CHEMTrust
Protecting humans and wildlife from harmful chemicals

The policy response to uncertain risks: why we should substitute the most hazardous chemicals

Dr A. Michael Warhurst
Executive Director, CHEM Trust
Environmental Health Policy, LSHTM

CHEMTrust
Protecting humans and wildlife from harmful chemicals

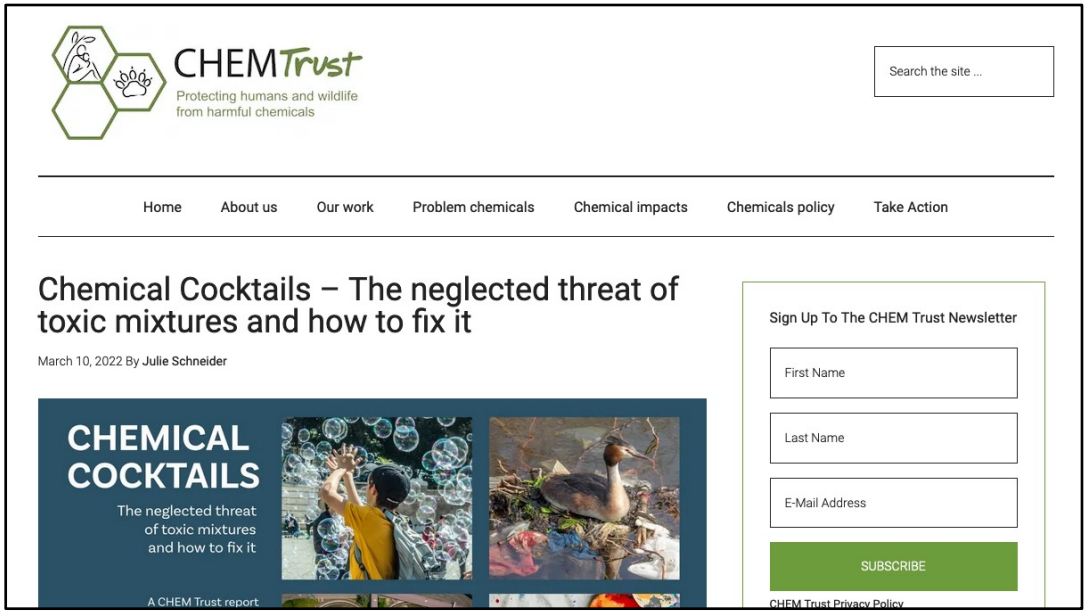
Contents

- Introduction to CHEM Trust
- The EU as a global regulator
- Key concepts in chemicals policy
- EU chemicals regulation – how it works
- Key EU debates: Mixtures, Grouping and Persistence and Mobility
- Conclusions

CHEMTrust
Protecting humans and wildlife from harmful chemicals

About CHEM Trust

- **A charity working at UK, EU & Global levels to protect humans & wildlife from harmful chemicals**
- **Working with scientists, technical processes and decision makers, in partnership with other civil society groups**
- **Focus on identification of, and action on, endocrine disrupting chemicals**
- **See @chemtrust & https://chemtrust.org**



CHEMTrust
Protecting humans and wildlife from harmful chemicals

The EU as a global regulator

- **The EU is the world's most powerful - and informed - regulator of industrial chemicals**
- **EU regulation of chemicals (and many other policy areas) sets a global standard**
- **Understanding EU chemicals regulation requires a bit of understanding of the EU**
- **The EU is best understood – in my view - as a democratic trans-national tier of government *which attempts to create a political compromise between economic, social and environmental needs***

CHEMTrust
Protecting humans and wildlife from harmful chemicals

What is the EU?

- **The EU was created by intergovernmental treaties between Member States**
  - These treaties defined a number of institutions, and defined their competence.
- **The EU is a unique institution**
  - It is a free trade area
  - It is an area with free movement of labour
  - It defines environmental standards
  - It defines social standards
  - It is increasingly developing a unified foreign policy (with many problems)
- **EU Member States continue to exist**
  - But in some areas - e.g. internal market - they have very little freedom to go against agreed EU regulation.

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Who is in the EU?

- **27 countries, >440 million people**
  - Germany, France, Italy, Spain, Poland, Romania, Netherlands, Greece, Portugal
  - Belgium, Czech Republic, Hungary, Sweden, Austria, Bulgaria, Denmark, Slovakia, Finland, Ireland,
  - Croatia, Lithuania, Latvia, Slovenia, Estonia, Cyprus, Luxembourg and Malta [*in order of population size*].
- **Other relevant countries:**
  - Norway, Iceland and Liechtenstein (EEA) - apply many EU regulations, but have no vote in EU decision-making
  - Switzerland also has agreements with the EU governing many aspects of regulation (& no vote)
  - UK – Exited EU regulatory systems in 2021, except for Northern Ireland; has commitments in trade dea, including not to ‘regress'

CHEMTrust
Protecting humans and wildlife from harmful chemicals

How does the EU make decisions?

- **Three key pillars of EU Governance:**
  - The **European Commission** drafts legislation, often after a request from Council.
  - **Council** - Member State governments, e.g. Environment Council = Environment Ministers - one of the two “chambers” of EU policy making
  - The **European Parliament**, elected by the people of Europe every 5 years - the second chamber of most EU policy making.
- **Almost all legislation must be agreed by both Council and Parliament**
  - EU legislation goes through a predictable process, with a (fairly) predictable timetable
- **Much regulation uses secondary legislative processes to address technical issues (as happens in many countries)**

CHEMTrust
Protecting humans and wildlife from harmful chemicals

How is EU legislation implemented & enforced?

