

### David J. Feifarek, M.S.

SENIOR SCIENTIST I

#### CONTACT INFORMATION

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#### PROFESSIONAL PROFILE

David Feifarek is a toxicologist in ToxStrategies' Health Sciences Practice. He has seven years of experience in federal government and industry regulatory toxicology, performing novel research and developing quantitative risk assessments for consumer and professional personal care, air care, home cleaning, and biocidal products, while participating in corporate strategic development and sustainability initiatives. His background includes delivery of fit-for-purpose assessments of consumer cosmetics and drugs regulated by the US FDA, EU Cosmetic Products Regulation, and EU Biocidal Products Regulation. He is familiar with guidelines from the Scientific Committee on Consumer Safety (SCCS, European Commission), Cosmetic Ingredient Review (CIR) assessments, and FDA monographs.

Mr. Feifarek's knowledge base includes a strategic understanding of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) and the EU Classification, Labelling, and Packaging (CLP) legislation, as well as product hazard labeling regulations in North America, Europe, and the Asia-Pacific and Australia-New Zealand regions. He has developed and implemented product safety claims (e.g., non-toxic, biodegradable, septic-safe), and he has in-depth working experience in screening for endocrine-disrupting properties of chemicals in accordance with EU REACH and Biocidal Product Regulation (BPR), as well as novel approach methodologies and priority data sources to screen for endocrine activity and adversity. His early work with USEPA contributed to the development and documentation of Adverse Outcome Pathways (AOPs) for estrogen, androgen, and steroidogenesis disruption. Mr. Feifarek's work has been recognized by his employers on multiple occasions, including an award in 2021 for establishing the company as an industry leader in understanding endocrine disruptor toxicology, and a 2020 award for developing novel methods of predicting endocrine-disrupting potential in chemicals.

Mr. Feifarek is well published in the scientific literature, including being a co-author on a paper discussing the relevance of environmental chemical transformation and associated impacts on endocrine disruption potential in fish, which was a Best Paper nominee in *Environmental Toxicology and Chemistry*, and in 2017, an article that was recognized by the American Chemical Society as an Editor's Choice Article and was featured on the cover of *Environmental Science and Technology*. He presents regularly at scientific conferences and symposia and enjoys collaborating with diverse stakeholders on dynamic and difficult issues.









#### EDUCATION AND DEGREES EARNED

- 2015 MS in Cell and Molecular Biology, St. Cloud State University, St. Cloud, Minnesota
- 2013 BS in Biomedical Science, St. Cloud State University, St. Cloud, Minnesota

#### PROFESSIONAL AFFILIATIONS

2021–Present	Personal Care Products Council (PCPC)
	Cosmetic Ingredient Review Science and Support Committee
	Safety and Regulatory Toxicology Committee
2019–2022	European Chemical Industry Council (CEFIC)
	Biocides for Europe Endocrine Disruptor Working Group
2018–2022	Health and Environmental Sciences Institute (HESI)
	Animal Alternatives Committee
2017–2022	International Fragrance Association (IFRA)
	Joint Advisory Group
2017–2022	Research Institute for Fragrance Materials (RIFM)
	Advisory Committee
2015–Present	Society of Environmental Toxicology and Chemistry (SETAC)
	Board Member, Vice President, President of Midwest Chapter

- Endocrine Disruptor Testing and Risk Assessment
- Animal Alternatives in Environmental Science

#### AWARDS AND CERTIFICATIONS

- 2022 Operational Excellence (OPEX) Employer Lean Champion Certification
- 2021 *Environmental Toxicology and Chemistry* Best Paper Nominee for Adverse outcome pathway networkbased assessment of interactive effects of an androgen receptor agonist and an aromatase inhibitor on fish endocrine function
- 2021 Technical Award and Officer's Award Employer recognition of contributions and accomplishments in endocrine disruption regulatory science
- 2019 Officer's Award Employer recognition for technical process improvement
- 2017 American Chemical Society (ACS) Editor's Choice Article
- 2017 Environmental Science & Technology Cover Article

- 2016 St. Cloud State University Distinguished Thesis Award awarded to the best thesis at the institution
- 2015 Midwest SETAC Best Student Platform Honorable Mention
- 2014 George Friedrich Endowed Wildlife Protection Fund Scholarship
- 2014 SETAC Student Travel Scholarship
- 2013 St. Cloud State University Student Research Grant
- 2008 Ford Motor Company Family Scholarship

#### SELECTED PROFESSIONAL EXPERIENCE

#### Toxicology — Consumer Products

Managed a team conducting fit-for-purpose safety assessments and providing technical/regulatory advice regarding the human and environmental toxicology of personal-care products.

