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**To the Inspector General of the Netherlands Food
and Consumer Product Safety Authority**

**Advisory opinion from the Director of the Office
for Risk Assessment & Research**

on TFA in the environment and in food

**Office for Risk Assessment
& Research**

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Our ref.

2026-010067145 - EN

Date

19 August 2026

Dear Mrs. Van Dijk,

I am writing to alert you to concerns regarding the potential risks associated with the substance trifluoroacetic acid (TFA) in relation to the environment and our food supply. I am raising this issue now due to new toxicological insights regarding TFA and the increasing prevalence of plant protection products containing a PFAS group and TFA. I advise you to give this matter due attention, including through extensive monitoring and active tracking of the situation.

Background

On 22 July 2026, the European Food Safety Authority (EFSA) published a report on the health-based limit value for TFA¹. At the request of the European Commission, EFSA re-evaluated the toxicity of this substance, following its previous assessment in 2017. Based on new toxicological information, EFSA concluded that the substance is more toxic than previously assessed. Consequently, EFSA has lowered the health-based value for long-term exposure—which it had previously derived—by a factor of 3.5. For acute exposure, EFSA has derived a value for the first time. The Director of Strategy has requested an interpretation of this EFSA report from the Office for Risk Assessment and Research.

TFA

TFA is a substance formed in the environment through the degradation of PFAS (per- and polyfluoroalkyl substances), a group that includes certain plant protection products containing a PFAS moiety. In recent years, TFA has been detected in increasingly high concentrations in Dutch groundwater, frequently exceeding the indicative drinking water guideline value of 2.2 µg TFA/L derived by the RIVM^{2,3}. This increases the likelihood of TFA being taken up by (food) crops and entering our food chain. The extent to which TFA is present in Dutch drinking water remains to be determined; the impact of groundwater treatment processes is currently under investigation. However, TFA has been detected in Luxembourg at levels of several hundred nanograms per liter in various types of bottled spring

¹ [EFSA lowers safe level for exposure to TFA | EFSA](#)

² [H2O-Online_251120_PFAS_in_grondwater.pdf](#)

³ [Grondwaterkwaliteit Nederland 2024](#)

water⁴. The extent to which TFA occurs in (food) crops and food products also remains to be established.

Studies in Germany⁵, Switzerland⁶, Denmark⁷, Sweden⁸, and Norway⁹ show that TFA levels in groundwater are significantly higher in areas with arable land than in areas with pasture or other land uses where crop protection products containing a PFAS group are not used. The province of Utrecht¹⁰ has found TFA in greatly elevated concentrations in the upper groundwater layers—in 37% of cases, (well) above the indicative drinking water guideline value. Recent research conducted by CLM, commissioned by Vewin and seven provinces, also shows that TFA concentrations in some deeper Dutch groundwater layers are linked to the cultivation of crops involving heavy use of crop protection products containing a PFAS group¹¹.

A Danish study shows that TFA levels in groundwater have risen sharply over the past 60 years¹². While the increase was negligible between 1960 and 1980, a linear rise appears to have occurred from 1980 onwards, moving from 0.2 micrograms per liter to approximately 1.5 µg/L in 2023. If this linear trend continues, the Dutch drinking water guideline value of 2.2 µg/L would be reached within a few decades. German research on wine indicates a significant increase in TFA levels over a 78-year period; no measurable concentrations were detected prior to 1970, whereas a sharp rise occurred from 2010 onwards, peaking at 260 µg/L in archived wines from Baden¹³. Consequently, concentrations exceeding the Dutch drinking water guideline value have recently been found in some wines. Another study¹⁴ shows that TFA is a widespread contaminant in beer and tea or herbal infusions. In 104 beer samples from 23 countries, TFA was detected at concentrations of up to 51 µg/L, with a median concentration of 6.1 µg/L.

