

US EPA ARCHIVE DOCUMENT

CAP88-PC Version 2.1.1 Beta  
Installation and Operation Guide

Summary of Changes from Version 2.1

Version 2.1.1 of CAP88-PC is an incremental change from Version 2.1. The changes have primarily been improvements to the Visual Basic User Interface and updates to the error handling methods in the visual Basic Code. The modifications include:

- Explicit typing of variables in many of the modules
- More extensive input field checking for valid values
- Addition of error handling routine to provide a text file output of errors encountered by the code
- Modification to the radionuclide input method
- Updates to the default directory structure in the wind and population file selection boxes
- Radionuclide release rate is now written to the INPUT.DAT file in 3 significant digits. This is a correction to the initial 2.1 Beta version where the output writes were in one significant digit in scientific notation.

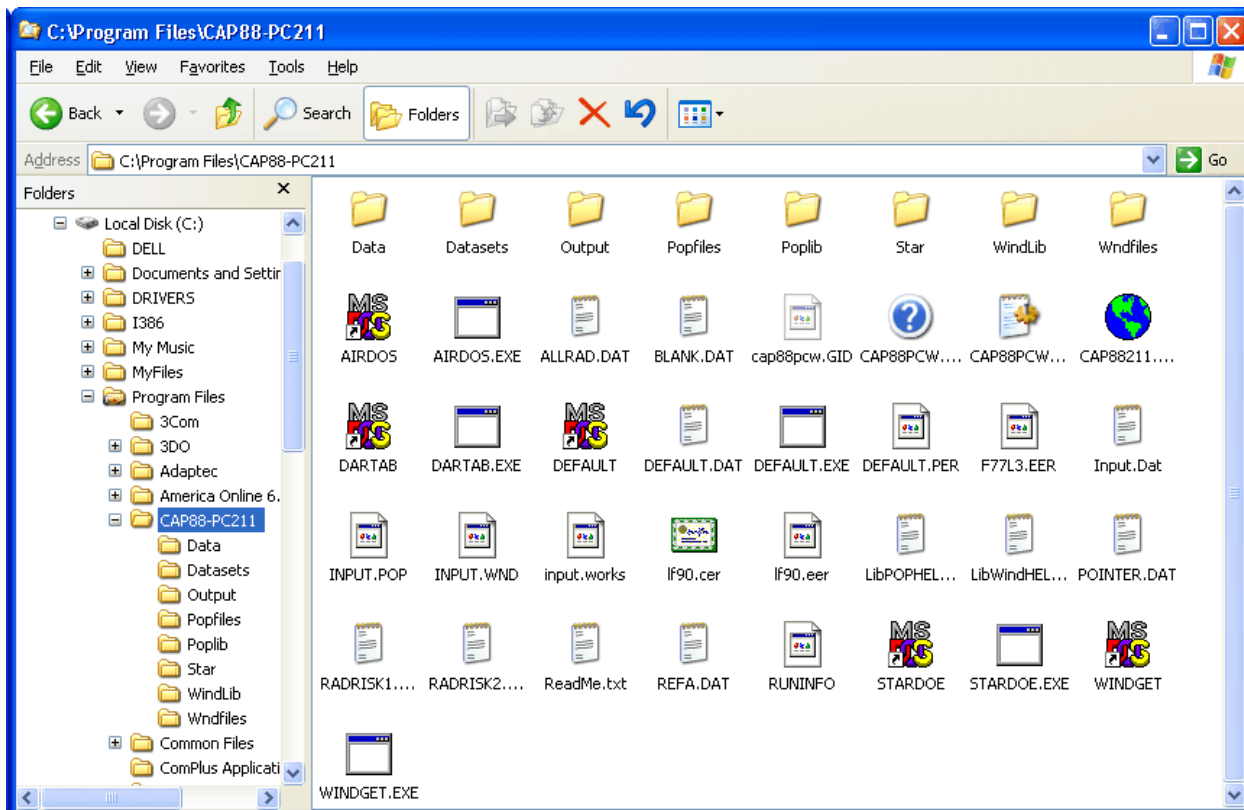
This version contains no changes to the AIRDOS or DARTAB FORTRAN routines from Version 2.1. The user interface for Version 2.1.1 was built in Visual Basic 6.0, and the install package was made using InstallShield 7.2.

Most of the user interface for Version 2.1.1 is similar to Versions 2.0 and 2.1, with the following exceptions:

- The 'Open From File' option is provided to allow the user to open input datasets that have not yet been included in the drop-down file list of available cases. Please see Section B.1 regarding first time running of version 2.1.1 post-installation, and section B.2 for more information on opening datasets.
- The default directory locations for the wind and population library are now the default install directories for these files.
- Version 2.1 and 2.1.1 contain a selection for Humidity on the Met Data tab of the input data form. This input field does not exist in Versions 2.0 or 1.0.
- The radionuclide entry method has been changed from Version 2.0 and the initial Beta of Version 2.1.1. Rather than enter data directly into the Nuclide Data tab of the input data form, the user now selects either 'Add Nuclide', 'Edit Nuclide' or 'Delete Nuclide' from the buttons on the form. When 'Add Nuclide' or 'Edit Nuclide' are selected, a new data entry form containing all selectable data for the nuclide is presented.
- A new 'Save and Close' button is available on the Nuclide Data tab of the input data form.

## A. Installation of Version 2.1.1

Follow steps 1-4 in Section A.2 if you have a previous installation of CAP88-PC Version 2.1 or Version 2.1.1. If you do not have an existing installation of CAP88-PC version 2.1 or Version 2.1.1 then begin with step 5. CAP88-PC Version 2.1.1 creates the following directory structure during a default installation:



### A.1 Installation Notes:

- CAP88-PC Version 2.1.1 will not install properly under Windows 95a, Linux, or Unix.
- If you are running Windows NT, 2000, or XP, we strongly recommend that you be logged on with administrative privileges to properly install CAP88-PC Version 2.1.1.
- We recommend that you disable all virus scanners prior to installation.
- The new installation program eliminates the need for a separate installation of DCOM98. Installation of DCOM98 and the Windows Scripting engine are included in the installation package. Installation of these Windows components may require rebooting the system during the installation process
- The procedure in Section A.2 assumes you have an existing installation of CAP88-PC Version 2.1 or 2.1.1. If you do not have any existing installations begin at step 5.
- Steps 5 and 6 assume you are installing the software after downloading the CAP88-PC Version 2.1.1 archive. If you are installing from a CD then you may skip steps 5 and 6.

