CAP88-PC V3

Update and Getting Started

Seminar Topics

- What is CAP88-PC V3?
  - Changes V2.0 – V2.1
  - Changes V2.1 – V3.0 (V3.0 includes V2.1 updates)
- How To Start With V3.0
  - Installing
  - Building a Case
- Upcoming Version Updates

User Changes V2.0 – V2.1

- Added User-Selectable distance and sector for individual cases
- Added an absolute humidity entry on the Met Data tab for site specific calculation of tritium concentration in vegetables
- Updated nuclide entry forms and added Save/Close button
- Added Open From File option
- Increased max number of nuclides to 120 from 36

Internal Changes V2.0 – V2.1

- Updated directory structure for installation flexibility
- Added error handling routine with error logging – writes to file YYYYMMDDErrorlog.txt
- More extensive input field checking
- Updated data environment
- Eliminated all 3rd party patches and functions
- Strict typing of all variables

Misc. Updates V2.0 - V2.1

- Many edits to code for file management
- Updated installer to work with Win95b – WinXP
  - Will not work under Win95a
  - Conditional install of components such as DCOM and scripting engine
- Full 32-bit implementation of code
  - User interface in Visual Basic 6
  - FORTRAN in Compaq Visual Fortran 6.5

Changes in Version 3

- Expansion of the nuclide database to 825 nuclides, including all FGR 13 decay chains
- Incorporation of the new FGR 13 dose and risk factors
- Elimination of the calculation of Genetic Effects
- Dose factors are now a function of radionuclide chemical form, wherever that is included in the FGR 13 database
- Organ dose equivalent is now calculated for 23 internal organs
- Cancer mortality risk is calculated for 15 cancer sites

Changes Version 3 – cont.

- The radionuclide inhalation absorption 'Class' terminology has been replaced by the new 'Type' nomenclature. The new types are F (fast), M (medium), and S (slow)
- All particulate sizes are 1.0 micron per the FGR 13 model data, except gases and vapor forms which are 0.
- Default values for all radionuclide inputs are included; these defaults correspond to the recommended values from FGR 13 wherever a recommendation was available.
- The radionuclide transfer factors for all elements in the CAP88-PC database have been updated to the values from the National Council on Radiation Protection and Measurement (NCRP) report number 123 (NCRP123).

Still More V3 Changes!

- The nuclide input form and data environment has been modified to allow selection of the nuclide's absorption type and chemical form
- The code now contains (not implemented) data for:
  - Age dependent dose factors
  - Dose factors for additional pathways such as drinking water ingestion and external exposure from multiple depths of soil contamination.
  - Dose factors for external exposure to infinite clouds
  - Cancer morbidity risk factors
- New routines for generating the FGR-13 decay chains

Getting Started With V3

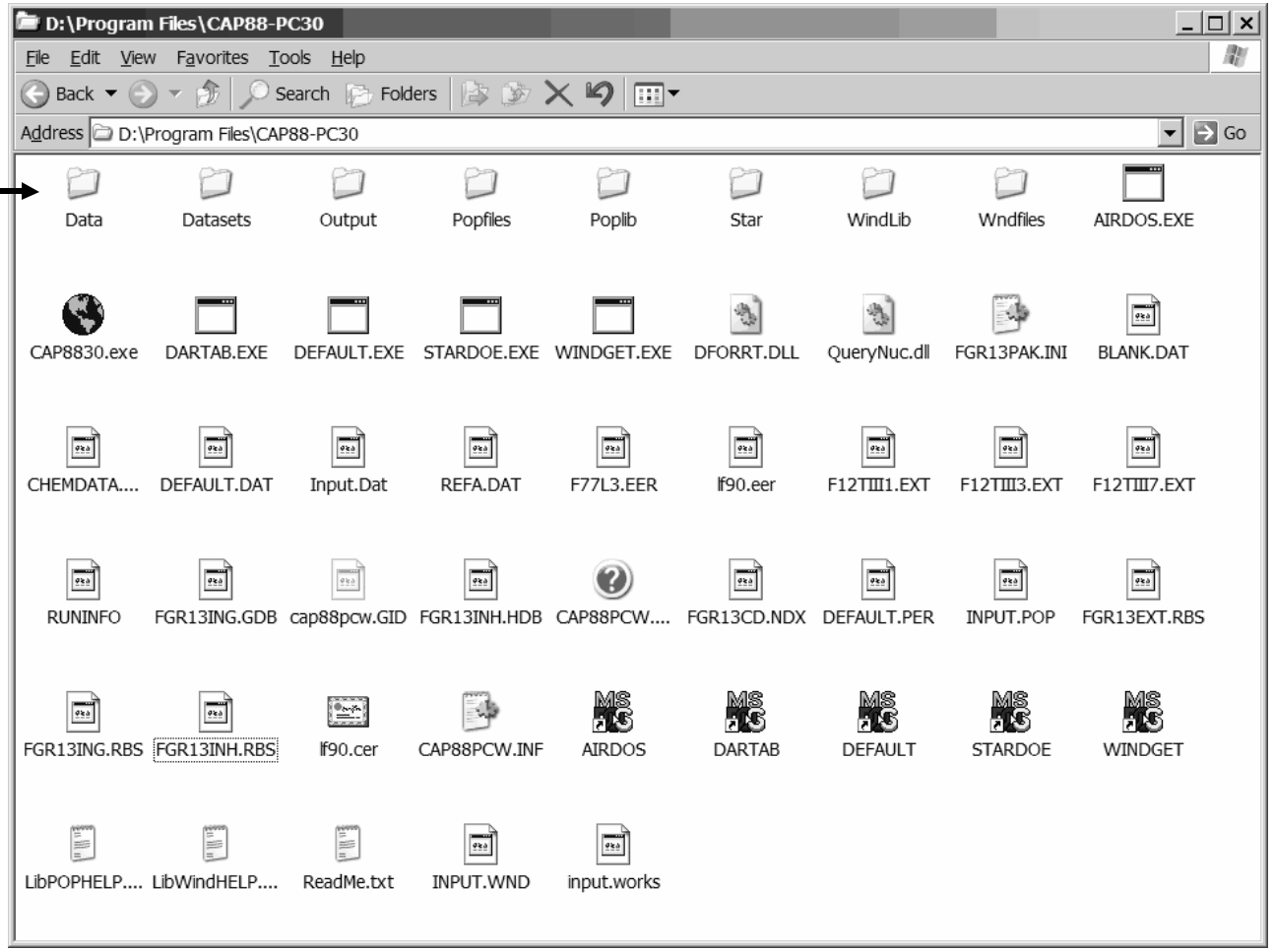
- Download version 3 from EPA web site
  - http://www.epa.gov/radiation/assessment/CAP88/index.html
  - Zip files are archives of the installation CD files
- User and Installation Guides on that site contain much of the information in this presentation
- Updated version addressing user issues will be posted to this site within a few weeks

Getting Started with V3

- Installation Notes:
  - CAP88-PC will not install or run under Win95a, Linux, Unix, VMS
  - If installing on Windows NT, 2000, or XP you should be logged with administrator privileges
  - Disable virus scanners prior to installation – some can interfere with installs
  - If you are re-installing V3 over an existing install, we recommend uninstalling the previous one before re-installing (after saving all user data)

Default Directory Structure

Subfolders for I/O, data, and libraries

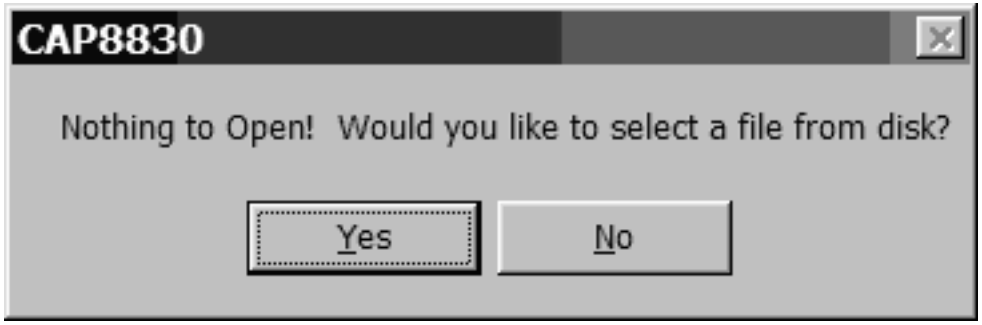


Notes on V3 Datasets

- Input files created with versions 1, 2, or 2.1 will not run in version 3.
- Caused by new data structures in FGR-13
- Cases from these versions will need to be re-created in version 3
- Existing population and wind data files will work in version 3 – these do not need to be regenerated

First Runs with V3

- When running Version 3.0 for the first time, no input datasets are included in the dropdown file selection list. In this instance, when selecting <File>, <Open Dataset>, the user will receive a message box stating “Nothing to Open!”



