

Facts about HFOs and TFA

What is TFA



TFA (trifluoroacetic acid and its salts) is a naturally occurring substance which is stable in the environment and resistant to further degradation (breakdown). TFA is also produced by the breakdown of some fluorocarbons.

TFA from man-made products represents no concern for the environment, aquatic organisms or humans.

Over 200 million tonnes are present in the oceans, both coastal and deep-ocean seawater.

More than **95 %** of TFA found in the oceans is **naturally produced.**



HFC-134a

20 %

of emissions transform to TFA. HFC-134a is currently the **largest** fluorocarbon source of TFA.

HFO-1234ze

does **not** form TFA during decomposition



HFO-1233zd

does **not** form TFA during decomposition

Recent modeling suggest that 1233zd can theoretically yield up an indirect contribution of up to 2 %, but experiments were unable to detect any TFA formed.



HFO-1234yf

If all Air Conditioning units of all cars in the world were equipped by HFO-1234yf, it would add

0.04 %

of TFA to oceans.

The study* for the EU assessed a worst case European HFO-1234yf emission and subsequent TFA formation and distribution scenario: The conclusions imply that the aquatic concentrations of TFA will remain well below the no-effect level of the most sensitive algae, even in the most extensive HFO 1234yf use conditions in mobile air conditioning.

*Henne S., Shallcross D.E., Reimann S., Xiao P., Brunner D., O'Doherty S., Buchmann B., *Future Emissions and Atmospheric Fate of HFC-1234yf from Mobile Air Conditioners in Europe*, Environmental Science & Technology 46 (3):1650-8 (2012).

Using Solstice[®] yf refrigerant has helped avoid the release of 27,255,766 metric tons of CO₂e into the atmosphere so far, equivalent to carbon sequestered by

131,646

square kilometers of trees, nearly the size of Greece.



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For more information

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