**Health Canada Response to Environmental Petition No. 0458**

**How protective and how transparent is the Canadian government response to the Per- and Polyfluoroalkyl Substances (PFAS) Class of 'Forever Chemicals' in water, products, and waste?**

**Petitioners:**

- Fe de Leon (Canadian Environmental Law Association);
- Beverley Thorpe (Clean Production Action);
- Olga Speranskaya (Health and Environment Justice Support);
- Brennain Lloyd (Northwatch); and
- John Jackson (representing Toxics-Free Great Lakes Binational Network).

*Supported by the Trout Lake Conservation Association and Nipissing Environmental Watch.*

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| **1** | What is the Government of Canada's timeline for reviewing existing exemptions for PFOS, PFOAs, and LC-PFCAs currently included in the Prohibition of Certain Toxics Substances Regulations? The 2018 consultation document 9 released by the government recommended removing all existing exemptions for PFOS, PFOA and LC-PFCAs. The recent Notice of Intent on PFAS published in April 24, 2021 outlined these exemptions would be finalized in Spring 2021. When will these existing exemptions be removed? | Environment and Climate Change Canada (ECCC) | The response will be provided by ECCC. |
| **2** | How will the Government of Canada prevent regrettable substitutes for PFOS, PFOA and LC-PFCAs? In the 2018 consultation document reference is made to the removal of exemptions due to fact that 'alternatives are available globally'. Can the government | ECCC, Transport Canada | The response will be provided by ECCC and Transport Canada. |

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| | clarify if these alternatives are fluorine-free or if they are other PFAS-based substances? Does the Government of Canada intend to promote PFAS-free alternatives to the use of PFOS, PFOA and LC-PFCAs? In particular, what is the rationale for regulations permitting the use of PFOS "in aqueous film forming foam present in military vessels or military firefighting vehicle contaminated during foreign military operations" and LC-PFCAs in aqueous film forming foam used in fire fighting? How is Transport Canada promoting the use of fluorine-free firefighting foams? | | |
| **3** | Is the Government of Canada prioritizing for assessment and management the remaining PFAS in the commercial products available in Canada, including PFAS that may be used in other products such as firefighting foam and including the short chained PFAS, which are currently not included in the *Prohibition of Certain Toxics Substances Regulations*?<br><br>What research or data has been undertaken by the Government of Canada about the risks, effects and treatment for short-chain PFAS, and | Health Canada (HC) and ECCC | The Government of Canada intends to move forward with activities to address the broad class of per- and polyfluoroalkyl substances (PFAS) because scientific evidence to date indicates the PFAS used to replace regulated PFOS, PFOA, and long-chain PFCAs (LC-PFCAs) may also be associated with environmental and/or human health effects.<br><br>Since 2018, Health Canada's PFAS research includes studying the effects of 28 PFAS on liver toxicity and includes both short-chain and long-chain PFAS. The results to date are published in:<br><br>• Reardon AJF, Rowan-Carroll A, Ferguson SS, Leingartner K, Gagne R, Kuo B, Williams A, Lorusso L, Bourdon-Lacombe JA, Carrier R, Moffat I, Yauk CL, Atlas E. Potency ranking of per- and polyfluoroalkyl substances using high-throughput transcriptomic analysis of human |

