

# Integrated Data Converter

User Documentation  
8/19/2004

Sam Qaiser, Virginia Department of Environmental Quality  
Marc Houyoux, U.S. Environmental Protection Agency

## Table of Contents

1	What are the capabilities of the IDC? .....	1
2	What are the limitations of the IDC? .....	1
3	How do I install the converter? .....	1
4	How do I start the converter on my PC? .....	1
5	How do I start using the converter? .....	2
6	How do set my output file directories? .....	2
7	How do I setup my output file headers? .....	4
8	How do I create a SMOKE-ready input file? .....	6
9	How do I generate IDA-formatted files without headers? .....	6
10	What will the names be of the IDA files without headers? .....	8
11	How do I merge multiple IDA files without headers and create a final IDA file? .....	8
12	What will the names be of the final output IDA files? .....	11
13	How do I make sure I have provided annual or daily records? .....	11
14	Where do I get help using this converter? .....	12

## 1 What are the capabilities of the IDC?

The Integrated Data Converter (IDC) program is designed to convert data files from Microsoft® Access® NIF 3.0 format to the Inventory Data Analyzer (IDA) format needed by the Sparse Matrix Operator Kernel Emissions (SMOKE) modeling system. It can convert stationary-area, point, nonroad mobile, and on-road mobile emissions data. It converts only annual and average-day records using the following logic:

- If the IDC finds only annual emission data for the pollutant, it directly includes it in the IDA file.
- If the IDC finds only daily emission data for the pollutant, it converts daily emission to annual emissions by multiplying by 365 and then includes it in the IDA file.
- If the IDC finds both annual and daily emission, it selects annual data for the record and includes it in the IDA file.
- The IDC ignores all other record types completely, and drops those records from the conversion so that they are not included in the IDA file.

For definition of how the IDC determines what annual and average-day records to use, please refer to Section 13 called “How do I make sure I have provided annual or daily records?”

## 2 What are the limitations of the IDC?

This version of the converter is preliminary and has the following limitations:

- The IDC uses only annual and daily emissions records.
- The converter cannot convert ASCII NIF3.0 files; the input files must be in Microsoft® Access® NIF3.0 files.
- The converter cannot convert VMT data to the VMT format needed by SMOKE.
- The converter must be run on a PC.
- The steps to use the converter are complex for this version of the IDC. We are reviewing the conversion process and expect to make it simpler in the next version of the converter.

## 3 How do I install the converter?

- Download the file named “IDC\_Jul2004.zip” from the Emission Factors and Inventory Group website [insert here].
- 

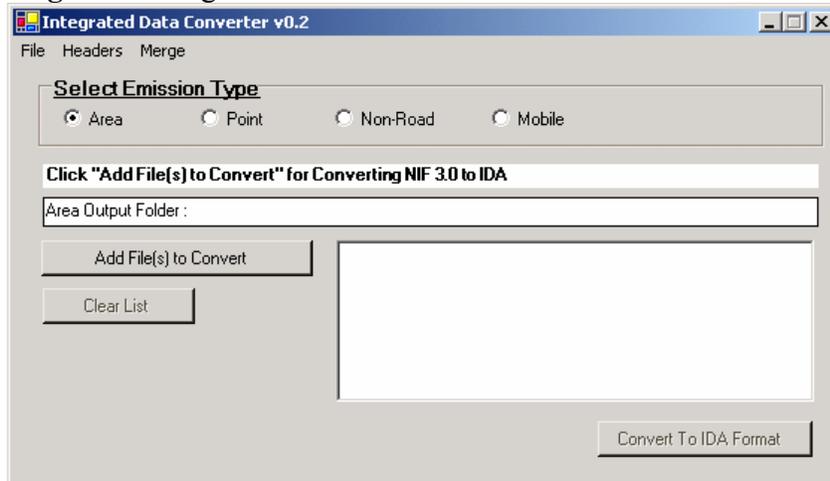
## 4 How do I start the converter on my PC?

The program can be started from the PC “Start” button often located at the lower-left corner of your computer monitor. From the “Start” menu, select “All Programs”, then “IDC 2004”, then “Integrated Data Converter.”

