

Title: Development of an Online Database of Laboratories for Measurement of Exposure Biomarkers (MEB-Lab)

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Background and Objective: Environmental epidemiology is a rapidly expanding field, fostered by the ever-increasing capacity to measure internal exposure to environmental chemicals. The Breast Cancer and Environment Research Centers epidemiology studies have very successfully used the CDC Environmental Health Laboratory for their environmental biomarker measurements. However, these laboratories support many other studies, and are not always available to take on additional work or able to process samples quickly when preliminary data are needed for grant applications. We have designed and developed a Web-based database of laboratories capable of measuring exposure biomarkers for research studies (MEB-Lab database) and offer it as a resource to the community of environmental scientists.

Methods: Information to populate the database was initially gathered from the websites and other printed materials of relevant laboratories across the US. To augment this information, we also contacted by mail/email these laboratories asking for additional details. Data elements requested include the laboratory name, location, contact information, link to website, chemical biomarkers measured, analytic technique, limits of detection specific to the biologic media, and laboratory publications.

The backend of the system was developed by using a MySQL database instance, and the frontend interface was developed using HTML and PHP. After an iterative process of initial user needs assessment conducted with local domain experts, we designed the front-end interface to enable users of the system are to invoke simple standard queries to obtain information about laboratories that are capable of measuring a specified environmental biomarker or class of biomarkers, or to obtain information about the biomarkers measured by a specified laboratory.

Results: The MEB-Lab searchable online database currently contains detailed information as indicated above from about 44 laboratories capable of measuring exposure biomarkers. Each laboratory is linked to information about 400 environmental biomarkers within 16 chemical classes. Initial testing indicates that the system functions as intended. The database can be accessed through the University of Cincinnati Center for Environmental Health website www.eh.uc.edu/ceg.

Conclusions: The MEB-Labs online database is a first-of-its kind, openly accessible resource that addresses a need for the for environmental epidemiology community. Ongoing work includes continued communication with and updating of laboratories' information and the addition of an online evaluation module that prompts users to provide feedback to help us modify and improve future versions of the system.

Support for this project provided by the National Institute of Environmental Health Sciences to the University of Cincinnati Center for Environmental Genetics (P30-ES06096).