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| | how is this information considered when evaluating chemicals for inclusion in the *Prohibition of Certain Toxics Substances Regulations*? | | liver spheroids. Toxicol Sci. 2021 Aug 28:kfab102. doi: 10.1093/toxsci/kfab102. Epub ahead of print. PMID: 34453843.<br><br>Since 2020, Health Canada also has and continues to undertake research in the area of fate and transport of PFAS (including short-chain PFAS: C7-C4) to support the assessment and management of PFAS at federal contaminated sites. Key internal research reports include:<br><br>• "Perfluoroalkyl Uptake in Foods: A summary of Available Literature" (Intrinsik, 2018).<br>• "Modelling Perfluorooctane Sulfonate (PFOS) Fate and Transport from Soil to Groundwater" (Franz, 2012). |
| **4** | How have Environment and Climate Change Canada and Health Canada given consideration to the imposition of a ban of all PFAS chemicals?<br><br>Will Canada develop a PFAS Action Plan to phase out the class of PFAS by 2030 for all non-essential uses?<br><br>Does Canada have an ambitious timeline to phase out the remaining uses of PFAS that currently have no available safer substitutes, similar to the approach taken by the European Commission in their Chemical Strategy for Sustainability? | HC and ECCC | On April 24, 2021, the Government of Canada published a Notice of intent to address the broad class of PFAS, outlining the federal government's planned action that will contribute to a class-based approach to addressing PFAS (i.e., considering PFAS as a group rather than taking a substance by substance approach). In particular, the Government of Canada will:<br><br>• continue to invest in research and monitoring of PFAS;<br>• collect and examine information on PFAS to inform a class-based approach; and<br>• review policy developments in other jurisdictions.<br><br>Furthermore, in 2023, the Government of Canada intends to publish a State of PFAS Report that will summarize relevant information on the class of PFAS (e.g., hazard information, exposures).<br><br>These actions described above will address the current knowledge gap and should information be identified that indicates potential harm to human |

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| | | | health and/or the environment, appropriate risk management measures (e.g., regulations) would be taken. |
| **5** | How does the *Prohibition of Certain Toxic Substances Regulations* address cosmetic products containing PFAS, particularly imported products?<br><br>What is the Government of Canada's plan and timeline for banning PFAS-contaminated products from entering Canada and for requiring clear labelling and consumer information on products which might contain PFAS? | HC | The *Prohibition of Certain Toxic Substances Regulations* apply to all products, including cosmetics. The Regulations prohibit the manufacture, use, sale, offer for sale and import of perfluorooctane sulfonate, its salts and its precursors (collectively referred to as PFOS), perfluorooctanoic acid, its salts, and its precursors (collectively referred to as PFOA), and long-chain perfluorocarboxylic acids, their salts, and their precursors (collectively referred to as LC-PFCAs), and products containing them, including cosmetic products, with a limited number of exemptions (e.g., incidental presence).<br><br>Future actions, including consideration of labelling and consumer information needs, will be informed by the work outlined in the Notice of intent to address the broad class of PFAS and the input and feedback provided by stakeholders through that process. Many of the actions described have been initiated and, for example, the State of PFAS Report will be completed in 2023 to inform further actions. |
| **6** | How has Health Canada applied the provisions of the *Canada Consumer Product Safety Act* with respect to consumer products that may contain PFAS?<br><br>How has Health Canada ensured that the prohibitions from selling non-compliant products are being enforced? Please provide a detailed description of this program implementation and available data to confirm compliance. | HC | The *Canada Consumer Product Safety Act* (CCPSA) has some of the most stringent regulations for consumer products and chemicals in the world, with legislative powers to take action to address product safety issues.<br><br>The CCPSA protects the public by addressing or preventing dangers to human health or safety that are posed by consumer products in Canada, including those that are manufactured, imported, advertised or sold in Canada. The general prohibition (section 7 and 8 of the CCPSA) and the regulations made under the CCPSA allow Health Canada to quickly respond to human health risks and to work with industry to remove unsafe products from the market.<br><br>When a risk is identified, Health Canada can take appropriate compliance and enforcement action, which can include: |

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| | | | • recall dangerous products from the Canadian market whether available online or in store;<br>• issue country-wide public advisories to inform Canadians through various platforms (e.g., website, email and social media channels) of dangers posed by harmful products. These advisories include actions Canadians can take to minimize any health risk to humans; and<br>• work in collaboration with the Canada Border Services Agency to prevent the import of prohibited, dangerous and non-compliant products.<br><br>As previously mentioned, PFOS, PFOA, and LC-PFCAs are regulated under the *Canadian Environmental Protection Act, 1999* through the *Prohibition of Certain Toxic Substances Regulations.* Therefore to date, exercising the authorities under CCPSA consumer products that may contain other PFAS has not been needed.<br><br>For more information about Health Canada's approach to verifying compliance with the CCPSA and its regulations, please consult the Consumer Product Safety Program policy on compliance verification projects: Industry guide. The results of the CCPSA Compliance and Enforcement activities since 2015 can also be found in Consumer Product Enforcement Summary Reports. |
| **7** | How have the responsible departments – Environment Canada and Climate Change, Health Canada, Transport Canada and the Department of National Defence – identified potential sites of PFAS contamination? | ECCC, Department of National Defence (DND), Transport | Health Canada does not have the mandate to identify contaminated sites. Under the Federal Contaminated Sites Action Plan (FCSAP), Health Canada is an Expert Support Department, and provides advice, training and tools related to human health in support of the assessment and risk management of legacy contamination at federal contaminated sites. This includes sites that may be contaminated by PFAS or other substances. |

