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Authors: Krish Vijayaraghavan[1], Kun Zhao[1], Cecilia Hurtado[1], Jiaqi Zhou[2], Geert Boeije[2], Dimitrios Papanastasiou[2], Ryan Hulse[2], Mark Boelens[2]

1. Ramboll
2. Honeywell

Automotive air conditioners represent a potential source of hydrofluoroolefin (HFO-1234yf) emissions due to refrigerant leakage. This paper presents the methodology and results of an environmental fate and transport modeling study to estimate trifluoroacetic acid (TFA) in the freshwater aquatic environment resulting from the degradation of HFO-1234yf emissions and subsequent TFA atmospheric deposition through case studies for the Rhine River basin in Europe and Susquehanna River and Sacramento River basins in the United States. The modeling shows that TFA derived from HFO-1234yf releases does not accumulate indefinitely in surface freshwater systems and reaches steady-state in less than a year.

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