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Implementation towards the achievement of the 2020 goal of sound chemicals management: emerging policy issues and other issues of concern: other issues of concern: perfluorinated chemicals

Update on the management of perfluorinated chemicals and the transition to safer alternatives

Note by the secretariat

The secretariat has the honour to circulate a report on the management of perfluorinated chemicals and the transition to safer alternatives prepared by the Organization for Economic Cooperation and Development (OECD) and the United Nations Environment Programme (UNEP) (see annex). The report provides a summary of the work carried out on this issue since the third session of the International Conference on Chemicals Management, identifies gaps remaining that need to be addressed to support the achievement of the 2020 goal, and proposes a workplan for the period 2016–2020. The report is presented as received by the secretariat, without formal editing.

* SAICM//ICCM.4/1.

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Annex

Progress report on the management of perfluorinated chemicals[1] and the transition to safer alternatives

I. Background

1. Per- and polyfluoroalkyl substances (PFASs) have been in use since the 1950s as ingredients or intermediates of surfactants and surface protectors for assorted industrial and consumer applications. Some of the unique physicochemical properties of PFASs that popularised their widespread use are also associated with environmental and human health concerns. For example, within the past decade, several long-chain perfluoroalkyl acids have been recognised as persistent, bioaccumulative, and toxic. Many have been detected globally in the environment, biota, food items, and in humans.

2. Driven by concerns about the potential adverse impacts of certain PFASs on the environment and human health, various risk reduction actions have been implemented to reduce the environmental and human exposure to, in particular, long-chain PFASs. Research on the environmental and health impacts of PFASs has been strengthened as well as projects to monitor their presence in the environment (in particular in water), biota and humans. There are also continuing efforts towards substitution of PFASs with safer alternatives (potentially less hazardous fluorinated compounds, non-flurorinated alternatives, and other technologies). Due to their global impact, it is important that efforts are being made to support the exchange of knowledge generated on PFASs risk, on possible alternatives and on the different types of existing risk reduction measures across countries.

II. Introduction

3. The OECD/UNEP Global PFC Group was established in 2012 to facilitate the exchange of information on PFASs and to support a global transition towards safer alternatives. The Group was established in response to the International Conference on Chemicals Management (ICCM 2) 2009 Resolution II/5, calling upon intergovernmental organisations, governments and other stakeholders to "consider the development, facilitation and promotion in an open, transparent and inclusive manner of national and international stewardship programmes and regulatory approaches to reduce emissions and the content of relevant perfluorinated chemicals of concern in products and to work toward global elimination, where appropriate and technically feasible".

4. The Global PFC Group constitutes a wide range of stakeholders including representatives from OECD and non-OECD countries (e.g. Benin, Costa Rica, China, India, the Russian Federation, Vietnam, Zambia), industry stakeholders (in particular fluorinated chemicals producers), NGOs, and academics. The Secretariat of the Stockholm Convention is also part of the group and is actively engaged in activities. Further participation in the group is encouraged.

III. Project activities and outcomes

5. Since its inception, the Global PFC Group has been focusing on developing a global overview of the situation vis-a-vis PFASs. In 2013, the Global PFC Group published a Synthesis Report on PFCs[2,] which provides an overview of the following areas: major uses of PFASs, scientific information pertaining to PFASs in regards to human health and the environment, regulatory approaches in a number of countries and available alternatives. In 2013-2014, four public webinars were organised to present the information contained in the synthesis report. The presentations and recording of the webinars are available at: http://www.oecd.org/ehs/pfc/pfceventsmeetingswebinars.htm.

6. More recently, the Global PFC Group has engaged in a more thorough analysis of risk reduction measures for PFASs across countries as well as examining information on emissions of PFASs in different regions worldwide.

[1] PFCs refer here to per- and poly- fluorinated chemicals, and not to perfluorocarbons. PFCs are now most frequently referred to as per- and polyfluoroalkyl substances (PFASs).