You can create a new file or open an existing dataset from a disk file – we will create a new dataset by selecting No

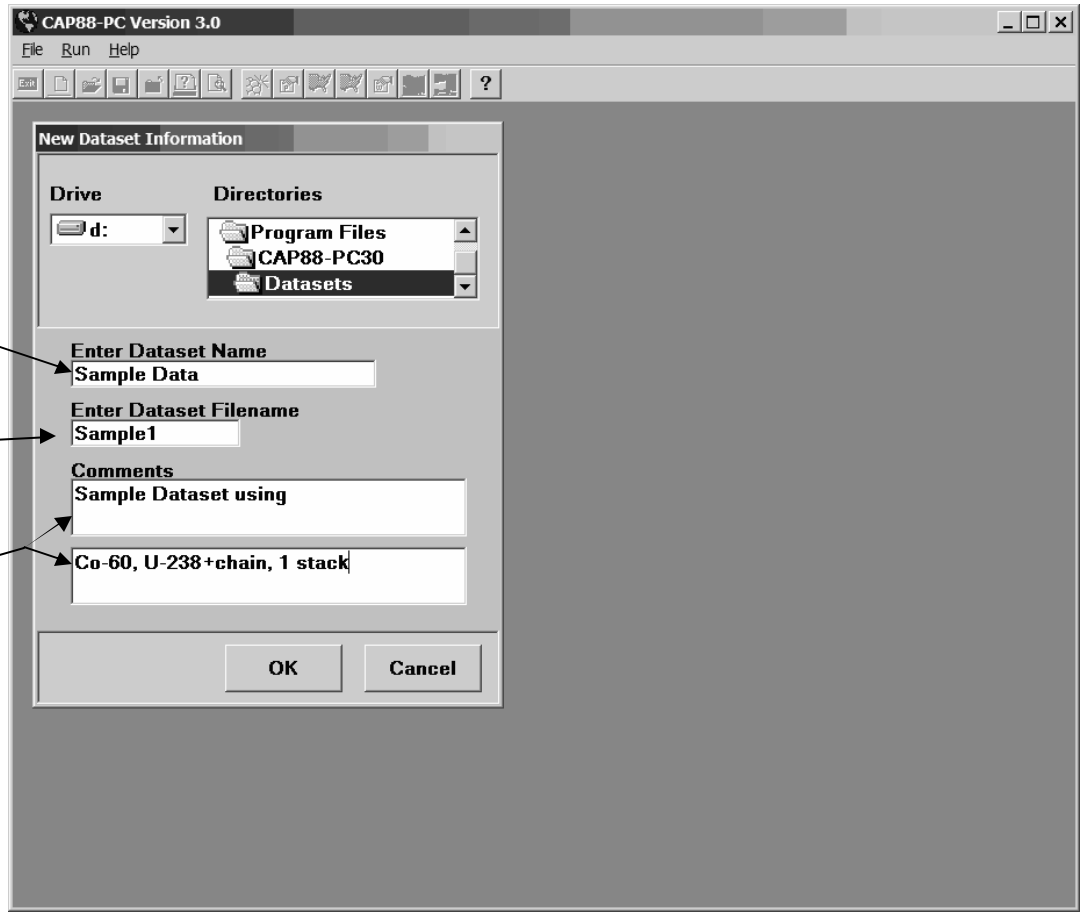
Building A V3 Case - 1

- Select <File> from the menu bar, then <New Dataset> to begin creating a new V3 case.

16 Characters max

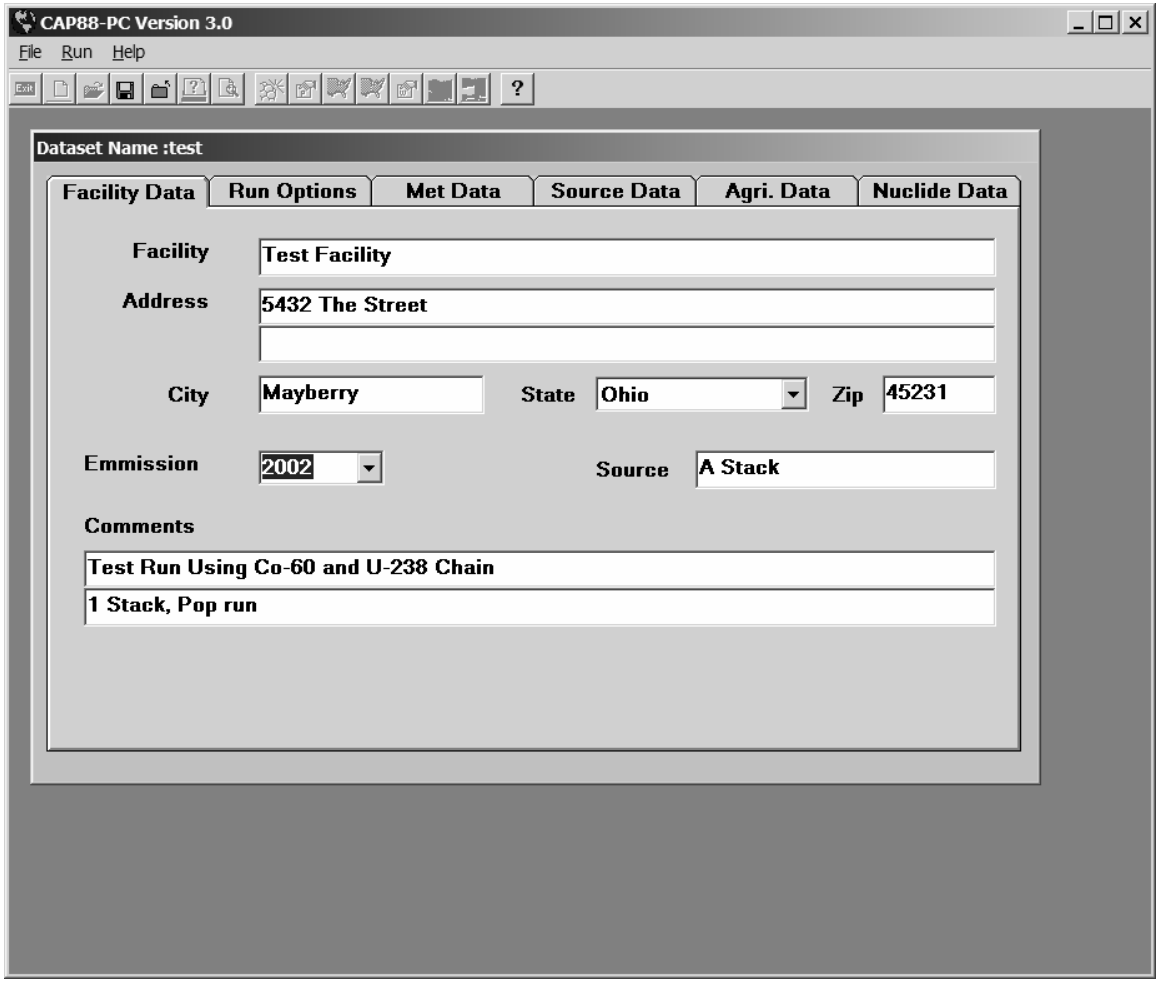
8 characters max

50 characters max each



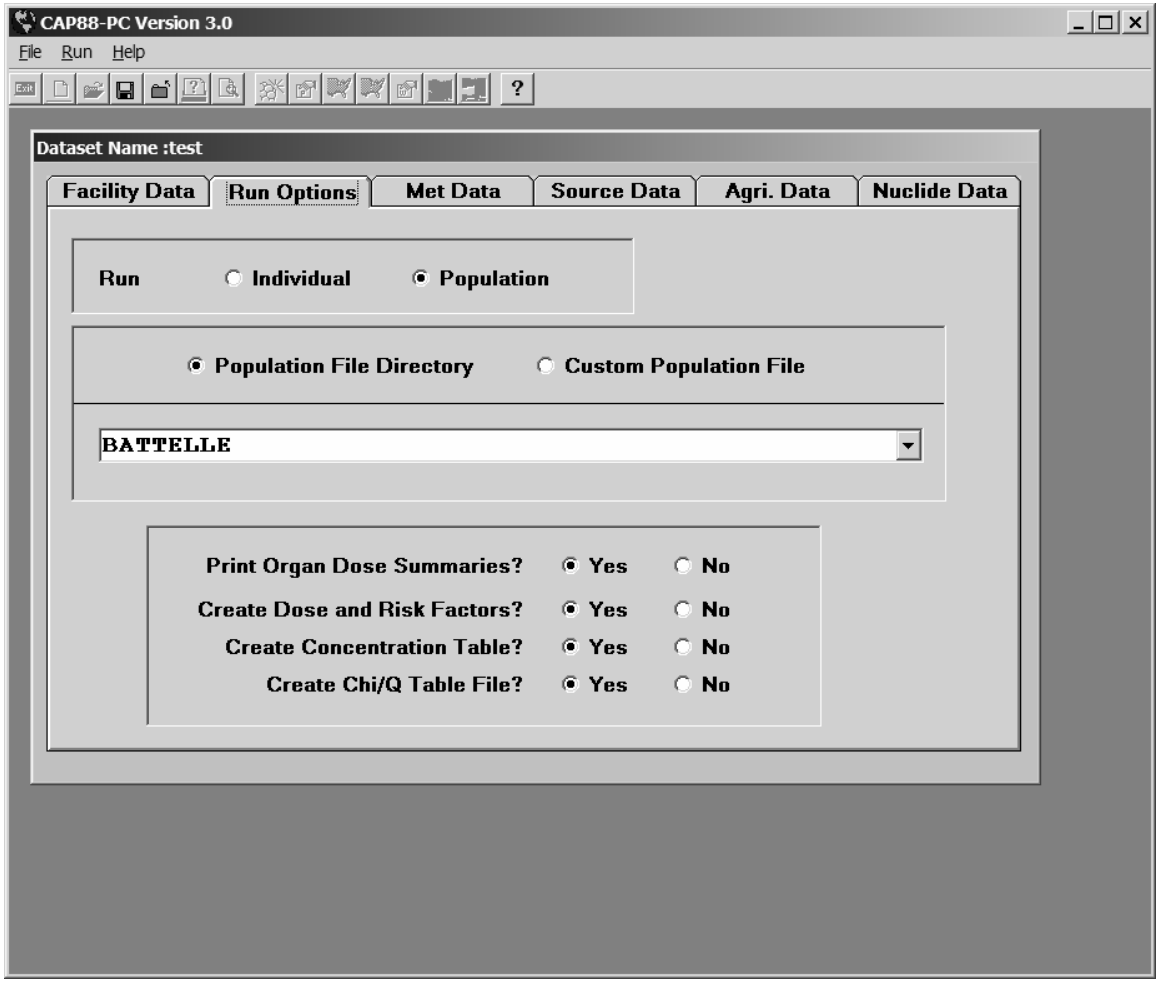
Building a V3 Case - 2

- This is the main form for building a CAP88-PC case. The form consists of six tabs; each tab provides fields of related data



