Livsmedelsverket

PFAS in drinking water and food

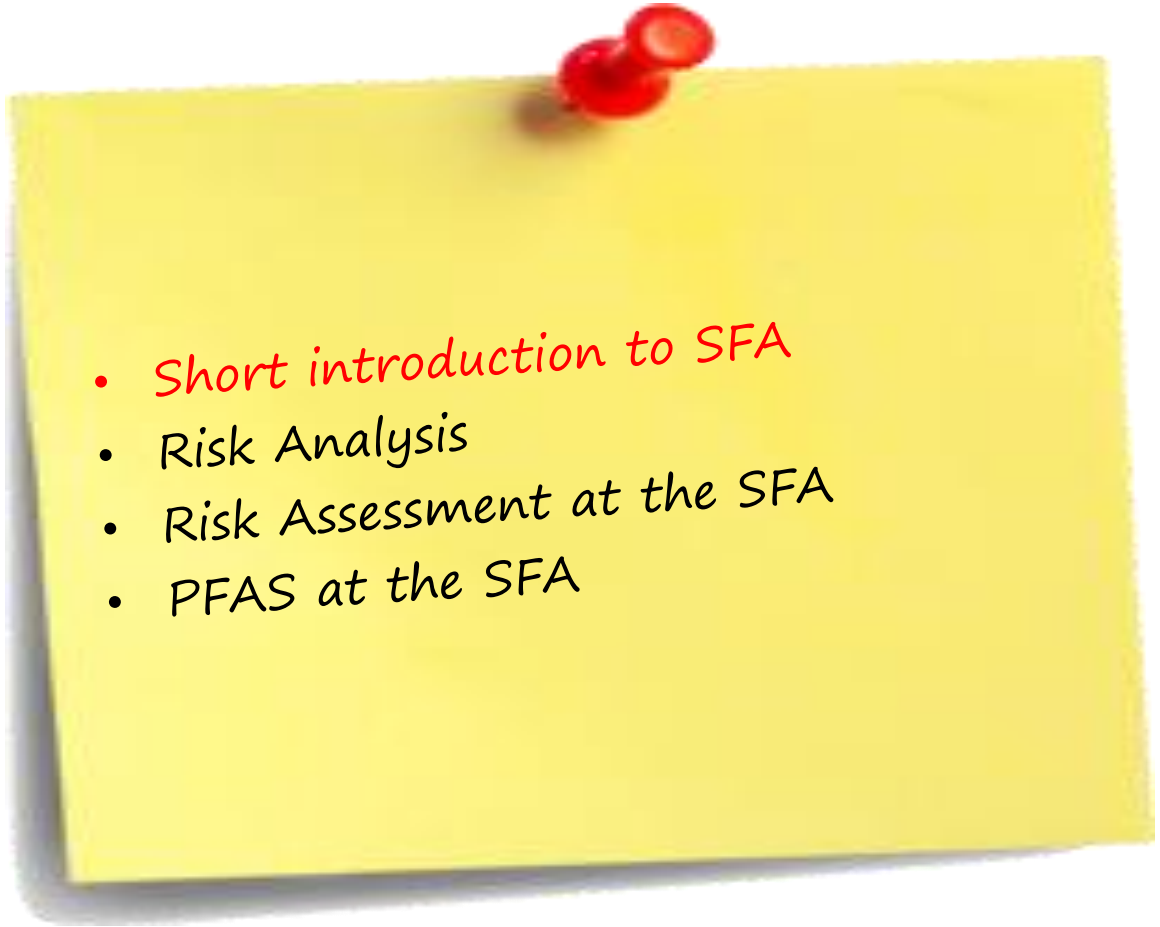
Emma Halldin Ankarberg, toxicologist, PhD

Risk and Benefit Assessment Department,

Swedish Food Agency

Emma.Ankarberg@slv.se

Outline


Short introduction to SFA
Risk Analysis
Risk Assessment at the SFA
PFAS at the SFA

Tasks of the Swedish Food Agency

The Swedish Food Agency assesses, manages, and communicates risks and benefits in food in order to enable

- healthy eating habits,
- safe food and drinking water,
- fair practices in the food trade.

We integrate environmental aspects in all our activities in order to contribute to a sustainable society.

