00 for F/Y 2015/2016.

Total value of contract not to exceed \$35,000.00 (excluding applicable taxes)

This covers the period from date of award to **June 30th, 2015.**

Submission of Proposals:

The proposal must describe, in sufficient detail to evaluate the bidder's compliance with evaluation criteria, the technical qualifications and relevant experience of the Contractor and key professional staff. The proposal should include: a technical component, a qualifications and resources component, a scheduling component, and a cost component.

Technical component

The proposal should be of a sufficient quality that it demonstrates clarity, logic and consistency and understanding of the terms of reference and the approach taken to achieve the contract objectives. The proposal should include the following:

- A statement of understanding, not to exceed five pages in length, of the work to be undertaken and why it has been requested.
- A detailed work plan and description of how the Contractor would carry out the tasks to achieve the project objectives.
- A description of the technical approaches, methodology, and data sources to be used.
- A contingency plan describing alternative approaches/plans and flexibility mechanisms to overcome obstacles to complete the tasks.

Qualifications of Bidding Firm and Resources

The proposal should present relevant company (prime and sub-contractors) experience directly related to projects dealing with environmental quality guidelines and related aspects discussed in this proposal.

The proposal should describe in sufficient detail the professional staff assigned to the project, their experience directly relevant to the work, and their expected contributions. Their technical

qualifications and relevant experiences should be supported by submitting the resumes of all team members participating in this contract.

The descriptions of projects or studies used in R5, R6 and R7 in the Rated Criteria Table below should not be more than one (1) page in length and must include at a minimum the following information to be awarded points: project title and industry sector; nature of services provided for the project or study, methodologies and approaches employed; summary of the project; name and contact information that could be used as a reference to verify the accuracy of the information provided

Scheduling Component

The proposal should include:

- A proposed schedule for deliverables.
- A breakdown of each project task which clearly identifies the time commitments of each member on the project team.
- The allocation of time between project manager and other team members with respect to work involvement.
- A contingency plan for the event the team leader is unable to complete the project.
- The total time commitment of the project team.

Cost Component

The cost quotation must identify the level of effort and estimated cost for each task in the work plan, the estimated cost of professional and support personnel, materials, equipment communications and supplies.

Professional Services:

The following is a breakdown of the Professional Services (show fee structure all-inclusive of profit and overhead).

<u>Category of Personnel</u>	<u>Per Diem Rates</u>	<u>Number of Days Assigned</u>	<u>Total</u>
------------------------------	-----------------------	--------------------------------	--------------

\$ _____
(transfer total under a) below)

In accordance with Part 4 Evaluation Procedures and Basis of Selection, Bidders must provide a maximum firm all inclusive rate. The Firm all-inclusive rate must include all costs associated with the services including the costs associated with the resource’s preparation time, the administrative overhead and the profit. The firm all-inclusive per diem rate must be exclusive of all applicable taxes.

a.) Total costs for completion of the work described in Annex “A”: \$ _____

b.) Travel Expenses: \$ _____

c.) Administrative Expenses:

**(Courier, long distance calls, reproduction,
set-up fees, shipping cost, etc.).**

\$ _____

d) TOTAL PROPOSAL PRICE
(Canadian Currency)

\$ _____
(Total of a + b + c above)

+ G.S.T. \$ _____

TOTAL: \$ _____

Appendix A- List of Fields for Terrestrial Toxicity Spreadsheets

Chemical Identity

Chemical name
Formulation/Form
% purity
Carrier Solvent
Background Concentration
Notes on chemical

Test Organism(s) (for Biomagnification studies list all)

Family
Species common name
Species Latin name
Life stage exposure (full, partial in vitro?)
Life cycle stage (age)
Habitat
Resident Canadian species?
Surrogate species?
Feeding (if relevant)

Experimental design

Soil conditions

Organic carbon content (OM, OC, TOC)
Temperature
pH
Test conditions
Soil particle size
Soil % sand, % silt, %clay
Soil source (natural, artificial)
Soil moisture content
Photoperiod
Light Intensity
Notes on abiotic factors
Abiotic factors complete?

Experimental design

Toxicity method
Toxicant concentrations (measured, measured at beginning, nominal, calculated, measured repeatedly)
Analytical method
Replications
Adequate replication?

