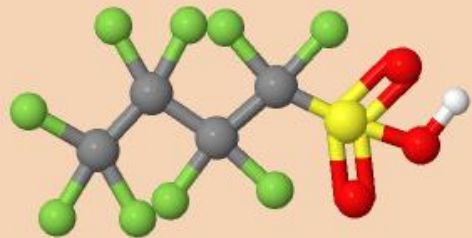




# Human Health Toxicity Assessment for Perfluorobutane Sulfonic Acid (PFBS; CASRN 375- 73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3)

**Beth O. Owens**

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Office of Research and Development



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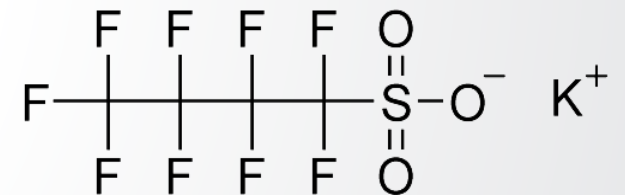
*The views expressed in this presentation are those of the author(s) and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.*



- Decision-making on PFAS chemicals is hindered by a limited number of available toxicity values
  - ORD is developing federal published, peer-reviewed toxicity values for priority PFAS
- 1-Perfluorobutanesulfonic Acid (PFBS) and its related salt called potassium perfluorobutane sulfonate (K<sup>+</sup>PFBS) are each four-carbon fully fluorinated alkane members.
  - Shorter chain PFAS developed and integrated into various consumer products and applications as a replacement for PFOA/PFOS.
  - Faster elimination from the body than PFOA and PFOS; but is persistent and mobile in the environment.
  - PFBS was introduced as a substitute for PFOS and is used widely for surfactant and stain repellent properties.



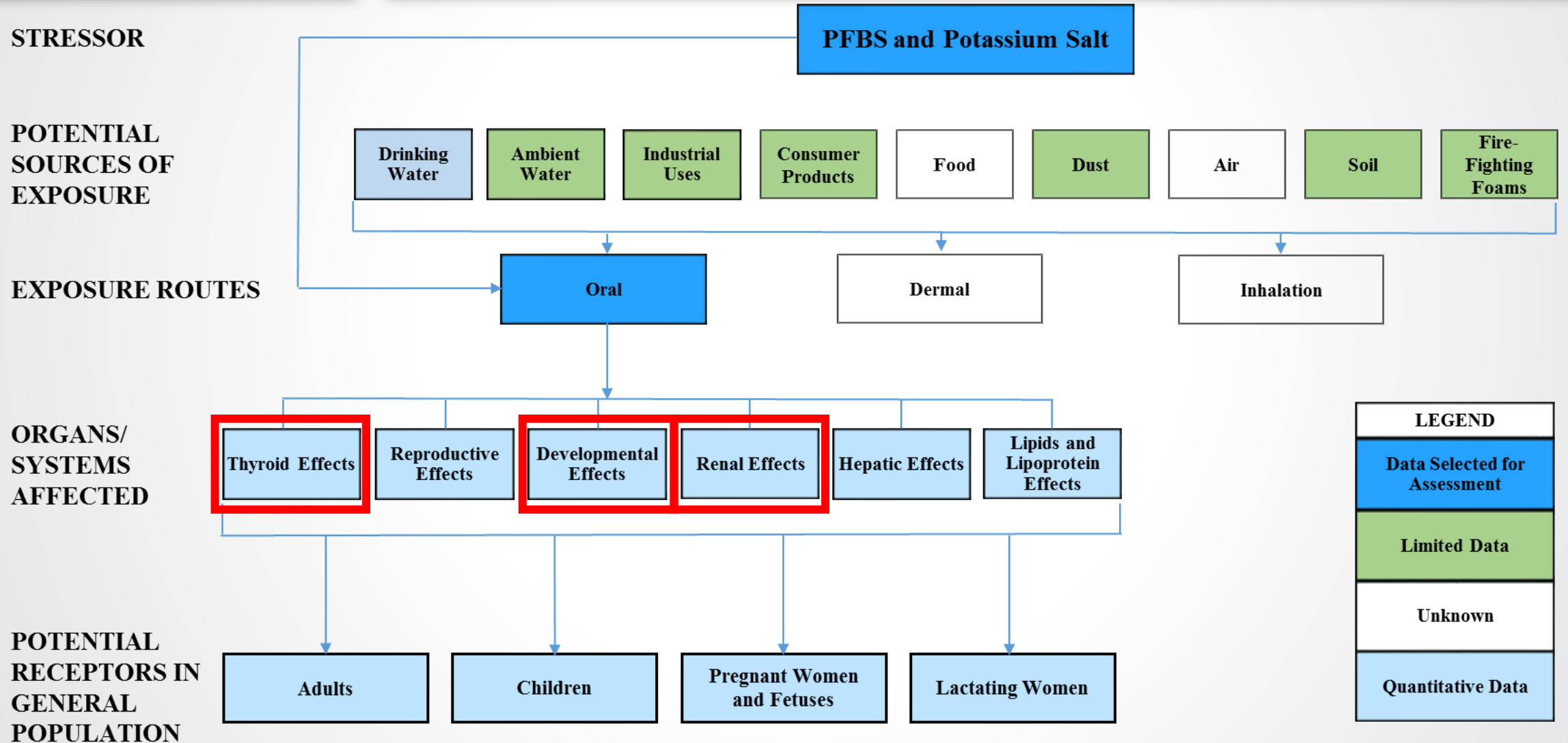
**1-Perfluorobutanesulfonic Acid**  
CASRN 375-73-5



