Re: Perfluorooctane Sulfonate (PFOS), its Salts and its Precursors Risk Management Strategy

Comments on Vol. 140, No. 26 – July 1, 2006 Canada Gazette Notice – Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999 and Proposed PFOS, its Salts and its Precursors Risk Management Strategy

Submitted to:
Environment Canada
Health Canada

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Introduction

This submission responds to the CEPA Registry posting for public comments on the Canada Gazette Notice (Vol 140, No. 26 – July 1, 2006) to add Perfluorooctane Sulfonate (PFOS), Its Salts and Its Precursors of Schedule 1 to the Canadian Environmental Protection Act, 1999 and the Proposed Perfluorooctane Sulfonate (PFOS), Its Salts and Its Precursors Risk Management Strategy.

We are pleased to support the government's proposal to add PFOS (PFOS anion, PFOS acid (PFOSH)), its salts (PFOS potassium salt, PFOS ammonium salt, PFOS lithium salt and PFOS diethanol-amine salt) and compounds containing the $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ or $C_8F_{17}SO_2N$ to Schedule 1 of the Canadian Environmental Protection Act, 1999. However, the proposal does not currently provide detailed listing of all PFOS substances that would be captured by the proposal. In our interpretation, the general listing of PFOS under Schedule 1 substances should not exclude taking action on PFOS substances identified under the Domestic Substances List (DSL) and PFOS substances that have been nominated and under review by the Review Committee of the Stockholm Convention on Persistent Organic Pollutants (POPs).

Recommendation 1: We support the listing of PFOS (PFOS anion, PFOS acid (PFOSH)), its salts (PFOS potassium salt, PFOS ammonium salt, PFOS lithium salt and PFOS diethanol-amine salt) and compounds containing the $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ or $C_8F_{17}SO_2N$.

Recommendation 2: The general listing of PFOS substances to be targeted under Schedule 1 of CEPA should include all PFOS substances on the DSL (i.e., whether these substances meet the categorization criteria or not), and those PFOS substances that have been nominated and under review by the Review Committee of the Stockholm Convention on POPs.

Need for Action Plan on Perfluorinated Substances

The Gazette Notice strictly focuses on the order to add toxic substances to Schedule 1. With this announcement, it is appropriate to note the unique opportunity available to Canada to develop a comprehensive approach in the assessment and management of toxic substances, in particular perfluorinated substances.

First, the results of the categorization process under the Canadian Environmental Protection Act will be released by September 13, 2006. The results of categorization will include PFOS substances as well as other perfluorinated substances that meet the criteria for categorization.

Second, the notice to add PFOS, its salts and compounds to Schedule 1 includes evidence indicating a pressing need to take action on these substances.

Third, the June 2006 Canada Gazette notice to add four fluorotelomer based substances and develop an action plan on perfluorinated carboxylic acids (PFCAs) indicate the need for more aggressive action on other perfluorinated substances.

Fourth, international efforts such as the Stockholm Convention on POPs and the review of the Great Lakes Water Quality Agreement are in the process of considering the expansion of the list of substances that require action. PFOS substances have been nominated under the Stockholm Convention on POPs and are identified as emerging substances of concern for the Great Lakes basin.

Finally, there have been a number of reports released in the past year indicating the urgency for action on perfluorinated substances. CELA, in partnership with members of the Canadian Partnership for Children's Health and Environment documented in its September 2005 report, Children's Health – A Primer, the problems with toxic substances, such as perfluorinated substances, in consumer products. Environmental Defence's report series, Toxic Nation (2005 and 2006), reports that testing blood from Canadians for a number of toxic substances shows that the general population has detectable levels of PFOs in its blood.

Together these developments suggest that Canada move away from a piecemeal approach on assessing and managing individual substances to a process that gives serious consideration and support to expanding Canada's efforts to review and assess the full class of perfluorinated alkyls (PFAs) and to ensure that this effort be part of developing a national action plan on perfluorinated substances. In our view, a national action plan on perfluorinated substances would increase efficiency and transparency in the domestic process in assessing and managing substances having structures and ranges of function that are similar to those named in the current proposal. The National Action Plan would provide a good inventory of efforts that Canada expects to undertake over the next several years, identify potential areas for further research and management efforts, and provide a basis for the tracking of progress to eliminate and reduce exposure to these substances.

Recommendation 3: We recommend that Canada expand its effort to review and assess the full class of perfluorinated alkyls (PFAs) and to ensure that such this effort be part of developing a National Action Plan on perfluorinated substances.