Results

Observed adverse effect (% growth reduction, % germination success, etc)
Endpoint (EC10, EC50, LC50 etc)
Effect concentration (mg/kg dry soil)
Control mortality
Concentration in each trophic level
BAF, BCF or BMF value
Statistical analyses
Variation
Adequate statistics?
Notes on experiment

Ranking of study (Selected, Consulted, Not Acceptable)
Rational and details for ranking
Notes on study

Literature Citation

Author(s)

Year

Journal

Volume

Pages

Evaluator

Evaluation date

Appendix B. Robust Study Summary (RSS) Forms for Soil Ecotoxicity

Robust Study Summaries Form and Instructions: Soil Toxicity					
No	Item	Weight	Yes/No	Specify	Instructions
1	Full bibliographic reference of the study: <i>[Insert here]</i>				No score for this item. Indicate the title and the authors of the study, year, journal/book/report, volume/issue/report No., pages, and other relevant information.
Substance					
2	Substance identity: CAS RN	No score			No score for this item. Indicate CAS RN.
3	Substance identity: chemical name(s)	No score			No score for this item. Indicate at least one chemical name from a recognized nomenclature or chemical inventory.
4	Chemical purity of the substance reported?	3			Yes (3) or No (0). Purity may be reported as % and/or chemical grade designations (e.g. "A.C.S.", "Reagent", etc.). May be not applicable for many UVCBs (e.g. CAS 128683-25-0 - crude oil; CAS 65996-72-7 - steelmaking dust; etc). Note: Indicate if not applicable. Note: Considering the nature, toxicity, mode of action, and properties of the substance and impurities, indicate whether the purity % (or grade) is reasonable (acceptable) for this particular test.
5	If a finished/formulated product containing the substance of interest was tested, was a full chemical composition of the finished product provided?	3			Yes (3) or No (0). Might be relevant to colorants, pesticides, UVCBs, polymers. Note: Not applicable if the test substance is a discrete high-purity chemical (see previous item). Note: Considering the nature, toxicity, mode of action, and properties of the substance and the additives (components), indicate whether this particular final-product test can be used to characterize the toxicity of the substance of interest.
6	Are stability and phys.-chemical properties of test substance reported?	No score			No score for this item. Yes or No. For example, according to OECD Test No. 222 (Earthworm Reproduction Test), the following information relating to the test substance should be available: WS, log Kow, VP, and persistence (e.g., hydrolysis & photolysis rates). Importantly, this Guideline is applicable to all substances irrespective of their water solubility, but is NOT applicable to volatile substances, defined as substances for which Henry's constant or the air/water partition coefficient is greater than one, or to substances with vapour pressures exceeding 0.0133 Pa at 25°C. No allowance is made in this Guideline for possible degradation of the test substance over the period of the test. Consequently it cannot be assumed that exposure concentrations will be maintained at initial values throughout the test (chemical analysis of the test substance at the start and the end of the test is recommended in that case).
Method					
7	Title/reference	No score			No score for this item. Yes or No. Provide the title/reference of the method used in the study.
8	Was the study conducted according to an internationally-recognized method/guideline? If not, could it be considered as equal to one of the internationally-recognized methods?	3			Yes (3) or No (0).

