Syracuse Research Corporation's Environmental Fate Data Bases

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The Syracuse Research Corporation developed the Environmental Fate Data Bases (EFDB) in 1979 under sponsorship of the U.S. Environmental Protection Agency (EPA). It was developed to make available-in one place-data relevant to environmental exposure (e.g., environmental release and environmental fate), identify critical information gaps, and provide a data source for constructing structure−activity correlations for the fate of chemicals in the environment. (For more information about the history of EFDB, see Howard et al., 1982, and Howard et al., 1986.)

The personal computer (PC) version of the Enviromental Fate Databases (EFDB) produced by the Syracuse Research Corporation (SRC) includes four major files: DATALOG, CHEMFATE, BIOLOG, and BIODEG. Each of these files is available separately, along with the support file, XREF, which contains 23 000 references in full citation. DATALOG is a data index file that contains chemical identification information; CHEMFATE contains physical property values, rate constants, and monitoring data for approximately 1700 chemicals; XREF contains 23 000 references in full citation; and BIOLOG contains information on microbial toxicity and biodegradation data for approximately 6500 chemicals. BIODEG and BIODEG Summary contain records of actual experimental results on biodegradation studies of approximately 700 chemicals.

The EFDB is designed to run on an IBM compatible PC and requires a computer with MS-DOS 2.0 or higher, 512 kBytes of RAM, and a hard disk with anywhere from 15.5 to 77.9 mBytes of available disk space. The amount of disk space required depends on which (if not all) of the data files are purchased. The software is simple to install, documentation is easy to follow, and the menu driven databases are easy to use. The PC Environmental Fate Data Bases is similar to the software available online directly through SRC's VAX computer. However, users of the online EFDB receive, along with the user's manual, a list of chemical in the various files. Users of the PC version do not automatically receive this list.

The EFDB is nicely organized. Information can easily be retrieved using either the CAS number (CAS#), the chemical name, chemical formula, or data type. Groups of CAS# can be saved to an ASCII file and used to conduct a search. This is a good way to organize frequently searched groups of chemicals. When using the Search by Chemical Name command, multiple isomers of some chemicals will show up with the CAS#, and the user is prompted to select the appropriate CAS#.

The files I thought to be most useful were DATALOG and CHEMFATE. DATALOG produces a list of references by data type for the chemical selected. The 18 data types include adsorption, biodegradation, ecosystem monitoring, and water solubility. CHEMFATE provides actual data for the data types selected as well as a list of references. DATALOG and CHEMFATE references can be listed by short or full citation. CHEMFATE also has a handy command: list number of data type records for a chemical. This is a convenient first step for the person searching CHEMFATE because the resultant screen shows the information available by data type, eliminating guess work in a search strategy. CHEMFATE data types include log acid dissociation constant, soil adsorption constant, degradation in natural systems, and biota monitoring.

All database search results can be printed to the screen, to a disk file, or directly to your printer. A handy search strategy is to print the results to the screen first; then, if there is a lot of data, the search can be repeated and the information saved to an ASCII file, which is easily manipulated by a text editor or word processing software. By editing the ASCII file, the user can save or print only the needed information. Now is a good time to mention that these database programs remember only the most recent search, and, when the search is done by chemical name, it does not remember the search at all.

The EFDB has an option that allows users to update searches when a new release provides additional files. Therefore, a user making a subsequent inquiry needs to search only the information added by the new release. Some of the information in the database dates back to the early 1960s, an advantage to someone who conducts many online searches where older references are often not accessible. However, because of the time required to send out new releases, the EFDB may not always have the most current information.

The searches I conducted were for pesticides, and DATALOG contained quite a number of references for my pesticide queries. In contrast, the CHEMFATE database frequently contained no data for the pesticide searches. This discrepancy between the databases is not surprising because the DATALOG file contains records for approximately 13 800 chemicals, whereas the CHEMFATE file contains data for approximately 1700 commercially significant chemicals. The CHEMFATE file in the EFDB may not be the best source of pesticide environmental fate data. However, I cannot think of another database that provides a collection of environmental fate data for pesticides.

Overall, I thought the EFDB to be very useful. Even though it has data limitations, particularly for pesticides, the EFDB has the capacity to provide comprehensive environmental fate data and references for many chemicals.

REFERENCES AND NOTES

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