- **Two main types of legislation:**
  - Directives must be incorporated in Member State law
  - Regulations are immediately legally binding in all Member States (and EEA countries if appropriate)
- **Enforcement:**
  - Commission can take Member States to court and fine them if legislation is not implemented correctly
  - Most enforcement within the legislation is at Member State level
    - Member States are unwilling to give up this power
  - A few areas are enforced at EU level
    - E.g. Competition law
- **Secondary: Comitology & implementing & delegated acts**
  - Strongest players Commission & Member State representatives; limited parliament role
  - Range of different processes; quite complex
  - Major role in decisions on individual chemicals

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Chemicals policy concepts (i)

- **Hazard assessment - intrinsic properties of a substance?**
  - What has been tested for? What organism, what life stage, what sensitivity?
  - What do you do if you don't have data?
- **Exposure assessment – what is the organism exposed to?**
  - How much do you know about use? Assessment based on data or modelling?
- **Risk assessment**
  - Dependent on quality of Hazard & Exposure data
  - What about exposure to other substances with additive effects?
- **Responsibility**
  - Who provides the data, who does the analysis, who checks it?
  - Who is responsible for addressing new information?

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Chemicals policy concepts (ii)

- **Positive list vs negative list**
  - can only use listed vs use anything except this list
- **Full risk assessment vs generic risk assessment (GRA)**
  - E.g. ‘Hazard based’ restrictions in toys and other consumer products (scope tbd)
- **Consideration of costs, benefits, substitutes and ‘essential use’**
  - What would be the impact of banning this chemical?
- **Grouping of chemicals**
  - Similar chemicals often have similar properties – can this be used to speed up regulation rather than just moving from one chemical to another?
  - Can grouping be used to fill data gaps? – see later…..
- **Economic interests**
  - How much lobbying pressure is there to continue using a chemical?
- **Risk management - A political balancing of the evidence on each side**

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Key points on risk assessment

- **Risk = Hazard x Exposure**
  - Assumes we know both
- **More accurate:**
  - Currently Estimated Risk (CER) = currently estimated hazard x currently estimated exposure
- **CER changes over time, normally increasing, often by orders of magnitude**
  - see “Late Lessons from Early Warnings” EEA reports; BPA later
- **Important point: no data ≠ no hazard (actually = ignorance)**
  - Absence of evidence ≠ evidence of absence
- **Risk assessment usually assumes only exposed to one chemical at a time**
  - Not reality, but mixtures are ignored by most regulatory systems

CHEMTrust
Protecting humans and wildlife from harmful chemicals

‘Free Market’ vs regulation

- **Older chemicals tend to be cheaper & newer more expensive**
  - E.g. sunk costs in manufacturing plant, economies of scale
- **Older chemicals are well understood in applications, new ones must be tested**
  - Downstream users happier with older chemicals, ‘keep what works’
- **Manufacturers of older chemicals tend to have more resources to defend continuing use**
  - Defending continued use is a rational ‘cost of doing business’
- ***Therefore, the ‘free’ market tends to benefit older, more established chemicals***
  - Innovation often ***requires*** regulation to phase out older & dirtier products

CHEMTrust
Protecting humans and wildlife from harmful chemicals

EU chemicals regulation

- **Main focus for industrial chemicals is REACH**
  - Other important regulations including classification & labelling, which links to occupational health & safety, accidents etc
- **Specific regulations for specific sectors, e.g.:**
  - Cosmetics, pesticides, pharmaceuticals, biocides
  - Food contact chemicals
- **Different sectors have different approaches, e.g.**
  - Balance between industry responsibly vs regulator analysis
  - Positive vs negative listing
  - Full vs generic risk assessment (‘hazard based approach’)
  - Consideration of costs, benefits and substitutes
  - Incomplete systems in certain areas (e.g. food contact)