9	Is it a GLP (Good Laboratory Practice) study?	3			Was the study conducted according to the OECD Principles of Good Laboratory Practice (GLP), or US FDA GLP Regulations, or US EPA GLP Regulations? Yes (3) or No (0). Note: The OECD principles of Good Laboratory Practice (GLP) help assure regulatory authorities that the data submitted are a true reflection of the results obtained during the study, and can therefore be relied upon when making risk/safety assessments. The complete and current set of OECD GLP can be found in Annex 2 of the OECD Decision of the Council Concerning the Mutual Acceptance of Data in the Assessment of Chemicals (www.OECD.org). Note: When "Yes", there should be a clear evidence that GLP was indeed applied - for example, in the report, it can be a GLP compliance statement (containing a dated signature of the study director and an identification of which GLP standards were followed), or it could be a quality assurance (QA) statement (containing the type of inspections of the study and a dated signature of QA manager).
Test organism					
10	Latin or both Latin & common names reported?	1			Yes (1) or No (0). Specify the name(s) (common and/or scientific) as reported in the study. Note: Ideally, identification of species should be confirmed by qualified personnel before testing but is not required prior to every test if organisms come from an in-house culture.
11	Age/stage of test organisms at test initiation (addition to test vessels) reported?	1			Yes (1) or No (0). For example, according to OECD Test No. 232 (Collembolan Reproduction Test in Soil), for the <i>F. fimetaria</i> test, 23-26 days old adults should be used; for the <i>F. candida</i> test, 9-12 days old juveniles should be used. For earthworms, initial weight and maturity (i.e., clitellated adult vs. juvenile) may be given (e.g., see Environment Canada's test methods).
12	Source of organisms and holding/acclimation conditions, and information on handling of test organisms reported?	1			Yes (1) or No (0).
13	Information on feeding (including type of food, preparation, amount, and feeding regime) reported?	1			Yes (1) or No (0). For example, OECD Test No. 232 (Collembolan Reproduction Test in Soil) recommends that as a suitable food source, a sufficient amount, e.g. 2-10 mg, of granulated dried baker's yeast, commercially available for household use, is added to each container at the beginning of the test and after about 2 weeks.
14	Number of organisms per replicate	1			Yes (1) or No (0). Specify the number of organisms per replicate. For example, according to OECD Test No. 232 (Collembolan Reproduction Test in Soil), in each test vessel, 10 juveniles <i>F. candida</i> (or 10 males and 10 females adults <i>F. fimetaria</i>) should be used.
15	Was the test organism relevant to the Canadian environment?	No score			No score for this item. Yes or No.
Test design / conditions					
16	Experiment type: laboratory or field	No score			No score for this item. Yes or No. Specify the test type.
17	Test: acute or chronic / test duration	No score			No score for this item. Yes or No. Specify the test type (acute or chronic) and duration.
18	Information on stock and test solution preparation reported?	1			Yes (1) or No (0). Test solutions of the chosen concentrations are usually prepared by dilution of a stock solution. Stock solutions should preferably be prepared by dissolving the test substance in test medium. The use of solvents or dispersants may be required in some cases in order to produce a suitably concentrated stock solution. Details on preparation of the test solution should be presented in the study.

19	Was the substance added appropriately to soil?	No score			No score for this item. Yes or No. For example, according to the OECD Test No. 232 (Collembolan Reproduction Test in Soil), four methods of application of the test substance can be used: 1) mixing the test substance into the soil with water as a carrier (for substances soluble in water); 2) mixing the test substance into the soil with an organic solvent as a carrier (for substances insoluble in water); 3) mixing the test substance into the soil with sand as a carrier (for substance poorly soluble in water <u>and</u> organic solvents); or 4) application of the test substance onto the soil surface (when the test substance is a pesticide). Note: The selection of the appropriate method depends on the characteristic of the compound and the purpose of the test.
20	<u>Metals only:</u> Was the time (aging) factor considered in soil toxicity test?	No score			Yes (1) or No (0). Specify the duration and conditions of aging period. (Aging period is a time comprised between the addition of the contaminant to the soil and the start of the test). Note: A high importance of the aging factor in soil toxicity testing has been emphasized by many researchers. For example, Naidu et al. (2003) reported that the long-term incubations of contaminant spiked soils, simulating field conditions in the laboratory, showed an exponential decline in contaminant bioavailability with aging. The authors found that the partition coefficient of contaminants increased with aging, and this seemed to have a direct impact on chemical toxicity to microorganisms and earthworms. The reduced toxicity of As and Cr to earthworms was attributed to increased binding of chemicals to soil colloids and consequent reduction in the bioavailable fraction in soil interstitial water. Oorts et al. (2007) concluded that testing Ni toxicity to soil microbial processes immediately after spiking soils in the laboratory overestimates Ni toxicity compared to aged soils; soil solution composition in freshly spiked soils was clearly different from that in aged and leached soils.
21	If the chemical was poorly soluble, was appropriate solvent (or other vehicle) used? If yes, was appropriate solvent (or other vehicle) control included in the test design?	No score			No score for this item. Yes or No. For example, according to the OECD Test No. 222 (Earthworm Reproduction Test), solvents or other vehicle is used to aid treatment of the soil with the test substance should be selected on the basis of their low toxicity to earthworm, and appropriate solvent (or other vehicle) control must be included in the test design. Note: In some tests, only volatile solvents (e.g., acetone) are recommended. For example, in the OECD Test No. 232 (Collembolan Reproduction Test in Soil), the test substance is dissolved in a small volume of a suitable organic solvent (e.g. acetone) and then sprayed onto, or mixed into, a small quantity of fine quartz sand, and the solvent is then removed by evaporation in a fume hood; the treated sand is then mixed thoroughly with the pre-moistened soil.
22	Information on positive and negative controls provided?	No score			No score for this item. Yes or No. Specify which controls were used, and the identity of the toxicant for a positive control. For example, in the OECD Test No. 232 (Collembolan Reproduction Test in Soil), a reference substance should be tested at its EC50 concentration for the chosen test soil type either at regular intervals or possibly included in each test run to verify that the response of the test organisms in the test system are responding within the normal level. A suitable reference substance is <u>boric acid</u> , which should reduce reproduction by 50% at about 100 mg/kg dry weight soil for both species (<i>F. candida</i> and <i>F. fimetaria</i>).
23	Were mortalities in all controls reported, and were they below the recommended rates?	No score			No score for this item. Yes or No. For example, in the OECD Test No. 232 (Collembolan Reproduction Test in Soil), in the untreated controls, mean adult mortality should not exceed 20% at the end of the test (for a test result to be considered valid). Note: Mortality in controls is a part of the validity criteria of the test, which is, in fact, relative-to-control "performance", and not mortality <i>per se</i> . For example, one validity criterion in OECD Test No. 208 (Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test) requires a control emergence of at least 70%, and this has nothing to do with the other validity criterion: mean survival of seedlings is at least 90% in controls.