Start ➡ All Programs ➡ IDC 2004 ➡ Integrated Data Converter

You should then see the main program window as shown in Figure 1, below:

**Figure 1:** Integrated Data Converter main window.



## 5 How do I start using the converter?

The IDC requires that you provide some basic configuration information before it can be used to convert data files. As part of this setup step, the IDC will save the configuration for use in all subsequent conversion steps. The configuration includes (1) setting the output file folder, and (2) setting the headers for each output file type (area, point, nonroad mobile, and on-road mobile). This feature allows you to configure some basic information that you do not have to retype every time that you run; however, if you want to change the output directory or the header content, then you must repeat this step.

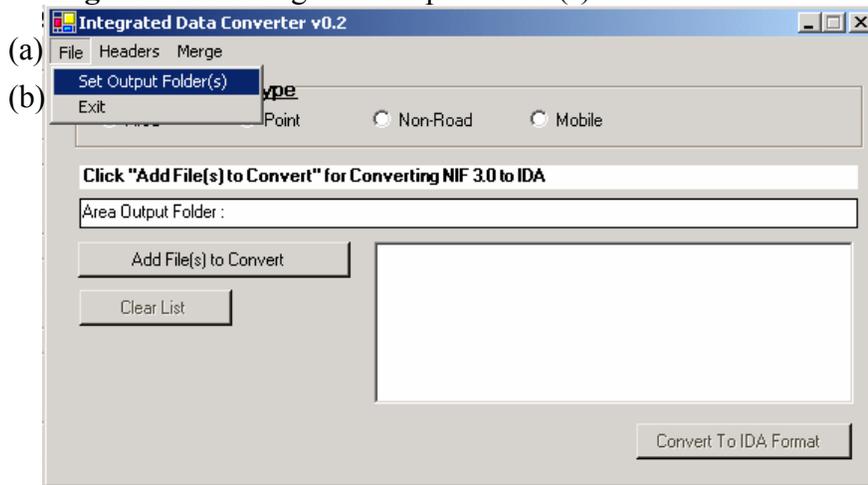
Please refer to the Sections 6 and 7 on “How do set my output file directories?” and “How do I setup my output file headers?” for more information on configuring the converter.

Then, refer to Section 8 entitled “How do I create a SMOKE-ready input file?” for instructions on actually converting your data.

## 6 How do set my output file directories?

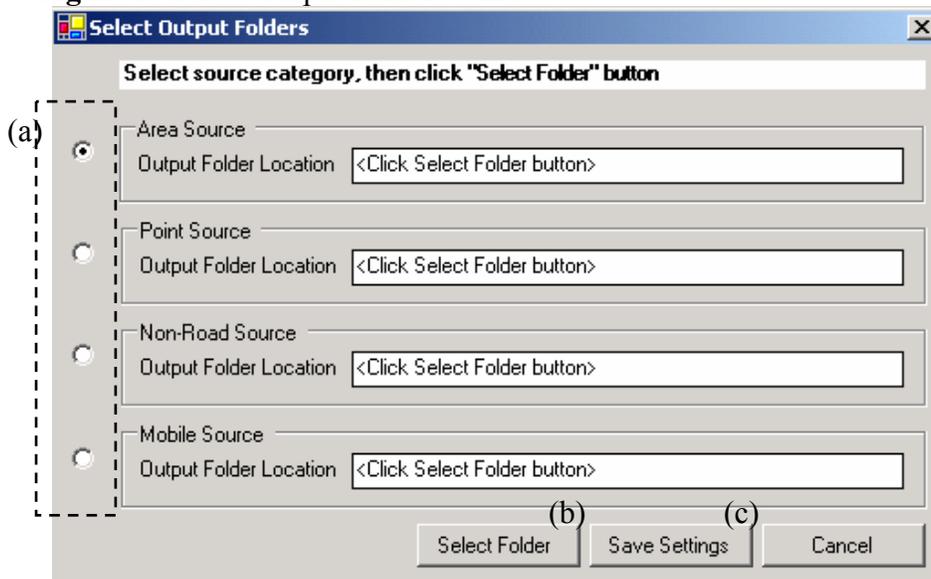
The IDC allows you to specify four output directories that correspond to area, point, nonroad mobile, and on-road mobile sources. To specify these directories, use the “**File**” menu (a) and select the “**Set Output Folder(s)**” menu item (b), as shown in Figure 2 below:

**Figure 2:** Selecting “Set Output Folder(s)” menu item



This will cause the IDC to display the “Select Output Folders” window, shown in Figure 3 below:

**Figure 3:** Select Output Folders window



To input each of the directories, **click a radio button (a)** at the left of the window shown in Figure 3 to select the source category of interest. Then **click “Select Folder” (b)** at the bottom middle of the same window. The IDC will then display a “Browse For Folder” window as shown in Figure 4 below, which you can use to set the output directories. Once you have selected output folder location, **click “OK” (a)**, and then the selected folder path will display in “Select Output Folder” box to the right of the radio button that you have chosen. Repeat these steps for all 4 source sectors listed in the window above (or only for those that you plan to convert).