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| | Please provide each Departments' criteria for investigation, and a list of sites clearly depicted on a map or with GIS coordinates which have been identified as confirmed or potential sites of PFAS contamination. | Canada and HC | |
| **8** | What data is available from monitoring programs undertaken by or on behalf of Environment Canada and Climate Change, Health Canada, Transport Canada and the Department of National Defence to detect or measure the levels of PFOS, PFOA, and LC-PFCAs or any other PFAS in Canada?<br>How do each of the departments make the data, results and findings from monitoring programs available to the public and to local health agencies?<br>What other environmental and health monitoring has been completed on PFAS beyond those in the PFOS, PFOA and LC-PFCAs?<br>Please provide the data, particularly for landfills, drinking water sources and wildlife monitoring.<br>How is this data released or made available to local health agencies and to the public? Please specify if the data is publicly and freely available and how it can be accessed. | ECCC, DND, Transport Canada and HC | PFAS data in humans is available for PFOS, PFOA, perfluorobutanoic acid (PFBA), perfluorobutane sulfonate (PFBS), perfluorohexanoic acid (PFHxA), perfluorohexane sulfonate (PFHxS), long-chain perfluoroalkyl carboxylic acids (such as perfluorononanoic acid [PFNA], perfluorodecanoic acid [PFDA], and perfluoroundecanoic acid [PFUnDA]).<br><br>This data has been collected as part of the Canadian Health Measures Survey (CHMS), Canadian Drinking Water Survey, Northern Contaminants Program (NCP) and Maternal-Infant Research on Environmental Chemicals (MIREC) study.<br><br>The results, findings and data are publicly available through scientific literature, and national and international summary reports, as listed below:<br>• AMAP Assessment 2015: Human Health in the Arctic. Arctic Monitoring and Assessment Programme (AMAP) // Oslo, Norway/ vii + 165 pp. //– URL: https://www.amap.no/documents/doc/AMAP-Assessment-2015-Human-Health-in-the-Arctic/1346 (access date: 09.09.2019).<br>• Caron-Beaudoin É, Ayotte P, Blanchette C, Muckle G, Avard E, Ricard S, Lemire M. Perfluoroalkyl acids in pregnant women from Nunavik (Quebec, Canada): Trends in exposure and associations with country foods consumption. Environ Int. 2020 Dec;145:106169. doi: 10.1016/j.envint.2020.106169. Epub 2020 Oct 9. PMID: 33041046.<br>• Fisher M, Arbuckle TE, Liang CL, Leblanc A, Gaudreau E, Foster WG, et al. Concentrations of persistent organic pollutants in maternal and cord |