### *A.2 Installation Procedure:*

1. Save any user created input or output files that are in the 'Datasets' and 'Outputs' subdirectories of the previous install. Do not save the CAP88\$ files as these are included in the install package.
2. Save any user generated wind or population files that are in the 'Popfiles' or 'Wndfiles' subdirectories of the previous install.
3. Uninstall any previous version of CAP88-PC version 2.1 or 2.1.1
4. Delete the directory structure from the previous install.
5. Create a temporary directory and download the .ZIP archive or self-extracting .EXE archive to the temporary directory.
6. Extract the files in the archive to the temporary directory. (Note - we recommend using a temporary directory as a location for the setup files rather than the directory where you intend to install CAP88-PC Version 2.1.1 to facilitate removal or archiving of the setup package following installation)
7. Run the SETUP.EXE program contained in the install package or on the CD. We recommend using the default installation directory for CAP88-PC Version 2.1.1. The install package will create the installation directory, and will also create a set of subdirectories underneath the installation directory. Please see section B.2 of this document for a description of the directory structure created by the CAP88-PC Version 2.1.1 installation routine.
8. As part of the installation, SETUP will install the Windows Scripting System and, for users running a WIN9x operating system, may install DCOM98 if it is not detected as already installed on your system.
9. Accept the Windows Scripting installation and the DCOM installation if they are requested by SETUP. If these are installed and you are running Windows 95b, 98, or ME, you may need to reboot during the CAP88-PC installation.
10. Copy any saved input files from step 1 into the new 'Datasets' subdirectory if you wish them to be readily available in the new version.
11. Copy any saved output files to the new 'Outputs' subdirectory if desired.
12. Copy any .WND or .POP saved during step 2 into the 'Windlib' or 'Poplib' subdirectories of the new CAP88-PC directory.
13. If you are running Windows 95b, 98, or ME, we recommend rebooting after the installation is completed. This may not be necessary under Windows 2000 or Windows XP.
14. Restart any virus scanner software that was disabled during installation of CAP88-PC.

We recommend placing your previously saved wind and population files into the library subdirectories rather than the 'Wndfiles' or 'Popfiles' subdirectories, because the code will treat these initially as new files. The default open locations in CAP88-PC Version 2.1.1 for new wind or population files are the 'Windlib' and 'Poplib' subdirectories, not the 'Wndfiles' or 'Popfiles' subdirectories, so this will make the files more readily accessible the first time you use them in the new installation. The code will subsequently save these files in the 'Wndfiles' and 'Popfiles' subdirectories after you select them for a run and perform a save of the case.

### B. Running Version 2.1.1

The installation package of CAP88-PC Version 2.1.1 ships with one pre-existing input file, named CAP88\$.dat, and the associated output files for that input set. The input file CAP88\$.dat, along with its backup file CAP88\$.bak, reside in the 'Datasets' subdirectory of the installation directory. Output files are still written into the 'Output' subdirectory in the same formats as under Version 2.0 and Version 2.1.

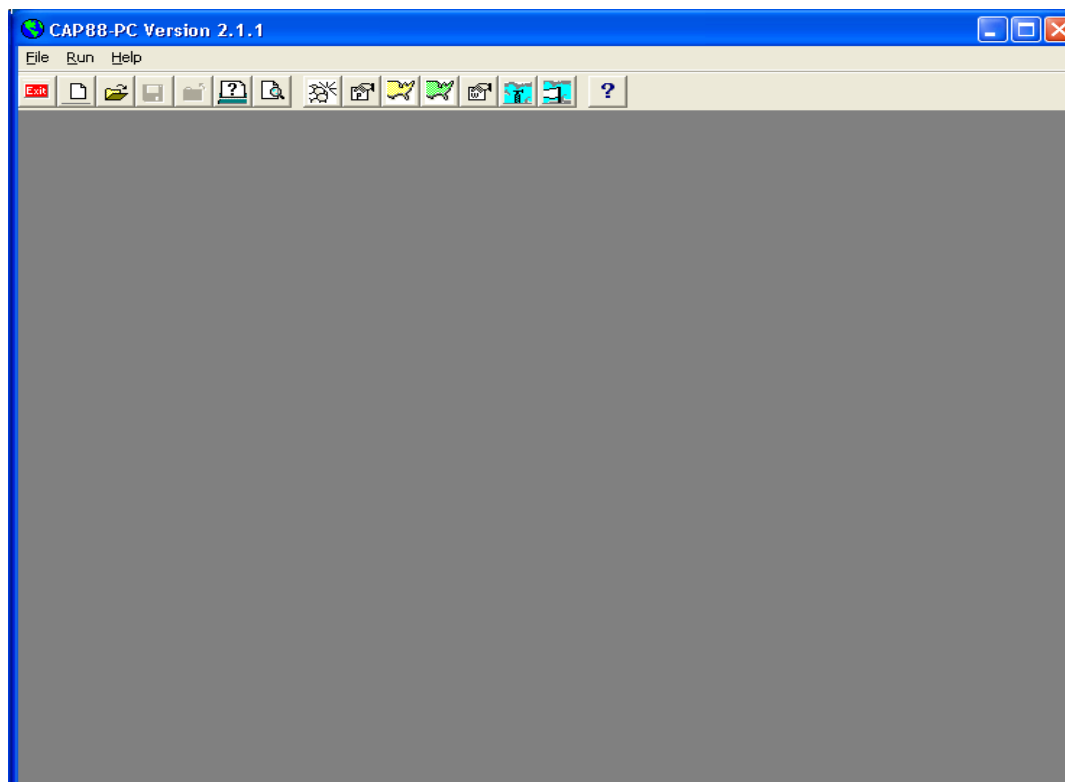
### *B.1 Initial Post-Installation Running of Version 2.1.1*

When running Version 2.1.1 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!". The user has a choice to create a new dataset, or open an existing input dataset from a file. If the user selects to open an existing file, a listing of the available files that reside in the 'Datasets' subdirectory is provided in the directory navigation window. The user may select one of these, or may navigate to another directory and select an input file from there. Once the dataset is created either by manual entry or by opening an existing file, perform a save of the dataset. This dataset will then be included in the drop-down file list for opening and for executing the case.

### *B.2 Running an Example Data Set*

The following steps are intended to illustrate the general procedure for creating a CAP88-PC Version 2.1.1 dataset.