To further support this recommendation, we direct you to a joint submission prepared by the Canadian Environmental Law Association and Dr. Rich Purdy dated December 22, 2004 to the former Ministers of Environment and Health (CELA publication #527 at http://cela.ca/uploads/f8e04c51a8e04041f6f7faa046b03a7c/527CEPA_PFOS.pdf) outlining concerns on the draft screening assessment results of PFOS. In addition, this submission provides some justification for the expansion of the PFOS assessment to include other PFAs. Briefly, the comments submitted include the following:

- The scope of the PFOS assessment did not consider or review the toxicity of PFOS, cumulatively with other perfluorinated acids such as slightly longer and shorter perfluorinated sulfonates and carboxylates. They have similar structures and properties including persistence, bioaccumulation, widespread presence in blood, and toxicological properties.
- There is evidence to support that PFOS is a cumulative toxin with other PFAs. Given the nature of its use and presence of other perfluorinated acids, the risk assessment of PFOS should be conducted as a cumulative risk assessment. At a minimum, PFAs should be assessed as a cumulative class by Health Canada and Environment Canada with specific focus on PFOS.
- The assessment did not provide a complete list of PFOS-containing substances on the DSL. Since these substances have similar uses and are found in similar products, it was noted that these substances are not pure and may contain homologs of PFOS that vary in chain lengths. In the manufacture of perfluorinated sulfonates, shorter and longer chain homologs are produced as by-products. Thus substances based on 6, 7, 9 and 10 carbon chains will also contain PFOS or PFOS precursors. The list of substances should include C6, C7, C9 and C10 perfluorinated sulfonate containing substances.
- The human health assessment for PFOS fails to adequately consider the exposure of PFOS to children's health. This gap will place undue risk to children's health if the management strategy for PFOS fails to ban the use, manufacture, production, disposal and import of PFOS and other perfluorinated substances.

Some of the health effects that may be associated with exposure to perfluorinated substances include impacts on the thymus and liver.

To support the notion of a national action plan on perfluorinated substances, we urge the government to consider again the comments submitted jointly by CELA and Dr. Rich Purdy (March 7, 2006) to Environment Canada regarding its proposal to develop a draft Action Plan on PFCAs. In this submission, CELA suggested that an opportunity is available to Canada to expand the scope of the proposed Action Plan to include all perfluorinated substances. The submission can provide a strong foundation for a national action plan for perfluorinated substances, as it outlines a number of components that should be included in an Action Plan to effectively ensure the protection of human health and the environment from continued exposure to PFCAs and other perfluorinated substances. We also urge you to consider the recommendations included in our February 2006 submission. See:

1) A joint submission by 19 environmental and health organization in: Submission to Environment Canada and Health Canada on Proposed Action Plan on Perfluorinated Carboxylic Acids (PFCAs) and its Precursors (February 24, 2006) at
http://cela.ca/uploads/f8e04c51a8e04041f6f7faa046b03a7c/536EN_PFCA_NGOs.pdf

2) Joint submission by CELA and Dr. Rich Purdy dated March 7, 2006 re: *Preliminary comments on proposed Action Plan for Perfluorinated Carboxylic Acids and its Precursors.*

Recommendation 4: We request that the recommendations outlined in the joint submissions dated February 24th and March 7, 2006 (referenced above) outlining the required elements of an Action Plan on PFCAs and its precursors be reviewed and considered in the context of the present submission.

Specific Comments on the Proposed Risk Management Strategy on PFOS substances

Noting the comments provided in the previous section, we are providing comments specifically focused on the proposed risk management strategy on PFOS as presented on the CEPA Environmental Registry dated July 12, 2006. In general, the proposed risk management strategy includes provisions that will aim to reduce exposure to PFOS. We however, would like to see a management strategy that aims to go beyond reduction of PFOS and strive for an elimination of these substances from all known sources. To that end, there are components in the risk management strategy that should be strengthened to meet the elimination objective.

Recommendation 5: The proposed risk management strategy should include a goal of elimination of PFOS substances from all sources, including consumer products.

Effective Regulatory Action

As a first step, we support the government proposal to add PFOS (PFOS anion, PFOS acid (PFOSH)), its salts (PFOS potassium salt, PFOS ammonium salt, PFOS lithium salt and PFOS diethanol-amine salt) and compounds containing the $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ or $C_8F_{17}SO_2N$ to the Prohibition of Certain Toxic Substances Regulations, 2005. The result will be a prohibition on manufacture, use, sale, offer for sale and import of PFOS, its salts and precursors and products or formulations containing PFOS, its salts and its precursors.

As we noted in an earlier section, we recognize the generic manner for listing of PFOS. We commend the government for extending the general wording to the proposed list of substances for prohibition. We are encouraged that the general nature of the prohibition may not be restricted to the PFOS substances listed on the DSL, or PFOS substances with carbon chain lengths between C6 and C10, that may be found in PFOS-containing substances. The aim of the proposed regulatory action is the prevention of the reintroduction of PFOS to Canada. In our view such an approach would be strengthened significantly if the prohibition and risk management strategy were explicitly to aim to identify PFOS substances used by other jurisdictions, and to set priorities for taking precautionary and preventative action on PFOS substances that may be introduced into Canada through the New Substances Notification regime.