[2] OECD, UNEP (2013), Synthesis paper on per and polyfluorinated chemicals (PFCs), OECD, Paris. see http://oecd.org/env/ehs/riskmanagement/PFC_FINAL-Web.pdf

1. A Cross-Country Analysis of Risk Reduction Approaches for PFASs

7. The report on "Risk Reduction Approaches for PFASs - A Cross-Country Analysis", which is being published in September 2015[3], provides a snapshot of current activities with regard to the development of risk reduction approaches for PFASs in a number of countries. This analysis aims to inform countries about options for risk reduction of PFASs. The project is based on a survey carried out in the first quarter of 2015. The survey addressed questions related to: (1) the pre-existing conditions necessary for the development and implementation of risk reduction approaches in a particular country/region; (2) the strengths of the different approaches and the benefits gained from their implementation; and (3) the challenges faced during their development and implementation.

8. The development of this project was based on the active participation of the following countries/regions: Australia, Canada, Denmark, the European Union, Finland, Germany, Japan, the Netherlands, Norway, the People's Republic of China, Poland, Sweden, the United Kingdom and the United States. Non-survey information on the Russian Federation is also included in the report. The Fluorocouncil[4] also contributed in providing specific information and examples on voluntary risk reduction measures taken by corporations.

9. The report shows that risk reduction approaches for PFASs are mainly covered under existing national and/or regional regulatory frameworks and generally focus principally on long chain PFASs and their precursors and salts. Approaches aimed at gathering new knowledge (e.g. of the risks of PFASs and of their use in products) and at awareness-raising tend to include broader categories of PFASs. The type of risk reduction approaches implemented across countries can vary but there is often a combination of voluntary and regulatory approaches that is used. Many countries require that regulatory approaches be supported by risk assessment demonstrating the need to reduce risk and exposure. Some also require that a socio-economic or cost-benefit analysis be conducted. While many countries have conducted their own analyses on PFASs, others indicated their use of published assessments from their international counterparts to save resources and avoid duplication of efforts.

10. The analysis of the risk reduction approaches in the studied countries highlighted a number of initial conditions that tend to influence the development of risk reduction approaches. Two important drivers are the growing scientific knowledge on the risk of certain PFASs for human health and the environment and the increasing number of international initiatives supporting a transition toward safer alternatives. The majority of surveyed delegations chose to prioritise certain long-chain PFASs for risk reduction based on scientific evidence, and international initiatives on PFASs (e.g. the listing of PFOS and related compounds under Annex B of the Stockholm Convention) also led many countries to take domestic measures to reduce risks.

11. Several surveyed countries/regions noted the importance of multi-stakeholder participation to inform the development of risk reduction approaches. Key stakeholders include: public authorities, industry, academics and advocacy groups.

12. Many countries evaluate the success of their strategies both qualitatively and quantitatively. For example, governments commonly measure the success of risk reduction approaches by tracking emissions levels and production and use information in their country. However, a number of challenges were identified that makes difficult both the elaboration of the approach and the evaluation of its impact. Some of the challenges are:

(a) The availability of robust scientific data to elaborate a risk reduction approach - these data gaps are especially a challenge when they exist for alternatives;

(b) The difficulty to gather the necessary information on the use of specific substances all along the supply chain;

(c) The fact that PFAS risk reduction approaches can be difficult to implement for industry. Alternatives need to be available and approved by regulatory bodies for use, economically cost-effective and technically suitable;

(d) The variation that exists among the risk reduction approaches regarding articles. For example, it may be difficult to identify chemicals in articles if their ingredients are not required to be labelled. When the components of an article are unknown, it is difficult to assess their risks and

[3] OECD, UNEP (2015), OECD/UNEP Global PFC Group, Risk Reduction Approaches for PFASs -A Cross Country Analysis, OECD, Paris [Forthcoming]

[4] The FluoroCouncil is the Global Industry Council for FluoroTechnology. It represents leading companies that manufacture, formulate or process FluoroTechnology products and promotes the sustainability of those products.

therefore manage them. It is also difficult to regulate the import of items from countries that have no risk reduction approaches in place;

(e) The challenges that may still arise during enforcement. For example, one country highlighted a lack of cost-effective and available technologies to dispose and/or destroy PFAS-contaminated materials at the volumes required.