Performed global risk assessments for consumer and professional formulations and served as regulatory toxicology liaison for fragrance-related issues. Specialized in endocrine disruption toxicology and regulation.

Member of team developing business strategy regarding regulatory landscape preparedness and product claim substantiation.

#### Research

As a contractor to the USEPA Office of Research and Development, studied the development of quantitative toxicological risk assessment tools, including the use of adverse outcome pathways.

Conducted and published graduate research thesis work examining the effects of biotic and abiotic factors (nutrients, dissolved oxygen, salinity, temperature) that influence chemical toxicity in aquatic reproductive tests. Received the Distinguished Master's Thesis Award from St. Cloud State University to recognize the institution's best thesis of the year.

Conducted and published additional research related to pharmaceutical uptake and disposition.

#### PUBLISHED MANUSCRIPTS

Racz L, Gauthier A, Bare J, Heintz M, **Feifarek D**, Kennedy S, Panko J. 2024. Assessment of perfluorocarboxylic acids in fluorinated high-density polyethylene containers and estimation of potential non-cancer risks associated with anticipated use scenarios. Regul Toxicol Pharmacol 147:105560.

Villeneuve DL, Blackwell BR, Blanksma C, Cavallin JE, Cheng W, Conolly R, Conrow K, **Feifarek DJ**, Heinis L, Jensen KM, Kahl MD, Milsk RY, Poole ST, Randolph EC, Saari TW, Watanabe K, Ankley GT. 2022. Case study in 21st century ecotoxicology: Using *in vitro* aromatase inhibition data to predict reproductive outcomes in fish, *in vivo*. Environ Toxicol Chem (in review).

Maloney E, Villeneuve DL, Jensen KM, Blackwell BR, Kahl MD, Poole ST, Vitense K, **Feifarek DJ**, Patlewicz G, Tilton C, Dean K, Randolph EC, Cavallin JE, LaLone CA, Schaupp C, Ankley GT. 2022. Evaluation of complex mixture toxicity: An effects-driven analysis in the Milwaukee Estuary (WI, USA). Environ Toxicol Chem (in review).

Garcia-Reyero N, Arick M II, Woolard A, Wilbanks M, Mylroie J, Jensen KM, Kahl MD, **Feifarek DJ**, Poole ST, Randolph EC, Cavallin JE, Blackwell BR, Villeneuve DL, Ankley GT, Perkins E. 2022. Male fathead minnow transcriptomes and associated chemical analytes in the Milwaukee estuary system. Scientific Data SDATA-20-00107D.

Villeneuve DL, Blackwell BR, Cavallin JE, Cheng W, **Feifarek DJ**, Jensen KM, Kahl MD, Milsk RY, Poole ST, Randolph EC, Saari TW, Ankley GT. 2021. Case study in 21st Century ecotoxicology: Using in vitro aromatase inhibition data to predict short term in vivo responses in adult female fish. Environ Toxicol Chem 40:1155–1170.

Ankley GT, Berninger JP, Blackwell BR, Cavallin JE, Collette TW, Ekman DR, Fay KA, **Feifarek DJ**, Jensen KM, Kahl MD, Mosley JD, Poole ST, Randolph EC, Rearick D, Schroeder AL, Swintek J, Villeneuve DL. 2021. Pathwaybased approaches for assessing biological hazards of complex mixtures of contaminants: A case study in the Maumee River. Environ Toxicol Chem 40:1090–1122.

Zorn KM, Foil DH, Lane TR, Hillwalker WE. **Feifarek DJ**, Jones FA, Klaren WD, Brinkman AM, Ekins S. 2020. Comparing machine learning models for aromatase (P450 19A1). Environ Sci Technol 54:15546–15555.

Zorn KM, Foil DH, Lane TR, Hillwalker WE, **Feifarek DJ**, Jones FA, Klaren WD, Brinkman AM, Ekins S. 2020. Comparison of machine learning models for the androgen receptor. Environ Sci Technol 54:13690–13700.

Zorn KM, Foil DH, Lane TR, Russo DP, Hillwalker WE, **Feifarek DJ**, Klaren WD, Brinkman AM, Ekins S. 2020. Machine learning models for estrogen receptor bioactivity and endocrine disruption prediction. Environ Sci Technol 19:12202–12213.