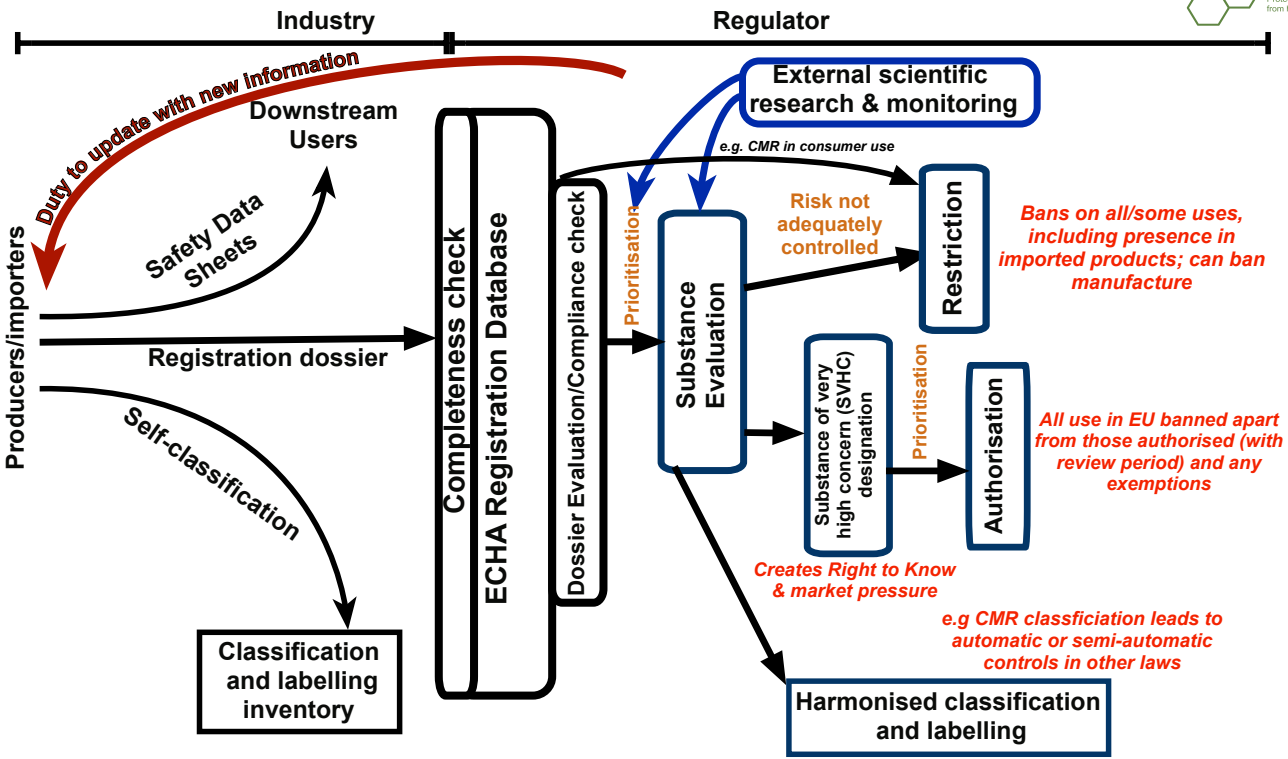
CHEMTrust
Protecting humans and wildlife from harmful chemicals

Starting with REACH

- **REACH is the EU's main chemicals law**
- **Its creation was very controversial and many said that it would not work, there were too many chemicals etc etc**
  - The Americans particularly disliked it – their view has not changed
- **REACH has worked**
  - it is not perfect and can be improved
  - ***a revision is now under way***
- **A major reason why REACH does work is the design of its core processes:**

CHEMTrust
Protecting humans and wildlife from harmful chemicals

CHEM Trust - REACH in one slide



CHEMTrust
Protecting humans and wildlife from harmful chemicals

REACH Registration & Evaluation

- **Industry must register substances produced or imported at >1 tpa (industry responsibility)**
  - Substances can be used if registered (i.e. no positive approval)
  - Much less information required for lower volume chemicals
  - 22,930 chemicals (substances) are registered to date
- **Only a small percentage evaluated by the regulator**
  - *"in the majority of registration dossiers that ECHA checks, important safety information is missing. After ECHA's request, most registrants update their dossiers with compliant information."*
    - https://www.echa.europa.eu/-/reach-data-compliance-needs-to-improve
- **Evaluation can lead to controls on use & harmonised classification through CLP**
  - Evaluation has been very slow & ECHA is now using other approaches including grouping & read-across help sort the 'Chemical Universe'
  - https://echa.europa.eu/universe-of-registered-substances

CHEMTrust
Protecting humans and wildlife from harmful chemicals

REACH Restriction

- **Process:**
  - Member State or ECHA produces dossier arguing that risk not ‘adequately controlled’
  - Dossier considered by ECHA Risk Assessment Committee (RAC) & Socioeconomic Assessment committee (SEAC)
    - Both made up of Member State experts
  - Outcome goes to Commission & Member State committee for decision
- **Risk based process, some consideration of socioeconomic impacts**
  - Restrictions include Bisphenol A in thermal paper, and Deca BDE, and PFOA and related compounds.
  - In preparation: ‘non essential’ uses of PFAS – see later

CHEMTrust
Protecting humans and wildlife from harmful chemicals

REACH Authorisation

- **Candidate listing of substances identified as having properties of 'very high concern' (SVHC) by regulator (ECHA/MS/Commission):**
  - Carcinogen, Mutagen, Reprotoxin (CMR)
  - Persistent, Bioaccumulative & Toxic (PBT)
  - Very Persistent, Very Bioaccumulative (vPvB)
  - 'similar concern' e.g. Endocrine disrupter
  - Then goes on 'candidate list' – a hazard based process
  - *Candidate list has economic implications, with downstream companies avoiding SVHCs, and creating 'right to know' for public*
- **If substance prioritised for action:**
  - Deadline set to apply for authorisation for continued use
  - Can get authorisation if use 'adequately controlled' or if no safer alternative 'available' – based on RAC & SEAC analysis, MS/Commission decision.

