

# MICROCOMPUTER SOFTWARE REVIEWS

Microcomputer Users Committee; James C. Clary, Chairman

Education Council, APCA

## LOW COST SOFTWARE—V

by Harold M. Cota [Cal Poly, San Luis Obispo, CA]

This is the fifth in our series on low cost software available to JAPCA readers. These programs have been developed by APCA members and are provided as a professional courtesy, as is, without warranty. The authors would appreciate any feedback you have. In addition, we hope you will be willing to share programs you have developed for your own PC.

To share your program all you need to do is prepare a brief description, similar to those in this column and send it with your program and any examples or documentations you are willing to furnish to: Dr. Hal Cota, CE/ENVE Department, Cal Poly, San Luis Obispo, CA 93407.

If you would like to order any of the software please send your request to the author or the address indicated with a self addressed stamped mailer. It is important to clearly identify who should receive the disk. Some past orders have been returned and *never been delivered* due to insufficient or incorrect address.

### NEW LISTINGS

**NOISE ADD:** Hal Cota (CE/ENVE, Cal Poly, San Luis Obispo, CA 93407), 1987, *SASMD*, \$10, (make check out to Air Pollution Control Training).

**VERSION:** 1

**MACHINE:** IBM PC (128 K) or compatible, one disk-drive, printer recommended

**OPERATING SYSTEM:** PC DOS or MS DOS Version 1.0 or later

**LANGUAGE:** Compiled Executable Code

If you are involved with calculating noise levels this short program may be useful. The user can add or average sound levels, calculate an overall sound pressure level, determine the A weighted sound level from octave band measurements, and estimate the L<sub>dn</sub> (the equivalent day-night level) from hourly sound level measurements.

In addition, we have included on this disk a program originally written for the Apple Computer to determine indoor noise levels given the noise source power level and the acoustical characteristics of the room written by Stephen Bayer at NOISH.

**DIFFUSIVITY:** Hal Cota (CE/ENVE, Cal Poly, San Luis Obispo, CA 93407), 1987, *SASMD*, \$10 (make checks out to Air Pollution Control Training).

**VERSION:** 1

**MACHINE:** IBM PC (128 K) or compatible, one disk-drive

**OPERATING SYSTEM:** PC DOS or MS DOS Version 1.0 or later

**LANGUAGE:** BASICA or GWBASIC

This program calculates the diffusivity of a two component gas mixture using the Wilke Lee equation. The program calculates the required collision function and force constants based on the data in Treybal's *Mass Transfer Operations*, Third Edition. The diffusivity in a liquid using the Wilke Chang equation can also be estimated. Three other programs on this disk have been listed in previous articles in Apple format. The additional programs are: gas

density, conversion of units to the SI system (kg, m, sec) and temperature conversions.

**SPRAY DRYER MODELS:** James Yeh (PETC/U S DOE, P.O. Box 10940, Pittsburgh, PA 15236), 1987, *SASMD*.

**VERSION:** 1

**MACHINE:** IBM PC or Compatible

**OPERATING SYSTEM:** MS DOS

**LANGUAGE:** BASICA or GWBASIC

The original work was presented in the paper entitled Microcomputer Aided Calculations and Parameters for Spray Drying Operations presented at the 1985 APCA Annual meeting (paper no. 85-19.3). Modified versions of the original code are available from the author. Three programs are included on the disk. COMBUS calculates combustion flue gas composition of any fossil fuel and also the flue gas water vapor dew point. It accounts for water addition from air and combustion. Program results include theoretical air, moles of combustion products, flue gas composition, and flue gas water vapor dew point. MIXTEMP calculates mixed stream gas phase temperature after the mixing of a hot gas stream and a slurry stream in a spray dryer. The gas residence time is estimated from the flue gas temperature. SPRAYDRY calculates two sets of flue gas compositions, one before and one after the spray dryer. It accounts for water from the slurry, additive water, combustion, and moisture in the air. The program also calculates dew points, theoretical air, moles of combustion product, SO<sub>2</sub> emission, NO<sub>x</sub> emission as NO<sub>2</sub> (NO<sub>x</sub> concentration in flue gas must be entered by the user).

The three programs were modified by Hal Cota at Cal Poly for easier user-machine interaction. The diskette contains both the original and the modified versions.

**RISK ASSESSMENT SCREENING PACKAGE (RASP):** Richard Booth (P.O. Box 493927, Redding, CA 96049), 1987, \$15 (make checks payable to Richard Booth).

