

TFA is defined as PFAS, and a ban on its manufacture, use, and marketing has been proposed only because TFA is a highly persistent substance that does not decompose. However, recent reports such as the following suggest that the proposal is wrong.

- UNEP 2021 Assessment Report of the Environmental Effects Assessment Panel

UV-driven photodegradation of some of the compounds controlled by the Montreal Protocol (e.g., hydrofluorocarbons (HFCs)) produce contaminants such as trifluoroacetic acid (TFA), but concentrations of these breakdown products in the environment are currently deemed too low to be a concern for human health or the environment.

TFA has recently been found in precipitation, surface waters, and indoor dust in China, although concentrations are below those considered toxic. No additional studies on the toxicity of TFA to organisms have been reported, but prior research has shown that this compound is not highly toxic to mammals and aquatic organisms, although some plants and algae may be sensitive.

- UNEP 2021 Assessment Report of the Environmental Effects Assessment Panel

A sound assessment of the environmental impact of TFA needs to consider the relevant physical, chemical, and toxicological data and realistic environmental concentrations. We are of the opinion that the properties of TFA indicate that it should not be included in this class for the purposes of generic regulatory risk assessment.

TFA does not bioaccumulate nor is it toxic at the low to moderate exposures currently measured in the environment or those predicted in the distant future.

- The Report by the German Environment Agency (UBA) 2021

TFA's toxicity was tested on various aquatic and terrestrial species and can be assessed as low.

It is also shown that, based on the available studies, TFA is of no health concern at the measured concentrations and is not harmful to ecosystems.

- The Report by the Norwegian Environment Agency 2017

A risk assessment was performed for HFO refrigerant use up to the 2100 which was based on the most commonly used HFO substance, HFO-1234yf, and its degradation product, TFA. The outcome of the risk assessment supported similar conclusions identified in literature, these being that toxicity risk of TFA to organisms and human health appears to be low.

We believe that HFOs are not persistent compounds and should not be included in the regulations.

HFOs break down in the environment within a short time span of 10–26 days, leading to their low-global-warming potential (GWP) and low environmental impact.

The mammalian toxicity of TFA and human exposures are reviewed to assess the margin of exposures (MoE). This article shows the following results

- TFA has very low toxic effects on mammals. (the below described)
  1. The potential of TFA to induce acute toxicity is very low.
  2. Oral repeated dose studies in rats have identified the liver as the target organ with mild liver hypertrophy as the lead effect.
  3. Biomarker analyses indicate that TFA is a weak peroxisome proliferator in

rats.

4. TFA administered to rats did not induce adverse effects in an extended one-generation study and in a developmental toxicity study or induce genotoxic responses.

- MoEs for human exposures to TFA are well above 100 and do not indicate health risks.

Article.

Mammalian toxicity of trifluoroacetate and assessment of human health risks due to environmental exposures

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