24	Artificial or natural soil?	No score			No score for this item. Specify which soil was used. For example, according to OECD Test No. 227 (Terrestrial Plant Test: Vegetative Vigour Test), either natural or artificial soils can be used, but it is indicated that artificial soils are typically not used for testing of crop protection products. Importantly, it is emphasized that clay soils should not be used if the test substance is known to have a high affinity for clays. In OECD Test No. 222 (Earthworm Reproduction Test), artificial soil is preferred, and it is indicated that when natural soil is used in additional (e.g. higher Tier) testing, the suitability of the soil and achieving the test validity criteria should be demonstrated.
25	Were soil characteristics provided; were they appropriate for the test?	?			No score for this item. Yes or No. Note: Major characteristics of any (i.e., artificial or natural) soil should be provided in the study/test report. For example, according to OECD Test No. 232 (Collembolan Reproduction Test in Soil), if <u>natural</u> soil is used, it should be characterised at least by origin (collection site), pH, texture (particle size distribution), CEC (cation exchange capacity), and OM (organic matter) content, and it should be free from any contamination; it is advisable to demonstrate suitability of natural soil for a test and for achieving the test validity criteria before using the soil in a definitive test. An <u>artificial</u> soil is used with an organic matter content of 5%, and composition of this soil (based on dry weights) should be: 5% sphagnum peat; 20% kaolin clay; ~74% air-dried industrial sand (predominantly fine sand with more than 50% of the particles between 50 and 200 microns); <1.0% CaCO ₃ (to obtain a pH of 6.0±0.5). It is recommended to measure the pH and optionally the C/N ratio, CEC, and OM content of the soil in order to enable a normalisation at a later stage and to better interpret the results.
26	Were soil moisture and pH monitored and maintained during the test?	?			Yes (3) or No (0). For example, according to the OECD Test No. 222 (Earthworm Reproduction Test), soil moisture content is determined at the beginning and at the end of the test in accordance with ISO 11465 and soil pH in accordance with Annex 3 or ISO 10390. These determinations should be carried out in a sample of control soil and a sample of each test concentration soil. The soil pH should <u>not</u> be adjusted when acidic or basic substances are tested. The moisture content should be monitored throughout the test by weighing the containers periodically. Losses are replenished as necessary with de-ionised water. The water content should not vary by more than 10% from that at the start of the test. Note: Different methods may give different requirements. For example, soil pH should <u>not</u> be adjusted when acidic or basic substances are tested according to the OECD Guidelines (see above). However, Environment Canada's Tests for Toxicity of Contaminated Soil to Earthworms EPS1/RM/43 (2004) allows for pH adjustment; however, justification for doing this has always to be provided.
27	Was temperature reported; was it appropriate during the test?	1			Yes (1) or No (0). For example, according to the OECD Test No. 232 (Collembolan Reproduction Test in Soil), the test mean temperature should be 20±1°C. According to OECD Test No. 227 (Terrestrial Plant Test: Vegetative Vigour Test), for 10 recommended crop species (tomato, cucumber, lettuce, soybean, and other), the temperature should be 25±3 °C during the day and 20±3 °C during the night.
28	Were photoperiod and light intensity reported; were they appropriate?	1			Yes (1) or No (0). For example, according to the OECD Test No. 232 (Collembolan Reproduction Test in Soil), the test is carried out under controlled light-dark cycles (preferably 12 hours light and 12 hours dark) with illumination of 400 to 800 lux in the area of the test vessels.
29	Were the number of replicates for each concentration (including controls) reported, and were they appropriate for the test type?	1			Yes (1) or No (0). Specify if the number of replicates. For example, according to the OECD Test No. 232 (Collembolan Reproduction Test in Soil), in a range-finding test, there should be at least two replicates for each treatment and control, while in a definitive test (determination of the ECx), at least two replicates for each test concentration treatment and six control replicates are recommended.