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Reach is not perfect…some problems

- **Registration**
  - Poor quality data
    - ECHA improving checks
  - Lacking data on neurodevelopmental impacts, endocrine disruption
  - Information on use is very limited
- **Evaluation**
  - Too slow
  - Too easy for industry to create delays e.g. by appealing or not delivering data
- **Restriction**
  - Too slow
  - Hard to get enough data for burden of proof
  - Not enough grouping
  - Little consideration of mixtures
  - Too many exemptions
- **SVHC & Authorisation**
  - Too slow
  - Hard to get enough data to satisfy burden of proof needed
  - Not enough grouping
  - Safer alternatives not always recognised

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Positive licencing systems

- **Pesticides and biocides**
  - Authorisation given by regulator for use
  - Includes hazard-based cut-offs for certain properties, including endocrine disruption, with possibility for continued use if socioeconomic importance
- **Pharmaceuticals**
  - Positive list (of course)
  - Very focusses on efficacy, environmental impacts largely ignored, see https://chemtrust.org/pharma
- **Veterinary medicines**
  - Similar to pharmaceuticals

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Other important systems

- **Classification and Labelling (CLP)**
  - Determines the rules for classifying and labelling chemicals, including e.g. flammability, carcinogenicity
  - Works in parallel with REACH, based on the Globally Harmonised System (GHS) but can go beyond this
  - Now planned to extend to EDCs and persistent and mobile chemicals
- **Food contact chemicals**
  - Positive listing for chemicals in plastic food contact materials, but no harmonisation for other materials like paper, card, inks, glues etc
  - Has been in process of review & reform for some years, but is all taking a very long time
    - See https://chemtrust.org/food-contact/

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Chemicals Strategy for Sustainability

- **Launched in October 2020**
  - Part of the “European Green Deal”
- **Revision of REACH, CLP & other laws**
  - https://chemtrust.org/new-european-chemicals-strategy/
- **This revision process is now underway**
  - With the ***potential*** to address many of the deficiencies of REACH
  - Huge number of processes going on, many workshops, consultations, studies etc

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Key elements of the CSS (1)

- **Extending rules on classification in CLP, adding:**
  - EDCs, Persistent & Mobile chemicals (PMT)
  - Immune, neurological & respiratory toxicants
- **Grouping chemicals**
  - To speed up assessment and reduce regrettable substitution
  - A ‘road map’ of restrictions on groups of chemicals prior to completion of the revision of REACH:
  - https://chemtrust.org/restrictions_roadmap/
- **Adding a ‘mixture assessment factor’ to REACH**
  - See later
- **A process to define ‘Safe and Sustainable by design’ criteria for chemicals**
  - (e.g. environment & human health, energy/climate & circularity)

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Key elements of the CSS (2)

- **Extension of the properties included in the Generic Risk Assessment (GRA) approach**
  - where chemicals with certain particularly hazardous properties are banned from certain groups of products, e.g. consumer products
  - Wider definition of the ‘most hazardous’ properties to include EDCs and potentially PMTs
- **Extension of the range of products covered by GRA, including general consumer products (e.g. toys, furniture and food contact materials), and also ‘professional’ products like paints.**
- **Creation of a new process to define ‘essential use’ which would allow continued use of the most hazardous chemicals**

CHEMTrust
Protecting humans and wildlife from harmful chemicals

The CSS reform process

- **Modifying CLP law to add EDCs and PMT**
  - Draft legislation in next few months; probably will be a mix of primary & secondary legislation (amending annexes); could be law by 2024
- **REACH revision – creating a new legal text**
  - Discussions on aspects of revision happening now, including impact assessment
  - Draft legislation expected end 2022
  - Debated by MEPs & EU Governments from 2023 onwards
  - Final deal either just before MEP elections in 2024, or with new MEPS in 2025 or 2026
  - Then enters into law – and the detailed implementation is worked out (important but often neglected)

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Three key EU debates

1. Mixtures exist, what can we do about them?
2. Addressing groups of chemicals – e.g. bisphenols
3. PFAS “forever chemicals” and the problem of persistence and mobility

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Mixtures

- **We are all exposed to mixtures, all the time**
  - So is the environment
- **Science shows that mixtures matter**
- **Regulatory systems must accept reality – a Mixture Assessment Factor is a key tool**
- **See our comprehensive report on mixtures:**
  - https://chemtrust.org/chemicalcocktails/

Chemical pollutants in the environment

Chemical pollutants related to human activities find their way into the natural environment via many routes: effluents from wastewater treatment plants connected to households, hospitals, and businesses; runoff from fields, roads, and airports; air and water emissions from factories and waste treatment sites. Chemical pollutants accumulate in soils, rivers and the deep ocean, exposing wildlife throughout the food chain to a cocktail of hundreds of substances.