Instructions and guiding principles

- The agency shall
  - develop legislation in the food area
  - perform food control
  - issue dietary advice to consumers
  - communicate with food industry and consumers on food related issues
  - conduct investigations on food composition and dietary habits
  - develop and perform laboratory analysis
  - make risk and benefit assessments

- The work shall be guided by the principles of risk analysis (“Working principles for risk analysis for food safety for application by governments”. CAC/GL 62-2007).

Director General

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Advisory Council

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- Biology
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- Risk and Benefit Assessment
- Sustainable Diets

Control Division

- Central Sweden
- Control Support
- Food Industry and Border Control
- Northern Sweden
- Southern Sweden

Governance and Guidance Division

- Control Management
- Corporate and Agency Support
- EU Coordination and Export
- Safe Foods

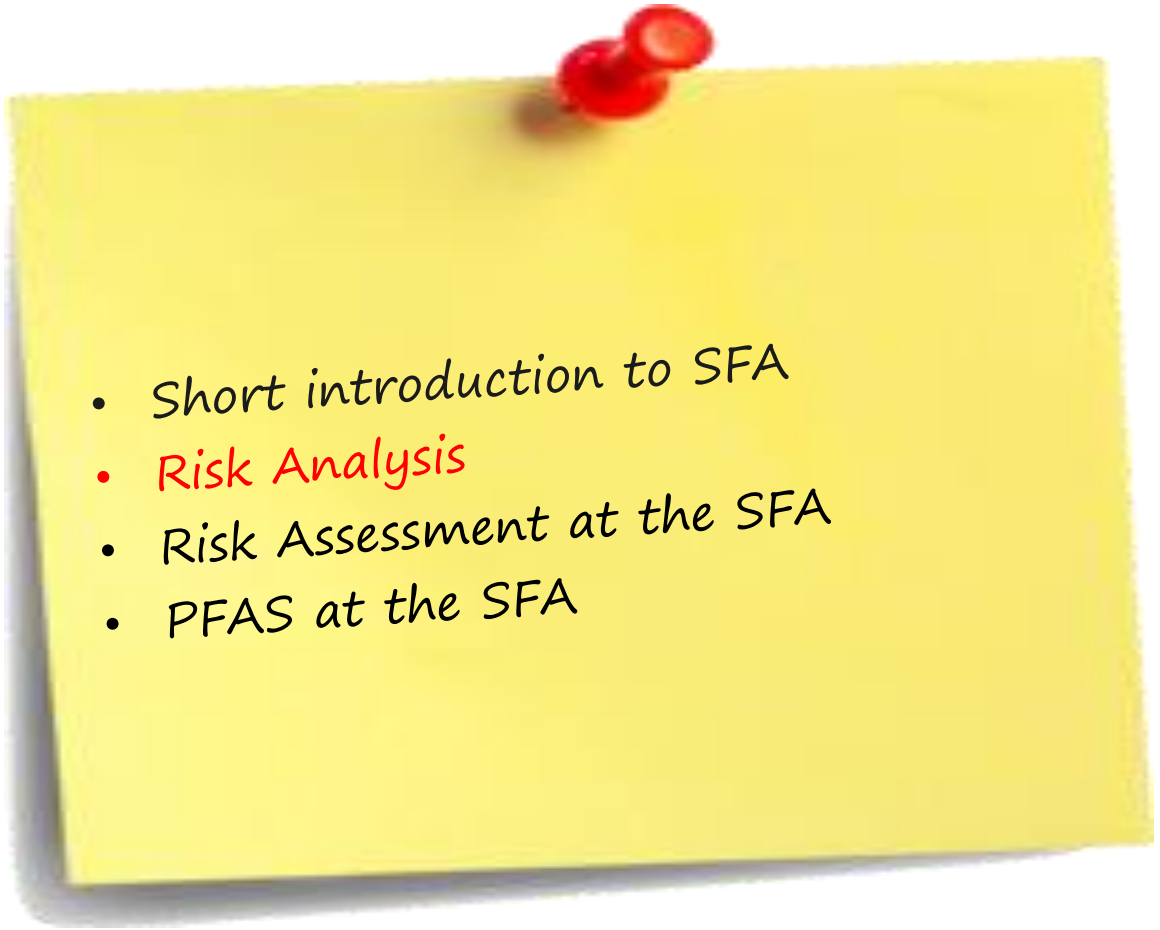
Strategic Development and Support Division