30	Dilution series (number and intervals of test concentrations) reported?	No score			No score for this item. Yes or No. Specify if the number of substance concentrations was appropriate for the test type. For example, according to the OECD Test No. 232 (Collembolan Reproduction Test in Soil), a range-finding test can be conducted with, for example, five test substance concentrations of 0.1; 1; 10; 100; and 1000 mg/kg dry weight of soil. For determination of the ECx (e.g. EC10, EC50) in definitive test, twelve concentrations should be tested, and the spacing factor may vary depending on the dose-response pattern.
31	Nominal concentrations reported?	1			Yes (1) or No (0). Specify number of nominal concentrations. Note: Not applicable if measured concentrations (see next item) are reported.
32	Were measured concentrations reported, and were they maintained during the test? Was the method of calculating mean measured concentrations (i.e. arithmetic mean, geometric mean, etc.) reported?	3			Yes (3) or No (0). For example, in the OECD Test No. 2008 (Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test), the concentrations/rates of application must be confirmed by an appropriate analytical verification. For soluble substances, verification of all test concentrations/rates can be confirmed by analysis of the highest concentration test solution used for the test with documentation on subsequent dilution and use of calibrated application equipment (e.g., calibrated analytical glassware, calibration of sprayer application equipment). For insoluble substances, verification of compound material must be provided with weights of the test substance added to the soil. If demonstration of homogeneity is required, analysis of the soil may be necessary.
33	Analytical method described?	No score			No score for this item. For example, in the OECD Test No. 2008 (Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test), the concentrations/rates of application must be confirmed by an appropriate analytical verification.
34	Toxicity values (specify endpoint and value)	No score			No score for this item. Specify the endpoint (e.g., mortality, reproduction, behaviour, etc.) and the value (e.g. LC50=70 mg/kg of soil, dry weight)
35	Were appropriate statistical methods used?	1			Yes (1) or No (0). For example, according to OECD Test No. 222 (Earthworm Reproduction Test), to compute any ECx value, the per-treatment means are used for regression analysis (linear or non-linear), after an appropriate dose-response function has been obtained. According to the Environment Canada's Guidance Document on Statistical Methods for Environmental Toxicity Tests EPS1/RM/46 (2007), non-linear regression (logistic, sigmoidal, hormetic, Weibull) is the preferred method for quantitative data (i.e., reproduction, length, biomass) if appropriate assumptions are met (normality, equal variance); for quantal data (mortality), probit, logit, Spearman-Kärber or binomial methods, as appropriate, are recommended.
35	Other biological observations (e.g., abnormal behaviour/responses) OR other adverse effects (e.g. carcinogenicity, mutagenicity; obvious or pathological symptoms) reported?	No score			No score for this item. Yes or No. Specify abnormal behaviour compared with the control and/or other adverse effects, highest concentration causing no mortality, the lowest concentration causing mortality of 100% of organisms, etc.
Score: ... %		#REF!			
Reliability code:		#REF!			
Reliability category (high, satisfactory, low):		#REF!			
Comments					Provide <u>important</u> remarks (if any). Were test validity criteria met? Have any deviations from a specified protocol/conditions (if any) been adequately explained? Describe any critical study limitations that indicate that the study results are unacceptable, or describe why, despite a relatively low score, the study results may be considered acceptable for a weight-of-evidence approach.