Recommendation 6: We are encouraged that the general nature of the prohibition may not be restricted to the PFOS substances listed on the DSL, or PFOS substances with carbon chain lengths between C6 and C10, that may be found on PFOS-containing substances. The aim of the proposed regulatory action is the prevention of the reintroduction of PFOS to Canada. In our view such an approach would be strengthened significantly if the prohibition and risk management strategy were explicitly to aim to identify PFOS substances used by other jurisdictions, and to set priorities for taking precautionary and preventative action on PFOS substances that may be introduced into Canada through the New Substances Notification regime.

Recommendation 7: We support the inclusion of PFOS (PFOS anion, PFOS acid (PFOSH)), its salts (PFOS potassium salt, PFOS ammonium salt, PFOS lithium salt and PFOS diethanol-amine salt) and compounds containing the $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ or $C_8F_{17}SO_2N$ to the Prohibition of Certain Toxic Substances Regulations, 2005.

To ensure that other PFOS substances are included in this prohibition, CELA with technical advice and guidance from Dr. Rich Purdy completed a short review and comparison of the PFOS substances nominated under the Stockholm Convention on POPs[1] as well as the list of PFOS substances covered by the survey conducted by Environment Canada,[2] to determine how many substances may be potentially covered by this prohibition. While this review was not exhaustive, we confirmed that not all 96 PFOS substances listed for consideration under the Stockholm Convention were listed in the 2005 survey. The discrepancy between the lists is unclear.

Canada should not exclude these substances from its risk management strategy on PFOS substances. Indeed, this exercise should provide reasons for expanding the list of PFOS.

The following is a list of CAS numbers corresponding to PFOS substances that are listed on the DSL.

Table 1: PFOS substances identified under the Canada Gazette survey (January 2005) and Preliminary Risk Profile PFOS under the Stockholm Convention on POPs

List of CAS no. for PFOS substances	
1652-63-7	67969-69-1
1691-99-2	67939-88-2
2250-98-8	68081-83-4
2795-39-3	68298-11-3

[1] Proposal for listing Perfluorooctane sulfonate (PFOS) in Annex A of the Stockholm Convention on Persistent Organic Pollutants, Prepared by the Swedish Chemical Inspectorate (KemI), Sweden, June 2005. Annex 1

[2] Notice with respect to perfluorooctane sulfonate (PFOS), its salts and its precursors (2005-01-15 - Canada Gazette Part I, Vol. 139 No. 3).

2991-51-7	68555-90-8
4151-50-2	68555-91-9
24448-09-7	68555-92-0
29081-56-9	68608-14-0
29117-08-6	68649-26-3
30381-98-7	68877-32-7
31506-32-8	68891-96-3
38006-74-5	68958-61-2
52550-45-5	70225-14-8
56773-42-3	70776-36-2
57589-85-2	94313-8405

From the proposed Risk Management Strategy on PFOS, it is unknown which PFOS substances from the list above will be targeted for action or under the list of prohibited substances. Given the international focus on PFOS substances and the acknowledgement, through the 2005 survey that these substances may be in use in Canada, it is our recommendation that these PFOS substances be on the list of PFOS substances to be prohibited.

Recommendation 8: Add the PFOS identified above in Table 1 to the list of PFOS substances to be added to the Prohibition of Certain Toxic Substances Regulation.

Table 2: PFOS substances not listed in Canada Gazette 2005 survey but listed under Stockholm Convention Proposal for PFOS

CAS no.	Compounds potentially degrading to PFOS substances
383-07-3	2-Propenoic acid, 2-[butyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl ester
423-86-9	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-2-propenyl
754-91-6	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-
1869-77-8	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-, ethyl ester
2263094	1-Octanesulphonamide, N-butyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-
2991-50-6	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-
3820-83-5	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-
3871-50-9	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulphonyl]-, sodium salt
13417-01-1	1-Octanesulphonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-
24924-36-5	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-2-propenyl-
50598-29-3	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(phenylmethyl)-
58920-31-3	2-Propenoic acid, 4-[[(heptadecafluorooctyl)sulphonyl]methylamino]butyl ester
61577-14-8	2-Propenoic acid, 2-methyl-, 4-[[(heptadecafluorooctyl)sulphonyl]methylamino]butyl ester
61660-12-6	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[3-(trimethoxysilyl)propyl]-
67939-42-8	1-Octanesulphonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[3-(trichlorosilyl)propyl]-
68239-73-6	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(4-hydroxybutyl)-N-methyl-
68310-75-8	1-Propanaminium, 3-[[(heptadecafluorooctyl)sulphonyl]amino]-N,N',N''-trimethyl-, iodide,