- Communications
- Crisis Management and Civil Preparedness
- Evaluation
- Finance and Accounting
- Human Resources
- IT and Service
- Legal Affairs

Risk/Benefit Assessment Department

- Toxicologists, Microbiologists, Nutritionists, Agricultural Scientists
- Around 40 employees
  - More than 80% PhD or equivalent
    - Make risk and benefit assessments,
    - Gather scientific knowledge as a base for
    - advice and recommendations,
    - legislation,
    - risk based control
    - EFSA Focal Point

Outline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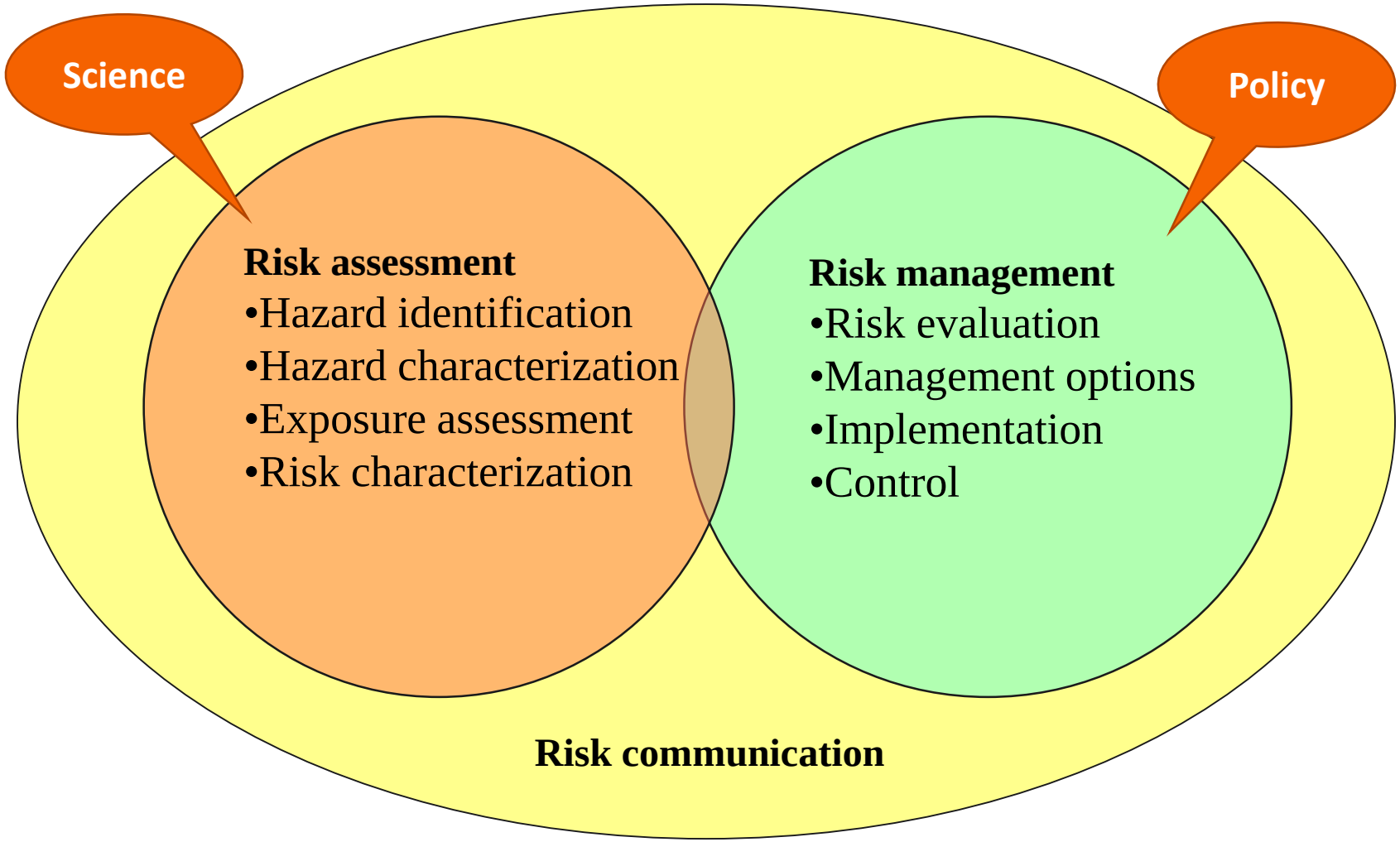
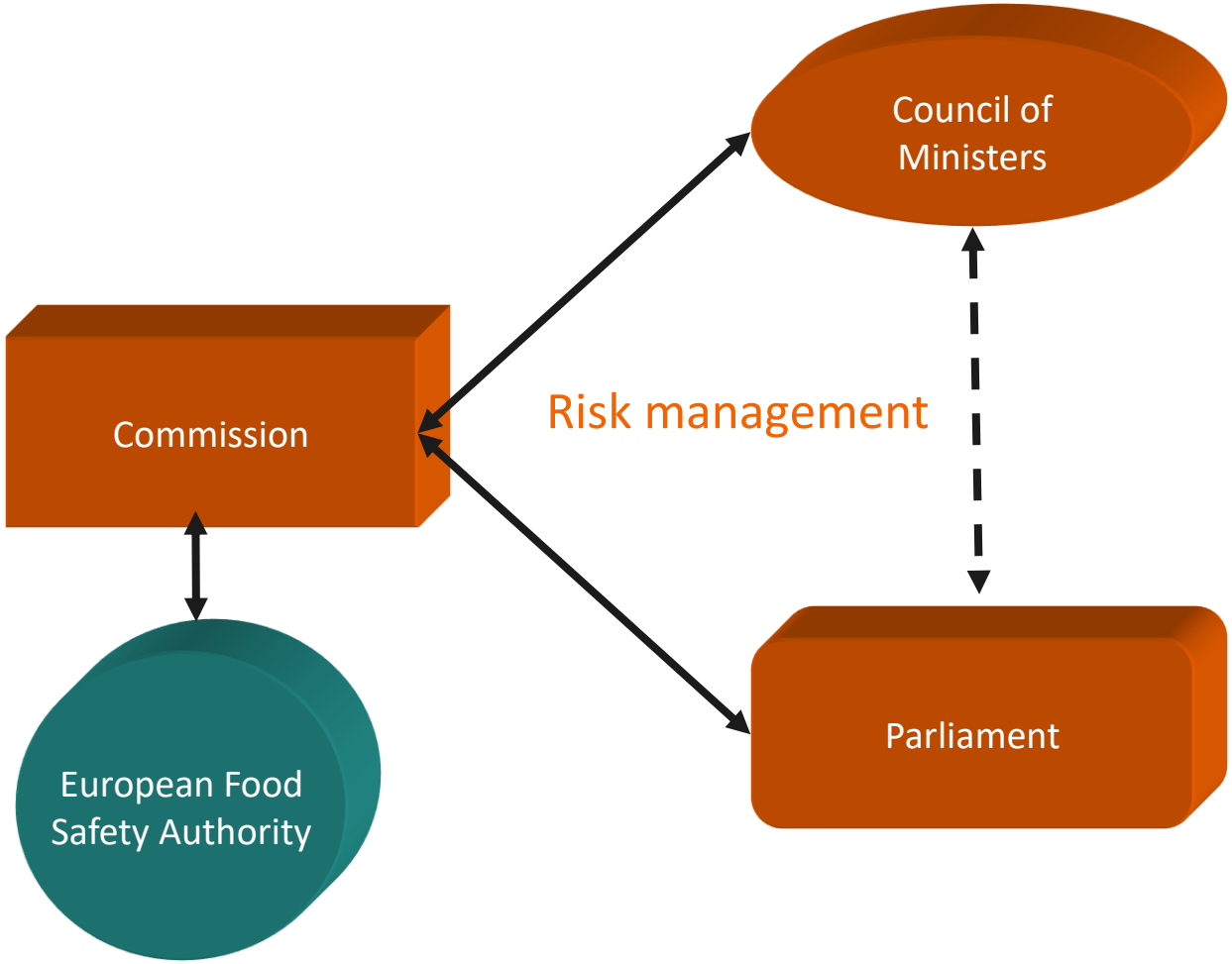
Risk analysis as a concept

WHO/FAO initiative



Risk Assessment vs Risk Management - EU



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Areas for risk and benefit assessments at SFA