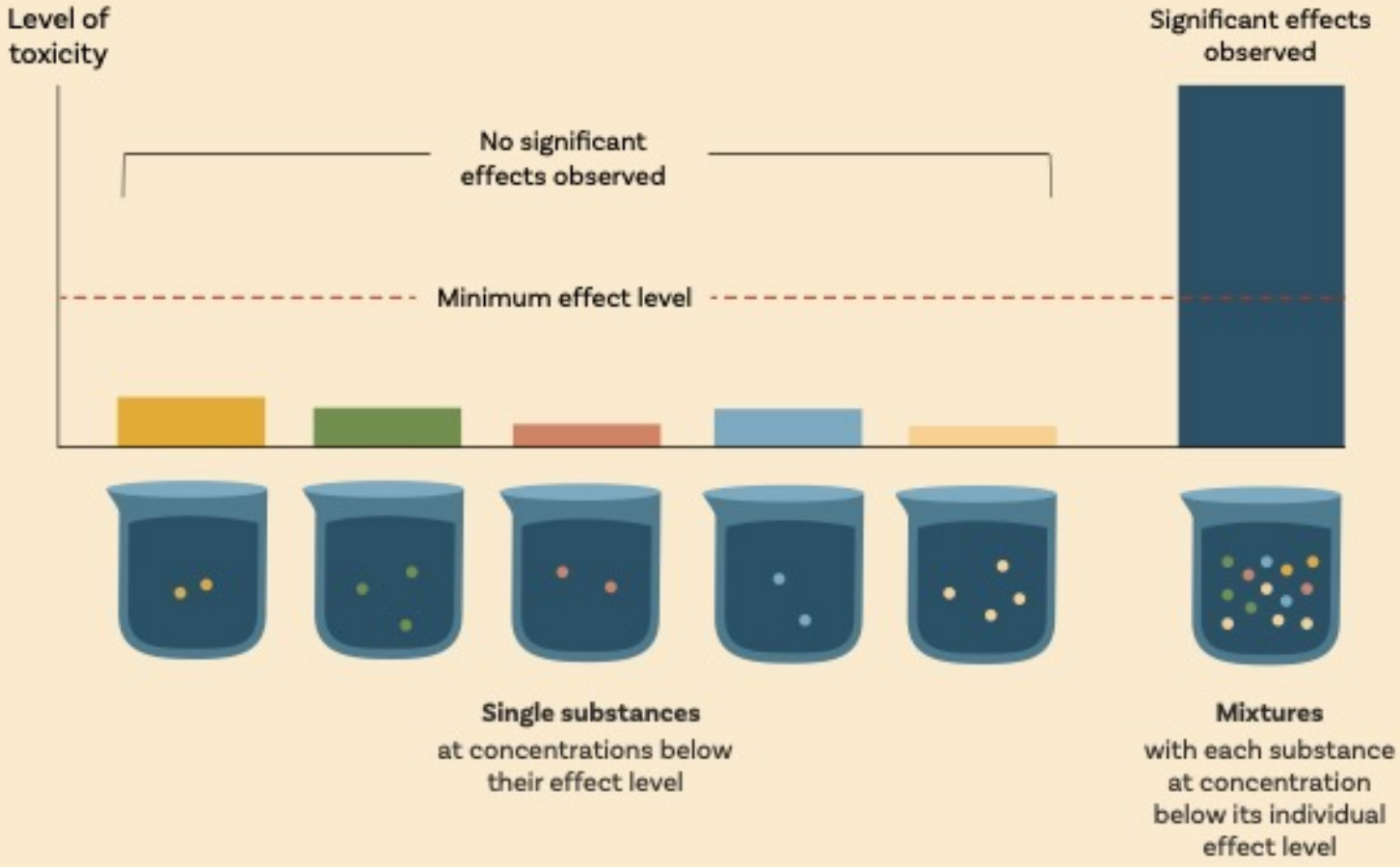
1. Everyday chemicals from clothes, detergents, cosmetics etc. emitted in sewage water from households
2. Pharmaceuticals emitted in sewage water from hospitals
3. Chemical contaminants discharged into rivers and the sea from wastewater treatment plants
4. Pesticides, fertilisers and biosolids contaminate soil, rivers, and groundwater from agriculture
5. Veterinary drugs and rodenticides used in farms contaminate soil, water, and fauna
6. Car tire leachates contaminate soil and rivers from road runoff
7. Industrial chemicals emitted into the air and wastewater from industrial sites
8. PFAS contaminates soil and water from firefighting foam used at airfields
9. Synthetic chemicals contaminate soil and water from landfill leachates
10. Chemical pollutants emitted into the air from incinerators
11. Pesticides and veterinary drugs contaminate the sea from aquaculture farms
12. Process chemicals, such as lubricants, contaminate the sea from oil rigs
13. Chemical contaminants, such as surfactants and biocides, are released into the sea from shipping

Chemical pollutants in the home

Within our homes and our daily lives we are exposed to hundreds of chemicals from multiple sources, such as flame retardants in soft furnishings, phthalates in plastic food packaging, or PFAS in cosmetics. Yet most chemical safety regulations completely ignore the fact that we are being simultaneously exposed to a cocktail of hundreds of substances from a diversity of sources.

1. PFAS chemicals in waterproof clothing
2. Siloxanes, parabens, and many others in shampoo, shaving foam, deodorants
3. Oxybenzone UV filter in sunscreens
4. Phthalates, parabens, many others in makeup
5. PFAS in nonstick cookware e.g. frying pans
6. Triclosan in antibacterial handwash
7. BPA in some plastic water bottles and food can linings
8. Pesticide residues in foods
9. PCBs, dioxins, PAHs found in disposal nappies
10. Phthalates, flame retardants and bisphenols in children's toys
11. Flame retardants in virtually all electronics
12. Phthalates, and thousands of secret compounds, in fragrances found in air fresheners, cleaning products, cosmetics, soaps
13. Pharmaceuticals and other contaminants in drinking water
14. Tattoo inks can contain a mixture of thousands of harmful chemicals
15. Flame retardants in furniture and mattresses
16. Unknown and unwanted chemicals in recycled products
17. Bisphenols in till receipts
18. Phthalates and many other plastics additives in food packaging
19. PFAS in microwave popcorn bags, bakery bags and compostable food packaging
20. Phthalates, flame retardants and volatile organic compounds in vinyl flooring

Something from nothing - mixture toxicity matters



What is a Mixture Assessment Factor or MAF?