13. Several best practices emerged from the analysis in the report:

(a) Risk reduction approaches should be science-based;

(b) Risk reduction approaches should be developed in consultation with stakeholders;

(c) A phased approach to risk reduction, such as starting with voluntary or policy approaches, should be considered when scientific data are lacking but there are emerging concerns (e.g. where early risk management actions are used to inform the development of further action), particularly when scientific data are lacking or more time is needed to prepare scientific or economic assessments to support regulatory action;

(d) International collaboration should be encouraged;

(e) Quantitative benefits from the risk reduction approaches should be measured and communicated;

(f) Timelines for action with ambitious targets should be established.

14. A survey like the one presented in this report could be repeated and the report could be updated, with participation from more countries from different regions in order to provide a global picture of risk reduction approaches.

2. Working towards a global emission inventory of PFASs Focus on PFCAs - Status Quo and the way forward

15. In order to take relevant, adequate measures to reduce the global environmental and human exposure, it is important to understand the levels and trends of long-chain PFASs and fluorinated alternatives in the global environment and biota, starting with source identification and quantification. The Global PFC Group initiated, in 2014, a project aiming to review existing literature on PFASs emissions globally, most particularly on the evolution of PFASs emissions over the past decades and on projection made for emissions toward 2030.

16. This project follows up on work undertaken by the OECD since 2004 to survey the production, use and releases of individual PFASs across countries and regions. The OECD conducted three international surveys in 2004, 2006 and 2009[5]. Despite issues related to confidentiality and incomplete response, the surveys provided the public with useful information on the actual market shift of the production and use of PFASs. However, the surveys also have some limitations: [i] the results are snapshots of the situation in certain years and do not reflect the entire historical production and use; [ii] the results focused on individual PFASs and do not reflect interlinkages among PFASs [iii] incomplete responses do not allow to construct a more precise global view. In the same period, there have been continuous efforts by scientists in estimating global emissions of selected PFSAs, PFCAs and their PASF- and fluorotelomer-based precursors from relevant sources by systematically integrating a wide range of fragmented information through interpolation, extrapolation and consistency checks.

17. This project from the Global PFC Group, the report of which is being published in September 2015[6], aims to work towards establishing a global emission inventory for PFASs by focusing on information from published reports regarding perfluoroalkyl carboxylic acids (PFCAs). The main goal of this report is to highlight the remaining gaps and uncertainties in measuring PFAS emissions worldwide to help identify future activity by the Group on identification of PFASs production, use and releases and to encourage more countries to participate in future activities.

18. The main results from the report indicate that after over a decade of research and systematic integration of many individual findings, four important sources of PFCAs are relatively well understood. Among them, commercial perfluorooctanoic acid (PFOA or C8 PFCA) and perfluorononanoic acid (PFNA or C9 PFCA) used in the fluoropolymer production are identified as

[5] See publications at http://www.oecd.org/env/ehs/risk-management/series-on-risk-management-publications-by-number.htm

[6] OECD, UNEP (2015), OECD/UNEP Global PFC Group, Working towards a global emission inventory of PFASs. Focus on PFCAs - Status Quo and the Way Forward, OECD, Paris [Forthcoming]

the sources responsible for the majority of C7–C9 and C11 PFCAs in the global environment. While former major global manufacturers in the United States, Western Europe and Japan are stepwise eliminating the production and use of long-chain PFASs (including commercial PFOA, PFNA and perfluorooctane sulfonyl fluoride- and fluorotelomer-based substances) by or shortly after 2015, new manufacturers in emerging economies recently initiated large-scale production and use of certain long-chain PFASs and limited quantitative information is publicly available. In general, a trend in the geographical distribution of major industrial sites is that production of long-chain PFCAs, fluoropolymers and other PFAS products has shifted from the US, Western Europe and Japan to the emerging economies in continental Asia (e.g., China and India), suggesting that the proportion of global emissions of PFCAs originating from continental Asia has increased. These new sources may more than offset the reductions obtained by the former major global manufactures. Therefore, there is an urgent need to capture this ongoing geographical shift of industrial sources, as a basis for future actions towards global elimination of long-chain PFASs.