	ammonium salt
68541-80-0	2-Propenoic acid, polymer with 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-propenoate
68867-60-7	2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-propenoate, 2-
	[methyl[(pentadecafluoroheptyl)sulphonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulphonyl]amino]ethyl 2-propenoate, 2-
	[methyl[(undecafluoropentyl)sulphonyl]amino]ethyl 2-propenoate and.alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl)
71463-78-0	Phosphonic acid, [3-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]propyl]-
71463-80-4	Phosphonic acid, [3-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]propyl]-, diethyl ester
129813-71-4	Sulphonamides, C4-8-alkane, perfluoro, N-methyl-N-(oxiranylmethyl)
148240-78-2	Fatty acids, C18-unsatd., trimers, 2-[[heptadecafluorooctyl)sulphonyl]methylamino]ethyl esters
160901-25-7	Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 2-ethyl-1-hexanol and polymethylenepolyphenylene isocyanate
178535-22-3	Sulphonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl)-, polymers with 1,1'-methylenebis[4-isocyanatobenzene] and polymethylenepolyphenylene
	isocyanate, 2-ethylhexyl esters, Me Et ketone oxime-blocked
182700-90-9	1-Octanesulphonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-, reaction products with benzene-chlorine-sulphur chloride (S2Cl2) reaction
	products chlorides
L-92-0151	2-Propenoic acid, 2-methyl-, butyl ester, polymer with 2-[ethyl[(heptadecafluorooctyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate, 2-
(US Premanufacture notice)	[ethyl[(nonafluorobutyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate, 2-
	[ethyl[(tridecafluorohexyl)sulphonyl]amino]ethyl 2-methyl-2-propenoate and 2-propenoic acid
P-94-2205	Polymethylenepolyphenylene isocyanate and bis(4-NCO-phenyl)methane reaction products with 2-ethyl-1-hexanol, 2-butanone, oxime, N-ethyl-N-(2-
(US Premanufacture notice)	hydroxyethyl)-1-C4-C8 perfluoroalkanesulphonamide
192662-29-6	Sulphonamides, C4-8-alkane, perfluoro, N-[3-(dimethylamino)propyl], reaction products with acrylic acid
251099-16-8	1-Decanaminium, N-decyl-N,N-dimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulphonic acid (1:1)
306973-46-6	Fatty acids, linseed-oil, dimers, 2- [[(heptadecafluorooctyl)sulphonyl]methylamino]ethyl esters
306973-47-7	Sulphonamides, C4-8-alkane, perfluoro, N-(hydroxyethyl)-N-methyl, reaction products with 12-hydroxystearic acid and 2,4-TDI, ammonium salts
306974-19-6	Sulphonamides, C4-8-alkane, perfluoro, N-methyl-N-[(3-octadecyl-2-oxo-5-oxazolidinyl)methyl]
306974-28-7	Siloxanes and Silicones, di-Me, mono[3-[(2-methyl-1-oxo-2-propenyl)oxy]propylgroup] -terminated, polymers with 2-[methyl[(perfluoro-C4-8-
	Alkyl)sulphonyl]amino]ethyl acrylate and stearyl methacrylate
306974-45-8	Sulphonic acids, C6-8-alkane, perfluoro, compounds with polyethylene-polypropylene glycol bis(2-aminopropyl) ether
306974-63-0	Fatty acids, C18-unsatd.,dimers, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino] ethyl esters
306975-56-4	Propanoic acid, 3-hydroxy-2- (hydroxymethyl)-2-methyl-, polymer with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol and N,N',2-tris(6-

	isocyanatohexyl)imidodicarbonic diamide, reaction products with N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-
	octanesulphonamide and N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-hydroxyethyl)-1-heptanesulphonamide, compounds with triethylamine
306975-57-5	Propanoic acid, 3-hydroxy-2-(hydroxymethyl)-2-methyl-, polymer with 1,1'-methylenebis[4-isocyanatobenzene] and 1,2,3-propanetriol, reaction products with Nethyl-
	1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-1-octanesulphonamide and N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N-(2-
	hydroxyethyl)-1-heptanesulphonamide, compounds with morpholine
306975-62-2	2-Propenoic acid, 2-methyl-, dodecyl ester, polymers with 2- [methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and vinylidene chloride
306975-84-8	Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-hydroxy-, polymer with 1,6-diisocyanatohexane, N-(hydroxyethyl)-N-methyl perfluoro C4-8-alkane sulphonamides blocked
306975-85-9	2-Propenoic acid, 2-methyl-, dodecyl ester, polymers with N-(hydroxymethyl)-2-propenamide, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl methacrylate,
	stearyl methacrylate and vinylidene chloride
306976-25-0	1-Hexadecanaminium, N,N-dimethyl-N-[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl]-, bromide, polymers with Bu acrylate, Bu methacrylate and 2-
	[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate
306976-55-6	2-Propenoic acid, 2-methyl-, 2-methylpropyl ester, polymer with 2,4-diisocyanato-1-methylbenzene, 2-ethyl-2-(hydroxymethyl)-1,3-propanediol and 2-propenoic
	acid, N-ethyl-N-(hydroxyethyl)perfluoro-C4-8-alkanesulphonamides-blocked
306977-58-2	2-Propenoic acid, 2-methyl-, 3-(trimethoxysilyl)propyl ester, polymers with acrylic acid, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and
	propylene glycol monoacrylate, hydrolysed, compounds with 2,2'-(methylimino)bis[ethanol]
306978-04-1	2-Propenoic acid, butyl ester, polymers with acrylamide, 2-[methyl[(perfluoro-C4-8-alkyl)sulphonyl]amino]ethyl acrylate and vinylidene chloride
306978-65-4	Hexane, 1,6-diisocyanato-, homopolymer, N-(hydroxyethyl)-N-methyl perfluoro-C4-8-alkane sulphonamides- and stearyl alc.-blocked
306979-40-8	Poly(oxy-1,2-ethanediyl), .alpha.-[2-(methylamino)ethyl]-.omega.-[(1,1,3,3-tetramethylbutyl)phenoxy]-, N-[(perfluoro-C4-8-alkyl)sulphonyl]
306980-27-8	Sulphonamides, C4-8-alkane, perfluoro, N,N'-[1,6-hexanediylbis[(2-oxo-3,5-oxazolidinediyl)methylene]]bis[N-methyl-