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| | | | blood from the maternal-infant research on environmental chemicals (MIREC) cohort study. Env Heal. 2016;15:1–14.<br>• Garcia-Barrios J, Drysdale M, Ratelle M, Gaudreau É, LeBlanc A, Gamberg M, Laird BD. Biomarkers of poly- and perfluoroalkyl substances (PFAS) in Sub-Arctic and Arctic communities in Canada. Int J Hyg Environ Health. 2021 Jun;235:113754. doi: 10.1016/j.ijheh.2021.113754. Epub 2021 May 10. PMID: 33984600.<br>• Government of Canada. 2018. Canadian Arctic Contaminants Assessment Report. Human Health Assessment 2017. Curren, MS (Editor). Catalogue: R74-2/4-2017E-PDF. ISBN : 978-0-660-08172-4. Her Majesty the Queen in Right of Canada, 2018. Available from: https://science.gc.ca/eic/site/063.nsf/eng/h_97662.html<br>Kubwabo, C., Lalonde, K. 2012. A survey of selected perfluorinated compounds in Canadian untreated source and finished drinking water. In: Organohalogen Compounds 74: 804-808. http://dioxin20xx.org/wp-content/uploads/pdfs/2012/1205.pdf<br><br>The CHMS results are summarized in reports that are posted on the Government of Canada's website (canada.ca/biomonitoring) and are available in CSV format through the Government of Canada's Open data portal (https://open.canada.ca/data/en/dataset/8cc88229-8132-4ccd-a3dd-b456579158c6).<br><br>Additionally, the findings from the CHMS 5th cycle were presented to external stakeholders, including provincial and territorial and non-governmental organizations, during a targeted briefing that included data specific to PFAS. CHMS results were also made available at the Canadian Public Health Association Conference (CPHA), the Ontario Public Health Association Convention (TOPHC) and the "Journées annuelles de Santé publique" (JASP) in 2017, 2018, and 2019 (in-person activities were suspended in 2020 and 2021 due to the COVID-19 pandemic). |

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| | | | Over the period of 2011 to 2014, the Environmental Sciences Group at the Royal Military College undertook a project under contract with Health Canada. The project investigated data gaps and uncertainties in field collection protocols (e.g., groundwater collection methods, sample size) and laboratory analytical methods for analyzing PFAS in soil and groundwater. Samples for this project were collected from various Department of National Defence PFAS sites. The results of the sampling and analytical procedures were presented in an internal contractor report. |
| **9** | In how many instances have each of Environment Canada and Climate Change, Health Canada, Transport Canada and the Department of National Defence requested extensions of up to 300 days to reply to Access to Information requests from the public when those requests pertain to reports, studies or monitoring results that are complete and/or have been the subject of issued statements by that Department? Please provide specifics. | | Health Canada had one Access to Information request file since August 10, 2016 that identifies PFAS or "forever chemicals" within the request text, and for which an extension up to 300 days was taken. |
| **10** | What data and scientific reports were used by Health Canada to establish the drinking water guidelines / standards for PFOA and for PFOS?<br><br>Did Health Canada use the risk assessment results on these PFAS completed under CEPA to establish the drinking water guidelines /standards for Canada? | HC | Health Canada reviewed and assessed all identified health risks associated with PFOA and PFOS in drinking water to develop the Canadian Drinking Water Quality Guidelines for PFOS and PFOA. These assessments incorporate available studies from scientific peer-reviewed journals and reports from various international organizations and governmental agencies, including CEPA assessments. The full list of references is in the published guideline technical documents for PFOS and PFOA.<br><br>The science on PFAS is complex and still emerging, and Health Canada is reviewing all the relevant scientific information to update the drinking water |

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| | Does Health Canada intend to update the guidelines based on current and emerging scientific knowledge of health impacts?<br><br>What is Health Canada's plan and timeline for establishing guidelines / standards for the remaining PFAS chemicals? | | guidelines for PFOS, PFOA and the nine screening values for select PFAS. In line with the recently published Notice of Intent to address the broad class of PFAS, Health Canada is considering approaches that would address PFAS as a class in drinking water safety. Health Canada is committed to updating its Canadian Drinking Water Quality Guidelines, its screening values and developing new technical guidance as the science evolves and more information becomes available.<br><br>In collaboration with our federal, provincial and territorial partners, and with opportunities for public consultation, Health Canada is working to develop additional guidance for PFAS in drinking water in the next two years and is anticipating revisions to the Guidelines for select PFAS in three to four years. |
| **11** | Why do Canadian drinking water guidelines and standards differ significantly from other jurisdictions with more stringent levels? For example, please provide a supporting rationale for why Health Canada established a Drinking Water Maximum Acceptable Concentration of 0.200 ug/L for PFOA and 0.600 ug/L for PFOS in comparison to the US Environmental Protection Agency (EPA) DW Lifetime health advisory of 0.070 ug/L for each of PFOA and PFOS? | HC | Health Canada and the United States Environmental Protection Agency work collaboratively by sharing information and leveraging experiences and research on contaminants in drinking water, including PFAS. More broadly, Health Canada has strong partnerships internationally and is designated as a World Health Organization Collaborating Centre for Water Quality.<br><br>The US EPA's approach and methods to set health advisory levels differ from those used by Health Canada to establish Canadian Drinking Water Quality Guidelines for multiple reasons. For example, the US EPA uses the body weight and water consumption for specific characteristics and considerations for their populations, which are different from the Canadian population values. In addition, the Canadian Drinking Water Quality Guidelines are developed with consideration to the feasibility of drinking water treatment. The approach for the US health advisories does not include these considerations. As a result of the population differences and considerations in development, the Canadian and US values are difficult to compare. |

