GUJARAT FLUOROCHEMICALS
VALUE THROUGH GREEN CHEMISTRY
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Incineration study on Fluoropolymers at their End-of-Life

By Gujarat Fluorochemicals Limited

The main reason to include Fluoropolymers in EU PFAS restriction proposal is its persistence (resistance to degradation) in the environment. A 2022 study by Conversio, a consultancy based in Germany, has shown that at its end of life approximately 85% of all Fluoropolymers end up in waste-to-energy recovery incinerators and the question of regulators subsequently was: are short chain PFAS formed during the incineration process?

Preliminary information from a recent project initiated by Gujarat Fluorochemicals Limited (GFL), a leading Fluoropolymer manufacturer, and executed by the Karlsruhe Institute of Technology (KIT) in cooperation with Société Générale de Surveillance (SGS) demonstrates clearly that Fluoropolymers are converted to Inorganic Fluorides and Carbon dioxide at standard incineration conditions. The inorganic fluorides mainly include Hydrogen Fluoride and Silicon tetrafluoride. Total organic fluorides (PFAS) were non-detectable with a reporting limit of 0.08 ppm and Trifluoroacetic acid (TFA) was also not detected with a reporting limit of 0.04 ppm. The results confirm that Fluoropolymers at their end of life when incinerated in waste to energy recovery plants do not generate any noticeable levels of PFAS emissions and therefore, pose no risk to human health and the environment.

The study involved application samples of the four most sold Fluoropolymers (PTFE, PVDF, PFA and FKM) provided by Pro-K (German association of polymer processors), which were incinerated under standard operating conditions for municipal and industrial waste incineration (850°C – 1100°C for two seconds residence time respectively) and consulted by the German Federal Environment Agency (Umweltbundesamt). Final data set and methodology used are being reviewed and validated by Environmental Standards Inc.

GFL will organize a webinar for the main stakeholders in early June 2023 where KIT and SGS will present the methodology and results in detail. A preliminary report is expected in a few weeks and will be submitted to ECHA's public consultation.

The absence of organic fluorides and more specifically PFAS substances in incineration flue gas confirms complete thermal destruction of Fluoropolymers during incineration and therefore it should pave the way for exempting Fluoropolymers from the EU REACH PFAS restriction proposal.