Building a V3 Case - 3

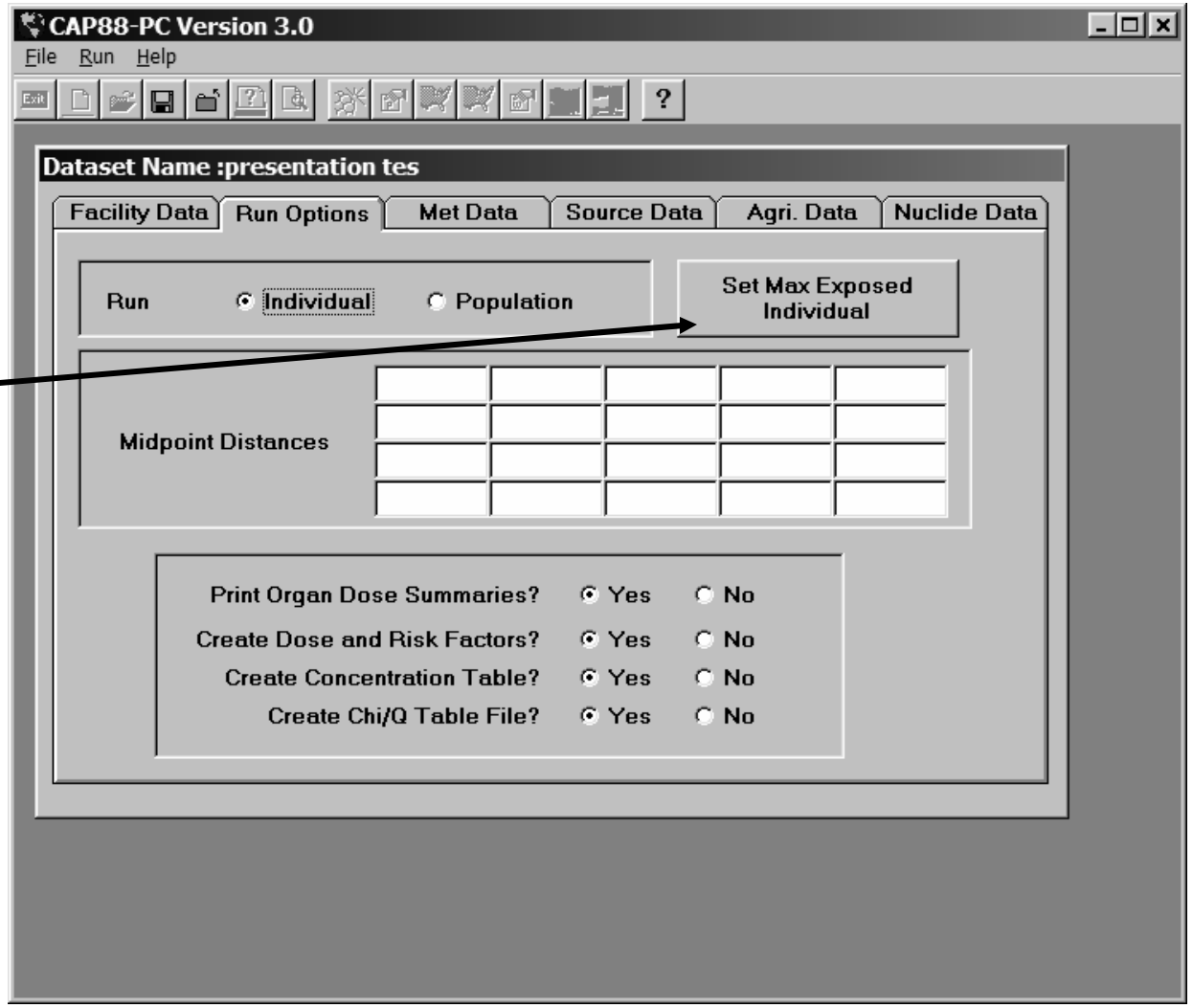
- This is a population run
- Individual runs require entry of grid sectors
- Removed genetic effects radio button