1. Let's start with a cup. This cup holds the maximum amount of acceptable risk from exposure to chemicals. **We call it the 'risk cup'.**

2. Classic chemical risk assessment assumes that risks only occur when the cup overflows.

3. Currently, chemical risk assessment usually considers only one chemical - each chemical is allowed to fill one cup.

4. But in reality, we are exposed to several chemicals at once and the 'risk cup' overflows – **we are not protected from the combined exposure to chemicals.**

5. The solution is to reduce by a factor – **the MAF** – the space every chemical gets to contribute to the overall combined risk in the cup.

6. Like this, there is room for all chemicals and **we are better protected from real life exposure**

The 'risk cup' should be able to hold hundreds of chemicals and also leave extra room for the unknown.
All worrisome substances with no safe level of exposure, e.g. endocrine disrupting chemicals, should be substituted wherever possible.

Decades of inaction on mixture toxicity

1980s
Additivity effects demonstrated in fish and other aquatic organisms

2007
International WHO/IPCS workshop on combined exposures of multiple chemicals

2009
- Nordic Council Workshop on combination effects.
- EU Council conclusions "Combination effects of chemicals"

2010
EU Commission Report "State of the art of mixture toxicity"

2012
Commission Communication on "The combination effects of chemicals"

2013
EU 7th Environment Action Plan promises to address combination effects of chemicals

2015
Swedish chemicals Agency KEMI proposes the use of a mixture assessment factor (MAF)

2018
EU Commission announces ban on four phthalate chemicals due to their combination effects

2019
Joint statement from global researchers recommend the application of a MAF as a way to decrease the total burden of exposure to chemical mixtures

2019
The European Food Safety Authority (EFSA) develops a framework when evaluating the potential "combined effects" of chemical mixtures in food and feed

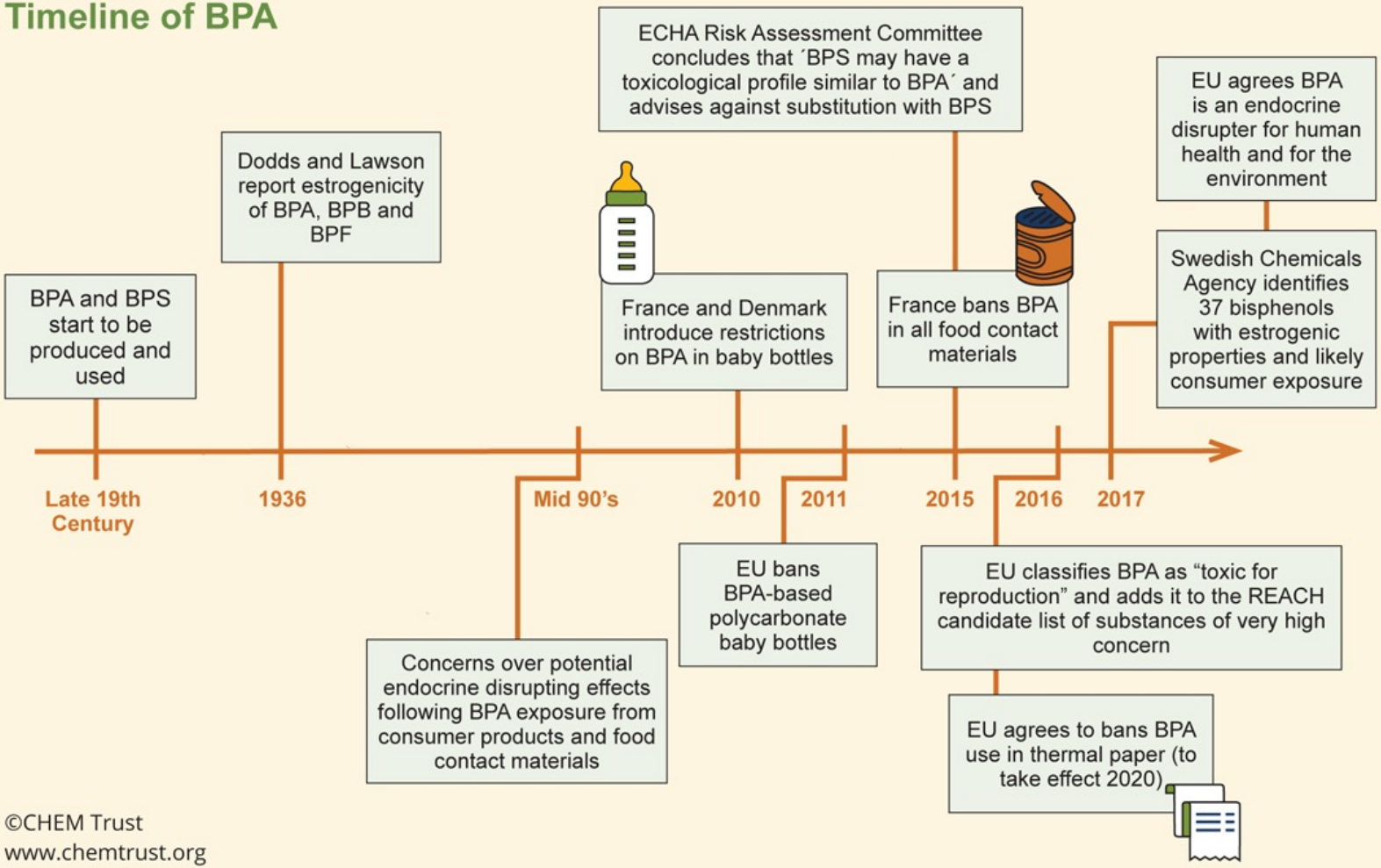
2020
EU Chemical Strategy for Sustainability recommends assessment of inclusion of MAF in REACH and provisions to address mixtures in other laws

