



Draft IRIS Assessments for PFBA, PFHxA, PFDA, PFHxS, PFNA, and Their Related Salts

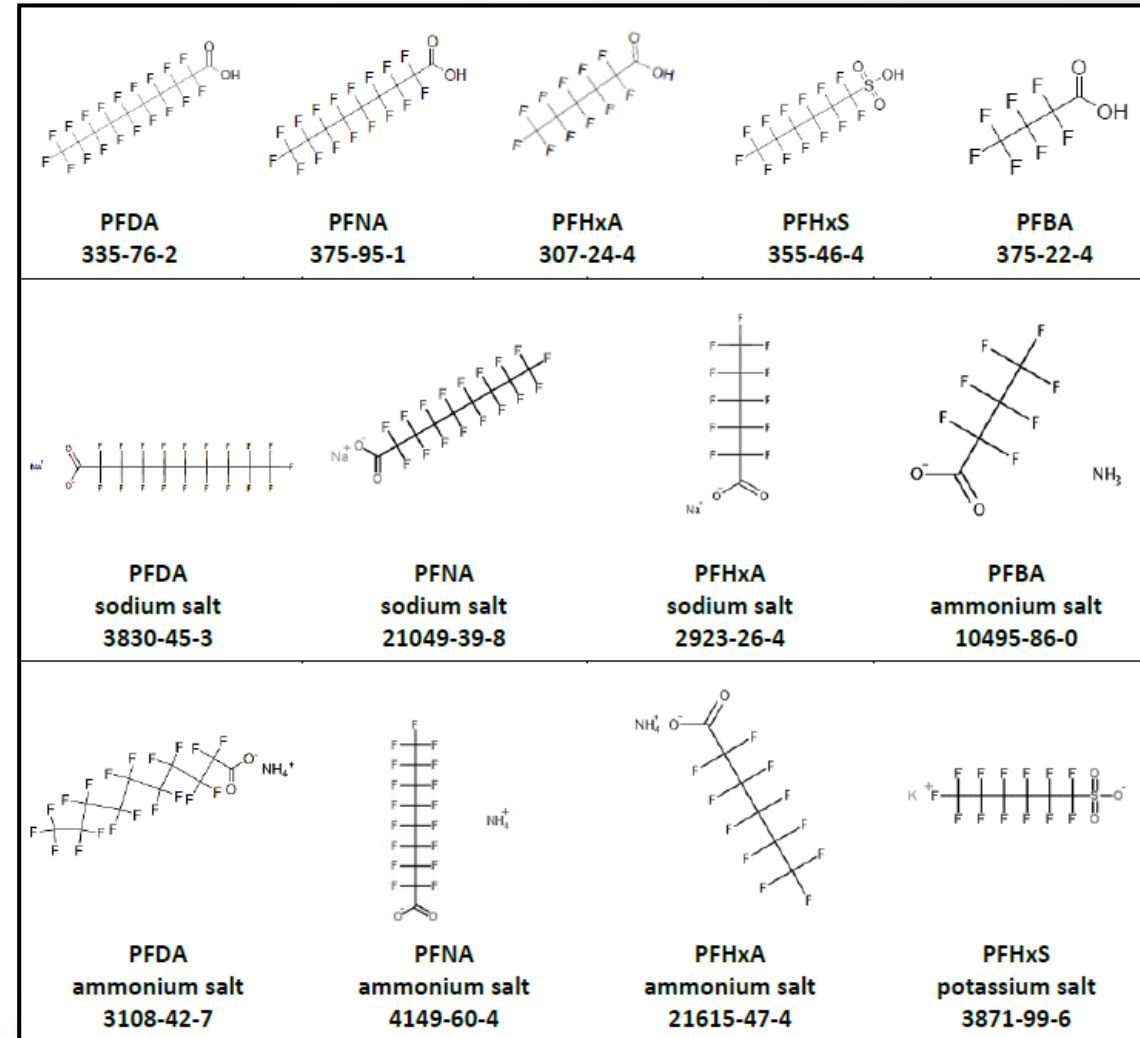
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The views expressed in this presentation are those of the author(s) and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