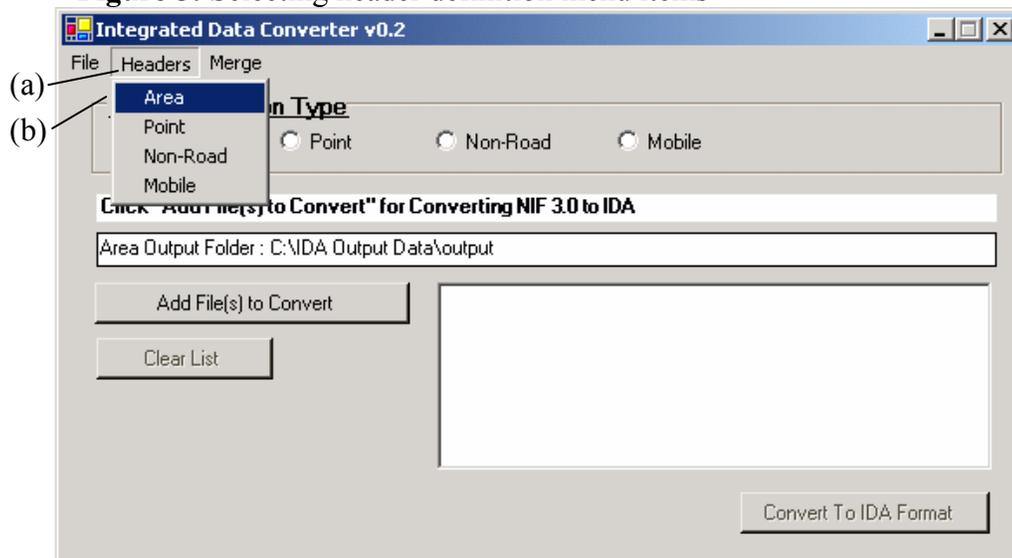


Lastly, after specifying the output folder location for each emission type, the user must click **“Save Settings” (c)** in the **“Select Output Folder”** (Figure 3) box. Once you click the **“Save Settings”** button, the main IDC window (Figure 1) will remain on your screen.

## 7 How do I setup my output file headers?

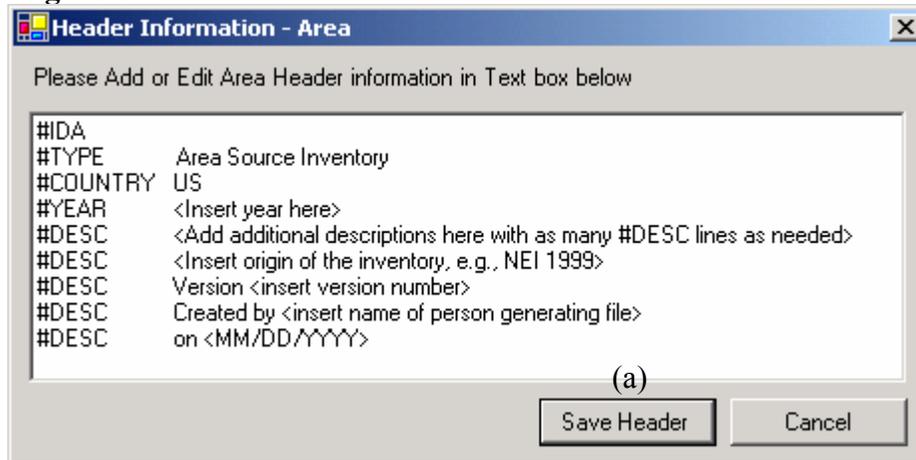
The IDC provides a way to set the output file headers as an initial step, which is then reused for all subsequent IDA conversions. Different headers can be configured for area, point, nonroad mobile, and on-road mobile sources. To setup the headers, use the **“Headers” menu (a)** and one of the source category menu items: **“Area” (b)**, **“Point”**, **“Non-road”**, or **“Mobile”** (for on-road mobile), as shown in Figure 5 below:

**Figure 5:** Selecting header definition menu items



When you select one of these menu items, a window will appear as shown in Figure 6 below. This window allows you to edit the header for the selected source category (“Area” in the example below, as can be seen from the window title).