Recommendation 9: Add the PFOS substances, identified under the Preliminary Risk Profile PFOS currently under consideration for purposes of the Stockholm Convention on POPs (see table 2), to the list of prohibited PFOS substances.

We also compared the PFOS substances targeted under the Canada Gazette 2005 survey (January 2005) and under the Stockholm Convention on POPs, in order to identify the PFOS that meet the categorization criteria under CEPA (according to the results presented in Environment Canada's April 2006 CD on Existing Substances). The results are presented below. Table 3 lists PFOS substances that are persistent (P), bioaccumulative (B) and inherently toxic (iT) (PBiTs). Table 4 lists PFOS substances that are PiTs, and Table 5 lists PFOS substances that did not meet the categorization criteria, or for which the decisions for categorization remain uncertain due to lack of data. Regardless of the proposal to add PFOS to the Prohibition of Certain Toxic Substances Regulation, 2005, it is our position that the PFOS substances listed below warrant further attention in the immediate future mainly because they are part of the PFOS family of substances that has been found to be toxic under CEPA.

Table 3: Selected PFOS substances meeting the categorization criteria for PBiT [3]

CAS#	Chemical Name	Categorization decision (persistence, bioaccumulative and inherently toxic)
1652637	1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, iodide	Yes
1691992	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-	Yes
2795393	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt	Yes
24448097	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-N-methyl-	Yes
29081569	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt	Yes
38006745	1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl]amino]-N,N,N-trimethyl-, chloride	Yes
67969691	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-[2-(phosphonooxy)ethyl]-, diammonium salt	Yes
70225148	1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, compd. with 2,2 -iminobis[ethanol] (1:1)	Yes

Recommendation 10: The PFOS substances meeting all criteria for categorization as listed above should be targeted for elimination within the next two years, regardless of the proposal to add PFOS to the Prohibited List of Certain Toxic Substances Regulatory, 2005.

Table 4: Selected PFOS substances meeting the EC criteria for categorization PiTs (persistence and inherently toxic)

CAS#	Chemical Name	Categorization Decision (persisent and inherently toxic
29117086	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-ω-hydroxy-	Yes

[3] Categorization decision as listed by Environment Canada as of April 2006.

56773423	Ethanaminium, N,N,N-triethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1)	Yes
68555908	2-Propenoic acid, butyl ester, polymer with 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate,2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate and 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate	Yes
68891963	Chromium, diaquatetrachloro[æ-[N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]glycinato-o1:o1]]æ-hydroxybis(2-methylpropanol)di-	Yes
68958612	Poly(oxy-1,2-ethanediyl), α-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-ω-methoxy-	Yes
70776362	2-Propenoic acid, 2-methyl-, octadecyl ester, polymer with 1,1-dichloroethene, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl 2-propenoate, N-(hydroxymethyl)-2-propenamide, 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-propenoate,2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-propenoate and 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-propenoate	Yes

Recommendation 11: Given the assessments completed on PFOS substances, the PFOS substances listed in Table 4 should be targeted for prohibition unless industry provides adequate evidence that these substances do not pose harm to the environment and human health. Data should be provided within a year. A reduction strategy and ultimate elimination of these PFOS substances should be in place over the next two years.

Table 3: Selected PFOS that do not meet the categorization criteria or remain uncertain but have been identified under the Environment Canada January 2005

CAS#	Chemical Name	Categorization decision (uncertain, no, or under review)
4151502	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-	Uncertain
30381987	1-Octanesulfonamide, N,N -[phosphinicobis(oxy-2,1-ethanediyl)]bis[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, ammonium salt	Uncertain
31506328	1-Octanesulfonamide, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-methyl-	Uncertain
52550455	Poly(oxy-1,2-ethanediyl), α-[2-[[(heptadecafluorooctyl)sulfonyl]propylamino]ethyl]-ω-hydroxy-	Uncertain
57589852	Benzoic acid, 2,3,4,5-tetrachloro-6-[[[3-[[(heptadecafluorooctyl)sulfonyl]oxy]phenyl]amino]carbonyl]-, monopotassium salt	Uncertain