**VERSION:** 1.1

**MACHINE:** IBM PC or compatible, one disk drive and printer required

**OPERATING SYSTEM:** MS-DOS 2.1 or higher

**LANGUAGE:** BASICA or GWBASIC

The RASP programs covers such areas as inhalation and non-inhalation risk calculations plus a program to convert potency values to the more useful unit risk values. Both screening and formal assessments may be conducted. The programs are user friendly and output is hard copy oriented yielding a report copy of all results.

Along with the RASP programs you get a copy of STACK-PACK and AIR QUALITY DATA DISPLAY at no cost. Both of these programs have been previously reviewed in this column.

All 3 sets of programs are sent on one disk which includes user manuals in text form. The RASP programs are in binary format and cannot be listed to the screen or printer. A hard copy of the source code is available from the author for an additional \$10 or a disk copy for an additional \$15.

**INDOOR AIR QUALITY:** Donna Deneen *et al.*, (available by sending check, \$12 to Air Pollution Training Fund, Dr. Hal Cota, Cal Poly, CE/ENVE, San Luis Obispo, CA 93407).

**VERSION:** 3

**MACHINE:** IBM PC and Compatibles

**OPERATING SYSTEM:** MS DOS

**LANGUAGE:** Compiled executable code

The original model was developed by the Institute of Gas Technology. Donna Deneen converted the code to run on an early model Radio Shack computer and made it user friendly. This was code later converted into MS DOS format by Vickey Hill. It is now being made available through the courtesy of Southern California Gas Co. and the Institute of Gas Technology. Documentation is provided with disk.

#### **A DATA ACQUISITION SYSTEM FOR PM10 FILTER**

**ANALYSIS:** C. Dunwoody, *et al.*, (California Air Resources Board, 1309 "T" Street, Aerometric Data Division, Sacramento, CA 95814), 1987, *SASMD*.

**VERSION:** 1

**MACHINE:** IBM PC-XT, electronic balance with computer interface

**OPERATING SYSTEM:** Microsoft BASIC, dBASE III Plus

This collection of 18 short programs directly accesses pre- and post-sampling filter weight data from a computer interfaced electronic balance and stores sampling parameters entered by the user through convenient screen formats. All sampling site information is accessed from a reference file. The system performs simple calculations, such as net weight, flow, air volume and ambient PM10 concentration. The system includes a program which accepts ion analysis data entered by the user, performs unit conversion to ug/M3 and evaluates the result against a user established limit of detection. Queries to the database can be made on the basis of several different parameters. Monthly data reports include a hard-copy printout as well as a text file which can be transferred to a larger data repository. Included with the program is a report describing the system in detail with instructions for altering system constants to suit the needs of your program.

#### **REVISED SOFTWARE**

**A P EQUIPMENT COSTS:** Aleta Kennard, Hal Cota (CE/ENVE Dept., Cal Poly, San Luis Obispo, CA), 1986, *SASM*, \$25 (make check payable to Air Pollution Training Fund).

**VERSION:** 2

**MACHINE:** IBM PC (128K) or compatible, one disk-drive

**OPERATING SYSTEM:** PC DOS or MS DOS Version 1.0 or later

**LANGUAGE:** Compiled Executable Code

This is a revision of the popular program on equipment costs originally written in Applesoft Basic and listed in *JAPCA*, 35, # 11, pg. 1203. It allows the user to estimate the purchase cost of an electrostatic precipitator, baghouse, scrubber, mechanical collector, absorber, and some auxiliary equipment using the IBM PC or compatible. The program is based on data that has appeared in *JAPCA* and *Chemical Engineering*. Limited documentation is provided on disk.

**CALINE4/URBEMIS2:** Pat Randall *et al.*, (California Air Resources Board, Box 2815, Administrative Services Div., Attn. Acct. Office, Sacramento, CA 95812), \$25.

**VERSION:** 2.1

**MACHINE:** IBM PC (128K) or compatible, one disk-drive

**OPERATING SYSTEM:** PC DOS or MS DOS Version 1.0 or later

**LANGUAGE:** Compiled Executable Code and BASIC

ARB has added some new features to its AQAT package originally described in this column (*JAPCA*, 36, #9, pg. 1042 (1986)). Basically the programs included are still the same. Emission factors have been updated.

The original version was designed to run on a color monitor and include help screen of information in the documentation to assist the user. The revised version allows the user to use a monochrome monitor and a Hercules or compatible card and effectively run the program without the help screens.

This new version displays bars on the screen that are updated to indicate the progress of the calculation when running CALINE4. Some of the more complicated runs took 45 minutes on the IBM PC. The time was cut down to about 30 minutes using a compatible in the 'turbo mode'.