**Figure 6: Header information window**



The SMOKE headers consist of some header identifiers that appear at the left of the window, and the associated information to the right. The different header identifiers should be set as follows:

- #IDA:** This header entry should not be changed; it is required by SMOKE 2.0 and above and will be ignored by earlier versions of SMOKE.
- #TYPE:** The conversion tool will set the correct type depending on the source category that you selected from the “Headers” pull-down menu on the main program window.
- #COUNTRY:** The country name must match the name of the country in SMOKE’s COSTCY input file. The default SMOKE countries are US, CANADA, MEXICO, CUBA, BAHAMAS, HAITI, and DOMINICANREPUBLIC. These can be changed in SMOKE COSTCY file, but in order to be able to use the other default SMOKE ancillary files, the US must always be set to country code 0 (in the COSTCY file).
- #YEAR:** Specify the year of the emission inventory that is represented by the data you will be converting (use a 4-digit year).
- #DESC:** This header lets you document as much about your inventory as possible. The default header has some placeholders that are needed for minimal proper documentation of the contents of your SMOKE input file:
  - The origin of your inventory (e.g., 1999 NEI)
  - The version number of your inventory (e.g., version 3)
  - The person who created the raw and/or converted file
  - The date on which the file was created.

Type the header information in the text area provided. Then, click “**Save Header**” (a) in the window shown in Figure 6, and the header information will be saved for the source sector selected and will be used in all future “merge” steps when you select the option to attach a header to the IDA output files.

## 8 How do I create a SMOKE-ready input file?

Creating a SMOKE-ready input file with the IDC involves two steps. First, you must convert your NIF3.0 files to IDA format without headers. By default, this step assumes that you have multiple file conversions to perform for each source sector (e.g., you are converting separate NIF3.0 files from each state). Second, you must “merge” your individually created IDA files into a single file and optionally insert the header. The headers are only inserted during the “merge” step.

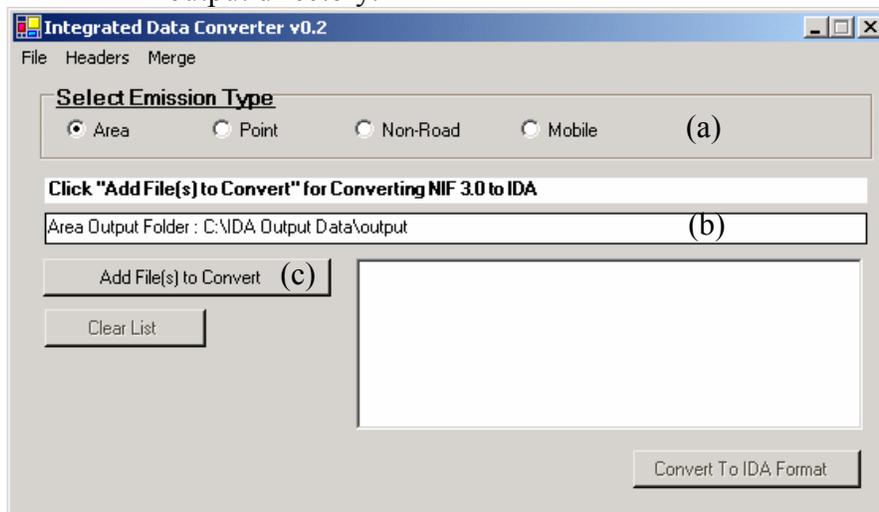
Sections 9 and 10 give the details about how to create the IDA files and how to merge multiple IDA files into a single IDA file with a header.

## 9 How do I generate IDA-formatted files without headers?

Prior to this step, users should make sure that they have specified output directories and headers, as described in Sections 6 and 7 of this documentation

First, select the emissions type by **clicking one of the Emissions Type buttons (a)** on the main IDC window, shown in Figure 7. In this figure, the “area” emission type has been selected. This selection will determine what input files the IDC will expect in subsequent steps and sets the output folder (based on your previous settings as described in Section 6). In Figure 7, note that the output folder is set to “C:\IDA Output Data\output”, labeled (b).