Ankley GT, Blackwell BR, Cavallin JE, Doering JA, **Feifarek DJ**, Jensen KM, Kahl MD, LaLone CA, Poole ST, Randolph EC, Saari TW, Villeneuve DL. 2020. Adverse outcome pathway network-based assessment of the interactive effects of an androgen receptor agonist and an aromatase inhibitor on fish endocrine function. Environ Toxicol Chem 39:913–922.

Medlock Kakaley EK, Blackwell BR, Cardon MC, Conley JM, EvansN, **Feifarek DJ**, Furlong ET, Glassmeyer ST, Gray LE Jr, Hartiga PC, Kolpin DW, Mills MA, Rosenblum L, Villeneuve DL, Wilson VS. 2019. De facto water reuse: Bioassay suite approach delivers depth and breadth in endocrine active compound detection. Sci Tot Environ 699:134–297.

Doering JA, Villeneuve DL, Poole ST, Blackwell BR, Jensen KM, Kahl MD, Kittelson AR, **Feifarek DJ**, Tilton CB, LaLone CA, Ankley GT. 2019. Quantitative response-response relationships linking aromatase inhibition to decreased fecundity are conserved across three fishes with asynchronous oocyte development. Environ Sci Technol 53(17):10470–10478.

Ankley GT, **Feifarek DJ**, Blackwell BR, Cavallin JE, Jensen KM, Kahl MD, Poole ST, Randolph EC, Saari TW, Villeneuve DL. 2017. Re-evaluating the significance of estrone as an environmental estrogen. Environ Sci Technol 51(10):4705–4713 (ACS Editor's Choice Article; *ES&T* cover article).

**Feifarek DJ**, Shappell NW, Schoenfuss HL. 2017. Do environmental factors affect male fathead minnow (Pimephales promelas) response to estrone? Part 1. Dissolved oxygen and sodium chloride. Sci Tot Environ 610:1262–1270.

Shappell NW, **Feifarek DJ**, Rearick DC, Bartell SE, Schoenfuss HL. 2017. Do environmental factors affect male fathead minnow (*Pimephales promelas*) response to estrone? Part 2. Temperature and food availability. Sci Tot Environ 611:32–43.

Zhao JL, Furlong ET, Schoenfuss HL, Kolpin DW, Bird KL, **Feifarek DJ**, Schwab EA, Ying GG. 2017. Uptake and disposition of select pharmaceuticals by bluegill exposed at constant concentrations in a flow-through aquatic exposure system. Environ Sci Technol 51:4434–4444.



#### PRESENTATIONS

#### [\*Presenter]

Lea IA, **Feifarek D**, Mihalchik A, Heintz M, Haws L, Nyambego H, Goyak K, Borghoff SJ. Evaluation of the endocrine disrupting potential of di-isodecyl phthalate. Abstract 3930, Society of Toxicology Annual Meeting, Salt Lake City, UT, March 2024.

Borghoff SJ, **Feifarek D**, Mihalchik A, Heintz M, Haws L, Nyambego H, Goyak K, Lea IA. Evaluation of the endocrine disrupting potential of di-isodecyl phthalate. Abstract 3931, Society of Toxicology Annual Meeting, Salt Lake City, UT, March 2024.

LaPlaca SB, **Feifarek D**, Panko JM. Differential acute sensitivity to 6PPD-quinone among aquatic species and regional applicability. Poster presented at Society of Environmental Toxicology and Chemistry (SETAC), Louisville, KY, November 2023.

Lea IA, Heintz MM, **Feifarek D**, Haws LC, Borghoff SJ. Weight-of-evidence evaluation of endocrine activity for diisodecyl phthalate (DIDP) and di-isononyl phthalate (DINP). Poster presented at Society of Toxicology Annual Meeting, Nashville, TN, March 2023.

Maloney E\*, Ankley GT, Blackwell BR, Cavallin JE, **Feifarek DJ**, Kahl MD, et al. Evaluation of complex mixture toxicity: An effects-driven analysis in the Milwaukee Estuary area of concern (Milwaukee, WI). SETAC North America 42nd Annual Meeting, virtual, 2021.

Urbino F\*, Zorn K, Foil DH, Lane TR, Hillwalker WE, **Feifarek DJ**, et al. Evaluating multiple machine learning models for endocrine disruption predictions. SETAC North America 42nd Annual Meeting, virtual, 2021.

Zorn K\*, Foil DH, Lane TR, Hillwalker WE, **Feifarek DJ**, Jones FA, et al. Machine learning model comparisons for endocrine disruption prediction. 19th International Workshop on (Quantitative) Structure-Activity Relationships in Environmental and Health Sciences, virtual, 2021.