67939882	1-Octanesulfonamide, N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, monohydrochloride	Uncertain
68081834	Carbamic acid, (4-methyl-1,3-phenylene)bis-, bis[2-[ethyl[(perfluoro-C4-8-alkyl)sulfonyl]amino]ethyl] ester	Uncertain
68555919	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate	Uncertain
68555920	2-Propenoic acid, 2-methyl-, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethyl ester, polymer with 2-[methyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[methyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and octadecyl 2-methyl-2-propenoate	Uncertain
68608140	Sulfonamides, C4-8-alkane, perfluoro, N-ethyl-N-(hydroxyethyl), reaction products with 1,1'-methylenebis[4-isocyanatobenzene]	Uncertain
68649263	1-Octanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-N-(2-hydroxyethyl)-, reaction products with N-ethyl-1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-1-butanesulfonamide, N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,7-pentadecafluoro-N	Uncertain
68877327	2-Propenoic acid, 2-methyl-, 2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl ester, polymer with 2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate, 2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl 2-methyl-2-propenoate and 2-methyl-1,3-butadiene	Uncertain
94313845	Carbamic acid, [5-[[[2-[[(heptadecafluorooctyl)sulfonyl]methylamino]ethoxy]carbonyl]amino]-2-methylphenyl]-, 9-octadecenyl ester, (Z)-	Uncertain
2250988	1-Octanesulfonamide, N,N ,N -[phosphinylidynetris(oxy-2,1-ethanediyl)]tris[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-	No
2250988	1-Octanesulfonamide, N,N ,N -[phosphinylidynetris(oxy-2,1-ethanediyl)]tris[N-ethyl-1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-	No
2991517	Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt	No
68298113	1-Propanaminium, 3-[[(heptadecafluorooctyl)sulfonyl](3-sulfopropyl)amino]-N-(2-hydroxyethyl)-N,N-dimethyl-, hydroxide, inner salt	No

Recommendation 12: Given the findings of the PFOS assessments and in keeping with the precautionary principle, the list of PFOS listed in Table 5 should be targeted for elimination unless industry provides information to demonstrate their safety to the environment or human health. Data should be provided to government within a year.

The above recommendations are consistent with recommendations outlined in *Reforming the Canadian Environmental Protection Act: Submission to the Parliamentary Review of CEPA, 1999* (June 2006), a submission prepared by PollutionWatch (http://cela.ca/publications/cardfile.shtml?x=2648) for the review of the *Canadian Environmental Protection Act, 1999*.

Inclusion of disposal in the Prohibition

The scope of the prohibition should include disposal; otherwise, the proposal neglects to acknowledge the ultimate fate and environmental impact of PFOS in products that may be entering the Canadian market through imports. By adding disposal to the prohibition regime, a strong signal is sent to retailers and others that make up the supply chain, that the responsibility for disposal of toxic substances should not be placed on the general public. Retailers should be discouraged from purchasing articles that may contain these toxic substances. The inclusion of disposal in the prohibition may provide added incentive to retailers to gain a better understanding of products, ingredients and industrial processes. Retailers may place pressure on suppliers to require appropriate safe disposal methods of toxic substances that do not promote creation of new sources of PFOS or other toxic substances.

Recommendation 13: We recommend that the prohibition of PFOS should be expanded to include disposal of PFOS and products containing PFOS, to ensure that potential importers or retailers are discouraged from purchasing products containing PFOS.

Recognition of international and domestic initiatives

Finally, the risk management strategy currently does not provide a good foundation for connecting the proposed risk management efforts to on-going international and domestic initiatives. The proposed risk management strategy should outline the impact of proposed activities on related initiatives and international obligations focused on PFOS substances. For example, the risk management strategy should articulate how progress on managing PFOS substances will be reported to the National Implementation Plan under the Stockholm Convention on POPs, or how the results of the categorization of the Domestic Substances List under CEPA will be incorporated and revised.

Recommendation 14: The proposed risk management strategy should articulate how related international and domestic initiatives will be affected by efforts targeting PFOS substances.

Exemptions

In the current proposal, the risk management strategy is very weak in the area of exemptions. With the exception of the standard exemptions for use of PFOS in the laboratory for scientific research and as laboratory analytical standards, the following information should be required in order for an exemption to be considered:

- identify the specific uses for PFOS. No expansion of the exemption should be accepted beyond these uses;
- quantify the total amount of PFOS to be used;
- provide rationale for using PFOS instead of a safe alternative with similar function;
- outline the time period to be applied for exemption;
- outline safe disposal methods for any remaining PFOS substances; and

- require public reporting and notice for application of exemption.

Any exemptions granted should be strictly monitored with a timeframe of no longer than two years to allow for transition time for identification and implementation of safe alternatives. Dr. Rich Purdy noted that the U.S. Environmental Protection Agency (EPA) granted a few exemptions for PFOS approximately 4 years ago. For example, the exemption granted to the photographic film industry should have or is about to be expired. The other exemptions granted by EPA were for essential uses in very controlled conditions in the making of computer chips which is done in a clean room where wastes are contained. The other use exempted was as an anti-corrosive additive to airplane hydraulic systems.

