TFA and Ultrashort PFAS in Foods

In recent years, ultrashort-chain per- and polyfluoroalkyl substances (USC PFAS) have emerged as contaminants of concern in both environmental and food safety contexts. These compounds, including trifluoroacetic acid (TFA), are frequently detected in drinking water, groundwater, surface waters, and increasingly, in food and beverages

Background

Ultrashort PFAS, defined as PFAS with one to three carbon atoms, are of growing concern due to their environmental persistence and widespread occurrence.

TFA is the simplest perfluorinated carboxylic acid and has been extensively studied and reviewed over the last few years. Its formation is partly linked to the atmospheric degradation of modern refrigerants such as HFC-134a and HFO-1234yf.

A large source of TFA includes the breakdown of pesticides containing trifluoromethyl groups (e.g., Fluazinam). In a PAN report (February 2024), national monitoring data revealed that PFAS pesticides were present in 20% of EU-grown fruits and berries and 12% of vegetables. The European Chemicals Agency (ECHA) is currently consulting on proposals to update TFA's classification to reprotoxic.

A recent PAN (Pesticide Action Network) / Global 2000 study (June 2025), reported TFA in cereal products, with conventional cereal products showing 3.5 higher concentrations than organic. Compared to a study by European Union Reference Laboratories in 2017, TFA concentrations in cereals have tripled.

Previous studies by Eurofins PFAS Competence Centre and Örebro University (2024) have also demonstrated significant TFA levels in orange juice and fruit/vegetable purees intended for children. Furthermore, a study from PAN in 2025 expands this concern to wine, demonstrating that TFA is present in commercially available wines across multiple regions.

Occurrence in in Fruit, Vegetables and Cereals

Elevated levels of TFA have been identified in a wide range of food and beverage products, particularly those derived from plants. TFA can concentrate significantly in aerial plant tissues due to environmental contamination via soil, water, and foliar deposition.

Competence Centre PFAS

Eurofins analytical packages

Eurofins now introduces a dedicated analytical service for ultrashort PFAS—including TFA—in foods. This includes fruits, vegetables, cereals, milk and non-woody plants. The method comprises TFA, TFMS, PFPrA and PFEtS with a reporting limit (LOQ) for TFA of 10 µg/kg and 0.1-1 µg/kg for the others. Optimal sample weight is 100 g and minimum 20 g, and a sample preparation (LPP02) is typically added. Delivery time (TAT) is 14 cal. days upon arrival at the laboratory.

Ultrashort PFAS analytical packages

Ultrashort PFAS packages	Analytes	Test code
Food		
TFA in foods	TFA	PLWCJ
Ultrashort PFAS in food	TFA, TFMS, PFPrA, PFEtS	PLWCK
Beverages		
TFA in beverages	TFA	PLWCL
Ultrashort PFAS in juice and beverages	TFA, TFMS, PFPrA, PFEtS, PFPrS	PLWBB

Additional PFAS and pesticide analytical packages

PFAS packages	Analytes	Test code
Food		
PFAS 4 in food and feed	PFOA, PFNA, PFHxS, PFOS	PLW8F
PFAS 22 in food and feed	PFAS20 (DWD)+6:2FTS+PFOSA	PLW9Q
PFAS TOT in food and feed	50 PFAS compounds	PLW8H
Beverages		
PFAS21 in beverages	PFAS20 (DWD)+6:2FTS	PLWBR
PFAS50 in beverages	50 PFAS compounds	PLWCC

Pesticide packages	Analytes	Test code	
Food			Baby food
Pesticides in fruit and vegetables	Screening of >500 pesticides	PLW8L	PLW8Q
Pesticides in vegetables with high fat content	Screening of >300 pesticides	PLW8S	PLW8R
Pesticides in cereals	Screening of >400 pesticides	PLW8U	PLW8W
Beverages			
Pesticides in juice and wine	Screening of >500 pesticides	PLWC8	

More information

Eurofins studies on TFA: www.eurofins.com/publications

PAN/Global 2000 report on TFA in wine, 2025: Message from the bottle | PAN Europe

PAN/Global 2000 report on TFA in cereal products, 2025: TFA in Cereal Products: The Forever Chemical in our Daily Bread

All about PFAS: www.eurofins.se/about-pfas

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Eurofins Food & Feed Testing's pesticide laboratory in Sweden has by Eurofins been appointed as Competence Center for PFAS testing for food in Europe. Eurofins in Lidköping (SE) started analyzing PFAS already at the beginning of the 2000s. With increasing awareness and market demands since 2016, a large leading PFAS lab has been established.

Competence Centre PFAS