Zorn K\*, Foil DH, Lane TR, Hillwalker WE, **Feifarek DJ**, Jones FA, et al. Applying multiple machine learning methods to predict endocrine disruption. SETAC North America 41st Annual Meeting (SETAC SciCon2), virtual, 2020.

Maloney E\*, Ankley GT, Blackwell BR, Cavallin JE, **Feifarek DJ**, Kahl MD, et al. Effects-based monitoring under the Great Lakes Restoration Initiative: Evaluation of spatial and temporal patterns in the Milwaukee Estuary. SETAC North America 41st Annual Meeting (SETAC SciCon2), virtual, 2020.

**Feifarek DJ**\*. Multi-sector toxicology: Perspectives from academia, government and industry. University of Wisconsin Madison, Department of Civil and Environmental Engineering Seminar Series, 2019.

**Feifarek DJ**\*, Staveley JP, McArdle ME, Freeman E, Hillwalker WE. Bioactivity models as tools for predicting endocrine-mediated adversity — Regulatory significance. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Toronto, ON, 2019.

Doering JA\*, Ankley GT, Blackwell BR, Cavallin JE, Cole A, Dean K, Fay KA, **Feifarek DJ**, et al. Species extrapolation of a quantitative AOP describing inhibition of aromatase in fishes: The importance of reproductive traits. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Toronto, ON, 2019.

Zorn K\*, Russo DP, Clark AM, Hillwalker WE, **Feifarek DJ**, Jones FA, et al. Predicting endocrine disruption with estrogen receptor machine learning models. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Toronto, ON, 2019.

Mihaich E, Schoenfuss HL, Scown T, Embry M, **Feifarek DJ**. Challenges and strategies for linking adverse effects to endocrine modes of action (session). Society of Environmental Toxicology and Chemistry North America Annual Meeting, Toronto, ON, 2019.

Doering JA\*, Ankley GT, Blackwell BR, Cavallin JE, Dean K, Fay KA, **Feifarek DJ**, et al. Cross-species applicability of a quantitative AOP describing inhibition of aromatase activity leading to reproductive dysfunction in fathead minnow. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Sacramento, CA, 2018.

Fay KA\*, Doering JA, Swintek J, Kono T, **Feifarek DJ**, Poole ST, et al. Addressing species diversity in biotransformation: Variability in expressed transcripts of hepatic biotransformation enzymes among fishes. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Sacramento, CA, 2018.

**Feifarek DJ**\*, Hillwalker WE, Pastirik AK, Mason PJ. A chemical prioritization approach based on EU guidance for the identification of endocrine disruptors. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Sacramento, CA, 2018.

Padilla L\*, Hillwalker WE, **Feifarek DJ**, Winchell MF, Castro-Tanzi S. Evaluating consumer behaviors to support refinement of pesticide use assumptions in EPA's Outdoor Residential Screening Model. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Sacramento, CA, 2018.

Pastirik AK\*, Hillwalker WE, Mason PJ, **Feifarek DJ**. Defining substances of concern for environmental risk assessment based on European guidance. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Sacramento, CA, 2018.

**Feifarek DJ**\*, Hillwalker WE, MasonP. Adverse outcome pathways: A global regulatory perspective. Society of Environmental Toxicology and Chemistry Midwest Chapter Meeting, Loyola University, Lake Shore Campus, Chicago, IL, 2018.

Blackwell BR\*, Ankley GT, Cavallin JE, Fay KA, **Feifarek DJ**, Jensen KM, et al. USEPA bioeffects monitoring under the Great Lakes Restoration Initiative: Overview of efforts to assess the biological impacts of CECs. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Minneapolis, MN, 2017.

Doering JA\*, Ankley GT, Blackwell BR, Cavallin JE, Fay KA, **Feifarek DJ**, et al. Differences in sensitivity to aromatase inhibition among fish species. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Minneapolis, MN, 2017.

Fay KA\*, LaLone CA, **Feifarek DJ**, Doering JA, Cavallin JE, Villeneuve DL, Ankley GT. Addressing species diversity in biotransformation: Variability in expressed transcripts of Phase I and II hepatic enzymes among fishes. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Minneapolis, MN, 2017.

Jensen KM\*, Ankley GT, Blackwell BR, Cavallin JE, Cheng W, Conolly R, **Feifarek DJ**, et al. The use of adverse outcome pathway-based toxicity predictions — A case study evaluating the effects of imazalil on fathead minnow reproduction. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Minneapolis, MN, 2017.

