Appendix B, Part 3: HERA Portfolio of Delivered Products

The following are a list of assessment products, models, databases, software and publications completed as part of HERA products delivered in fiscal year 2019, fiscal year 2020, and early 2021.

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Assessment Products

U.S. EPA. Human Health Toxicity Values for Perfluorobutane Sulfonic Acid (CASRN 375-73-5) and Related Compound Potassium Perfluorobutane Sulfonate (CASRN 29420-49-3) (Public Comment Draft). U.S. Environmental Protection Agency, Washington, DC, EPA/823/R-18/307, 2018. https://www.epa.gov/sites/production/files/2018-11/documents/pfbs_public_comment_draft_toxicity_assessment_nov2018-508.pdf

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Models, databases, and software

Health and Environmental Research Online (HERO) is part of the open government directive to conduct business with transparency, participation, and collaboration. The HERO database contains millions of records of scientific articles with hundreds of thousands of full text articles.

The Health Assessment Workplace Collaborative (HAWC) has been developed as an essential systematic review tool to assist with assessment development and increase transparency and access to information. HAWC is a tool designed to capture key data and analyses performed in conducting human-health assessment of chemicals and other environmental exposures in-order to establish hazard

identification and potentially derive quantitative levels of concern. It allows categorization, data extraction, and visualization of references and experimental metadata used in the assessments.

ExpoKids Version 1.0 is an R-based visualization tool that graphically illustrates estimates of relative exposure and aggregate exposure sources within and across lifestages. This tool works with EPA's Exposure Factors Interactive Resource for Scenarios Tool (ExpoFIRST) to estimate average daily dose (ADD) and lifetime average daily dose (LADD) by lifestage. ExpoFIRST is a standalone tool that utilizes the EPA's Exposure Factors Handbook (EFH) to provide deterministic potential dose estimates for user-defined exposure scenarios.

i. Dai M, Euling SY, Phillips L, Rice GE. (2020). ExpoKids: An R-based tool for characterizing aggregate chemical exposure during childhood. Journal of Exposure Science & Environmental Epidemiology. https://doi.org/10.1038/s41370-020-00265-6

Benchmark Dose Software (BMDS) is the primary dose-response tool for use in human health risk assessments within the EPA and globally. Two advancements of BMDS have been released since fiscal year 2019 to enhance the capabilities and use of the application.

i. U.S. EPA. Benchmark Dose Software (BMDS) Version 3.1. U.S. Environmental Protection Agency, Washington, DC, 2019.
ii. U.S. EPA. Benchmark Dose Software (BMDS) Version 3.2 User Guide. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-20/216, 2020. https://www.epa.gov/bmds/benchmark-dose-software-bmds-32-user-guide-readme

The All Ages Lead Model (AALM) predicts lead concentration in body tissues and organs of hypothetical individuals, based on a simulated lifetime of lead exposure. The purpose of the model is to provide risk assessors and researchers with a tool for rapidly evaluating the impact of possible sources of lead in a specific human setting where there is a concern for potential or real human exposure to lead.

i. U.S. EPA. All-Ages Lead Model (AALM), Version 2.0 (External Review Draft, 2019). U.S. Environmental Protection Agency, Washington, DC, 2019. https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=343670

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