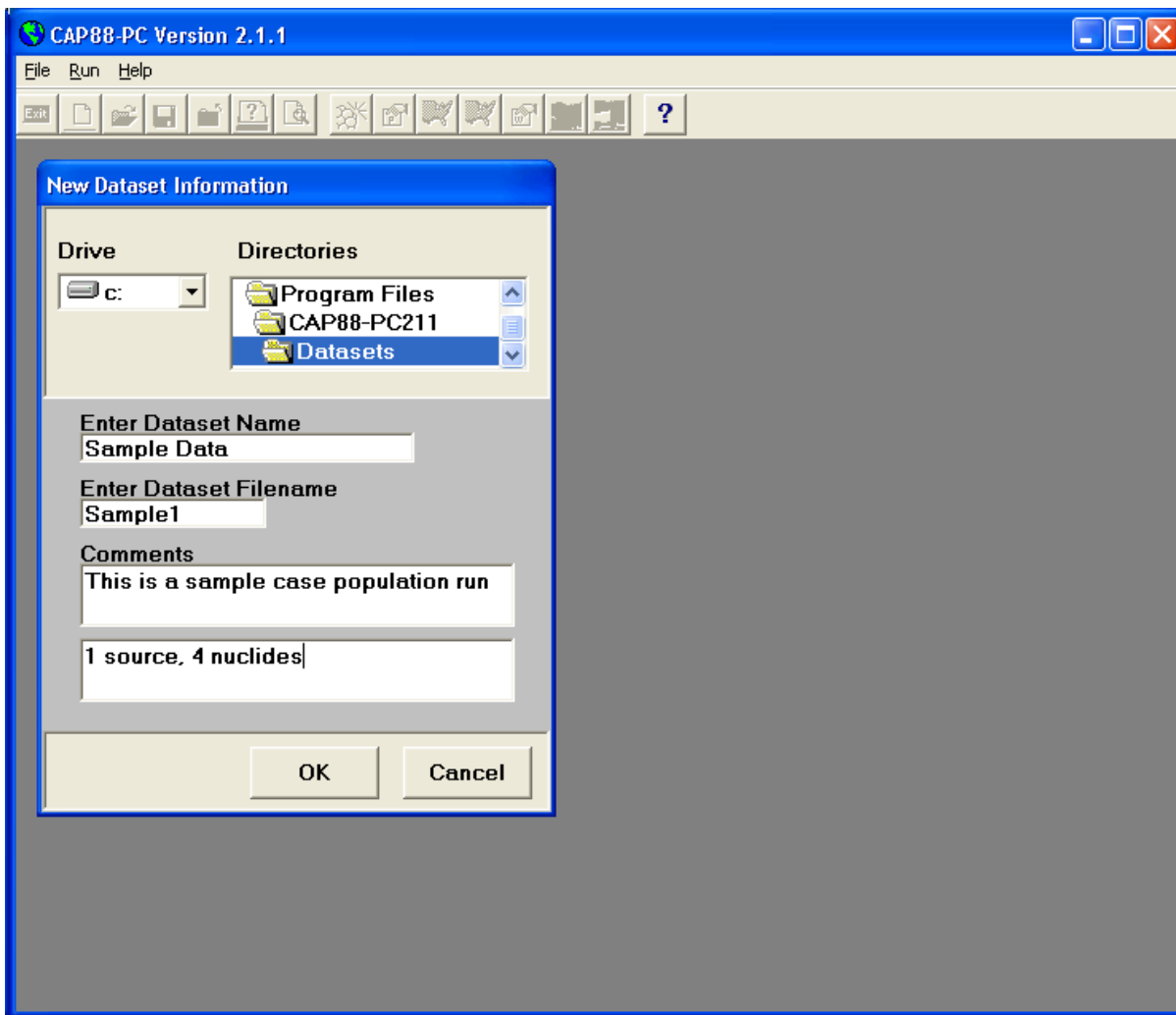
1. Start the code by double-clicking on the desktop icon or by using the icons installed on the <Start>, <Programs>, <Cap88pc211> location on the Windows start menu. After the initial splash screen, you will be at the following screen:



2. Select

<F

ile> from the menu bar, then <New Dataset> to begin creating a new CAP88-PC case. Enter the information for Dataset Name, Dataset Filename, and the two comment fields, and then click <OK>. Dataset Name must less than or equal to 16 characters, and Dataset Filename less than or equal to eight characters. The comment fields are now optional; entries in each field must be less than 50 characters.



3. The next screen is the initial tab of the main form used to provide dataset information to CAP88-PC. The form consists of six tabs; each tab provides fields of related data. The user fills in these fields to build the dataset for the case being analyzed. This particular tab, shown in the screen below, is used to provide descriptive information regarding the facility being modeled. Providing the sample case data to this <Facility Data> tab results in the following screen:

Dataset Name :Sample Data

Facility Data | Run Options | Met Data | Source Data | Agri. Data | Nuclide Data

Facility: Batelle Columbus Laboratory

Address: Any Street

City: Columbus State: Ohio Zip: 44000

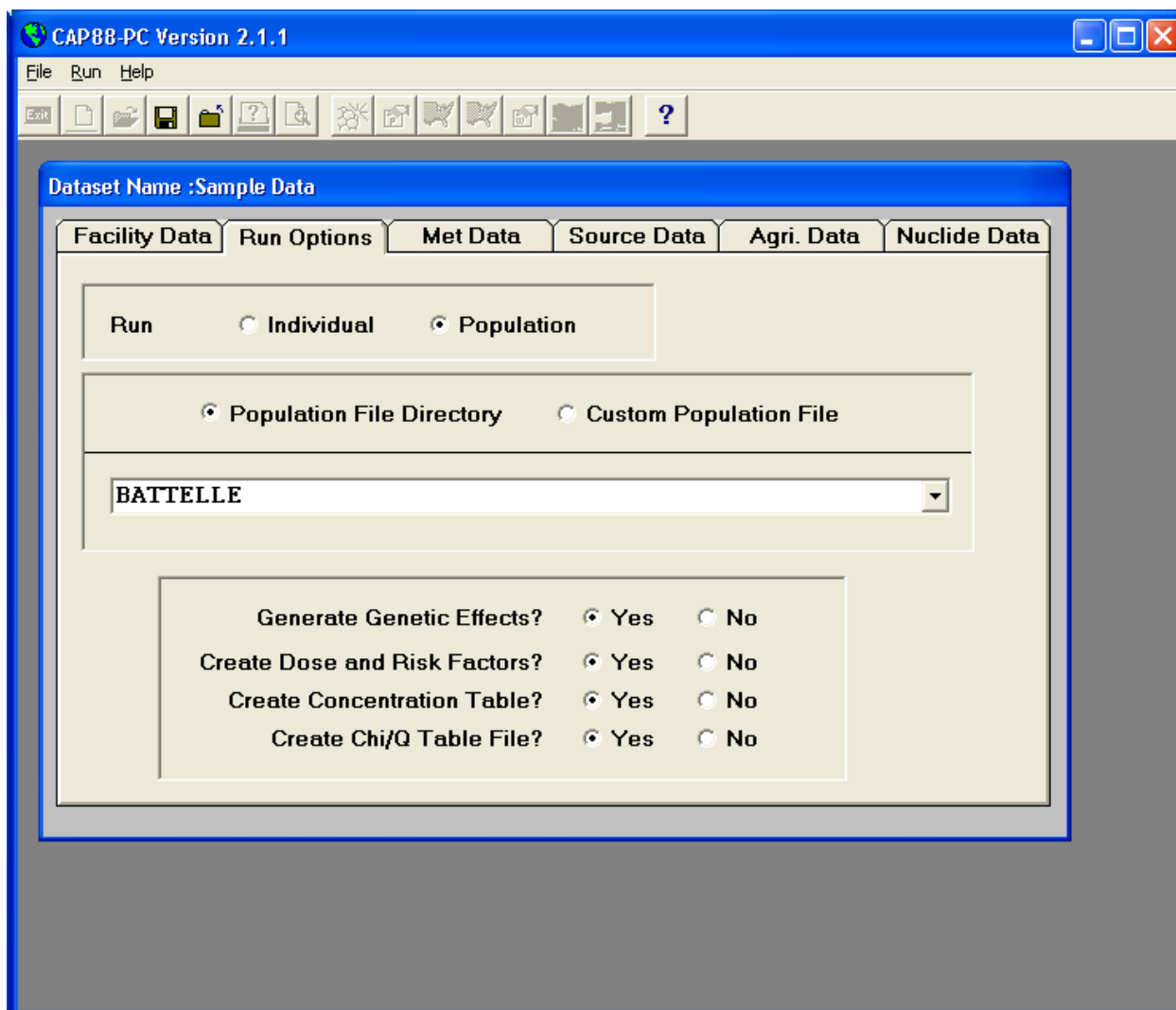
Emission: 1995 Source: 1 stack

Comments

This is a sample case population run

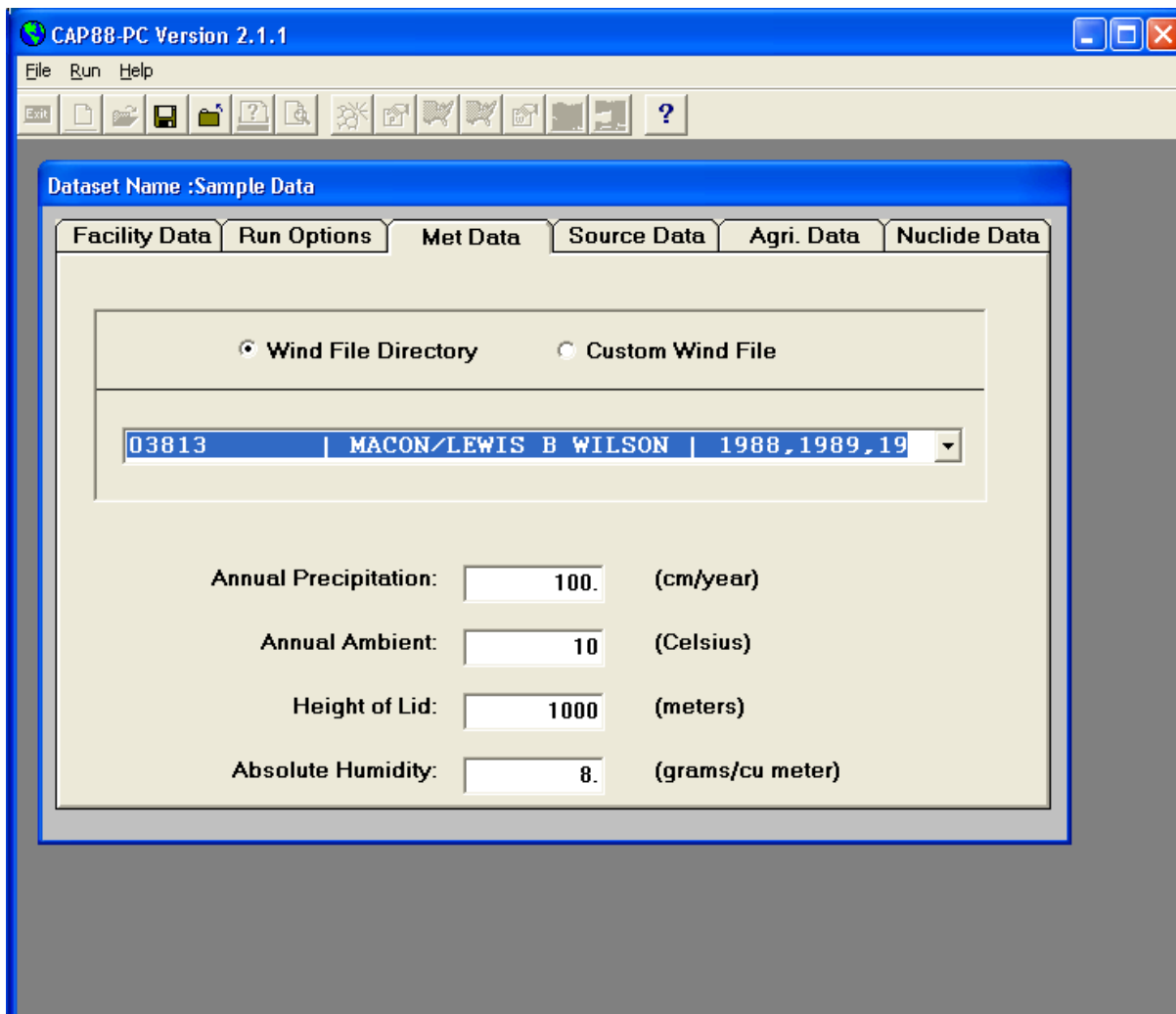
1 source, 4 nuclides

4. Select the <Run Options> tab, which will display the fields for selecting the type of run for this dataset (population or individual), for selecting the population file, and for selecting the type of output files for the run. For this sample dataset, select the data as shown in the figure below. Note that when the radio button for Population File Directory is selected, the file selection control is a drop down list of the population files that have been extracted into CAP88-PC's data environment. If the Custom Population File button is selected, then the file selection control allows selecting a population file by navigating to any file location. The initial default directory for the Custom Population File selection is the POPLIB subdirectory of the CAP88-PC Version 2.1.1 installation directory.