Villeneuve DL\*, Blackwell BR, Cavallin JE, Cheng W, **Feifarek DJ**, Jensen KM, et al. Developing confidence in adverse outcome pathway-based toxicity predictions: Effects of the fungicide imazalil on fathead minnow reproduction. Society of Environmental Toxicology and Chemistry Europe Annual Meeting, Brussels, Belgium, 2017.

**Feifarek DJ**\*, Randolph EC, Milsk RY, Cavallin JE, Poole ST, Saari TW, et al. Reevaluating the significance of estrone as an environmental estrogen. Society of Environmental Toxicology and Chemistry Midwest Chapter Meeting, University of St. Thomas, Minneapolis, MN, 2017.

**Feifarek DJ**\*, Randolph EC, Milsk RY, Cavallin JE, Poole ST, Saari TW, et al. Conversion of estrone to estradiol in male fathead minnows: Implications for assessing risk. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Rosen Shingle Creek, Orlando, FL, 2016.

Poole ST\*, Ankley GT, Blackwell BR, Cavallin JE, Cheng W, **Feifarek DJ**, et al. Quantitative AOP-based predictions for two aromatase inhibitors evaluating the influence of bioaccumulation on prediction accuracy. Society of Environmental Toxicology and Chemistry North America Annual Meeting. Rosen Shingle Creek, Orlando, FL, 2016.

Randolph EC\*, Ankley GT, Blackwell BR, Cavallin JE, Cheng W, **Feifarek DJ**, et al. Effects of the fungicide imazalil on the fathead minnow (*Pimephales promelas*) reproductive axis: A case study in 21st Century toxicity testing. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Rosen Shingle Creek, Orlando, FL, 2016.

**Feifarek DJ**\*, Milsk RY, Jensen KM, Blackwell BR, Randolph EC, Cavallin JE, et al. The fungicide imazalil disrupts steroid biosynthesis in fathead minnows (*Pimephales promelas*). Society of Environmental Toxicology and Chemistry Midwest Chapter Meeting, Madison Concourse, Madison, WI, 2016.

Randolph EC\*, Ankley GT, Blackwell BR, Cavallin JE, Cheng W, **Feifarek DJ**, et al. Effects of the fungicide imazalil on the fathead minnow (Pimephales promelas) reproductive axis: A case study in 21st Century toxicity testing. Society of Environmental Toxicology and Chemistry Midwest Chapter Meeting, Madison Concourse, Madison, WI, 2016.

**Feifarek DJ**\*, Schroeder AL, Blackwell BR, Houck KA, Ankley GT, LaLone CA, Villeneuve DL. Environmental surveillance and monitoring — The next frontier for pathway-based high throughput toxicology. Lake Superior National Estuarine Research Reserve St. Louis River Summit, University of Wisconsin, Superior, 2016.

**Feifarek DJ**\*, Rearick DC, Shappell NW, Schoenfuss HL. Modulation of estrogenic exposure effects via alterations in salinity and dissolved oxygen in male fathead minnows, Pimephales promelas. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Salt Palace Convention Center, Salt Lake City, UT, 2015.

**Feifarek DJ**\*. Toxicology in a changing climate: Modulation of estrogenic effects via environmental factors. Master's Thesis, St. Cloud State University, St. Cloud, MN, 2015.

**Feifarek DJ**\*, Shappell NW, Schoenfuss HL. Vitellogenin, a biomarker of estrogenic exposure in fish, is modulated by changing environmental conditions. Society of Environmental Toxicology and Chemistry Midwest Chapter Meeting, USEPA Mid-Continent Ecology Division, Duluth, MN, 2015.

**Feifarek DJ**\*, Shappell NW, Schoenfuss HL. Modulation of estrogenic effects via environmental factors. Fourth International Conference on Occurrence, Fate, Effects, & Analysis of Emerging Contaminants in the Environment (EmCon), University of Iowa, Iowa City, 2014.

**Feifarek DJ**\*, Shappell NW, Schoenfuss HL. Modulation of estrogenic effects via environmental temperature and food availability. Minnesota Pollution Control Agency 77th Annual Wastewater Operations Conference, Brooklyn Park, MN, 2014.

**Feifarek DJ**\*, Shappell NW, Schoenfuss HL. Modulation of estrogenic effects via environmental temperature and food availability. Society of Environmental Toxicology and Chemistry Midwest Chapter Meeting, Loyola University, Chicago, IL, 2014.

**Feifarek DJ**\*, Shappell NW, Schoenfuss HL. Modulation of estrogenic effects via environmental temperature and food availability. St. Cloud State University Student Research Colloquium, St. Cloud, MN, 2014.