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| | | | The assessment of health effects related to PFOS and PFOA, and the larger class of PFAS, is a complex and emerging area of science. To account for this, based on available science, Health Canada adopted a conservative approach by selecting the health effect (liver effects) that was observed at the lower level of exposure in deriving the Guidelines, and used average water consumption for a Canadian adult (1.5 L/day) and uncertainty factors proportional to the state of the science. The US EPA chose a different health effect as a basis of its Health Advisory, additional safety factors, and a higher average daily consumption rate of (3.78L/day). |
| **12** | What recent research has been undertaken with respect to the effect of PFAS exposure on the health of Canadians, and how and where are those research findings made available to Canadians in general and to public health agencies in particular?<br>Does Health Canada have a plan to update their health impact information and if so, how will this be communicated to the public? | | Health Canada has been actively carrying out research on the effect of PFAS exposure on the health of Canadians since 2008. Key projects are listed below, along with references to publications and reports. In addition to presenting the research findings at scientific forums and publishing them in scientific peer-reviewed journals whenever possible, Health Canada publishes an annual Compilation of Research Abstracts that is accessible online. The Government of Canada also publishes the CEPA annual report that contains a compilation of various scientific abstracts summarizing research initiatives across many federal departments.<br>Below is a summary of relevant Health Canada research:<br>• Health Canada launched a research project to model the dose-response behavior of various PFAS in the Canadian population. The model is expected to provide regulators and scientists a tool to predict the exposure across different PFAS forms and identify potential markers of altered immune functions.<br><br>• Health Canada is also conducting research to evaluate the health risk posed by PFAS exposure on the liver, as it is one of the main targets of PFAS toxicity. Using this approach, the potency of 28 PFAS were ranked. The results were recently published in Toxicological Sciences: |

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| | | | ○ Reardon AJF, Rowan-Carroll A, Ferguson SS, Leingartner K, Gagne R, Kuo B, Williams A, Lorusso L, Bourdon-Lacombe JA, Carrier R, Moffat I, Yauk CL, Atlas E. Potency ranking of per- and polyfluoroalkyl substances using high-throughput transcriptomic analysis of human liver spheroids. Toxicol Sci. 2021 Aug 28:kfab102. doi: 10.1093/toxsci/kfab102. Epub ahead of print. PMID: 34453843. (see b i) response for lay summary)<br>○ Rowan-Carroll A, Reardon A, Leingartner K, Gagné R, Williams A, Meier MJ, Kuo B, Bourdon-Lacombe J, Moffat I, Carrier R, Nong A, Lorusso L, Ferguson SS, Atlas E, Yauk C. High-Throughput Transcriptomic Analysis of Human Primary Hepatocyte Spheroids Exposed to Per- and Polyfluoroalkyl Substances as a Platform for Relative Potency Characterization. Toxicol Sci. 2021 May 27;181(2):199-214. doi: 10.1093/toxsci/kfab039. PMID: 33772556.<br><br>• Health Canada has also evaluated the potential effects of PFAS exposure during pregnancy on maternal and child health outcomes including gestational weight gain, high blood pressure, gestational diabetes, infertility, low birth weight, and newborn markers of immune system development and metabolic function. These findings are published in scientific journals and lay abstracts are available on the Maternal-Infant Research on Environmental Chemicals (MIREC) website (http://mirec-canada.ca).<br>○ Ashley-Martin J, Dodds L, Arbuckle TE, Bouchard MF, Fisher M, Morriset A-S, et al. Maternal Concentrations of Perfluoroalkyl Substances and Fetal Markers of Metabolic Function and Birth Weight. Am J Epidemiol. 2017;185(3).<br>○ Ashley-Martin J, Dodds L, Arbuckle TE, Morisset A-S, Fisher M, Bouchard MF, et al. Maternal and neonatal levels of |