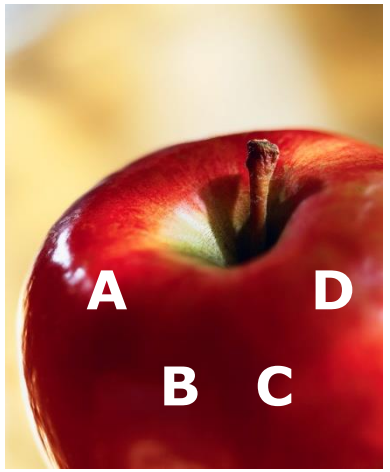
Causes of health risks – food

- Unbalanced diet
- Microorganisms
- Chemical substances
  - Natural toxins
  - Contaminants
  - “Intended” (e.g. food additives and pesticides)

Risk Assessments – often single chemicals
We eat food – need for risk benefit assessment

High exposure of pure hypothetical chemicals

Chemical	Cancer	Nervous system	Liver	Kidney
A	**+**	0	+	0
B	0	**-**	0	0
C	**-**	0	0	+
D	0	+	0	0



+ detrimental effect
– protective effect
0 not tested

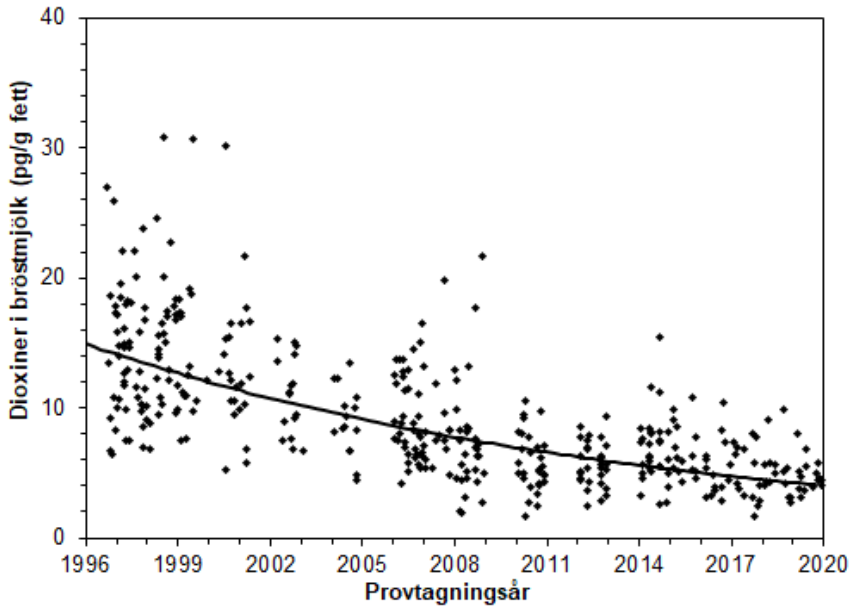
Risk/benefit assessment in food toxicology often means a comparison between the risk of a single chemical and the benefit of a whole food item.
Necessary for issuing Dietary Advice.

Communicating risks from food

- Don´t mix hazard with risk
  - Hazard is the inherent property to cause damage
  - Risk is probability of a negative health effect at a certain exposure in a specific population
- What is an acceptable risk?
  - Tolerable/Acceptable Daily Intake, Margin of Exposure, Sensitive groups, Nutritional benefits
- What about severity of the effect?
- Need to compare risks and benefits. Need for a “Common currency”
- What do we know and what is unknown?

Exposure assessment - How?

- Analyses (chemical and biological)
- Dietary surveys – Riksmaten
- Biomonitoring



[Biomonitorering – övervakning av ämnen i kroppen (livsmedelsverket.se)]

So, what can we do?
- Risk management at the SFA

Different managements measures

- Control
- Influence EU legislation
- National Maximum Levels…
- Restrictions of use
- Dietary advice and recommendations

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PFAS – what happens on SFA?