Recommendation 15: Specific criteria for receiving exemptions should be met by proponents, in order for an exemption to apply. The list of criteria for exemption should include the specific information outlined above.

Recommendation 16: Exemptions should not exceed two years; an express purpose of exemptions should be to allow sufficient time to identify and implement safe alternatives.

The results from the January 2005 survey indicate that PFOS imports have ceased since 2002, and that no manufacturers or exporters exist in Canada as of 2004. The only documented stockpile of PFOS Aqueous Film Forming Foam (AFFF) has been estimated at 3 tonnes. Given this situation, Canada is well positioned to ensure that there is no further use, manufacture and import of PFOS into Canada by any sector. However, the risk management strategy fails to provide an adequate rationale as to why AFFF is exempted from the prohibition.

The proposal to consider an exemption of five years for PFOS AFFF is wholly inadequate. No rationale is provided for the exemption except that it is the only known stockpile available in Canada. The risk management strategy does not provide adequate documentation on the specific volume or location of these stockpiles so the public is unaware of the potential risk of exposure to the stockpile. Finally, no information is provided on whether safe alternatives may be available for the application of AFFF. Should an exemption for PFOS AFFF be appropriate, efforts should be focused on replacing AFFF with safe alternatives over the next two years with clearly outlined disposal methods for AFFF. We are aware that there are alternatives available for PFOS based AFFF. We are concerned that PFHS, a C6 chain length perfluorinated sulfonate is being considered a possible replacement. PFHS based AFFF should not be considered as a replacement because it contains PFOS as a by-product. Also, PFHS is as persistent as PFOS, is found in almost as many blood samples as PFOS, has an apparent half life in humans longer than PFOS and is it is highly probable that it is toxicologically additive with PFOS. We also understand there are non-fluorinated AFFF agents that can be used. Therefore, we suggest that resources and further investigation may be required to identify alternatives that do not exhibit the same hazardous properties as PFOS including shorter and longer carbon chain lengths. In our view, imposing a two year limit provides adequate signals to the affected sectors to identify an alternative and ensure that use of AFFF would not continue over time.

Recommendation 17: Exemptions for AFFF and facilities using PFOS should not exceed two years.

Recommendation 18: Any exemption for PFHS-based AFFF should not exceed two years.

Recommendation 19: Facilities using PFOS AFFF should be required to complete a pollution prevention plan to ensure that efforts are underway to phase out the use of this substance.

Recommendation 20: Facilities that use PFOS substances should be required to complete a pollution prevention plan, in order to ensure that efforts are underway to phase out the use of this substance, or in order to identify alternatives. No volume restriction should be imposed for these plans. No minimum volume threshold should apply.

Similarly, an exemption on the import of manufactured articles that may contain PFOS should be investigated further. While we acknowledge that the current provisions in CEPA do not effectively address toxic substances in articles, nor do the provisions in the *Hazardous Products Act*. We reject the notion that exemptions should be provided to imports of products that may contain PFOS, particularly in the absence of a policy and research agenda for the elimination of toxic substances in products. One of the policy initiatives that should generate serious consideration is the need for mandatory labelling by importers for substances found to be toxic under CEPA. Products containing PFOS should not be allowed to enter the Canadian market. This requirement should be supported with an effective compliance and enforcement regime that would include conducting random testing to determine effectiveness of labelling requirements.

Recommendation 21: We reject the notion that exemptions should be provided to imports of products that may contain PFOS, particularly in the absence of a policy and research agenda for the elimination of toxic substances in products.

Recommendation 22: Mandatory labelling by importers for substances found to be toxic under CEPA should be required. Products containing PFOS should not be allowed to enter the Canadian market. This requirement should be supported with an effective compliance and enforcement regime that would include conducting random testing to determine effectiveness of labelling requirements.

Importers

We are encouraged by and support the efforts of the Government of Canada to consider restrictions on import and manufacture of articles containing PFOS. However, more detail on this proposal is warranted. As noted in previous paragraphs, one policy initiative that should be explored with respect to import of products is the need for mandatory labelling for toxic substances. Importers should be required to identify those products that may contain CEPA-toxic substances. Those substances listed on the *Prohibition of Certain Toxic Substances Regulation, 2005* should not be allowed to enter the Canadian market in products.

Canada should not wait for its trading partners to initiate restrictions on the use of PFOS, given the evidence of the human and environmental impacts from PFOS exposure and the possibility that imports of products may continue to increase over time. A time limitation should be imposed on importers, in order to facilitate transition by importers to products having safer characteristics. The delay by Canada in addressing imported products continues to place Canadian health and environment at risk from exposures of untold magnitude and effects.

Recommendation 23: Canada should require mandatory labelling for toxic substances in products that have been imported. Any substance listed under the *Prohibition of Certain Toxic Substances Regulations, 2005* should not be allowed on the Canadian market.