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Bisphenols & grouping

- **Why did a chemical that was found to be an EDC in 1938, Bisphenol A, become a major ingredient of FCM?**
  - Dodds, E. C.; Lawson, W., "*Molecular structure in relation to estrogenic activity. Compounds without a phenanthrene nucleus*". Proc. Royal Soc. Lon. B. 1938, 125, 222-232.
  - https://royalsocietypublishing.org/doi/10.1098/rspb.1938.0023
- **Despite ever more evidence of low dose effects**
  - EU food safety agency EFSA is now proposing a 100,000 fold reduction in the safe level
    - https://chemtrust.org/bpa_inaction/
- **Why does BPA get replaced by almost identical chemicals like BPS?**
  - as CHEM Trust highlighted in our 'Toxic Soup' report in 2018

Timeline of BPA



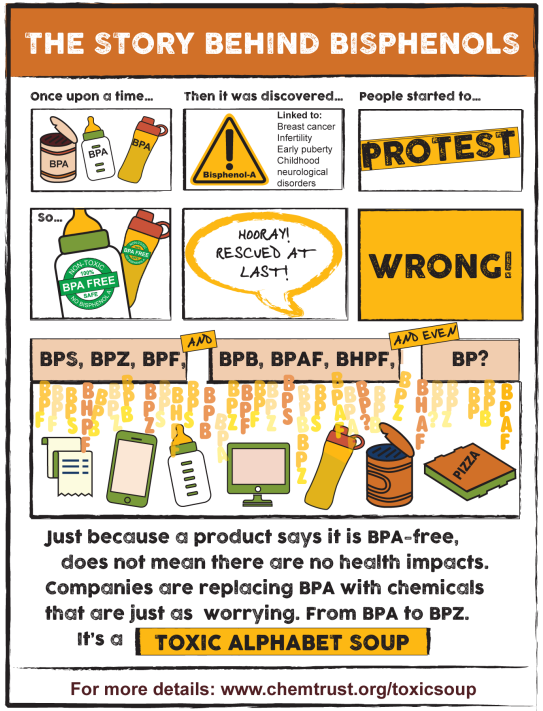
©CHEM Trust
www.chemtrust.org

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Toxic soup of regrettable substitutes

- **"Toxic Soup" report**
  - **Launched Mar 2018**
  - **Examines how companies switch from a known hazardous chemical to one with similar properties**
  - **and how regulators could stop them by regulating groups**

https://chemtrust.org/toxicsoup/



CHEMTrust
Protecting humans and wildlife from harmful chemicals

Progress on bisphenols

- **German government is developing restriction on BPA and structurally related bisphenols (including derivatives) of similar concern for the environment, proposal due October 2022**
- **ECHA published a report on Bisphenols as a group on 7/4/22, identifying that many are likely to need regulatory action**
    - https://echa.europa.eu/fr/-/group-assessment-of-bisphenols-identifies-need-for-restriction
  - *"ECHA and the Member States have assessed a group of 148 bisphenols and recommended that more than 30 bisphenols need to be restricted due to their potential hormonal or reprotoxic effects"*
- **The Commission's 'Restrictions Roadmap', published 25/4/22 with commitment to do more on bisphenols**
  - https://chemtrust.org/restrictions_roadmap/

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Grouping progress

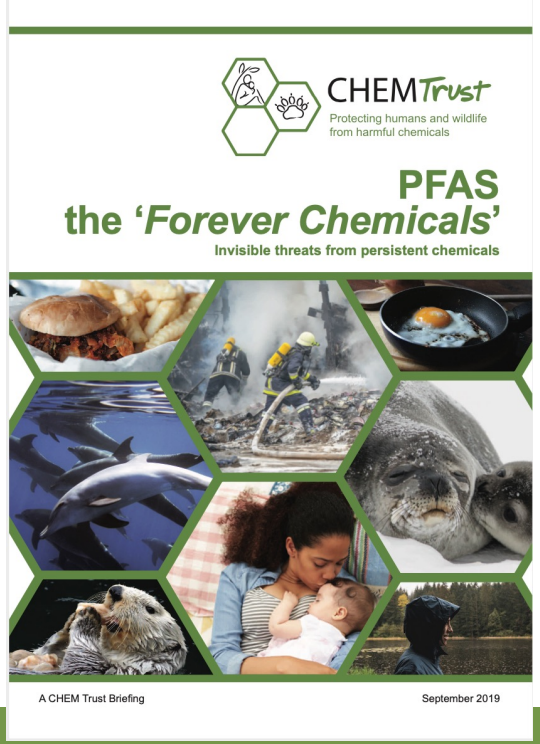
- **ECHA has recently started publishing their analysis of groups of chemicals**
  - Using available data and computer-based approaches to fill in data gaps
- **Results on their 'assessment of regulatory needs' page:**
  - https://echa.europa.eu/assessment-regulatory-needs
- **Key groups published so far:**
  - Ortho-phthalates, see our blog: https://chemtrust.org/echa-grouping/
  - Bisphenols, as mentioned earlier
- **Coming soon:**
  - Multiple groups of flame retardant chemicals, which will feed into the Restrictions Roadmap - "*there will be particular focus on brominated flame retardants and their prioritisation for restrictions*"