The EFSA report indicates that the thyroid gland is the most critical organ regarding the toxicological effects of TFA. Additionally, at higher concentrations, TFA affects the liver and causes developmental toxicity. Due to the absence of studies on long-term toxicity and/or carcinogenicity, as well as studies on

⁴ Persoonlijke mededeling van de Luxemburgse collega van de Heads Of food safety Agencies (HOA).

⁵ [Pesticides can be a substantial source of trifluoroacetate \(TFA\) to water resources - ScienceDirect](#)

⁶ <https://www.bafu.admin.ch/en/tfa-in-groundwater>

⁷ [A 60-Year Increase in the Ultrashort-Chain PFAS Trifluoroacetate and Its Suitability as a Tracer for Groundwater Age](#)

⁸ [Screening och fördjupad utvärdering av TFA och andra PFAS i grundvatten i områden utan kända lokala föroreningskällor 2023-2025](#)

⁹ <https://nva.sikt.no/registration/0198cc581df0-5ff52eeb-81a6-44e5-aaff-d8ec695f742c>

¹⁰ [Memo en rapport meetronde freatische grondwaterkwaliteit provincie Utrecht](#)

¹¹ [1236-CLM-rapportage-PFAS-pesticiden-provincies.pdf](#)

¹² Christian N. Albers and Jürgen Sültenfuss. A 60-Year Increase in the Ultrashort-Chain PFAS Trifluoroacetate and Its Suitability as a Tracer for Groundwater Age. Environ. Sci. Technol. Lett. (2024) 11 (10): 1090–1095.

¹³ Freeling F, Mira de Orduña Heidinger R. Tracking Trifluoroacetate (TFA) through Time: A 78-Year Record from Archived Wines. Environ. Sci. Technol. (2025) 16;59(49):26762–26769. doi: 10.1021/acs.est.5c10868.

¹⁴ M. Scheurer, K. Nödler (2021). Ultrashort-chain perfluoroalkyl substance trifluoroacetate (TFA) in beer and tea – An unintended aqueous extraction. Food Chemistry, 351, 129304, <https://doi.org/10.1016/j.foodchem.2021.129304>.

potential developmental immunotoxicity in animals, there remains uncertainty regarding the substance's toxicity. Furthermore, the European Chemicals Agency (ECHA) had already classified TFA as a substance that is highly mobile and highly persistent in the environment, as well as toxic to reproduction¹⁵.

Note: ECHA is currently preparing a broad restriction proposal to ban all PFAS compounds; however, plant protection products containing a PFAS group are excluded from this proposal¹⁶.

NVWA

The NVWA (Netherlands Food and Consumer Product Safety Authority) oversees compliance with statutory regulations regarding plant protection products, in collaboration with several other organizations. Among other things, the NVWA checks whether agricultural and horticultural businesses adhere to the legal rules governing the use of these products.

The NVWA recently examined which plant protection products containing a PFAS group had been detected in various food crops sampled over the past 15 years or so. While many of these food crops were imported from other countries, a significant number of products containing residues of PFAS pesticides actually originate in the Netherlands. The data indicate that these substances are being found in food crops with increasing frequency; the number of such instances has roughly quintupled between 2010 and 2025.

At present, the NVWA does not yet have an overview of the occurrence of TFA in food crops and food products.

Risk assessment?

EFSA did not conduct a risk assessment in its report. Consequently, EFSA did not evaluate whether current TFA concentrations in groundwater, drinking water, food crops, and other foodstuffs could pose a health risk. A rough estimate by BuRO (see sidebar) indicates that, based on a few broad assumptions and current understanding of exposure, such risks appear negligible regarding TFA intake *solely* through drinking water. However, much data is lacking for an accurate risk assessment that accounts for TFA intake via both food and water.