- 2012 – *POPUP*
- 2013 - Risk assessment of PFAA in food and drinking water
- 2013 – Information report with KemI (PM5/13)
- 2014 – *Action levels for drinking water (PFAS 7)* and advice for recreational fishing
- 2014 – Start of two PFAS-networks in Sweden
- 2016 – *Revised action levels (PFAS 11)*
- 2017? – Letter of intent togheter with authorities and researchers
- 2020 – *New opinion from EFSA*
- 2021 - DWD work in the EU-COM
- 2022 – *New Swedish MLs for drinking water*
- 2022 – *New ML for certain foods*
- 2023 – Data collection and more MLs for food
- 2022-2024 – *GA together with SEPA*

Gemensam avsiktsförklaring

Myndigheter och forskare ökar samarbetet för att minska riskerna med PFAS

Högfluorerade ämnen (PFAS) orsakar problem i miljön och har bland annat förorenat dricksvattnet på flera ställen i Sverige. Med anledning av det behövs ett utökat samarbete mellan myndigheter och forskare. Vi avser därför utöka vårt samarbete. Det gör vi för att öka effekten av de resurser som vi lägger på att hantera problemen med högfluorerade ämnen (PFAS).

Högfluorerade ämnen används i många olika produkter, till exempel i brandsläckningsskum, textilier, livsmedelsförpackningar, rengöringsmedel och kosmetika. Vi vet också att antalet användningsområden ökar och att ämnena är extremt svårnedbrytbara i miljön. Många är dessutom vattenlösliga och rörliga i mark. De förorenar vattendrag och dricksvattentäkter när de kommer ut i miljön. Förorening av sjöar och vattendrag kan även ge höga halter av PFAS i matfisk.

Regeringen har beslutat att inrätta en samordningsgrupp (SamTox) med sju myndighetschefer, som ska samverka för att tidigt kunna upptäcka och åtgärda nya och möjliga kemikaliehot. Den ökande spridningen av högfluorerade ämnen är ett sådant kemikaliehot, och åtgärder kommer även att diskuteras i denna grupp.

Vår avsikt är att inom vårt respektive ansvars- och kompetensområde bidra till ett ökat samarbete för att minska riskerna och öka kunskapen om PFAS. Det avser vi göra på följande sätt:

- Vi samarbetar och förbättrar den offentliga tillsynen. Vid behov tar vi fram tillsynsvägledning för PFAS.
- Vi driver på i frågor som handlar om PFAS. Vid behov tar vi fram regler och råd eller vidtar andra åtgärder – inom Sverige, EU och på den internationella arenan.
- Vi bevakar vad som händer och ökar kommunikationen mellan oss för att förbättra riskbedömning, regelutveckling, miljöövervakning, forskning, teknikutveckling och tillsyn som handlar om PFAS.
- Vi utvecklar nätverk för att förbättra kommunikationen mellan myndigheter och andra viktiga aktörer.
- Vi inventerar och kartlägger bakgrundshalter, förorenade områden och andra platser där PFAS förekommer.
- Vi kartlägger befolkningens exponering för PFAS.
- Vi medverkar till att nya tekniker utvecklas och används för provtagning, analys, vattenrening och sanering av förorenade områden.
- Vi för dialog med berörda aktörer för att stimulera en frivillig utfasning av PFAS.
- Vi informerar aktivt allmänheten om PFAS och vad myndigheterna gör.

POPUP

- Biomonitoring since 1996
- Analysis of older serum samples showed elevated levels of certain PFAS
- Drinking water contaminated with fire fighting foam?

- Urge for municipalities to analyze drinking water


RETURN TO ISSUE | < PREV ARTICLE NEXT >

Perfluorinated Alkyl Acids in Blood Serum from Primiparous Women in Sweden: Serial Sampling during Pregnancy and Nursing, And Temporal Trends 1996–2010

Anders Glynn[†*], Urs Berger[‡], Anders Bignert[§], Shahid Ullah[‡], Marie Aune[†], Sanna Lignell[†], and Per Ola Darnerud[†]

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Vetenskapliga publikationer från POPUP-kohorten (livsmedelsverket.se)

Action levels for drinking water 2014 and 2016

- 2014: Action level of 90 ng/L of PFAS 7 – ”lower as much as possible”

