



Credit: Phototropy/flickr



The Challenge of >12,000 PFAS

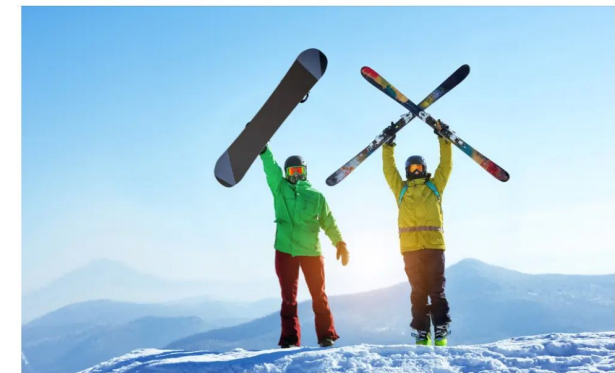
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*Maryland State House
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The PFAS in ski wax helps athletes slide faster down the hill. Dmitry Molchanov/Shutterstock

*>200 Use Categories
[Glüge et al., Environ
Sci: Processes&Impacts,
2020]*

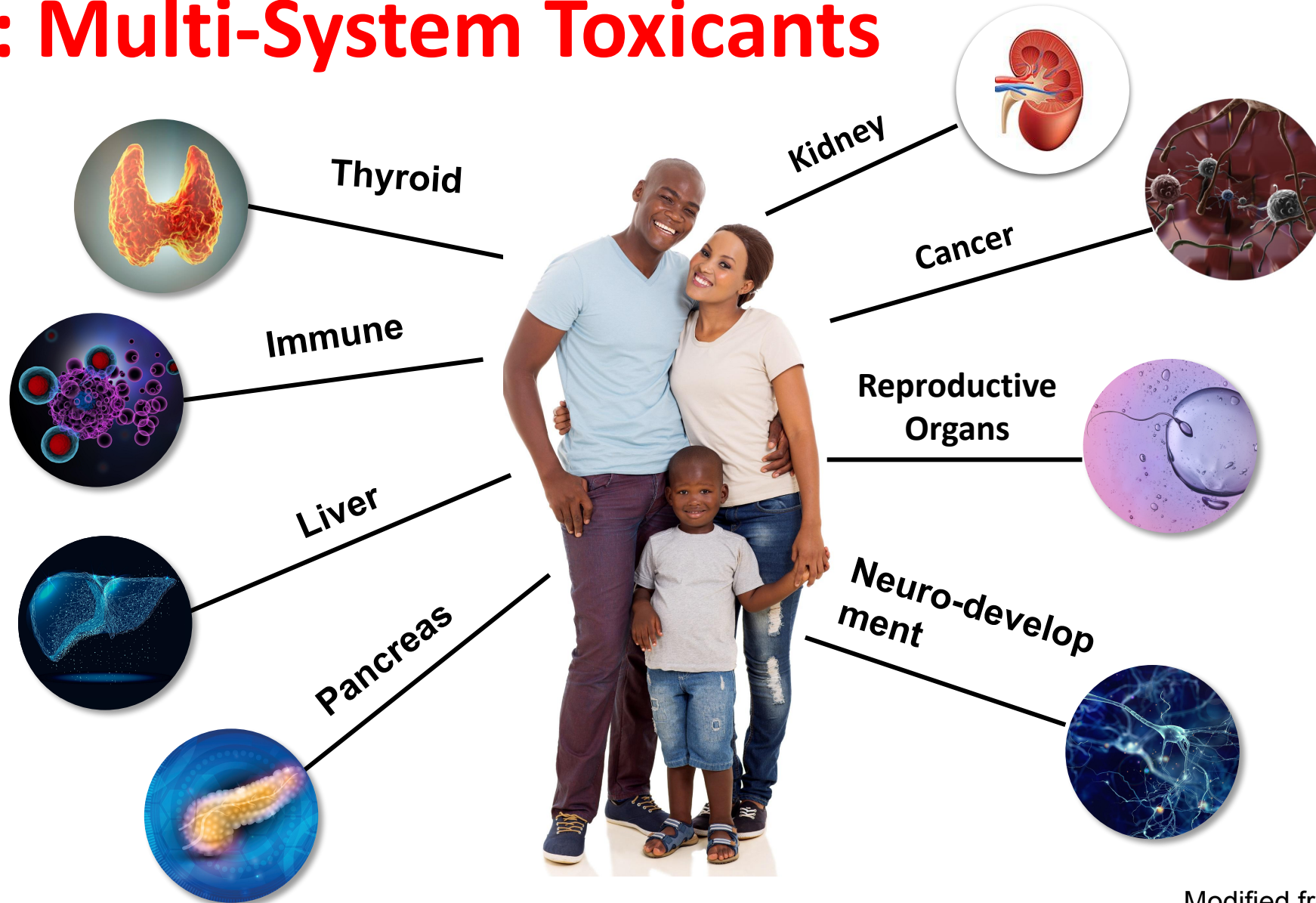
How are we exposed?

- Diverse group of chemical compounds used in industry and consumer products worldwide since 1950s
- Contaminant in Drinking water
- Found in various products:
 - Carpet and Fabric
 - Food Packaging and Food
 - Pots and Pans
 - Clothing
 - Cardboard packaging
 - Firefighting foams (AFFF)
 - Cosmetics



Ingestion (Drinking Water, Food, Dust), Inhalation, Dermal

PFAS: Multi-System Toxicants



Key Research Questions

- **Total organic fluorine analysis** – Are we measuring 90% or 10% of PFAS present in a sample?
- **How can we get rid of PFAS?** – Filtration? Incineration? Landfill?
- **Essentiality** – Where are chemicals really needed and where can we replace with safer alternatives? (*Cousins et al., 2019*)
- **Assessing alternatives** – Are our substitutes safer?
- **PFAS as a class** – One chemical group or subclasses? (*Kwiatkowski et al., ES&T Lett. 2020; Balan et al., EHP 2021*)
 - Too many PFAS to do proper toxicity testing (including mixtures)
 - NASEM strongly “....***an approach that uses subclasses to assess the chemicals is scientifically justifiable...***” [NASEM]

Regulating chemicals as a class of nothing new!

States are Moving Ahead

- AFFF
 - 36 states in process of banning or restricting PFAS-containing AFFF
- Food Contact Materials
 - 14 states are in process of banning PFAS in food packaging materials
- Textiles and Furnishing
 - 4 states ban on selling or PFAS-containing textiles
 - 4 states banning in other consumer products, personal care products, and cosmetics
- Water
 - US EPA Office of Water Developing Stringent MCLs for PFOA and PFOS
 - Michigan, New Hampshire, New Jersey, Massachusetts, Maine, and Vermont established MCLs for up to 6 PFAS
 - California listed PFOA and PFOS under Proposition 65
 - Denmark banned ALL PFAS in food packaging
 - EU treating PFAS as a class on moving forward to ban all but essential uses
 - Canada moving to treat PFAS as a class

