

**DEMONSTRATION OF EPA'S DATABASE OF
INDOOR AIR POLLUTANT SOURCES (DIAPS)**

P.A. Lawless
L.D. Michaels
J. White
Research Triangle Institute
P.O. Box 12194
Research Triangle Park, NC 27709

The study of indoor air pollution has undergone a remarkably rapid expansion over the last 5 to 10 years. Public health concerns about exposure to asbestos, formaldehyde and radon have fueled a large investment by research and regulatory agencies into indoor air quality (IAQ) studies. For the most part, this work has focused on identifying sources, quantifying emissions and developing and demonstrating control strategies designed to reduce human exposures. The sudden information explosion has made it very difficult to stay abreast of new developments. Exacerbating the problem of access to IAQ information is the very broad interdisciplinary mix of researchers attracted to the field who publish their data in discipline-specific journals and monographs not commonly distributed in other disciplines. In addition, the wide range of approaches taken to the investigation of IAQ problems frequently requires the use of unreliable assumptions and tedious recalculation to permit comparisons between published work on the same pollutants and sources.

Research Triangle Institute (RTI), working with the U.S. Environmental Protection Agency, has developed a user-friendly, PC-based database manager for indoor air pollution sources (DIAPS).

DIAPS has been designed specifically to facilitate information exchange in the IAQ field. The long-range goal is to provide a widely accepted vehicle for the cataloguing and comparison of experimental and survey data.

To encourage the use of DIAPS as a tool for information exchange, the database has two distinct parts: the Standard Database (SD) supplied with the program and an empty User's Database (UD). The SD contains data extracted from the open literature. It cannot be altered from inside DIAPS. The UD has exactly the same structure as the SD, but it can be added to and edited through DIAPS' interactive menus. During "browsing" and "searching" operations in DIAPS, the SD and UD are joined so that the current user's entries combine with the general literature citations to form a single, ordered database.

DIAPS is an interactive menu-driven database manager. It is based on the popular database program DBASE III™. A Basic language database manager, DBLIB was used to develop the interactive portions of the program, and R&R Relational Report Writer is responsible for the screen displays and printed report formats. However,

*AEERL, U.S. Environmental Protection Agency.

none of these programs are necessary to run DIAPS. The program is provided on diskettes and will run on any IBM-PC compatible system with either two floppy disk drives or one floppy drive and one hard disk using DOS Version 2.0 or later and 350K of memory.

The output of the program is designed for use with both a screen and a printer. Given the limitations of the PC screen, the printer should be the primary output device. DIAPS has been configured to accommodate several popular printers, but the configuration can also be modified or customized following appropriate menu selections.

Figure 1.1 is a diagrammatic representation of DIAPS. All subsequent menus are accessed through the Main Menu. The Browse option provides a scan of the entire database according to fixed format reports. The Search option allows the user to filter the reports according to some criteria identified by the user in the "Select Search Restrictions" Menu. For example, the user may want a printout of all entries that discuss formaldehyde and were published after 1985. Search restrictions can be placed on all fields including the abstracts. Multiple restrictions in a field can be strung together using Boolean operators. The results of the search can be output to screen or printer according to six different kinds of fixed format reports.

The Modify option addresses only the UD. The user can add new names to the list of pollutants, sources, and class/category lists. In addition, to complete the entry, the user must add to the databases that make up DIAPS by entering information associated on the entry screen with index terms. Index terms are the essential pivot around which the DIAPS organizes itself. The index terms are automatically assigned as the user enters a new title in the database. For each new title, the index terms are used to keep track of the pollutants, sources, and measurement conditions summarized in the database. Three databases are used in this part of the data entry, BIBLIO, EXPTL, and POLL. Three other databases are used as "look-up" lists for pollutants, sources and class/category of sources. DIAPS meshes all of these together using index terms to produce output from browsing, searching or from the utilities listings.

The potential display formats include:

- standard bibliographic listings by author
- bibliographic listings by author with abstract
- a table listing emission rate/emission factor arranged either by pollutant or by source
- a table summarizing experimental conditions and associated emission rates/factors ordered either by source or by pollutant.