5. Select the <Met Data> tab to display the fields for describing the meteorological data required by CAP88-PC Version 2.1.1. One change to this tab from version 2.0 is the addition of the Absolute Humidity field, which has a default value of 8 grams water per cubic meter of air. The tab should initially appear similar to the following figure:





For this sample dataset, do not use the Wind File Directory button, since no wind file applicable to Columbus Ohio has been extracted into the CAP88-PC data environment. Select the Custom Wind File button to change the file selection control to one that will permit selecting a wind file from a separate directory. The tab should now display as follows:

Dataset Name :Sample Data

Facility Data Run Options Met Data Source Data Agri. Data Nuclide Data

Wind File Directory  Custom Wind File

Locate

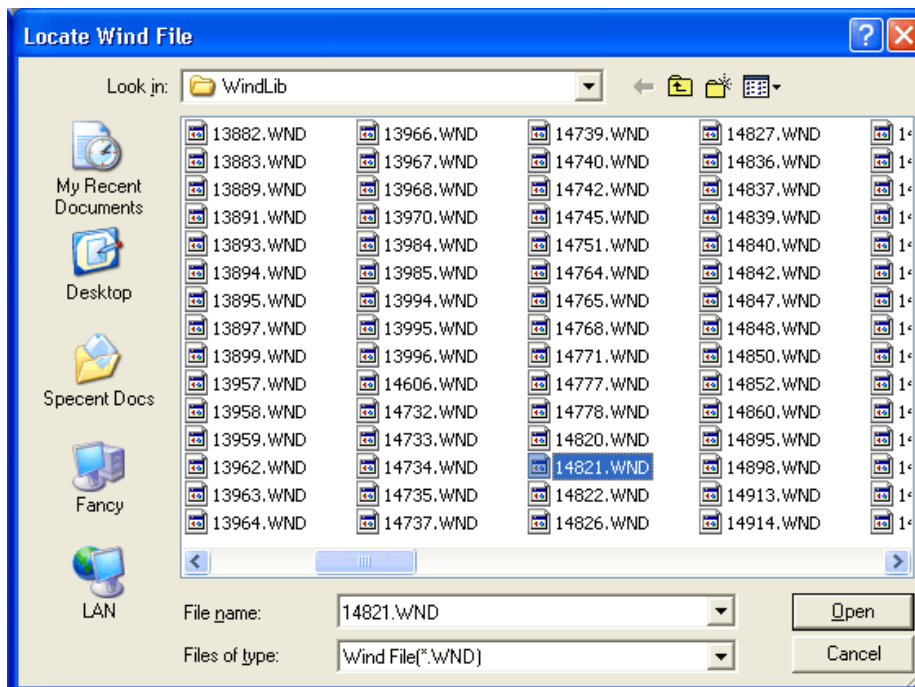
Annual Precipitation:  (cm/year)

Annual Ambient:  (Celsius)

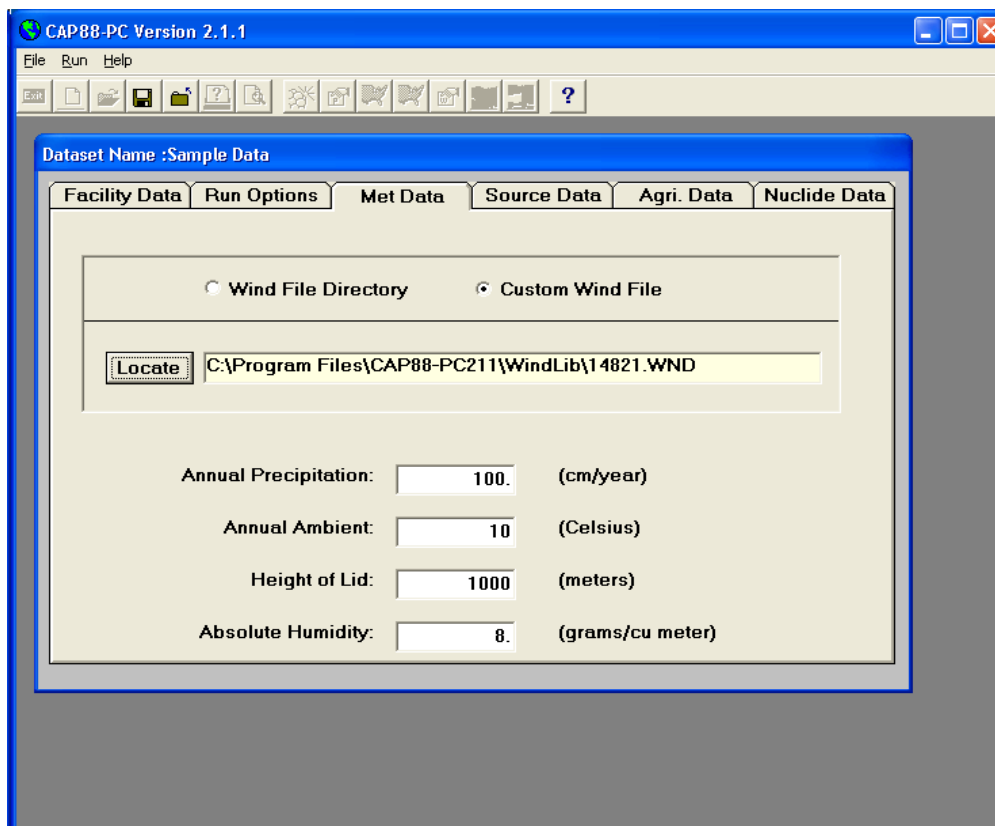
Height of Lid:  (meters)

Absolute Humidity:  (grams/cu meter)

Click the <Locate> button to display a list of wind files stored in the Windlib subdirectory of the CAP88-PC Version 2.1.1 installation directory. Select the file named 14821.wnd, and the following sub-screen should result:



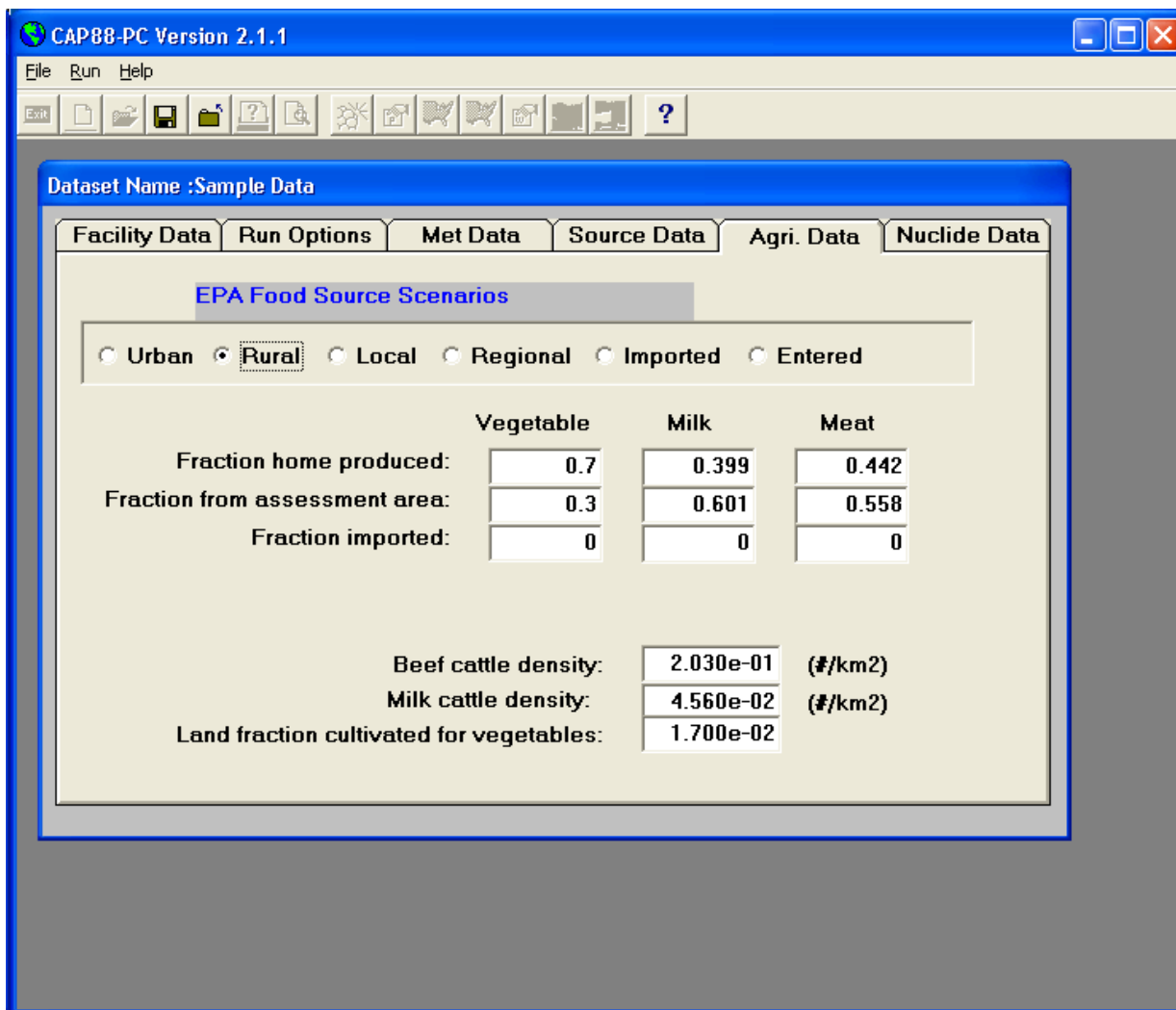
Click <Open>, and the file should be selected for use as the input wind file. The <Met Data> tab should now appear as follows:



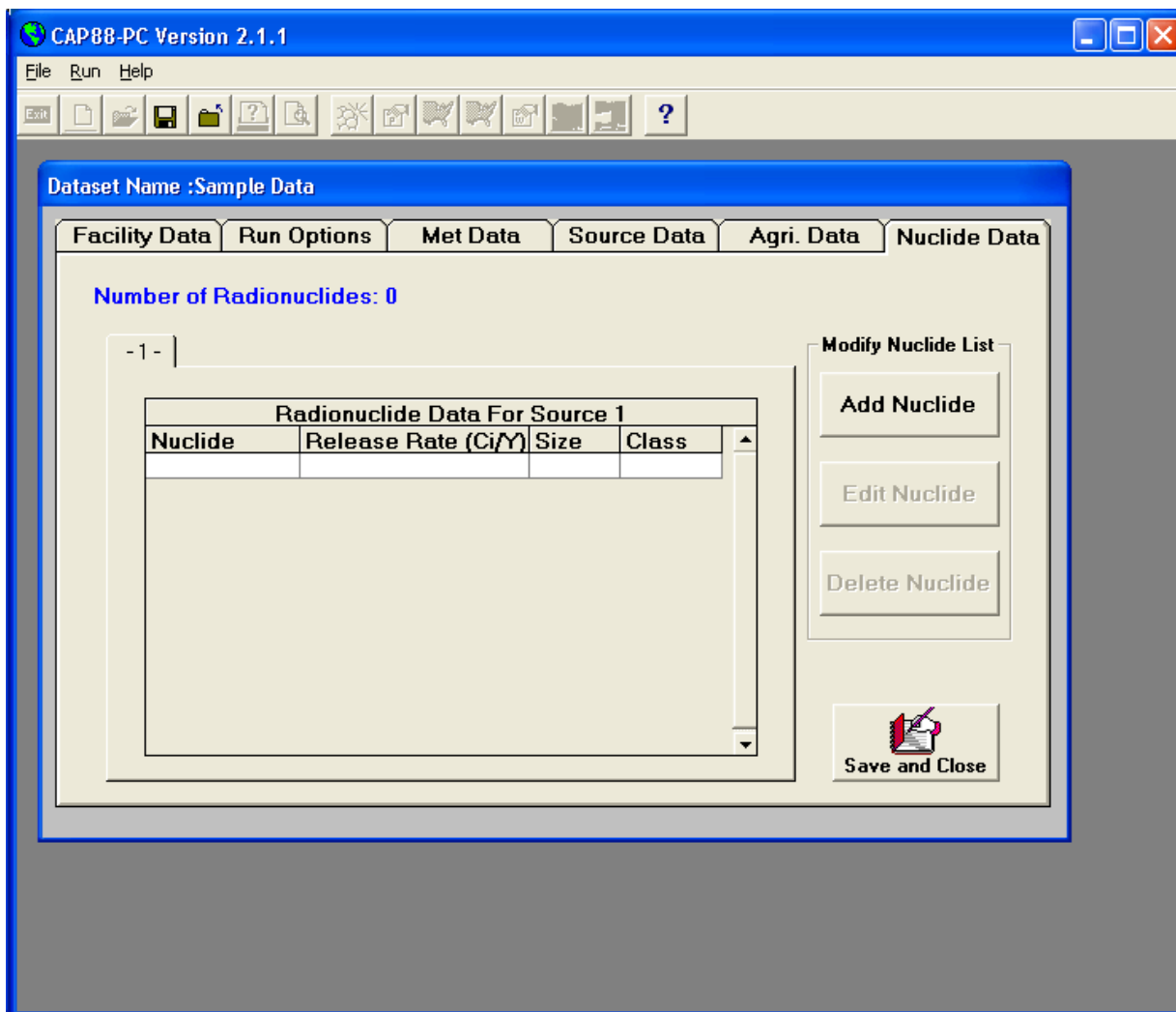
6. Select the <Source Data> tab to enable the fields that describe the physical parameters of the release. This sample dataset only uses a single stack release, but up to 6 sources can be selected. Note that although CAP88-PC allows up to 6 different sources, all sources must be of the same type (area or stack). Also, CAP88-PC models the sources as being co-located, i.e. they have the same physical center point. The displayed screen should be as follows after all data for the sample dataset have been entered:

The screenshot shows the CAP88-PC Version 2.1.1 software window. The title bar reads "CAP88-PC Version 2.1.1". The menu bar includes "File", "Run", and "Help". The toolbar contains icons for Exit, File operations, and Help. The main window displays the "Dataset Name : Sample Data" and several tabs: "Facility Data", "Run Options", "Met Data", "Source Data", "Agri. Data", and "Nuclide Data". The "Source Data" tab is active. It features a "Source" section with radio buttons for "Area" and "Stack", where "Stack" is selected. Below this is a "Number of Sources:" dropdown menu set to "1". A section titled "Enter dimensions of sources:" contains input fields for "Height (m)" (30.), "Diameter (m)" (1.), and a "Plume" section with radio buttons for "Buoyant", "Momentum", "Fixed", and "None", where "Momentum" is selected. At the bottom, there is a section titled "Enter the exit velocity (meters/sec) for each source" with a table of input fields containing the value "1".

7. The next tab to be selected is the <Agri. Data> tab, which allows entry of the food pathway information for the dataset. The various options for the food sources determine the fraction of the food products grown either local to the analysis location, within the overall assessment area, or from outside the assessment area. Foods produced outside the assessment area are considered in the CAP88-PC code to be uncontaminated. The populated fields for the sample dataset will result in a screen appearing as follows:



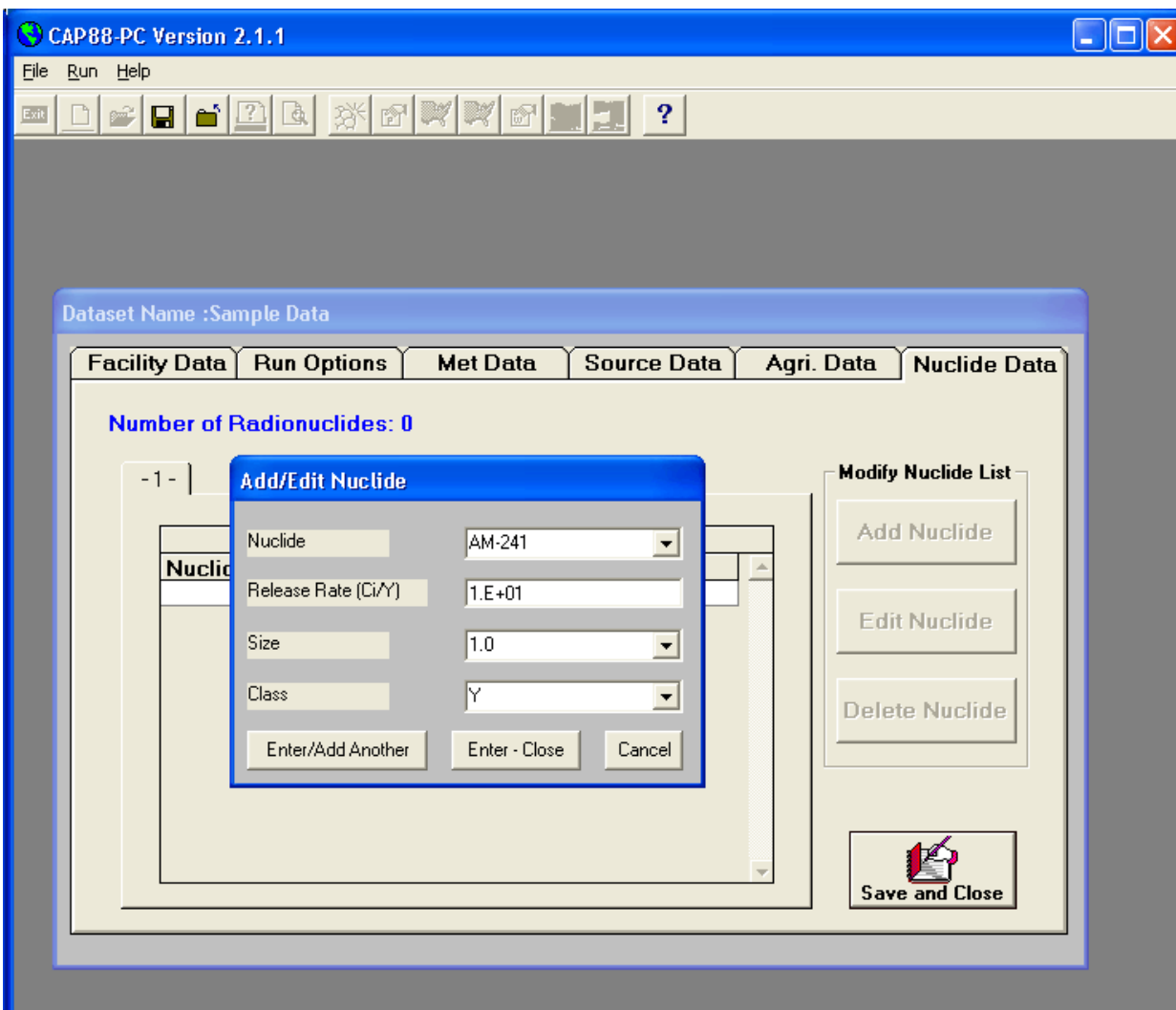
8. The final tab to be selected is <Nuclide Data>. This tab has been modified from Version 2.0 to include a <Save and Close> button, and, more significantly, to add a sub-form where all additions or modifications to radionuclide data is performed. Initially, the <Nuclide Data> tab will have the following appearance:



To begin adding nuclides, click <Add Nuclide>, which displays the nuclide data entry sub-form displayed in the next graphic. Use the Nuclide drop down list to select the first nuclide to be included in the analysis, which in the sample case is Am-241. After the nuclide is selected, the remaining three nuclide data fields are activated. Enter the release rate for the radionuclide (in Curies per year) from the currently selected source. Use 10 Ci/yr for the sample dataset. Note that in this example only one source tab is available on the form.