Disposal of PFOS

The risk management strategy notes that PFOS has a wide range of application and can be found in many products available to consumers or for industrial processes. We noted earlier the importance of adding disposal as part of the prohibition. PFOS should be considered a hazardous waste due to its impact on the environment. Currently, Canada will be faced with PFOS-containing products that will be allowed to enter Canada through imports. The proposal also documents that approximately 3000 tonnes of AFFF PFOS is in stockpile and will be used over a period of time. These are potential sources of PFOS waste streams that should be considered carefully. Therefore, improved strategies for the collection, containment and final disposal of PFOS-containing products is required and should be included in the risk management strategy. In addition, monitoring of landfill emissions of PFOS substances should be undertaken.

Recommendation 24: PFOS should be considered a hazardous waste due to its potential impact on human health and the environment. Efforts should be focused on improving strategies for collection, containment and final disposal of PFOS-containing products, including a monitoring protocol for landfill emissions for PFOS.

Identification and Promotion of Safe Alternatives

The proposed risk management strategy documents that a number of substances have been identified as alternatives to PFOS, its salts and precursors, including: perfluorobutane sulphonate substances, fluorotelomers, hydrocarbon-based and silicone-based surfactants. The proposed risk management strategy, however, does not document the toxicity of these substances, with the exception of the reference to fluorotelomer substances. The absence of this information makes it difficult to comment on the adequacy of these substances as safe alternatives to PFOS. Indeed, environmental non-governmental organizations have been vocal over the years calling for the urgent need to identify and promote safe alternatives to hazardous substances. It is our view that any substances being considered as a safe alternative/substitute should be required to demonstrate that it does not exhibit hazardous properties. The proponent should submit adequate data to government to demonstrate the safety of any proposed alternative or process. No substance should be accepted as an alternative if it demonstrates similar toxic properties to the substance that it replaces.

We are pleased to read that on-going research is underway to identify alternatives. To guide these efforts, government should initiate dialogue in developing criteria for identification of safe alternatives, and establishing a database of substances that are suitable as safe alternatives to toxic substances. This dialogue should be undertaken in a multi-stakeholder consultation process.

Recommendation 25: Government should initiate dialogue in developing criteria outlining principles that should be followed in identification of safe alternatives, and establishing a database of substances that are suitable as safe alternatives to toxic substances. This dialogue should be undertaken in a multi-stakeholder consultation process.

Recommendation 26: Safe alternatives are considered safe if the alternatives do not exhibit hazardous properties such as persistence, bioaccumulation, carcinogenicity, mutagenicity, neurotoxicological toxicity, developmental and reproductive toxicity (including endocrine disruption), respiratory toxicity, and teratogenicity.

Multi-Stakeholder Process

We agree that a multi-stakeholder process may be required to further discussion on various components of the proposed risk management strategy on PFOS. At this time, however, the stakeholder consultation process should not be debating the addition of PFOS to the Prohibition of Certain Toxic Substances Regulation, 2005.

Some areas of focus for public consultation include:
* identify how to effectively capture and restrict the entry of imported products that may contain PFOS;
* initiate dialogue on criteria for assessing safe alternatives;
* develop, identification and promotion of safe alternatives and development of an inventory of alternatives to toxic substances such as PFOS;
* develop specific strategies for the electroplating sector and fire fighting activities and continued use of PFOS and products containing PFOS;
* identify the barriers facing facilities using AFFF on phasing out PFOS
* require public reporting on the effectiveness of the risk management strategy; and
* expand proposed risk management strategy into the development of a National Action Plan on all perfluorinated substances. Currently, an action plan is being proposed for perfluorinated carboxylic acids. This action plan should include consideration of other perfluorinated substances in light of the pending deadline for the categorization process under CEPA. This process may identify other perfluorinated substances that are not currently being addressed through assessment or management regimes, and that warrant action.

To effectively engage in any multi-stakeholder consultation, adequate resources and clear terms of reference are required. Given the range of industrial applications and products that contain PFOS substances, additional care should be considered in timing of consultation meeting and engagement by public interested organizations.

Recommendation 27: Given the evidence surrounding PFOS and its potential impact to health and environment, a stakeholder process should not debate or revisit whether to add PFOS to the Prohibition of Certain Toxic Substances Regulations, 2005.

Recommendation 28: A multi-stakeholder process should be established over the next six months to discuss specific issues related to the management of PFOS and other perfluorinated substances. Areas for potential dialogue, include:
*** identify how to effectively capture and restrict the entry of imported products that may contain PFOS;**
*** initiate dialogue on criteria for assessing safe alternatives;**
*** develop, identification and promotion of safe alternatives and development of an inventory of alternatives to toxic substances such as PFOS;**
*** develop specific strategies for the electroplating sector and fire fighting activities and continued use of PFOS and products containing PFOS;**
*** identify the barriers facing facilities using AFFF on phasing out PFOS;**
*** require public reporting on the effectiveness of the risk management strategy; and**
*** expand proposed risk management strategy into the development of a National Action Plan on all perfluorinated substances.**

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