The German Federal Institute for Risk Assessment (BfR) also made a rough estimate of the food safety risks associated with TFA¹⁷. To do so, the BfR used measurements of TFA in cereal products as a basis. The average concentration in cereal products was 0.078 milligrams (mg) per kilogram (kg), with a peak value of 0.36 mg/kg found in muesli. The BfR concluded that a person weighing 60 kilograms (kg) would need to consume at least eight kg of muesli per day to exceed the health-based limit for TFA of 0.05 mg per kg of body weight (the 2017 EFSA standard), based on the highest measured value. Based on this information,

¹⁵ [rac77_final_minutes_en](#)

¹⁶ [PFAS pollution - European Commission](#)

¹⁷ [Trifluoroacetic acid \(TFA\) in cereal products: Based on current knowledge, no health impairments are expected](#)

no health risks are anticipated. Under EFSA's current, new standard for the Acceptable Daily Intake (ADI), this figure would come to 2.3 kg of muesli per day, and even then, no health risks are expected.

Sidebar. Rough food safety risk assessment for TFA

Reports on TFA levels in groundwater indicate that TFA concentrations are found in the range of a few micrograms per liter. BuRO anticipates that water could be a significant source of exposure and is therefore elaborating on this information to provide a rough estimate of the food safety risk.

Assumptions

- drinking water is a significant source of TFA intake
 - drinking water contains the same amount of TFA as groundwater
 - the TFA content in water is 10 micrograms (µg) per liter (L)
 - an adult weighing 60 kilograms (kg bw) drinks approximately 2 L of water per day (d)
 - that adult therefore ingests 20 µg of TFA per day
- This translates to an intake of 0.33 µg TFA/kg bw/d for a 60 kg adult.

New EFSA standards

For lifetime exposure, the ADI (Acceptable Daily Intake) applies
According to EFSA, the new ADI for TFA is 0.014 mg/kg bw/d, or 14 µg/kg bw/d
For acute exposure over a single day, the ARfD (Acute Reference Dose) applies
According to EFSA, the ARfD for TFA is 0.07 mg/kg bw/d, or 70 µg/kg bw/d

Risk

In this extreme example, the food safety risk associated with water intake is 2% of the chronic health-based standard (ADI) and 0.4% of the acute health-based standard (ARfD). In other words, an adult would need to drink at least 84 liters of water containing the specified concentration of TFA daily to exceed the ADI for TFA, or at least 424 liters in a single day to exceed the ARfD.

Consequently, no health risks are expected.

Note: This calculation does not take into account TFA intake from other food sources!

Ctgb

The Board for the Authorisation of Plant Protection Products and Biocides (Ctgb) is also closely monitoring developments regarding the formation of TFA in the environment resulting from plant protection products containing a PFAS group. Consequently, in April 2025, the Ctgb asked the Minister to accelerate the European assessment of plant protection products that lead to the formation of TFA¹⁸. In addition, the Ctgb announced that it would itself re-evaluate 46 plant protection products containing a PFAS group¹⁹.

¹⁸ [Ctgb vraagt snelle aanpak stoffen die TFA produceren | College voor de toelating van gewasbeschermingsmiddelen en biociden](#)

¹⁹ [Ctgb gaat middelen met PFAS opnieuw beoordelen | College voor de toelating van gewasbeschermingsmiddelen en biociden](#)

Concern

Given the increasing prevalence of plant protection products containing a PFAS group, the rise of TFA in the environment—potentially resulting from that aforementioned increase—and the more frequent detection of such plant protection products in food on the Dutch market, there is concern that TFA levels will continue to rise in the coming years and pose a food safety risk. This concern is compounded by new (and more serious) toxicological insights regarding this substance, alongside a lack of data on certain key toxicological endpoints, such as carcinogenicity and toxicity following long-term exposure.

Advice

Although this concern is supported by the information above, much remains unknown. It is therefore important for the NVWA to monitor TFA levels—for instance, by testing food and beverages (both domestic and imported)—and to press for greater insight into the actual use of plant protection products containing a PFAS group.

Sincerely yours,

Prof. dr. Dick T.H.M. Sijm
Director Office for Risk Assessment & research (BuRO)