Building a V3 Case – 3b

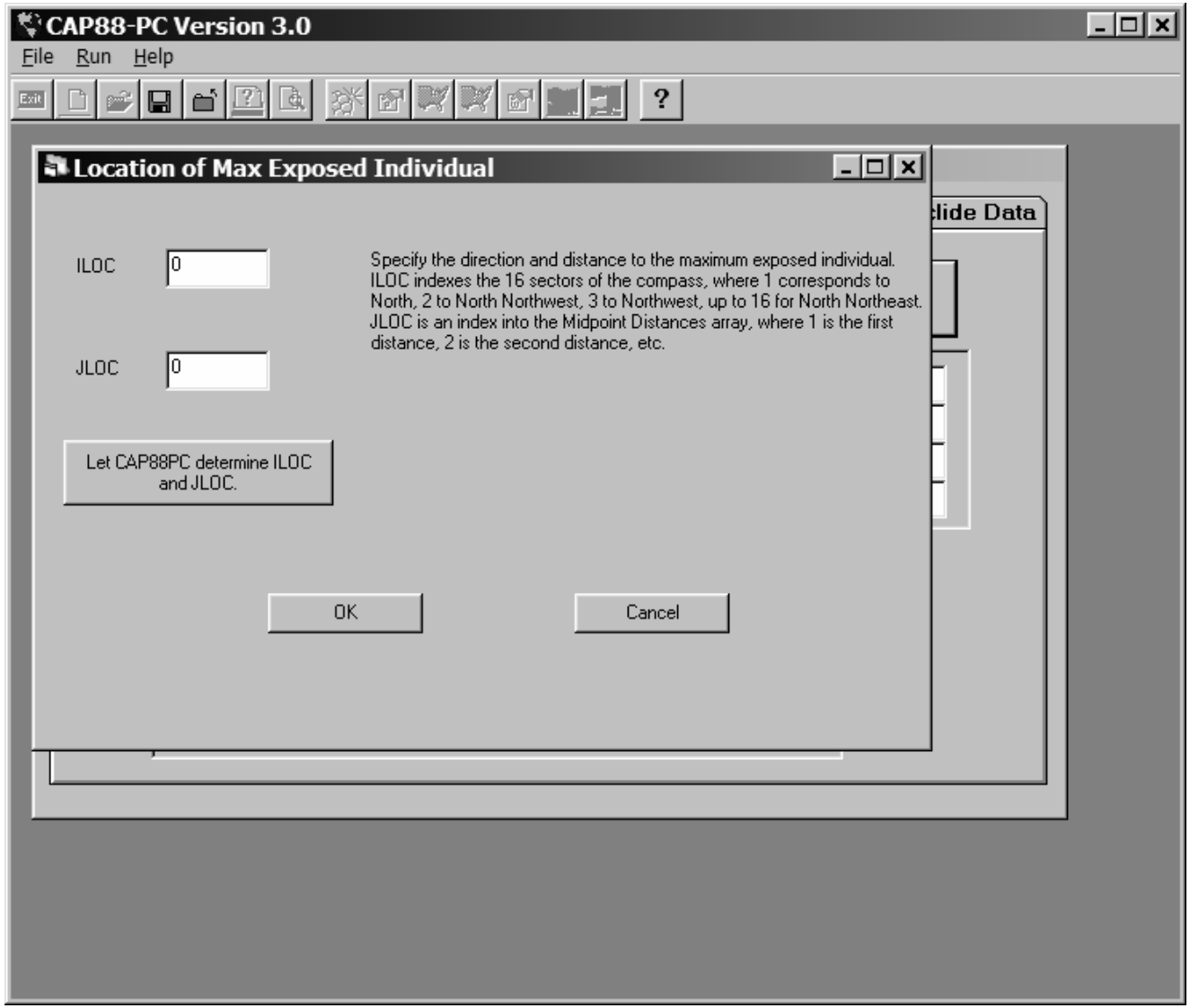
If you select Individual

Can target the assessment to a location



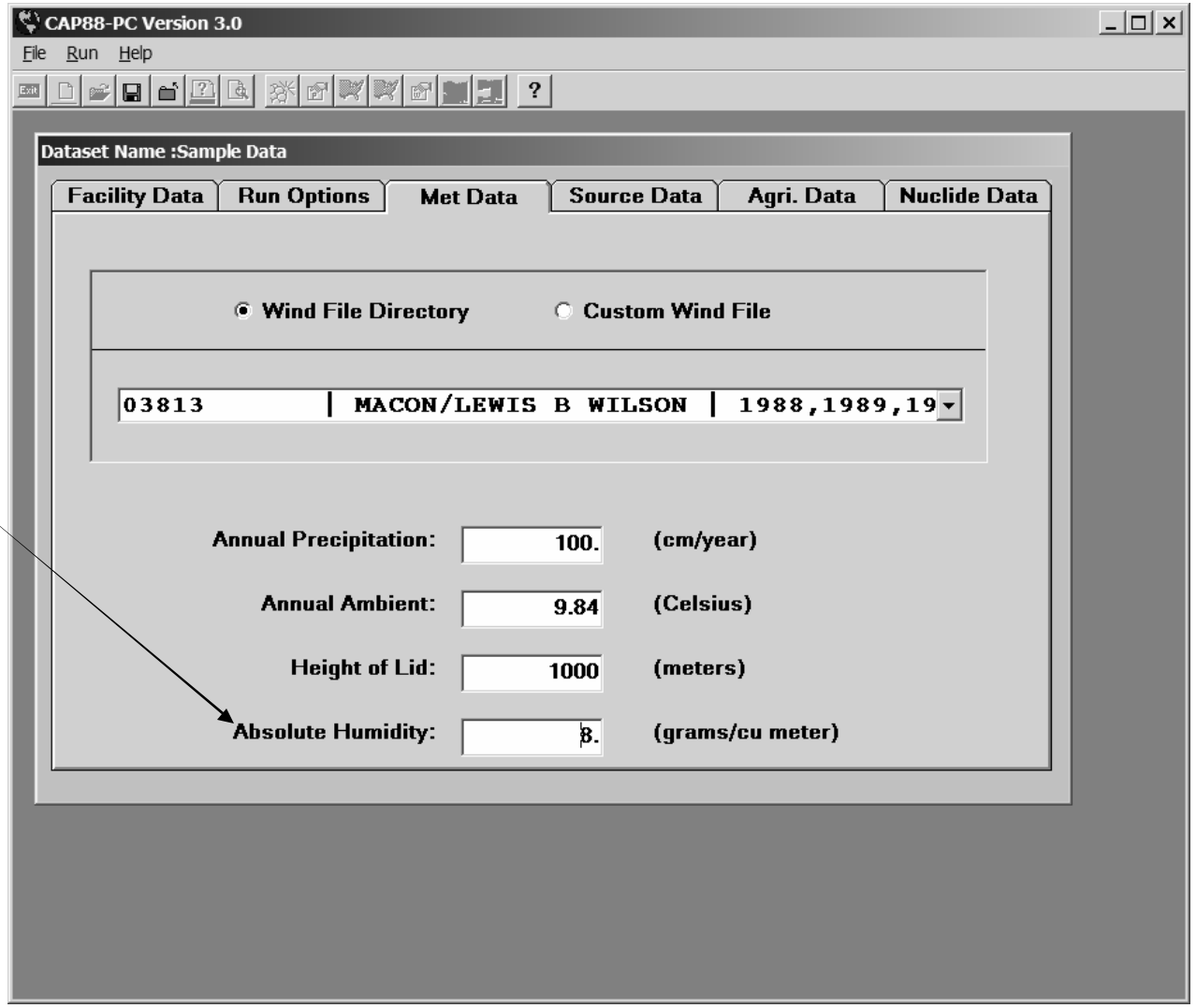
Building a V3 Case – 3c

Selection of sector for assessment



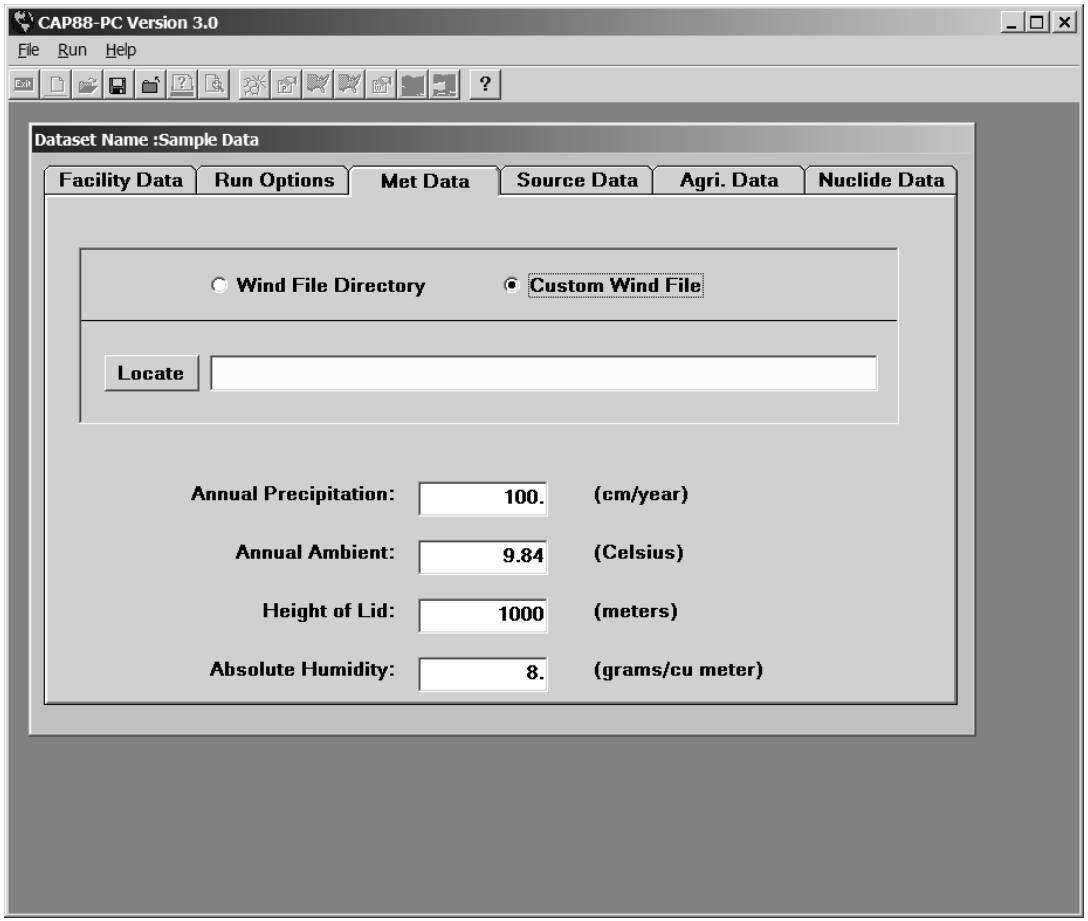
Building a V3 Case - 4

- Humidity field added in V2.1



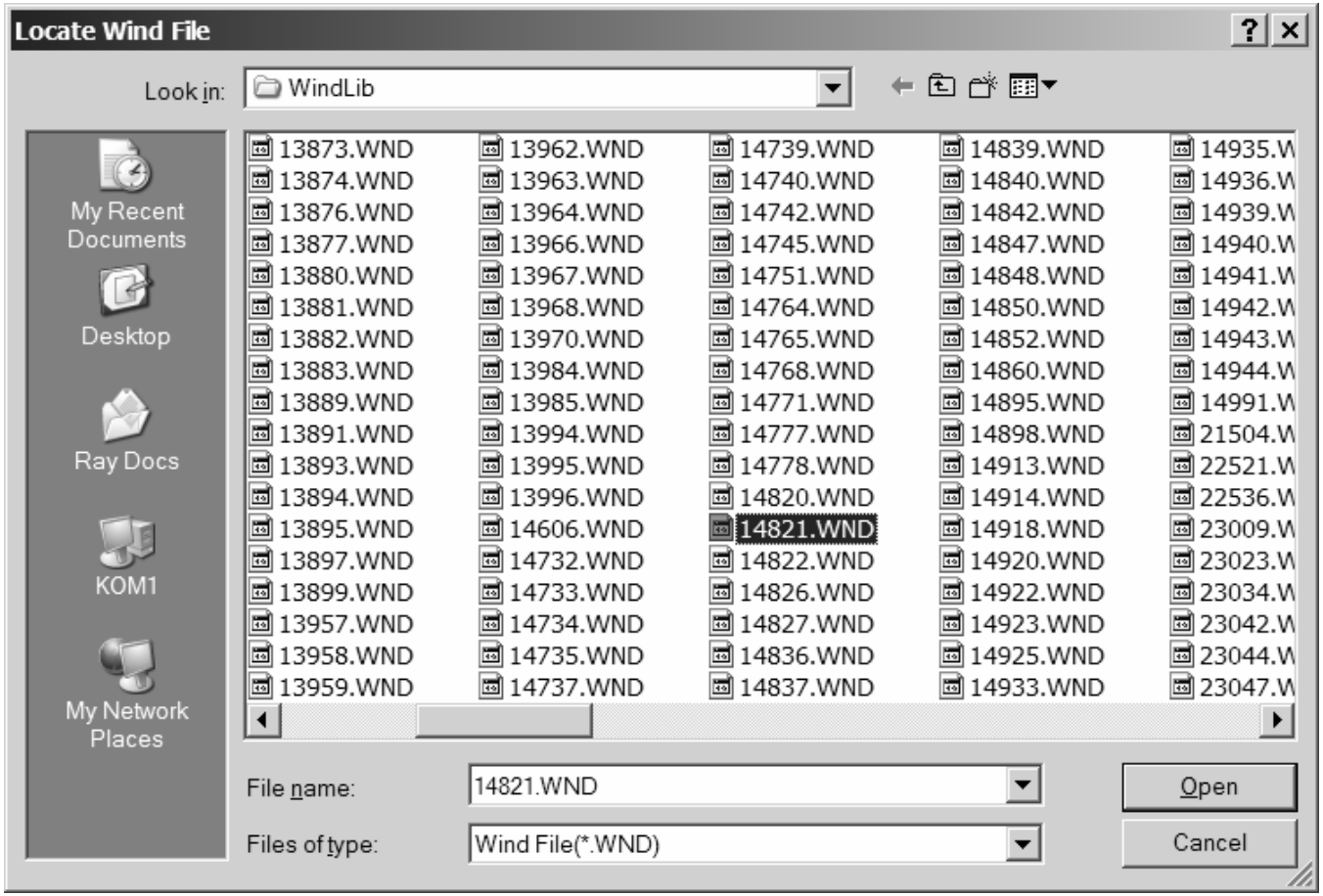
Building a V3 Case - 5

- Click the <Locate> button to display a list of wind files stored in the Windlib subdirectory
- You can navigate to other folders if you store your wind files elsewhere
- Wind file format has not changed