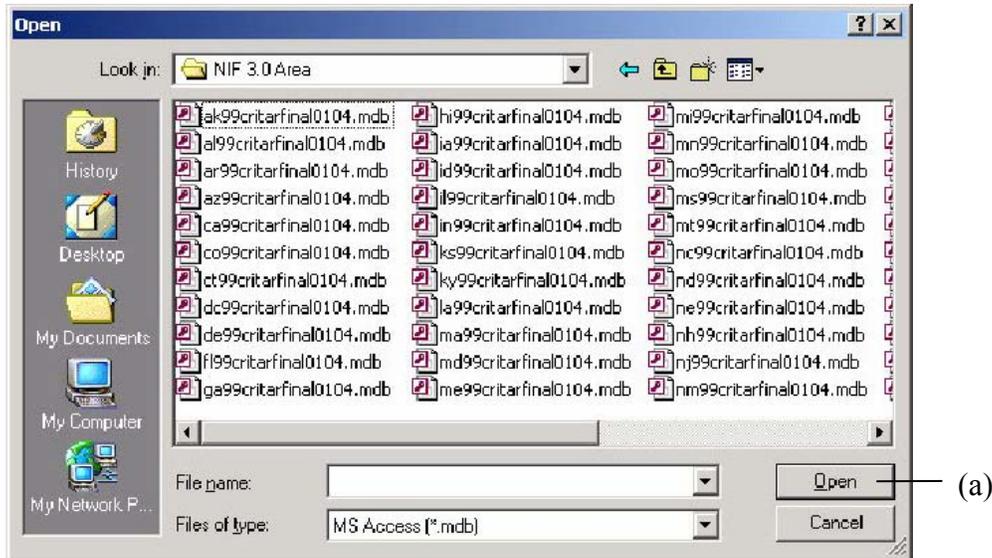
**Figure 7:** IDC main window after selecting emission type and output directory.



Next, select the input files by **clicking the “Add File(s) to Convert” button (c)** on the main IDC window, shown in Figure 7. Please note that because you can not use the “Add File(s) to Convert” button (c) more than once per conversion, **you must have all of the NIF3.0 files that you intend to convert in the same directory on your computer.**

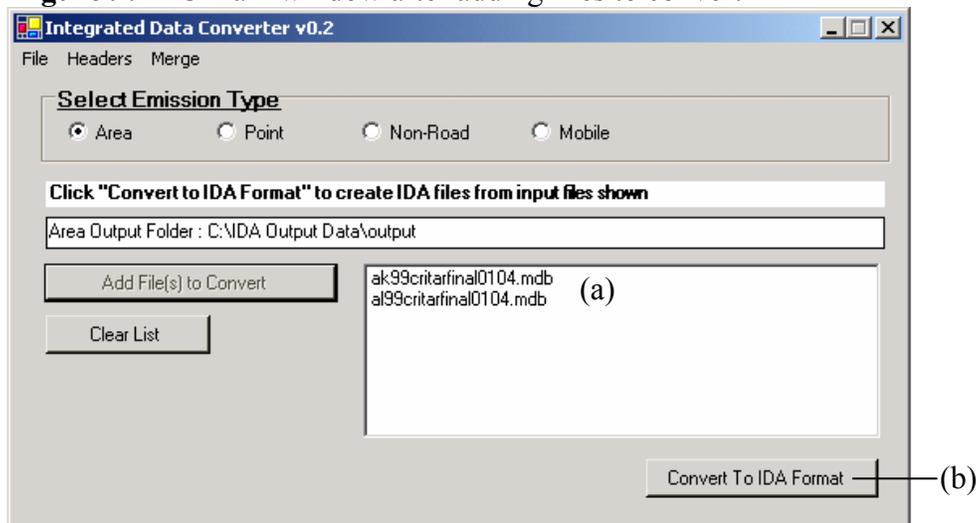
A window will appear (as shown in Figure 8) that you can use to find the correct directory and files. You can select as many files at a time to add to the conversion step as you like, but those files must all be files for the same input format (area/nonroad, point, or on-road mobile).

**Figure 8:** File browser window



In the dialog box, use your mouse and the “shift” or “control” keys on your keyboard to highlight all of the files that you want to convert. Then **click the “Open” button (a)** to select all of the files. All of the files you selected should then be displayed in the main IDC window in the white box just above the “Convert to IDA Format” button (area (a) in Figure 9). An example is shown below.