CHEMTrust
Protecting humans and wildlife from harmful chemicals

3. PFAS – ‘forever chemicals’

- **Persistent fluorinated pollutants, contaminating the world**
  - Including our blood
- **Affect immune response to vaccination in children**
- **In everyday products, from dental floss to food packaging**
- **Huge group of chemicals, only a few controlled**
- **Briefing:**

https://chemtrust.org/pfasbrief/



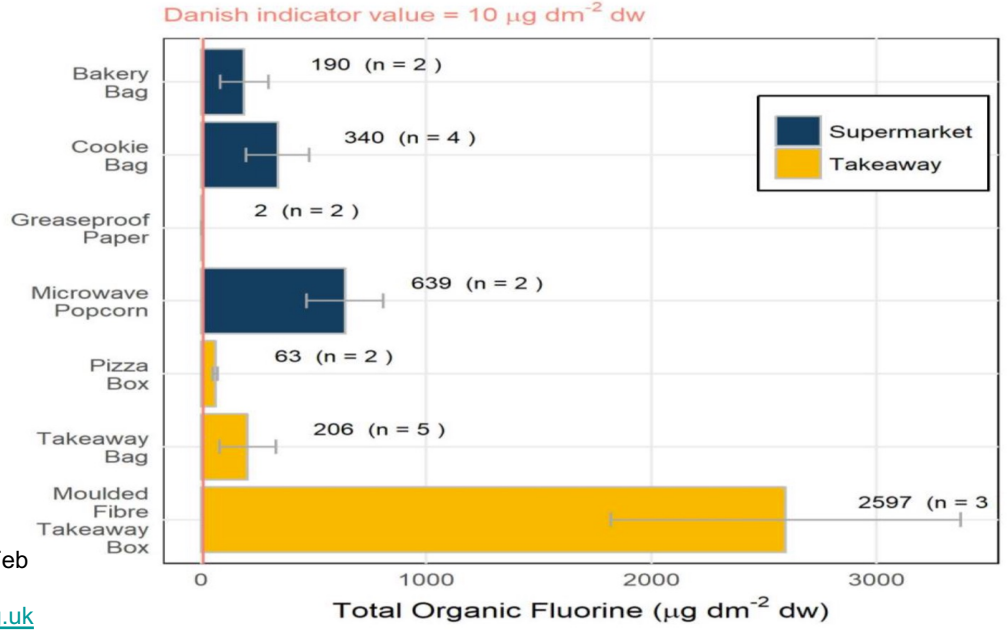
CHEMTrust
Protecting humans and wildlife from harmful chemicals

Also a film (on Netflix)

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Moulded fibre "labelled as sugarcane or begasse"

PFAS in UK food packaging (2020)



Data from FIDRA, 11th Feb 2020
https://www.pfasfree.org.uk

Figure 3. Results from Total Organic Fluorine (TOrF) testing. Values indicate category mean and sample size. Bars represent mean concentrations ± standard error of the mean. The value of 10 μg dm^{-2} dw is designated by the Danish authorities as background contamination.

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Action on PFAS?

- **Two are being globally controlled (PFOS and PFOA)**
  - Some subject to some control in the EU, but thousands aren't
- **EU now developing a REACH Restriction on a wide range of PFAS**
  - Led by Germany, the Netherlands, Norway, Sweden and Denmark
  - Proposal currently expected in January 2023
  - This is a complex – and controversial - process - but it will eventually have very significant impacts
- **More info on PFAS from CHEM Trust & ECHA:**
  - https://chemtrust.org/pfas/
  - https://echa.europa.eu/en/hot-topics/perfluoroalkyl-chemicals-pfas

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Persistence and mobility

- **PFAS are a group of chemicals that are both:**
  - Persistent - long lasting, difficult to break down
  - Mobile - move extensively in the environment
- **They may not (yet) be known to be toxic – but if they are found to be after release, there is no way they can be removed from the environment**
- **This is why many argue that persistence and mobility is a reason to regulate all chemicals**
  - No-one is prepared to remove such chemicals from the environment if they are later found to be toxic
- **EU plans rules to classify and label PMT & vPvM; *may* include in the GRA regulatory system**

CHEMTrust
Protecting humans and wildlife from harmful chemicals

Conclusions

- **Chemicals policy is quite complex….**
  - … and controversial, as chemicals are at the root of the economy
- **Dealing with ignorance & uncertainty is reality**
  - Properties, use, exposure, alternatives & economic impacts
- **Some regulations are more precautionary than others**
  - much is risk based, some more hazard based, some incomplete
- **Aspects of reality routinely ignored (to a large extent)**
  - E.g. Exposure to mixtures
- **Decisions must be made with limited evidence**
  - We are normally dealing with products on the market, where exposure is happening, maybe even increasing
- **CSS is an opportunity - but there‘s lots of work ahead to ensure that it delivers**