Select the particle size and the class for the release from their respective drop down lists, for the radionuclide. The only options available for the nuclides are those that are included in the CAP88-PC data environment, which is derived from the data contained in the RADRISK dose and risk coefficient files used by CAP88-PC. Since four radionuclides are used in the sample dataset, select <Enter/Add Another>

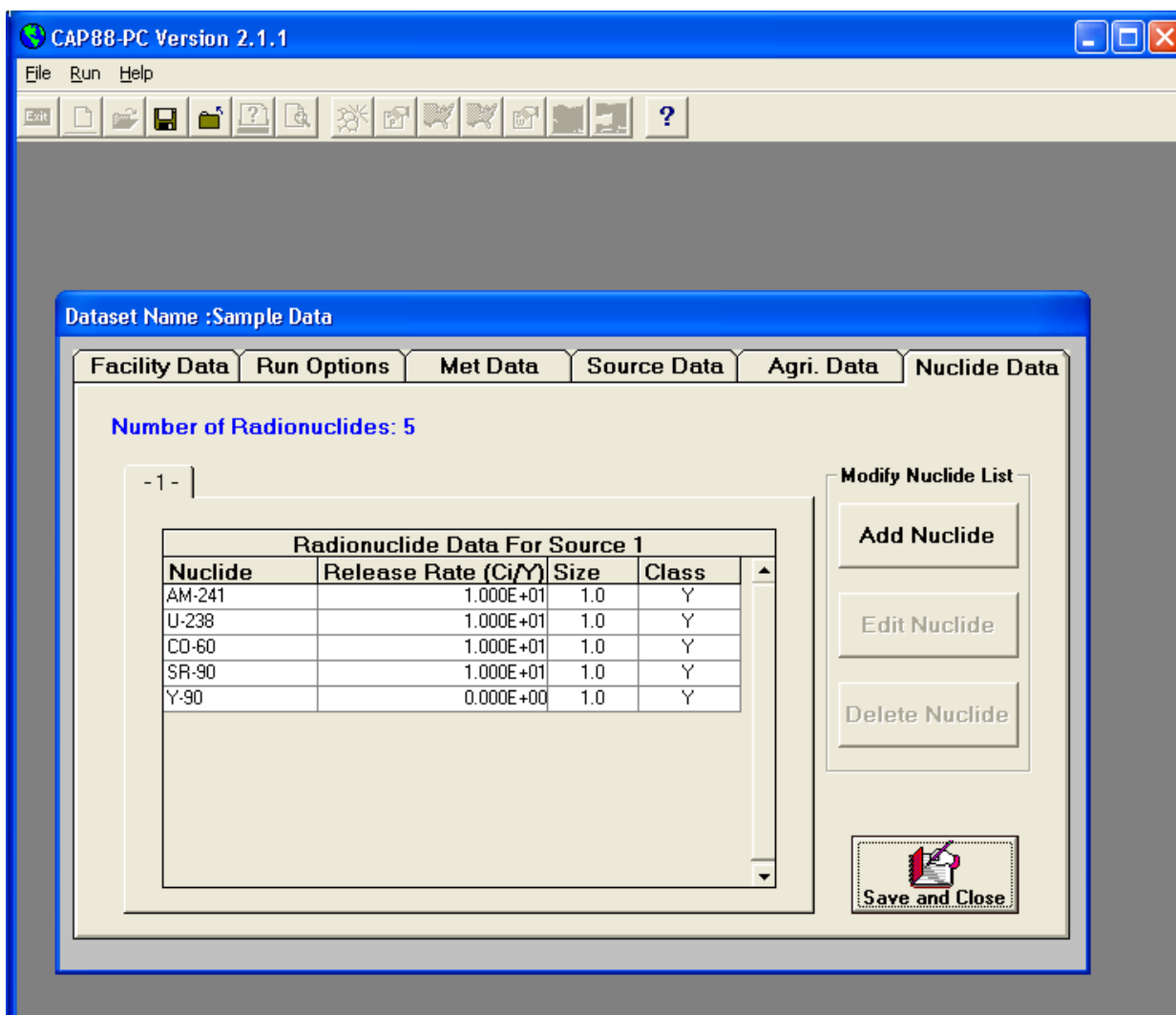
Repeat the selection process for U-238, Co-60, and Sr-90. When selecting U-238, the default



particle size is 3 microns, which will need to be modified to 1 micron using the drop down list. Also, when adding U-238, a prompt will appear asking if you wish to add the rest of the U-238 decay chain. Do not add the decay chain for the sample problem dataset. A similar message will appear for Sr-90, but in this case add the decay chain, and CAP88-PC will automatically include the Y-90 progeny to the list.

Following entry of the last nuclide, select <Enter-Close> to terminate entry of radionuclides and return to the <Nuclide Data> tab. If <Enter/Add Another> is erroneously used, clicking <cancel> will terminate entry of nuclide data but will not remove the previously entered information.

The <Nuclide Data> tab should now appear as follows:



Once the data has been completely entered, click <Save and Close> to return to the initial startup form for CAP88-PC Version 2.1.1. At this time the dataset has been saved as the file named sample1.dat in the Datasets subdirectory of the Cap88-PC Version 2.1.1 installation directory. The case may be run by selecting <Run>, and <Execute> from the menu bar. Select the [Sample Data] dataset from the Dataset Name dropdown list, and then click <OK>. Output files will be written to the Output subdirectory, and are viewable within the code environment by clicking on the <print preview> icon on the button bar and selecting [Sample Data] from the dataset name dropdown list.