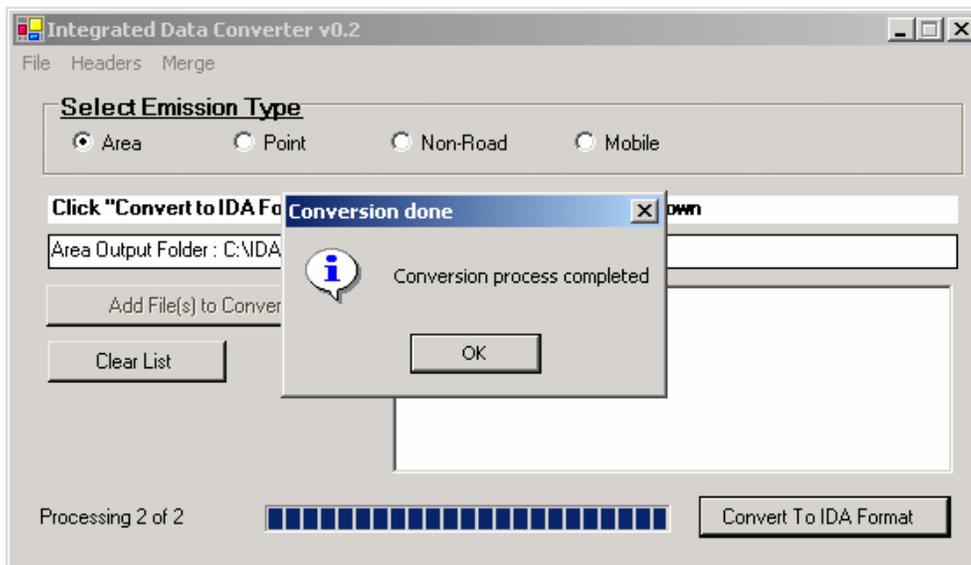
**Figure 9:** IDC main window after adding files to convert



To create the IDA files for the input files that you have selected, click the “**Convert to IDA Format**” button (b) at the lower right of the main IDC window.

Once the conversion is complete, a message box will appear that tells the user that the file has been generated, as shown in Figure 10. At this point, you will have created one IDA file for each Access NIF3.0 file that is listed in the file list on the main IDC window. These files are named as described in the next section. The next step is to merge these files together with a header, as described in Section 11.

**Figure 10:** IDC main window after converting Access® files to IDA format without headers.



## 10 What will the names be of the IDA files without headers?

The conversion step that was just described will create an IDA-formatted file without a header for each Access NIF3.0 file selected for conversion. The names of these IDA files are created as follows:

<Output Folder>\<Name of Source file>\_Area\_IDA.txt

For example, the file al99critarfina10104.mdb in the example windows shown above would be converted to an IDA file with the name:

C:\IDA Output Data\Area\al99critarfina10104.mdb\_Area\_IDA.txt

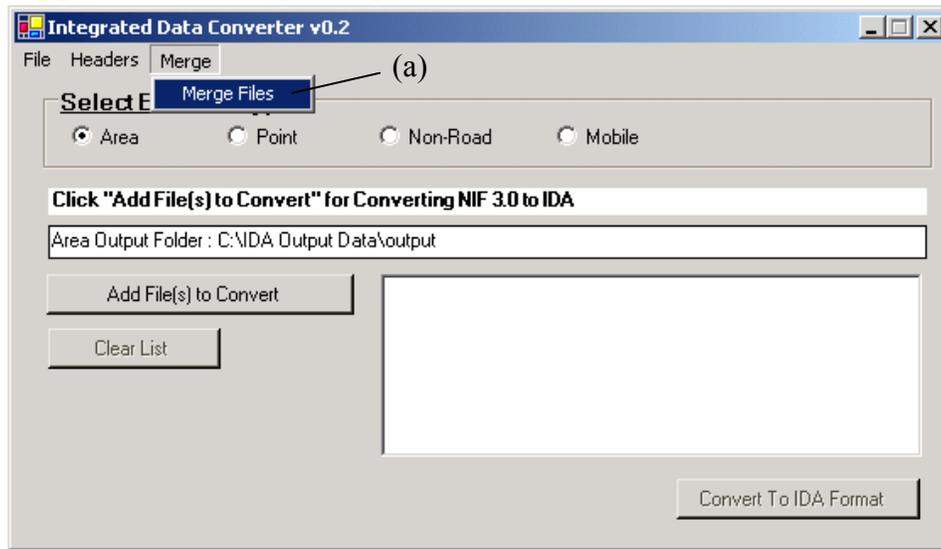
These files will be used as an input in the “Merge” step, described next.

## 11 How do I merge multiple IDA files without headers and create a final IDA file?

This step allows you to combine IDA files from multiple states or other breakdowns into a single IDA file with a header that is ready for input to SMOKE.