19. Also, the understanding of (potential) sources of some other PFCA homologues, particularly C4, C5, C10, C12–C14 PFCAs, is still incomplete. Multiple overlooked sources of PFCAs have been identified, but currently cannot be quantified due to a lack of information, thereby limiting the quantitative understanding of their contribution to global and regional emissions of PFCAs. Furthermore, efforts to assess and understand the risks associated with the environmental and human exposure to many fluorinated alternatives to long-chain PFASs, starting from source identification and quantification, and the understanding of their global production, use and releases are also essential.

20. Based on lessons learned and the uncertainty and gap analysis presented in this report, three recommendations for improving knowledge on global and regional emissions of PFASs are presented as follows:

(a) [i] The OECD 2007 list of PFASs needs to be updated. In 2007, OECD published an exhaustive, revised list of PFASs containing over 920 PFASs. However, this list is likely no longer up-to-date. In order to provide all stakeholders with an extensive, consistent and easily accessible list of PFASs for future work, it is recommended that the OECD list be updated with possible new features as outlined in the recommendation section of the report.

(b) [ii] A new survey on the global production, use and release of PFASs is necessary in order to properly assess historical and ongoing exposure and to understand global trends. Making such information publicly available is key to establishing the big picture of global and regional emissions of PFASs; thus, a new survey, which encompasses critical information needs and includes all relevant regions, and public consultation, should be considered to collect this information.

(c) [iii] Synergies among stakeholders and links to the existing programs are needed. Another challenge in estimating the global emissions of PFASs is to fill those critical knowledge gaps, where systematic studies and advance of science and knowledge are needed. For this purpose, synergies among stakeholders (intergovernmental organizations, governments, industry, academia and civil society) and links to the existing programs should be used. A broader and more transparent and intense dialogue among stakeholders and relevant actors is needed. The OECD/UNEP Global PFC Group could provide a forum for this dialogue.

IV. Gaps remaining and implications for the 2020 goal

21. The Global PFC Group identified a number of gaps to meet the SAICM 2020 goal. In particular, the four following areas of work will be strengthened in the 2016-2020 period:

(a) Enhance information and knowledge sharing on alternatives to PFASs;

(b) Increase understanding on uses of PFASs and product content;

(c) Develop estimates of PFASs production and release, particularly in relation to use and exposure potential;

(d) Engage in capacity building activities, in particular with emerging and in-transition economies.

22. The Global PFC Group sees enhancing information and knowledge sharing on alternatives as a priority. There is a need to gather scientific data and enhance understanding on the alternatives that are available and to widen the debate regarding the replacement of certain fluorinated compounds, where possible, by non-fluorinated alternatives and different technologies. A number of activities are proposed to help fill-in this gap in the next section “Work Plan”.

23. From discussion with members of the Global PFC Group, as well as feedback provided at ICCM 3, there remains a significant interest in pursuing work in the area of uses and product content of PFASs. Indeed, a number of countries are not producing or processing PFCs, but import products containing PFCs - and owing to a lack of appreciation on what those products contained, they are often treated like any other products. Imports of products containing PFCs from countries for which there are no or little controls on these substances are a particular concern. It is important that more information is available that could help to identify products of concern. A number of activities are proposed to help fill-in this gap in the next section "Work Plan".