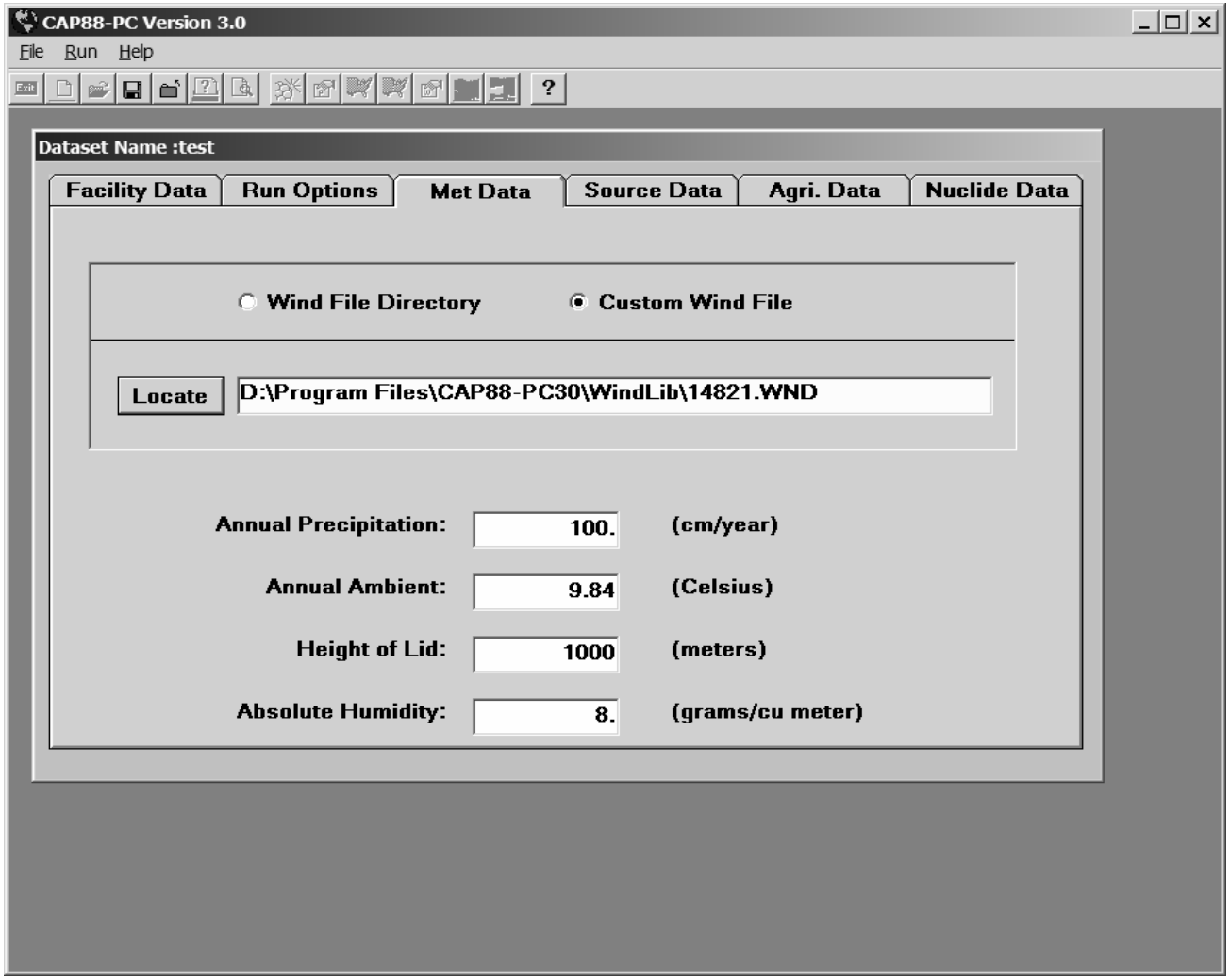


Building a V3 Case – 6

- Form allows full navigation in the Windows folder system.
- Selecting a file returns it to the wind file line on the previous form