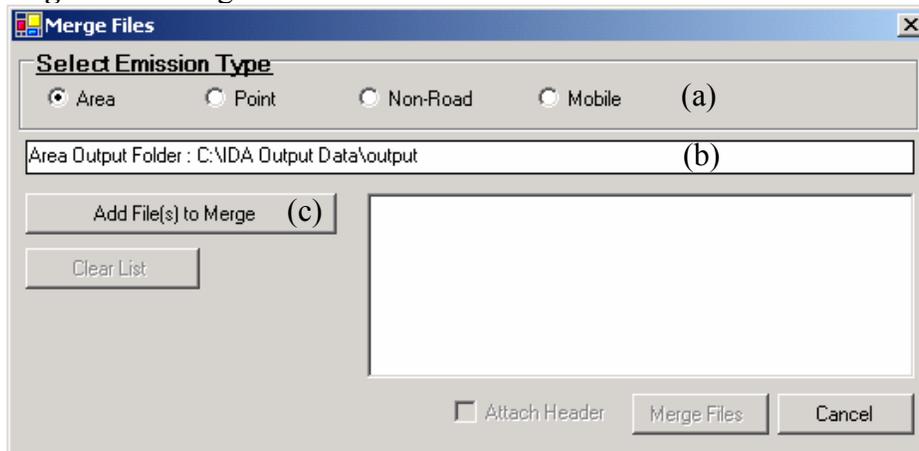
First, from the merge menu on the main IDC window, select “**Merge Files**”, as shown in item (a) of Figure 11. This will bring up the “Merge Files” window.

**Figure 11:** Selecting “Merge Files” menu item



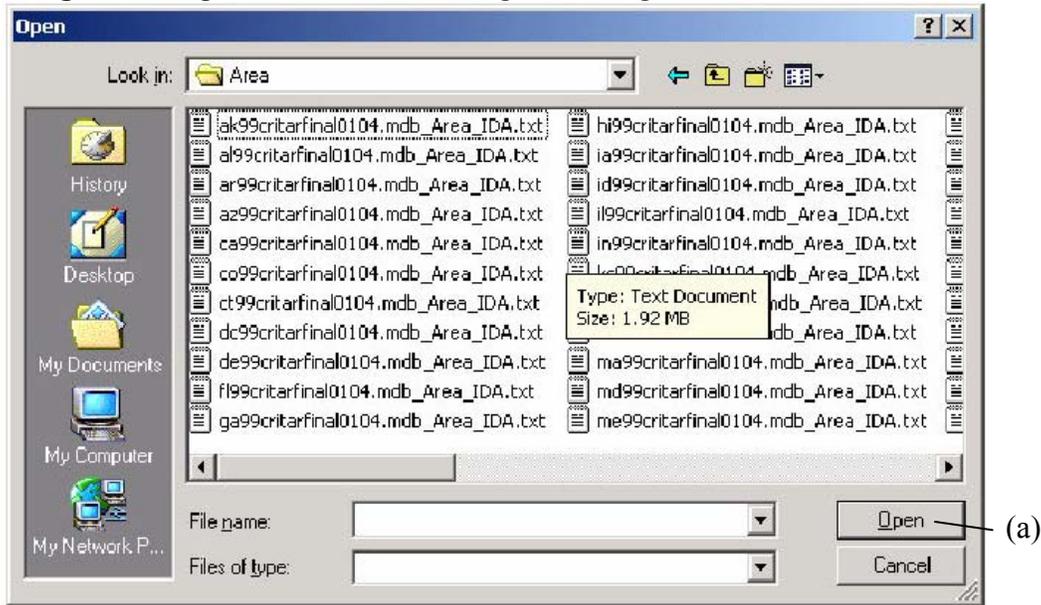
The “Merge Files” window is shown below in Figure 12. To merge your multiple IDA files (without headers), first **click the Emissions Type button (a)** in the window to select the format of the files that you are converting. This will set the output directory (b) (based on your previous settings) and determine the header that will be used in the final output file.