**Potassium Perfluorobutane Sulfonate**  
CASRN 29420-49-3



# Approach





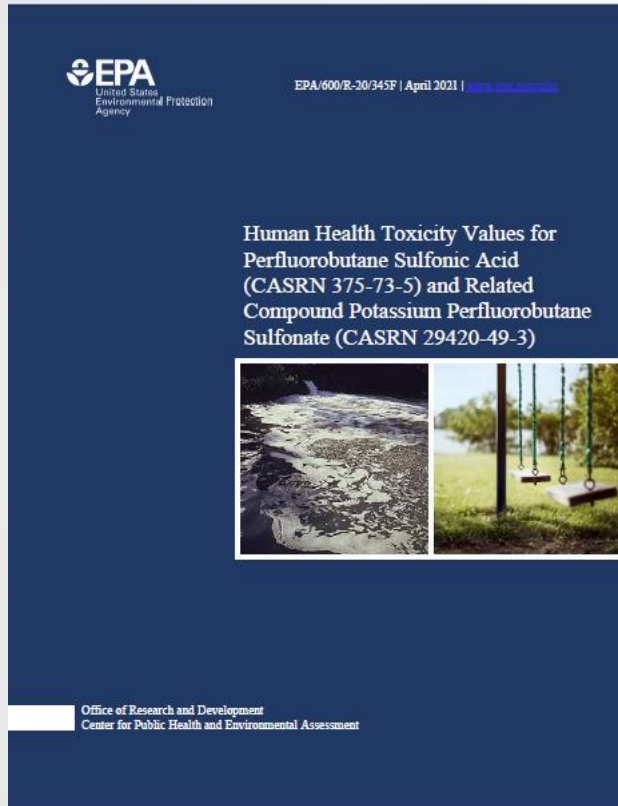
# Human Health Toxicity Values for PFBS

- Across the body of evidence supporting hazards via the oral exposure route and across all life stages evaluated, the thyroid (specifically, decreased thyroid hormone [total T4]) in newborn mice was identified as the critical effect from a single generation developmental study (Feng et al. 2017)

	POD (BMDL <sub>HED</sub> )	Uncertainty Factors						RfD
		UF <sub>A</sub>	UF <sub>H</sub>	UF <sub>L</sub>	UF <sub>S</sub>	UF <sub>D</sub>	UF <sub>C</sub>	
<b>Subchronic</b>	0.095	3	10	1	1	3	100	<b>1 × 10<sup>-3</sup></b>
<b>Chronic</b>	0.095	3	10	1	1	10	300	<b>3 × 10<sup>-4</sup></b>

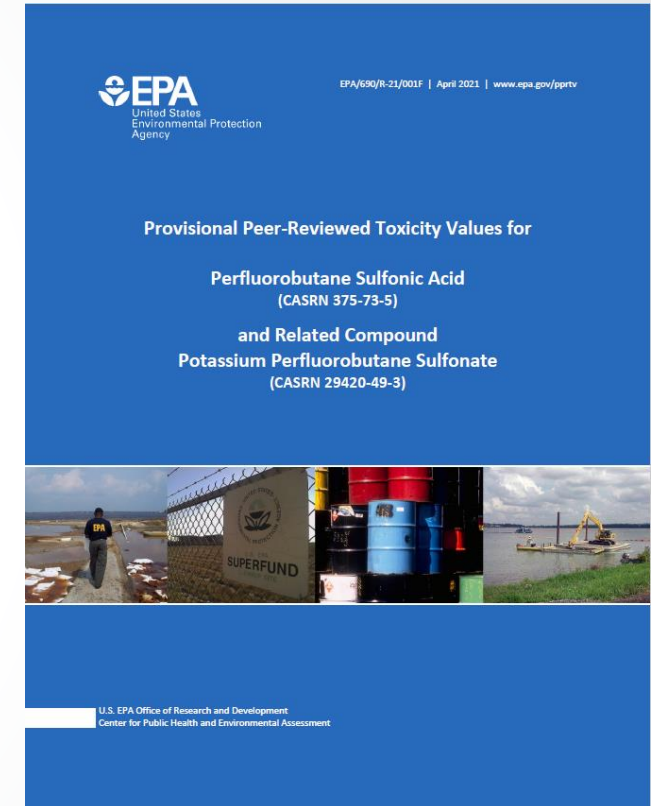
UF<sub>A</sub> – interspecies variability; UF<sub>H</sub> – intraspecies variability ; UF<sub>L</sub> – LOAEL to NOAEL uncertainty;  
UF<sub>S</sub> – subchronic to chronic uncertainty; UF<sub>D</sub> – database uncertainty

# Toxicity Assessment of PFBS Released



- EPA released the final *Human Health Toxicity Values for Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3)* in April 2021
  - This assessment for PFBS updates and replaces the 2014 Provisional Peer-Reviewed Toxicity Value (PPRTV) assessment for PFBS.

<https://epa.gov/pfas/learn-about-human-health-toxicity-assessment-pfbs>



<https://cfpub.epa.gov/ncea/pprtv/recordisplay.cfm?deid=350061>



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