

Contribution of FluoroCouncil's member Archroma to the Draft Addendum to the Risk Management Evaluation Report for PFOA, its salts and PFOA-related substances

The FluoroCouncil is the global trade association of producers of FluoroTechnology such as fluoropolymers and fluorotelomers. All FluoroCouncil member companies globally phased out PFOA and C8 production at the end of 2015 (1).

This submission has been prepared by FluoroCouncil's member Archroma with respect to the exemption request with respect to the *use of PFOI (perfluorooctane iodide) as intermediate to enable reprocessing at another site than the production site to TFE (tetrafluoroethylene) and HFP (hexafluoropropylene)*. It responds to the request for further information formulated in the Draft Addendum concerning the volumes in question as well as the possible risks and risk management measures in place. It also outlines the socio-economic rationale of the exemption request and comments on the discussion with respect to the status of 1-H-PFO as non-PFOA-related substance.

1. Volume of the PFOI side-fraction

Archroma has made investments into a pilot plant in operation since 2017 in order to further reduce the amount of the unintentionally generated C8/long-chain fraction, hereinafter called the "PFOI side fraction", during C6 fluorotelomer production. Following a final viability assessment at the end of April 2018, Archroma expects a fully operational system by summer 2019.

As a result of this reduction effort, we expect the volume of the PFOI side fraction to range between[...] and [...] as of 2020. The exact volume will depend on two main factors: the final reduced proportion of the PFOI fraction as part of the C6 production process as well as the market demand for C6 fluorotelomers. The entire fraction would be transported to South Korea for transformation into TFE and HFP.

To note, the PFOI fraction is not only composed of C8 substances. C8 substances amount to [...] of the total fraction. The residual fraction includes some longer-chain substances [...] and other non-fluorinated substances [...]. The composition of the residual fraction is projected to shift further from C12 and C10 towards C8 as of 2020 as a result of the reduction effort.

2. Possible risks and risk-management measures

All steps of the process covered by the exemption request apply the best available techniques. They are conducted in closed systems with 1/ no contact with water and 2/ incineration of off-gases. The only exception relates to the loading/unloading of containers used for the transport of the PFOI fraction, where strictly controlled

conditions are in place. The production personnel is supervised and trained. All procedures are well documented and most of them are controlled by a process control system. Maintenance operations, typically unclogging, are conducted with products which are incinerated after use.

The C6 production from which the PFOI fraction results, takes place under closed system, with all production units being linked by closed pipes. Between the units there are vessels buffering the products. In 2016, Archroma made significant investments which have terminated any contact with water during production, thereby preventing any presence of fluorinated chemistry in waste water. The only possible emissions are in the off-gases which are incinerated.

The loading and unloading steps for transport in containers take place with local ventilation. Archroma would like to underline that the PFOI fraction is in a liquid form with a very low volatility which further reduces the risk of emissions. The air flow is then filtered by activated carbon adsorption. Filters are incinerated. The workers conducting the operation wear a protective gear.

The transport of the entire unintentional side fraction takes place in dedicated containers and with an experienced specialised shipment company for chemicals. The shipment takes place in compliance with relevant requirements and regulations. The ships have safety measures in place to prevent and deal with contingencies. Archroma shall furthermore comply with the administrative requirements for transport set forth in the Convention, in cooperation with the relevant Parties. In this regard, Archroma would like to highlight its prior experience with applying export control procedures.

The transformation of PFOI into TFE and HFP including intermediary steps of iodine extraction, pyrolysis and distillation, take place under closed system and in inert gas conditions. The process is water free. The only possible emissions are in the residual off-gases which are incinerated.

A summary of the risk-management measures in place are displayed below:

Process step	RMM-general	RMM-specific
C6 production with PFOI fraction	Closed system	No contact with water, off gases incinerated
Loading	SCC	Protective gear, local ventilation, off-gases filtered by activated carbon adsorption, filters incinerated
Transport	Closed containers	Dedicated closed containers, ship equipped to transport hazardous chemicals
Unloading	SCC	Protective gear, local ventilation, off-gases filtered by activated carbon adsorption, filters incinerated
Iodine recovery	Closed system	Inert gas conditions, no contact with water, off-gases incinerated
Pyrolysis	Closed system	Inert gas conditions, no contact with water, off-gases incinerated
Distillation	Closed system	Inert gas conditions, no contact with water, residual gases incinerated

3. Further technical and socio-economic rationale

The PFOI fraction, due to its elevated iodine content, cannot be directly sent to an incineration facility. The iodine content causes rapid corrosion of installations at elevated temperatures, hence the fundamental necessity of iodine extraction. Given the high iodine content, it is anticipated that any incineration process will pose uncommon challenges to incinerators for which an adequate solution may not be in place by the time of the entry into effect of the provisions of the Convention. Archroma, which does not have an iodine extraction capability on-site, has so far not been successful in its efforts to find an incineration facility capable of handling the PFOI fraction. The South Korean partner facility remains at present and in the foreseeable future the only alternative to stock-piling. In the absence of an onsite iodine extraction facility, transport of the unintended PFOI side fraction will be required.

Archroma already invested over [...] in its site in Gendorf, Germany, to move from C8 to C6 production and to further reduce the amount of the unintended PFOI fraction. The launch of a potential pilot plant for on-site iodine extraction up to a fully-functional system would take at least three years and require significant investments.

In the current situation, an additional investment in an on-site iodine extraction facility is uncertain due to the absence of long-term visibility with respect to the operation of the plant. Archroma's decision to move forward with on-site iodine extraction will be determined by the status of the substance resulting from the transformation of PFOI during iodine extraction, 1-H-PFO. Provided this substance is not a PFOA-related

substance, the process of PFOI transformation into 1-H-PFO in closed system and on-site would be permitted by the Convention without a time-limited exemption.

In the absence of an alternative option to stock-piling, a closure of the plant cannot be excluded. This could lead to about [...] direct job losses (from production, R&D, marketing and sales), and furthermore substantially impact suppliers and downstream users.

Archroma would like to highlight the benefits of its cooperation with the South Korean facility which has a patented process that enables the reconversion of fluorinated products back into the raw materials necessary for the production of C6 telomers and fluoropolymers, thereby avoiding the use of primary sources of these materials.

4. Status of 1-H-PFO

We acknowledge the scientific references brought forward in the draft Addendum regarding the status of 1-H-PFO. We do not believe that they give conclusive evidence on the degradation potential of the substance in question. We are currently in the process of preparing further evidence.