The SI units are used in DIAPS and it is hoped that the database will encourage the use of a standard reporting format among IAQ researchers.



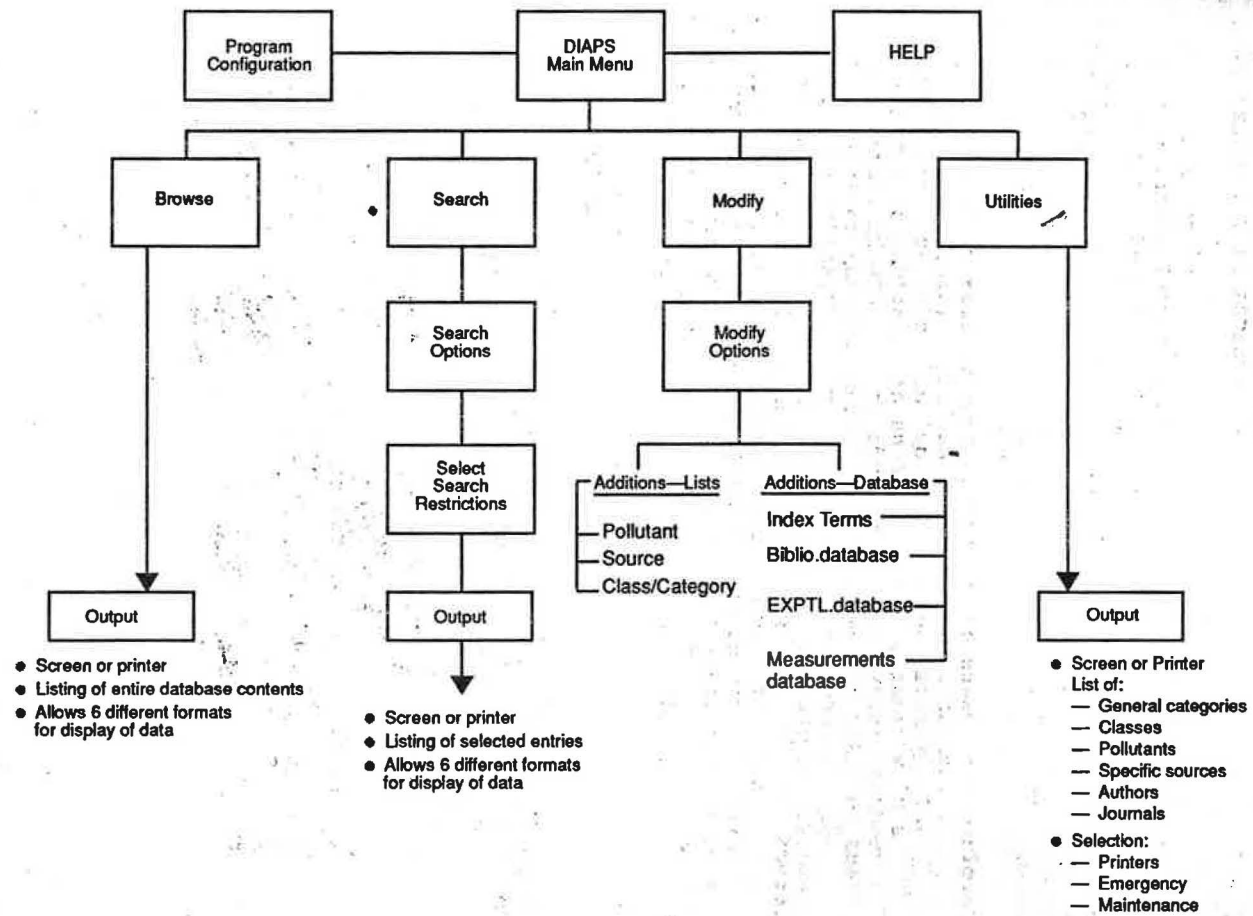


Figure 1.1. Diagrammatic representation of DIAP's menus.