Appendix C. List of Fields for Aquatic Toxicity Spreadsheets

1	Chemical name	27	Toxicity methods
2	Formulation	28	Analytical methods
3	% purity	29	Statistical analyses
4	Solvent	30	Replications
5	Notes on chemicals	31	Toxicant concentrations
6	Family	32	Control mortality
7	Species common name	33	Notes on experiments
8	Species Latin name	34	pH
9	Life stage	35	O ₂
10	Life cycle	36	Temperature
11	Habitat	37	Alkalinity
12	Resident species?	38	Hardness
13	Surrogate species?	39	Conductivity
14	Feeding	40	Salinity
15	Notes on organisms	41	Water Source
16	Exposure	42	Notes on abiotic factors
17	Duration	43	Authors
18	Endpoint	44	Year
19	Observed effect	45	Journal
20	Effect concentration (µg/L)	46	Volume
21	Variation	47	Pages
22	Ranking	48	Evaluator
23	Rational and details for ranking	49	Other Source
24	Experimental design	50	Evaluation date
25	Abiotic factors complete?	51	Notes on study
26	Test conditions		

Appendix D. Robust Study Summary (RSS) Forms for Aquatic Toxicity Data

Robust Study Summaries Form and Instructions: Aquatic iT				
No	Item	Weight	Yes/No	Specify
1	Reference:			
2	Substance identity: CAS RN	n/a		
3	Substance identity: chemical name(s)	n/a		
4	Chemical composition of the substance	2		
5	Chemical purity	1		
6	Persistence/stability of test substance in aquatic solution reported?	1		
Method				
7	Reference	1		
8	OECD, EU, national, or other standard method?	3		
9	Justification of the method/protocol if not a standard method was used	2		
10	GLP (Good Laboratory Practice)	3		
Test organism				
11	Organism identity: name	n/a		
12	Latin or both Latin & common names reported?	1		
13	Life cycle age / stage of test organis	1		
14	Length and/or weight	1		
15	Sex	1		
16	Number of organisms per replicate	1		
17	Organism loading rate	1		

Robust Study Summaries Form and Instructions: Aquatic iT

No	Item	Weight	Yes/No	Specify
18	Food type and feeding periods during the acclimation period	1		
<i>Test design / conditions</i>				
19	Test type (acute or chronic)	n/a		
20	Experiment type (laboratory or field)	n/a		
21	Exposure pathways (food, water, both)	n/a		
22	Exposure duration	n/a		
23	Negative or positive controls (specify)	1		
24	Number of replicates (including controls)	1		
25	Nominal concentrations reported?	1		
26	Measured concentrations reported?	3		
27	Food type and feeding periods during the long-term tests	1		
28	Were concentrations measured periodically (especially in the chronic test)?	1		
29	Were the exposure media conditions relevant to the particular chemical reported? (e.g., for the metal toxicity - pH, DOC/TOC, water hardness, temperature)	3		
30	Photoperiod and light intensity	1		
31	Stock and test solution preparation	1		
32	Was solubilizer/emulsifier used, if the chemical was poorly soluble or unstable?	1		
33	If solubilizer/emulsifier was used, was its concentration reported?	1		
34	If solubilizer/emulsifier was used, was its ecotoxicity reported?	1		
35	Analytical monitoring intervals	1		
36	Statistical methods used	1		
<i>Information relevant to the data quality</i>				

Robust Study Summaries Form and Instructions: Aquatic iT

No	Item	Weight	Yes/No	Specify
37	Was the endpoint directly caused by the chemical's toxicity, not by organism's health (e.g., when mortality in the control >10%) or physical effects (e.g., 'shading effect')?	n/a		
38	Was the test organism relevant to the Canadian environment?	3		
39	Were the test conditions (pH, temperature, DO, etc.) typical for the test organism?	1		
40	Does system type and design (static, semi-static, flow-through; sealed or open; etc.) correspond to the substance's properties and organism's nature/habits?	2		
41	Was pH of the test water within the range typical for the Canadian environment (6 to 9)?	1		
42	Was temperature of the test water within the range typical for the Canadian environment (5 to 27°C)?	1		
43	Was toxicity value below the chemical's water solubility?	3		
Results				
44	Toxicity values (specify endpoint and value)	n/a	n/a	
45	Other endpoints reported - e.g., BCF/BAF, LOEC/NOEC (specify)?	n/a		
46	Other adverse effects (e.g., carcinogenicity, mutagenicity) reported?	n/a		
47	Score: ... %			
48	EC Reliability code:			
49	Reliability category (high, satisfactory, low):			
50	Comments			

Robust Study Summaries Form and Instructions: Aquatic iT

No	Item	Weight	Yes/No	Specify