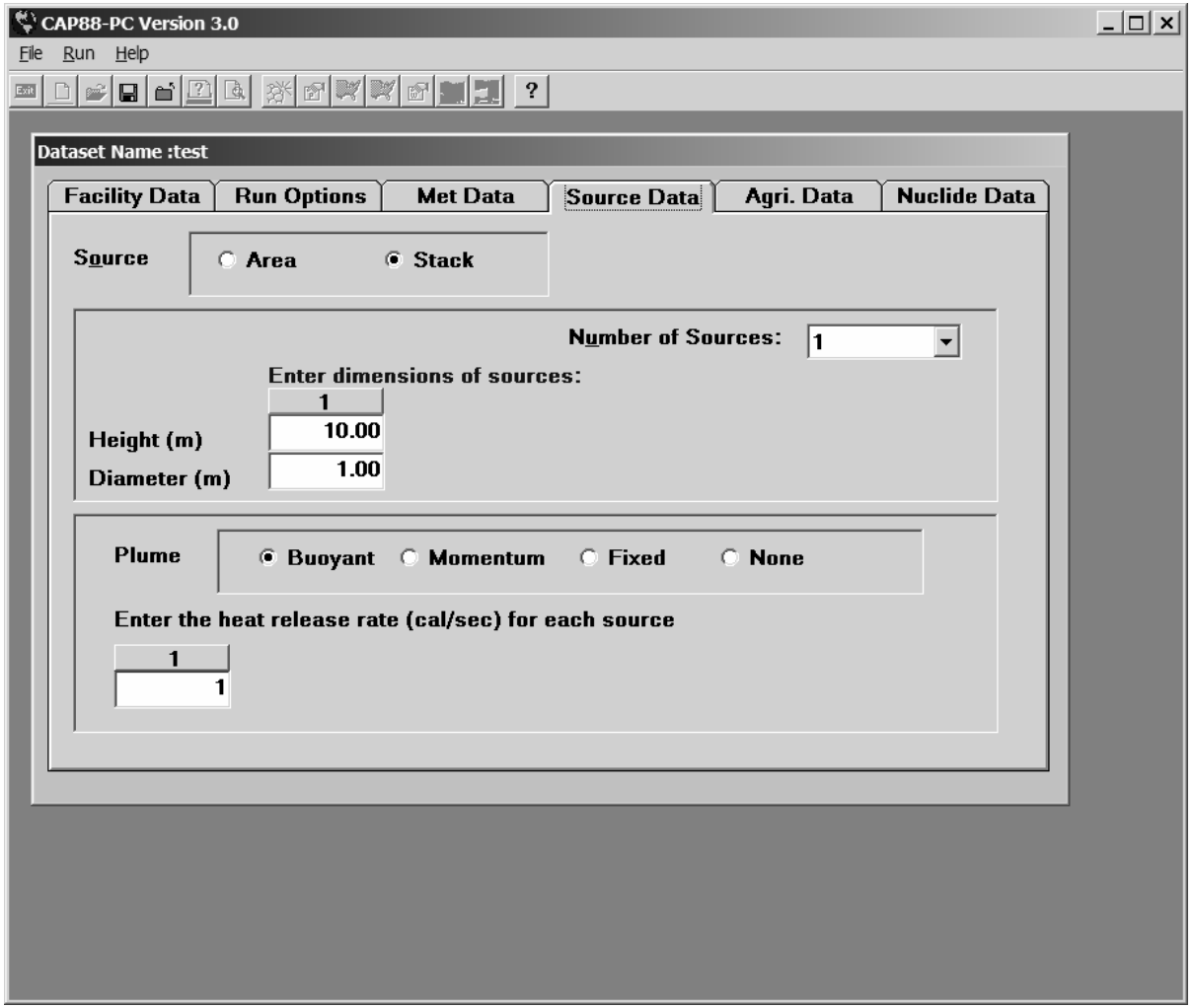
Building a V3 Case - 7



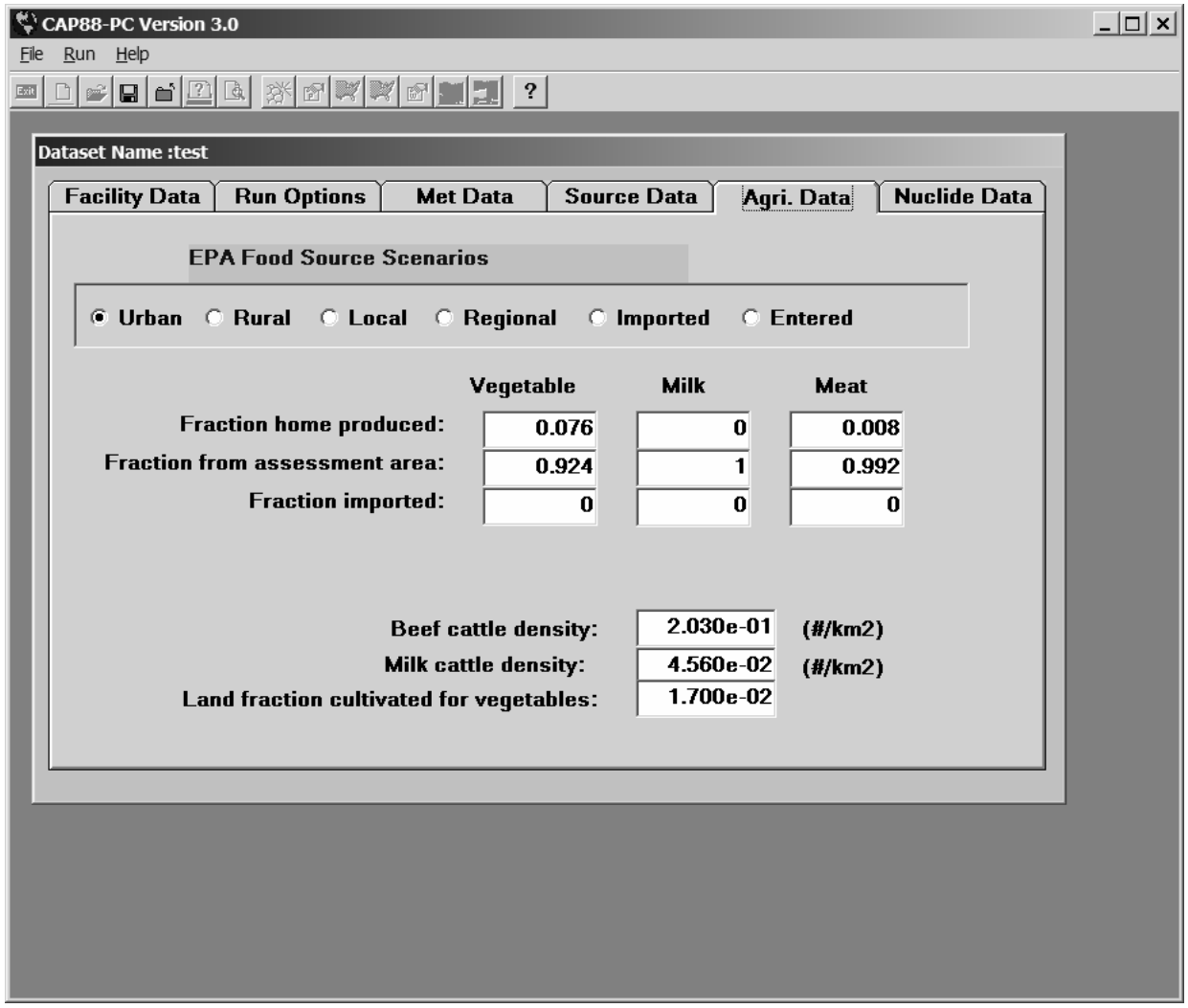
- After selection, the full pathway to the wind file is displayed

Building a V3 Case - 7

- No visible changes to Source form
- 0 diameter stacks are not allowed.