**Figure 12:** Merge files window



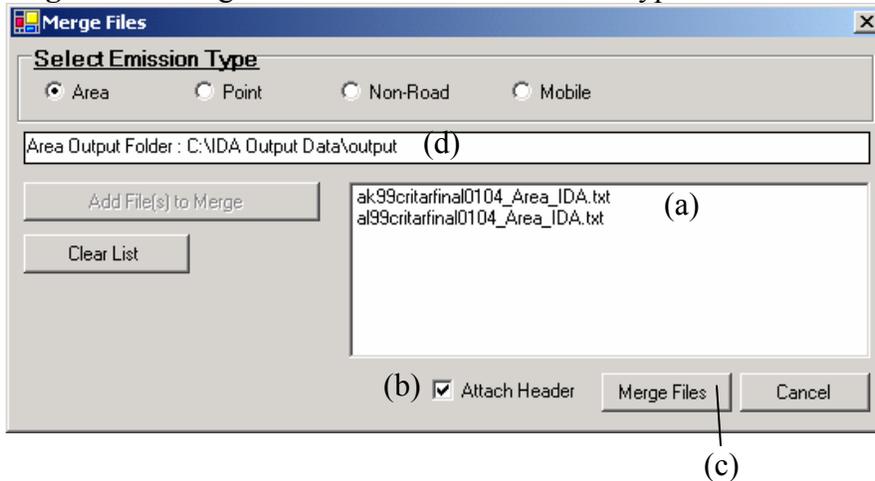
Next, **click the “Add File(s) to Merge” button (c)**, which will bring up another window called “Open,” shown in Figure 13, which will allow you to select the IDA files without headers to include in the merge process.

**Figure 13:** Open window for creating final merged file



From the “Open” dialog window, use your mouse to select all of the IDA files without headers that you are merging. The **click the “Open” button (a)** shown in Figure 12. At this point, the “Merge Files” window should display the files that you want to merge(as shown in (a) of Figure 14). Make sure that these are IDA files by looking at the file names.

**Figure 14:** Merge files window after emissions type and files



Next, click the “**Attach Header**” **checkbox (b)** at the bottom, middle of the “Merge Files” window if you want to include the header in the final output file. If you do not click the checkbox, the header will not be included in the file. There is no way to create a merged file with the IDA that has different headers for different sections.

Finally, **click the “Merge File” button (c)** to perform the merging process. A single file will be created that may included a header (if you’ve used the “Attach Header” checkbox) and will

include the concatenated information from the IDA files you selected for merging in the previous steps. The name of the final output file is shown below.

**NOTE:** When creating IDA files with PM10 and PM2.5 emissions, make sure that the header contains the names “PM10” and “PM2\_5”, which are needed to work with the SMOKE default ancillary files.

## 12 What will the names be of the final output IDA files?

The merge step that was just described will create a single IDA-formatted file for each source category. The names of the IDA files are generated as follows:

<Output Folder>\<Emissions Type Name>.MMDDYYYY.txt

where,

<Output Folder> is as defined in the merge files window, item (d) of Figure 14

<Emissions Type Name> is one of the following:

Area sources: arinv  
Point sources: ptinv  
Nonroad mobile sources: nrinv  
On-road mobile sources: mbinv

And where MMDDYYYY is the date format indicating the month (MM), day (DD), and year (YYYY) that the file was created by the converter.

For example, the file name created for the example “Merge Files” window shown in Figure 14 if the file was created on July 8<sup>th</sup>, 2003, would be:

C:\IDA Output Data\Area\arinv.07082004.txt

## 13 How do I make sure I have provided annual or daily records?

Since the IDC will convert only annual or daily records as described in Section 1 called “What are the capabilities of the IDC?,” it is important to make sure that all records that you intend to have included in the IDA file. The IDC uses the following records from NIF3.0 Access<sup>®</sup> Files:

Annual records are defined as those records with a start date of January 1<sup>st</sup> and an end date of December 31<sup>st</sup>.

Daily records are defined as records with Emission Type in the NIF3.0 Emissions Table set to 29 (for average-daily). If there are multiple records of this type for the same source/pollutant, the converter uses the emissions from the earliest start date in the file. This means that the converter cannot be used to separate out multiple average-day values from a single NIF3.0 file. If you want to use average-daily records from a NIF3.0 file, you must create separate NIF3.0 files that include only one average-daily record for each period of interest. For example, if you had

average-daily emissions for each month, you'd need to create a separate set of NIF3.0 files for each month prior to using the converter.

#### **14 Where do I get help using this converter?**

For Questions, please contact Virginia Department of Environmental Quality OIS Helpdesk at 804-698-4100. Alternatively, you can contact the program developer, Sam Qaiser at 804-698-4587 or by e-mail at [sqaiser@deq.state.va.us](mailto:sqaiser@deq.state.va.us).