

## **HERO: Tools for Systematic Review to Support U.S. EPA Science Assessments.**

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**Abstract:** The Health and Environmental Research Online (HERO) database is a module-based database system constructed to support assessments by helping researchers to systematically identify, compile, organize, manage, characterize, and prioritize new relevant published research, as well as extract and report on data for use in U.S. the Environmental Protection Agency's development of science assessments. HERO currently stores metadata for two million citations and has been used in over three hundred assessment documents, both drafts and final versions. HERO serves as a central repository for results from literature searches, and fosters team collaboration to transparently share their process of screening citations from the beginning of the process to the final selection of relevant material. HERO has introduced multiple tools to expedite the process of systematic review, such as a software modification that links the bibliography of an assessment back to HERO, allowing reviewers to evaluate each draft of an assessment more efficiently. Another example tool is a system to automatically categorize citations by academic discipline, making the efforts of multidisciplinary teams more efficient. A third example tool is 'citation mapping,' a keyword free search technique that uses aggregation of bibliographic coupling relationships to present a set of search results that is self-ranked by probability of relevance. Used in coordination with traditional screening techniques, these tools improve the efficiency of scientific experts by focusing their resources on the most relevant material. HERO is working with the providers of third party tools to incorporate efficient processes to perform screening tasks on HERO citations. Disclaimer: The views expressed in this abstract are those of the authors and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.