Based on

- EFSA opinion for PFOS from 2008

- Swedish data on PFAS in drinking water

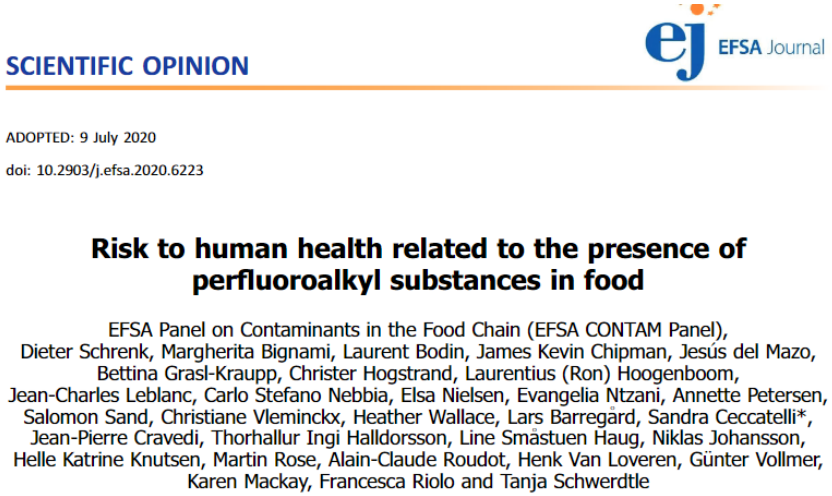
- most exposed groups, i.e. babies drinking formula (10% of TDI)

- 2016: Action level of 90 ng/L of PFAS 11– ”lower as much as possible”

- Based on Swedish data showing problems with more PFAS

EFSA opinion 2020

- Increased serum levels of cholesterol
- Increased levels of liver enzyme (ALT)
- Reduced birth weight (PFOS & PFOA)
- **Immunotoxicity** (vaccination, infection)



SCIENTIFIC OPINION

EFSA Journal

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Risk to human health related to the presence of perfluoroalkyl substances in food

EFSA Panel on Contaminants in the Food Chain (EFSA CONTAM Panel), Dieter Schrenk, Margherita Bignami, Laurent Bodin, James Kevin Chipman, Jesús del Mazo, Bettina Grasl-Kraupp, Christer Hogstrand, Laurentius (Ron) Hoogenboom, Jean-Charles Leblanc, Carlo Stefano Nebbia, Elsa Nielsen, Evangelia Ntzani, Annette Petersen, Salomon Sand, Christiane Vleminckx, Heather Wallace, Lars Barregård, Sandra Ceccatelli*, Jean-Pierre Cravedi, Thorhallur Ingi Halldorsson, Line Småstuen Haug, Niklas Johansson, Helle Katrine Knutsen, Martin Rose, Alain-Claude Roudot, Henk Van Loveren, Günter Vollmer, Karen Mackay, Francesca Riolo and Tanja Schwerdtle

Based on several similar effects in animals, toxicokinetics and observed levels in human blood, EFSA decided upon a assessment for the sum of four PFASs: PFOA, PFNA, PFHxS and PFOS

Efsa TWI/TDI

1. PFOA
2. PFNA
3. PFHxS
4. PFOS

4.4 ng/kg/w

0.63 ng/kg/d

Drinking Water Directive and the Swedish MLs

- In 2020: EU PFAS limit values in the new drinking water directive (binding for all countries within the EU).
- Based on a risk assessment from WHO
- A *minimum directive*. This means that member states may choose to introduce stricter legislation into their national regulations.
- Intake calculations on the Market Basket and Riksmaten studies

EU DWD	Swedish MLs
PFAS 20: 100 ng/L	PFAS 21: 100 ng/L (+ 6:2 FTS)
PFAS total: 500 ng/L	PFAS 4: 4 ng/L

Maximum levels in food 2022-2023

- Discussions and call for data
- June 2022 – ML for fish, meat and eggs – more are coming
- Based on the ALARA principle
- Need for dietary advice?
- EFSA opinion on risk-benefit for fish in 2025?

Government Assignment with Swedish EPA

- Food production in contaminated areas?

- Ongoing 2022 – 2024
- Two parts

  - Food from contaminated areas

  - Background exposure – Market Basket and individual samples

How can we influence the work with PFAS in EU in the food area?

- More toxicological and epidemiological studies on PFAS – **EFSA**
  - Different PFASs
  - Modes of action
  - Health effects?
- More data on food stuffs – **EU COM**
  - Animals
  - ”Other”
  - More and emerging PFASs

Science in the food area

Summary

- PFAS is an important area of work at the SFA – concerns both drinking water and food

- Research is crucial to drive risk assesments and collect data

- Lesson to learn – do not allow these kind of substances to be produced and used – *they will end up in the environment and in the end in our food…*

Thank you for your attention!

Any questions?