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| | | | perfluoroalkyl substances in relation to gestational weight gain. Int J Environ Res Public Health. 2016;13(1).<br>○ Ashley-Martin J, Levy AR, Arbuckle TE, Platt RW, Marshall JS, Dodds L. Maternal exposure to metals and persistent pollutants and cord blood immune system biomarkers. Environ Heal A Glob Access Sci Source. 2015;14(1)<br>○ Borghese MM, Walker M, Helewa ME, Fraser WD, Arbuckle TE. Association of perfluoroalkyl substances with gestational hypertension and preeclampsia in the MIREC study. Environ Int [Internet]. 2020;141(March):105789. Available from: https://doi.org/10.1016/j.envint.2020.105789<br>○ Shapiro GD, Dodds L, Arbuckle TE, Ashley-Martin J, Ettinger AS, Fisher M, et al. Exposure to organophosphorus and organochlorine pesticides, perfluoroalkyl substances, and polychlorinated biphenyls in pregnancy and the association with impaired glucose tolerance and gestational diabetes mellitus: The MIREC Study. Environ Res. 2016;147.<br>○ Vélez MP, Arbuckle TE, Fraser WD. Maternal exposure to perfluorinated chemicals and reduced fecundity: The MIREC study. Hum Reprod. 2015;30(3):701–9.<br><br>• MIREC-related projects are underway to examine:<br>○ personal care product use during pregnancy (cosmetics, lotions, hair products) and maternal PFAS concentration.<br>○ PFAS concentrations during pregnancy and maternal and child antibody response to vaccines.<br>○ PFAS concentrations during pregnancy and maternal lipid levels.<br><br>• A project using data from the Plastics and Personal Care Product use in Pregnancy (P4) study to examine PFAS concentrations in milk in relation to personal care product use is underway. |

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| | | | • Health Canada researchers have also planned a study to look at the associations between PFAS exposure and menopause.<br><br>As noted in the Notice of intent to address the broad class of PFAS, Health Canada and Environment and Climate Change Canada will publish a State of PFAS report within the next two years. It will provide updated health information on the broader class of PFAS. This report will be published on the Government of Canada's website. In addition, Canada recently nominated LC-PFCAs to the Stockholm Convention on Persistent Organic Pollutants. As part of this process, Health Canada and Environment and Climate Change Canada provided an update of ecological and health impact information, which is available online. Health Canada also published a summary of health impacts. |
| **13** | What research is underway with respect to potential links between PFAS and COVID-19, and other vaccines? How does Health Canada intend to communicate the findings of this research to COVID-19 researchers and science advisory groups in Canada? | HC | At this time, Health Canada has not undertaken research to investigate the link between PFAS and COVID-19; however, as noted in response to Q12, a Maternal-Infant Research on Environmental Chemicals (MIREC) related project is underway to investigate PFAS concentrations during pregnancy and antibodies to the following common live vaccines: measles, mumps, rubella, and varicella (chickenpox).<br><br>To the best of our knowledge, there is no intentional use of PFAS in vaccine production. The submission packages that Health Canada reviewed for COVID-19 vaccine authorization did not contain multivariate studies on exposure to chemicals such as PFAS and the effectiveness of vaccines.<br><br>Health Canada and the Public Health Agency of Canada monitor the safety and effectiveness of vaccines following their authorization, and will update Canadians with any new information in this regard. |

**Health Canada Response to Environmental Petition No. 0458**

**How protective and how transparent is the Canadian government response to the Per- and Polyfluoroalkyl Substances (PFAS) Class of 'Forever Chemicals' in water, products, and waste?**

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| **14** | How does CEPA and its regulations apply to the movement of waste containing PFAS into Canada from US and other countries? What information is collected and made available to the public regarding the origin, quantity, frequency, treatment and disposal of these wastes? Please explain and provide supporting information. | ECCC and Transport Canada | The response will be provided by ECCC and Transport Canada. |