24. The interest of continuing work on evaluating PFASs emissions worldwide was developed in the previous section.

25. In general, the Global PFC Group sees a need to engage a wider range of stakeholders in the Group, for it to be fully inclusive: from emerging/in-transition countries, but also from a wider range of OECD countries and industry stakeholders at different level in the supply/value chain. Further participation in the group is encouraged. There was also a need identified to continue communication activities (e.g. webinars, updating of a Web Portal) on PFASs risks and the transition to safer alternatives.

V. Proposed Work Plan

Workplan for the OECD/UNEP Global PFC Group with regards to managing perfluorinated chemicals and the transition to safer alternatives

26. This work is proposed to be undertaken by the OECD/UNEP Global PFC Group, depending on the resources that will be made available. Specific approaches and methodologies to undertake the activities described below will be further elaborated within the Global PFC Group. As outlined in the report "A Cross-Country Analysis of Risk Reduction Approaches for PFASs", there is also significant activity underway within several countries and voluntary approaches being taken by industry that the work of the Global PFC Group complements.

PROPOSED ACTIVITY AREAS	PROPOSED ACTIONS 2016-2020
Enhance information and knowledge sharing on alternatives to PFASs	There is a need to gather scientific data and enhance understanding on alternatives and to expand the debate regarding the replacement of certain fluorinated compounds, where possible, by non-fluorinated alternatives and different technologies. Actions proposed for 2016 – 2020 include: 1. Gathering scientific information on alternatives, including their hazard profiles; 2. Collect information on market trends and availability of alternatives. This may include case studies on responses to market and regulatory pressure; 3. Organise webinars to enhance information and knowledge sharing on alternatives. Information collected through this project should be useful to policy makers and regulators to support and facilitate decision making on market acceptance for proposed alternatives. It also aims to provide useful information to stakeholders further down the value chain on the range of available alternatives for specific purposes. This work will be undertaken in close cooperation with public authorities from countries engaged in the Global PFC Group, with the Secretariat of the Stockholm Convention, with industry representatives and NGOs.
Information about uses and product content of PFASs	A number of countries are not producing or processing PFASs, but import products containing PFASs. It is important that more information is available that could help to identify products of concern. Action proposed for 2016-2020, include: 1. Gathering information on market trends and analysis on products containing PFASs (and their precursors) that could help understand flow of consumer products. The information could be compiled by sector/product type (e.g. food packaging, textiles, etc.); 2. Gathering information on product content. This could be done by gathering information from industry on the products they manufacture.

	Activities will be undertaken in close cooperation with ongoing and future projects of UNEP, in particular the Chemicals in Products project, as well as relevant activities of the Stockholm Convention and other organisations and institutions.
Survey on production and use of PFASs	In order to take relevant, adequate measures to reduce the global environmental and human exposure, it is important to understand the levels and trends of long-chain PFASs and fluorinated alternatives in the global environment and biota, starting with source identification and quantification. Efforts will continue for gathering information on PFAS production and release, possibly through a survey if participation from a sufficient number of manufacturing countries is secured. Collecting good quality information through surveys has proved difficult in the past, other ways of seeking information on gaps will be considered, such as filling gaps through the use of market reports on global production. The information gathering activity should focus on production volumes rather than emissions per se, and link production volumes to use and exposure patterns. The project would focus its efforts on: (i) engaging emerging/in transition economies to provide information and data; and (ii) finding a resource-efficient methodology that allows collecting information that is accurate and relevant. The project might also address BEP (best environmental practices) used in the industry to manufacture these substances (this includes impurity and unreacted raw material content of the products for sale) as well as BEPs in the industry using these substances.
Risk Reduction Approaches for PFASs	The further dissemination of Global PFC Group report on "Risk Reduction Approaches for PFASs - A Cross Country Analysis" is planned for the period 2016-2020 (e.g. through webinars, posting on the PFC Web Portal, etc). Also it is envisaged that the report could be updated, with participation from more countries from different regions in order to provide a global picture of risk reduction approaches.
Capacity Building Activities	Increase capacity building activities for PFASs, in particular in emerging and in-transition economies. Concrete projects are under discussion.