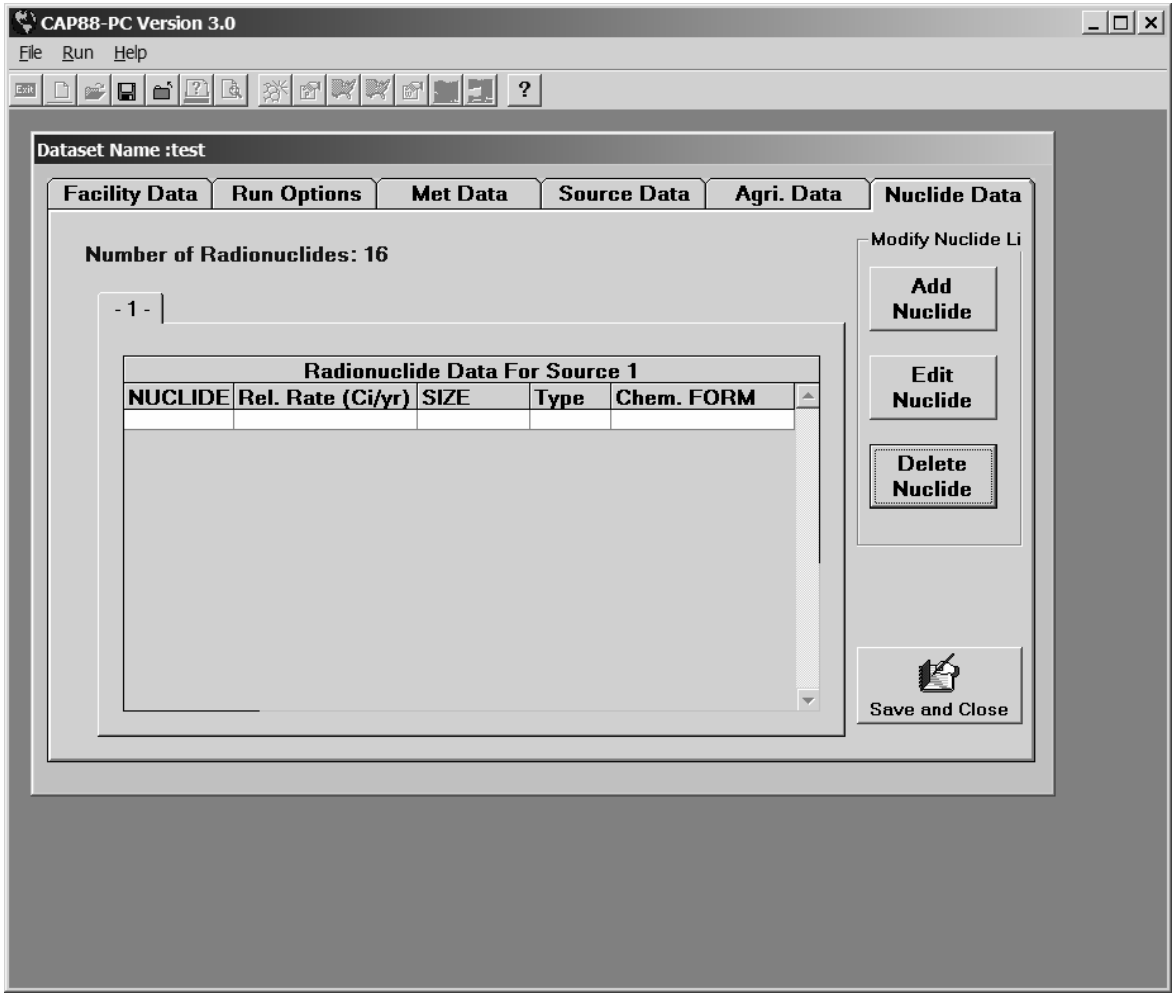
Building a V3 Case - 8



- No significant changes to Agricultural Data tab from V2

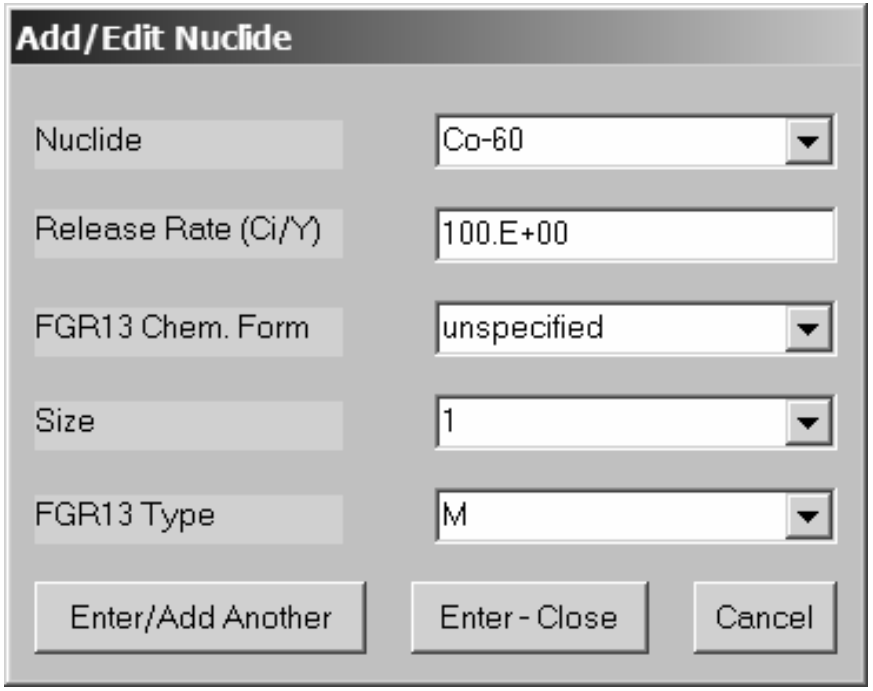
Building a V3 Case - 9

- Many changes to nuclide screen – data no longer entered directly in fields



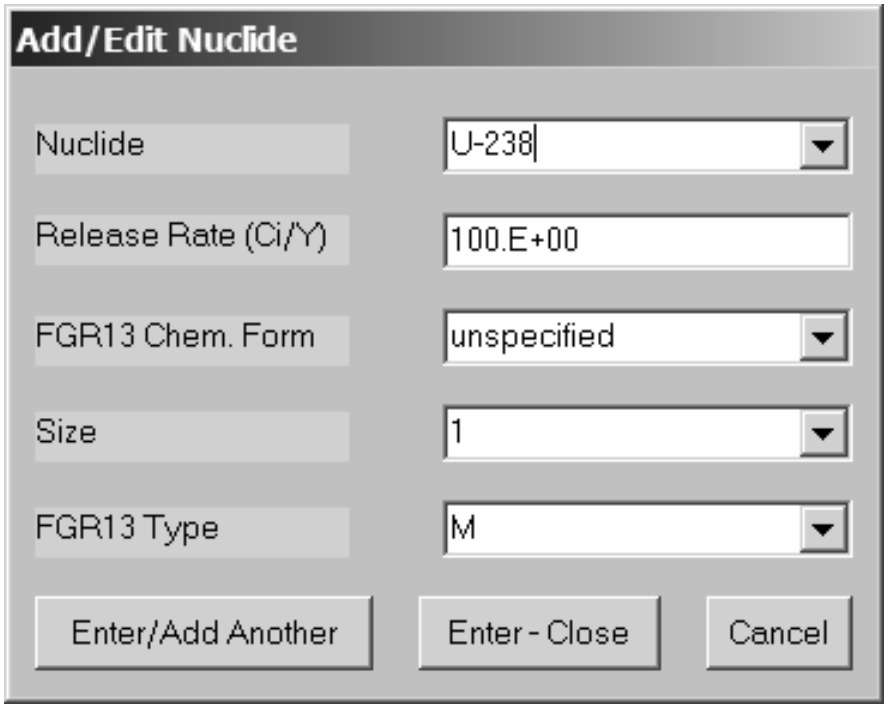
Building a V3 Case - 10

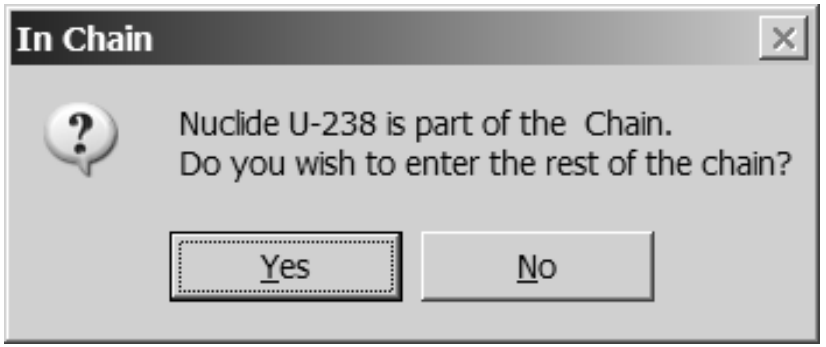
- Form handles new DCF functionality in FGR 13, including Chemical Form.
- Sizes limited to 1 or 0 as per FGR 13 database
- Type is analogous to the Class D, W, Y
- Nuclide drop down list allows typing in the box and contextual list
- Default values per FGR 13



Building a V3 Case - 11

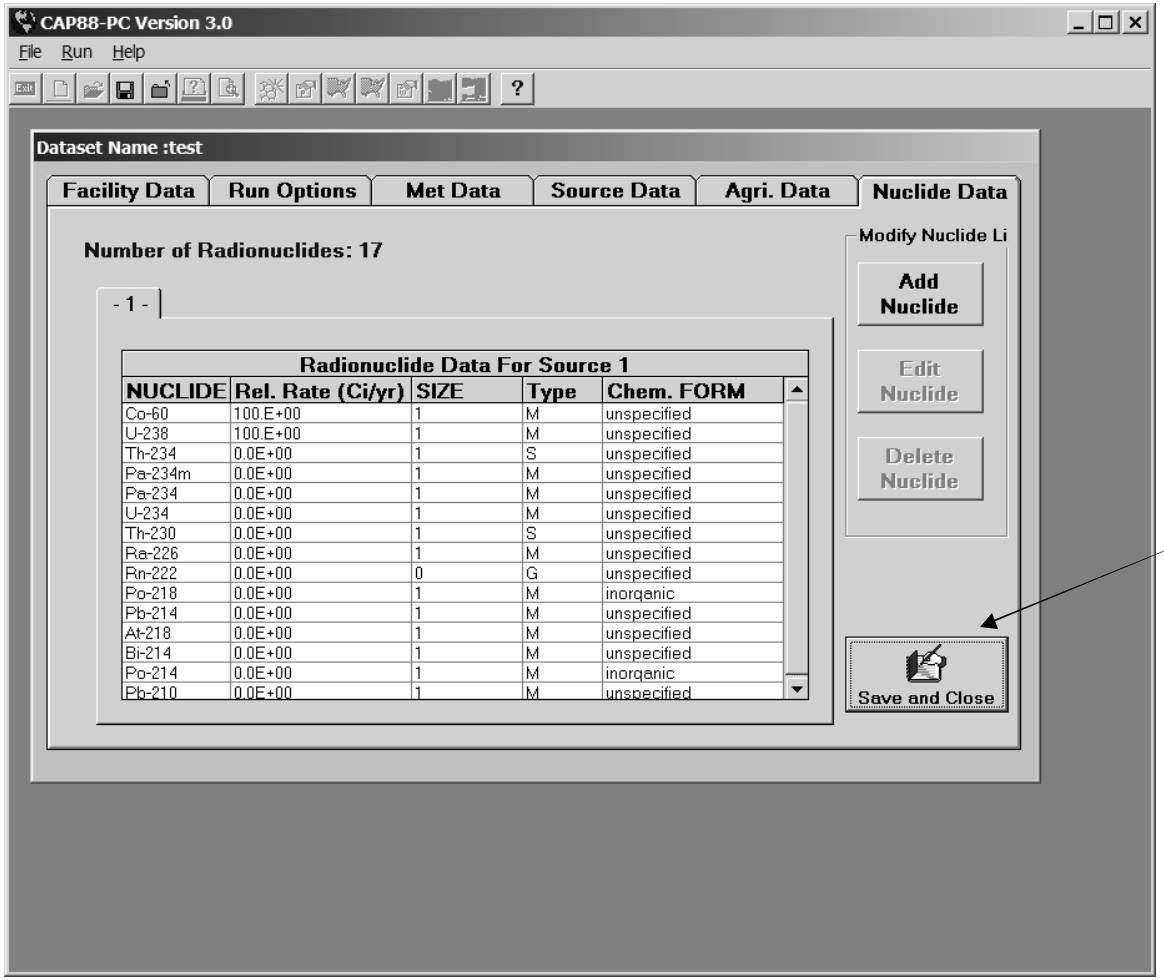
- Prompt for inclusion of chain is similar to version 2
- V3 builds chains using chains in FGR 13. Chains are added using the current nuclide as the top member
- Nuclide entry continues until selection of Enter-Close





Building a V3 Case - 12

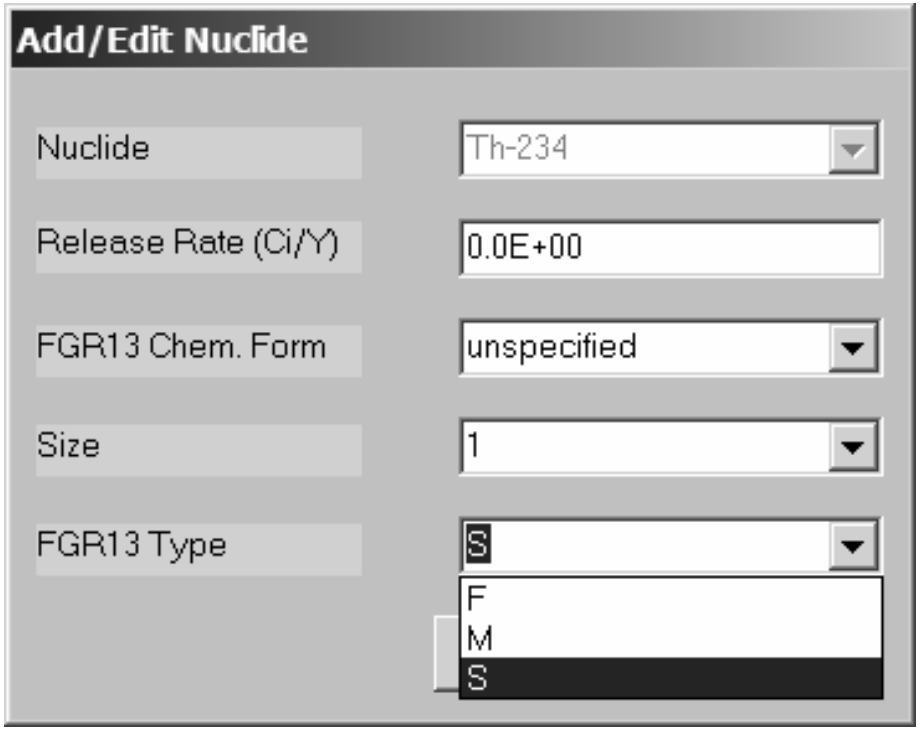
- Nuclide form after U-238 Chain added to the Co-60.
- Select a Nuclide to activate the Edit and Delete functions



Select Save and Close to save the case and return to the initial startup form. The case input data is saved in the Datasets folder with a .dat file extension.