- EPA has few available PFAS toxicity values
 - IRIS toxicity values are well-vetted and defensible (7-step review process including public comment and peer review).
 - Final IRIS toxicity values can support EPA decisions across a range of Program, Regional, and Tribal partners.
- The 5 IRIS PFAS were selected for diversity of structure and: were identified as priorities by EPA Program(s); had available in vivo animal studies; and could be quantified using standardized analytical methods
 - PFHxS is a perfluoroalkane sulfonic acid (PFSA); PFDA, PFNA, PFHxA, and PFBA are perfluoroalkyl carboxylic acids (PFCAs)
 - PFBA and PFHxA are considered short-chain; the others are long-chain PFAS (examples at right)



November 2019 Systematic Review Protocol for the 5 IRIS PFAS assessments

https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=345065

Outlines the availability of human health assessment-relevant studies

- General lack of studies to address inhalation exposure and potential carcinogenicity

Describes the assessment methods to be applied across the 5 separate documents

- Uses systematic review methods to transparently identify, evaluate, and synthesize studies

Identifies key science issues the assessments will address

- Toxicokinetic differences across species and sexes
- Human relevance of effects in animals that involve PPAR α receptors
- Potential confounding by other PFAS exposures in epidemiology studies
- Toxicological relevance of certain endpoints (e.g., liver hyperplasia) in rodents
- Characterizing uncertainty due to missing chemical-specific information



Preliminary Cross-view

Potential Effects	PFBA	PFHxA	PFDA	PFHxS	PFNA
<i>Developmental*</i>	Supporting evidence exists	Supporting evidence exists	Supporting evidence exists	Supporting evidence exists	Supporting evidence exists
<i>Hepatic</i>	Supporting evidence exists	Supporting evidence exists	Supporting evidence exists	Some evidence suggests	Supporting evidence exists
<i>Endocrine*</i>	Supporting evidence exists	Some evidence suggests	Neutral	Supporting evidence exists	Some evidence suggests
<i>Immune</i>	Lack of informative studies	Neutral	Supporting evidence exists	Supporting evidence exists	Supporting evidence exists
<i>Reproductive</i>	Neutral	Neutral	Supporting evidence exists	Neutral	Supporting evidence exists
<i>Hematological</i>	Neutral	Supporting evidence exists	Neutral	Some evidence suggests	Neutral
<i>Nervous System</i>	Neutral	Neutral	Neutral	Neutral	Neutral
<i>Renal*</i>	Lack of informative studies	Neutral	Neutral	Neutral	Neutral
<i>Cancer</i>	Lack of informative studies	Neutral	Lack of informative studies	Lack of informative studies	Lack of informative studies
<i>Respiratory</i>	Lack of informative studies	Neutral	Neutral	Neutral	Lack of informative studies
<i>Gastrointestinal</i>	Lack of informative studies	Neutral	Neutral	Neutral	Lack of informative studies
<i>Inhalation</i>	Lack of informative studies	Lack of informative studies	Lack of informative studies	Lack of informative studies	Neutral

- Supporting evidence exists
(may not match hazard ID decisions in public drafts)
- Some evidence suggests
(generally, would benefit from additional study)
- Neutral
(studies exist but are inconclusive overall)
- Poorly studied
(bioassays exist but are not robust [e.g., 1 short-term])
- Lack of informative studies
(observational studies may exist but are not robust)

Note that these preliminary observations are based on DRAFT assessments and may change

*Health effects of primary concern (i.e., developmental delays; thyroid hormone disruption; and renal hyperplasia) in the final PFBS assessment (2021)



Current Status

Actual and Anticipated Timing

	Executive Review (ORD)	Agency Review	Interagency Consultation	Public Comment	External Peer Review
PFBA	Complete	Complete Jun 2020	Complete Aug 2020	Ongoing	Q1 FY22
PFHxA	Complete	Complete Jan 2021	Ongoing	Q2 FY22	Later in 2022
PFDA	Ongoing	Q1 FY22	Q2 FY22	Later in 2022	Later in 2022
PFHxS	Ongoing	Q1 FY22	Q2 FY22	Later in 2022	Later in 2022
PFNA	Q1 FY22	Q2 FY22	Later in 2022	Later in 2022	Later in 2022

See Program Outlook (updated 3x/year) for timing on public steps: <https://www.epa.gov/iris/iris-program-outlook>



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