Building a V3 Case - 13

- This results from selecting the Edit Nuclide button
- Available selections are those contained in the FGR 13 database for that nuclide
- Once data has been entered use the Enter key to return to the main nuclide form



Running the Case

- Running cases in V3 is identical to the method used in V2.
- After saving, the case name will appear in the drop down list of available cases
- Output files are written to the Output sub-folder under the CAP88-PC installation folder
- Output files can still be viewed with the CAP88-PC viewer
- I/O files can be viewed externally using any program that can open ASCII text files

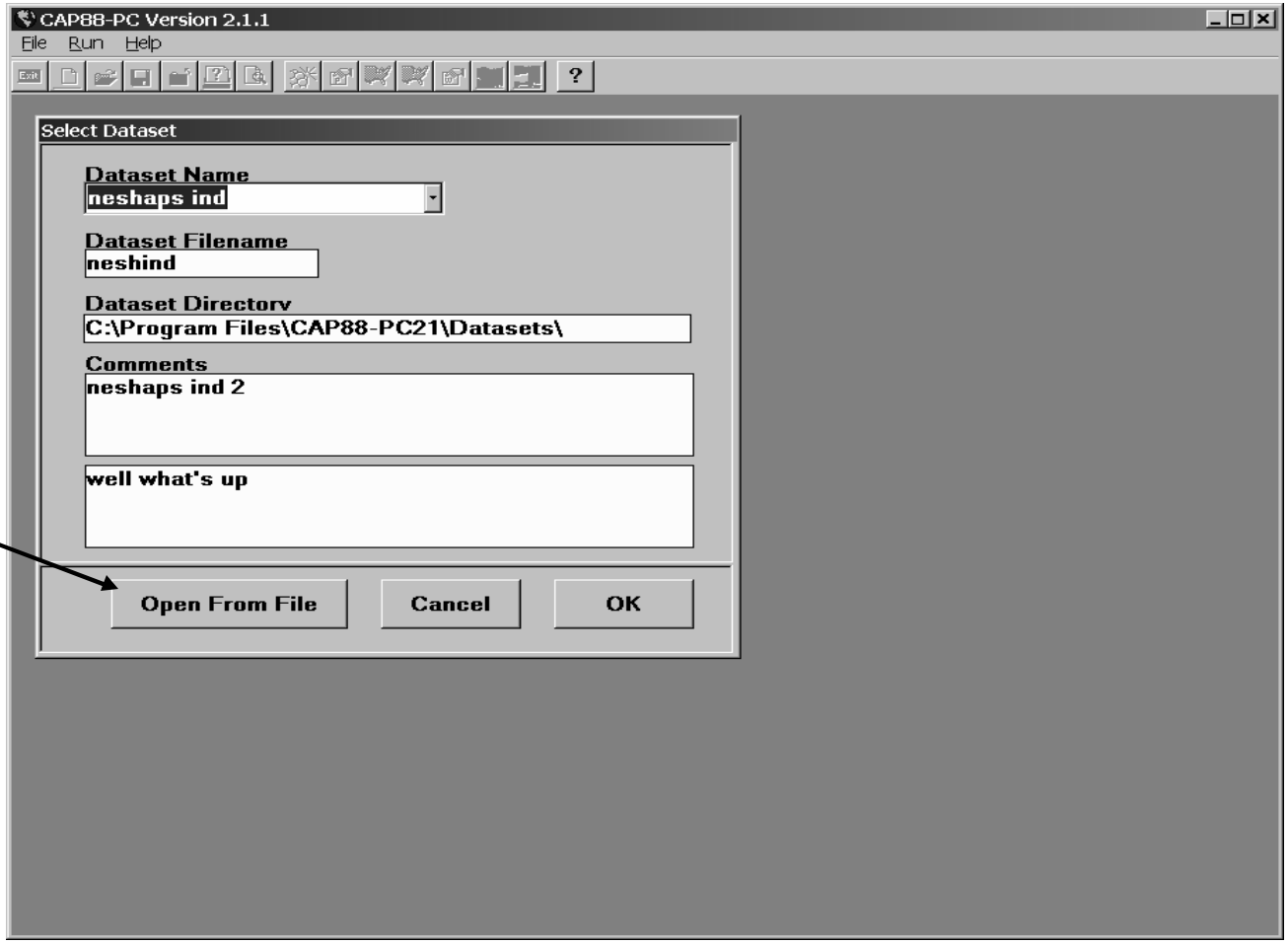
Ancillary Functions

- Population File Editor, Wind File converter, etc., have not been changed
- Default.dat file has been changed to reflect 23 organs and 15 cancer sites in FGR 13
- No change to file viewers

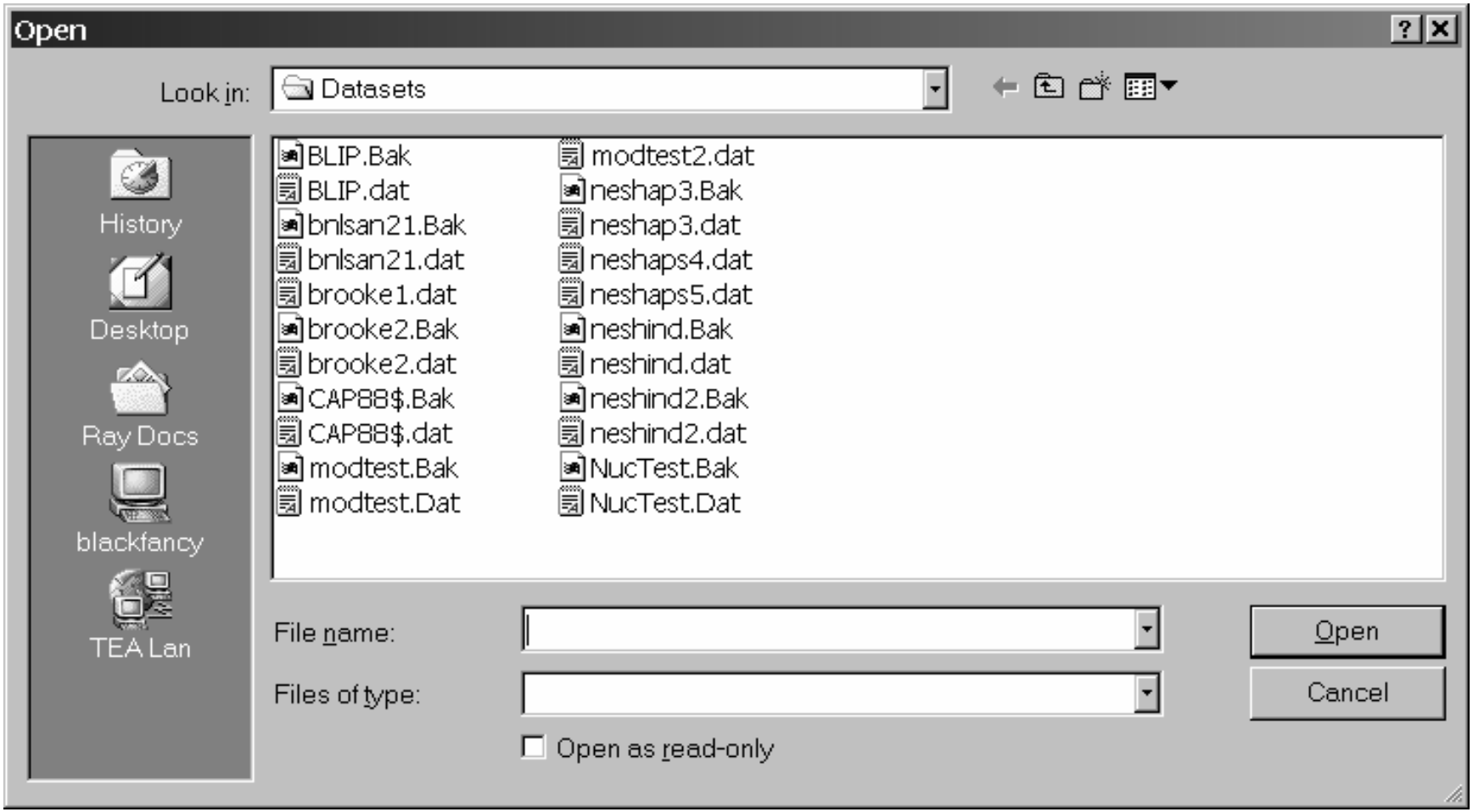
Opening a dataset not in the list

Datasets generated externally or saved during a re-install can now be opened without regenerating them.

Use the Open From File option in the Select Dataset form



Select the desired input file



What is Next?

- Next revision due for release next week
- Feedback from user community resulted in patching bugs and finding some database errors
- Will include corrected build-up and decay calculations based on times from NCRP 123
  - New build-up times per NCRP-123; 500 sec for air and 30 years for ground (user selectable)
- Future versions have data available for additional pathways and age-dependent dose factors
- Code is now built to allow rapid porting to use as a web application should EPA desire

Thanks for Attending

Please submit questions in writing