A New Database Program for Creating Area Source Inventories

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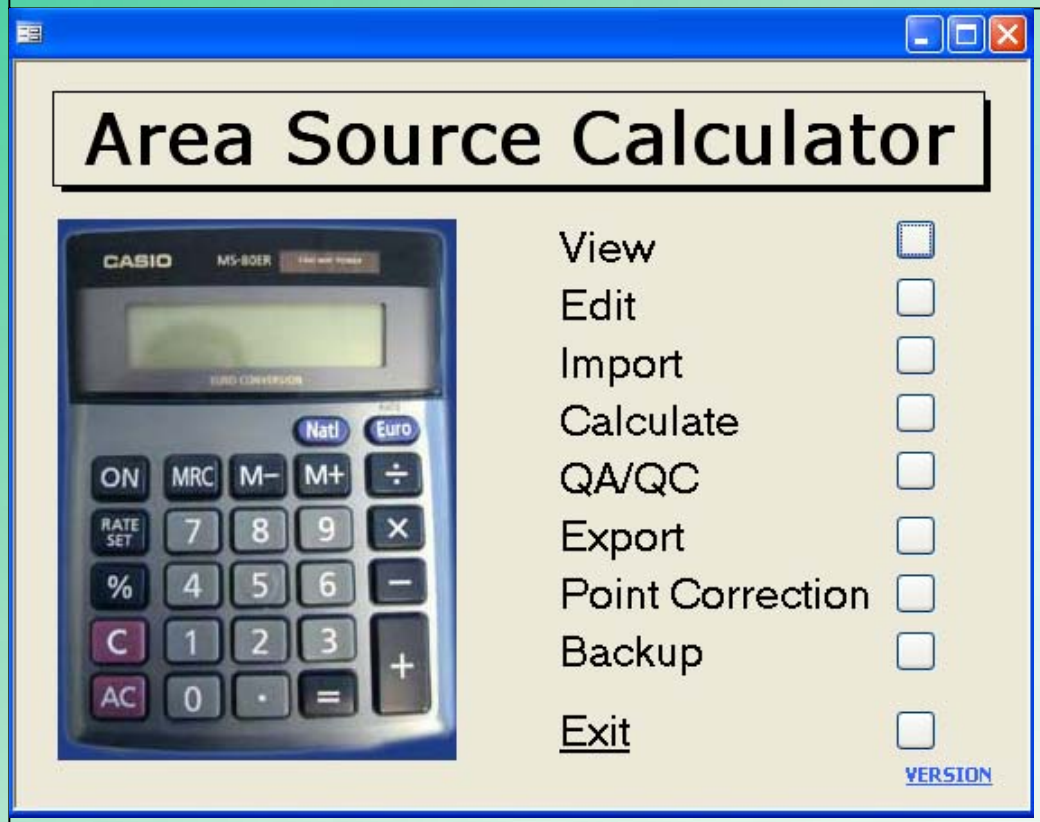
May 15th, 2007

Area Source Calculator



- Prepare fast/efficient NIF Area/Nonpoint Emission Inventories
- Minimize repetitive steps by automation
- Consistency
- Multi-Year inventories
- Better use of State resources
- An experiment of a working inventory tool using commercially available software

Motivation – Data Management

- Manually Intensive
  - Microsoft Excel
- Time Consuming
  - Ohio Inventory > 70,000 records
- Tradeoff
  - Management vs. Quality/Quantity

Motivation – Existing Programs

- Few area inventory tools on the market
- Large learning curve
- Limited State budget
- Expensive to modify and maintain
- Not meeting State needs

Motivation - Experimentation

- 'Pilot' Scale
  - A tool based on a simple inventory methodology designed by the State
- Low-Risk
  - Inexpensive
  - Utilize State resources
  - Control development time
- Upgradeable
  - Easily adaptable to new inventory requirements
  - Enhance menu options and other tool features (QA/QC, etc)
- Incorporate it into a suite of similar applications
  - Aircraft Emissions Calculator
  - Mobile Emissions Calculator
  - Point Source Tool, etc

Methodology - Parameters

- Create emission records based on:
  - Source Classification Code (SCC) (Who?)
  - Pollutant of interest (What?)
  - Ohio County (Where?)
  - Year of Inventory (When?)

Methodology - Estimation

- Controlled

CEM = A x EF x (1-CE x RP x RE)

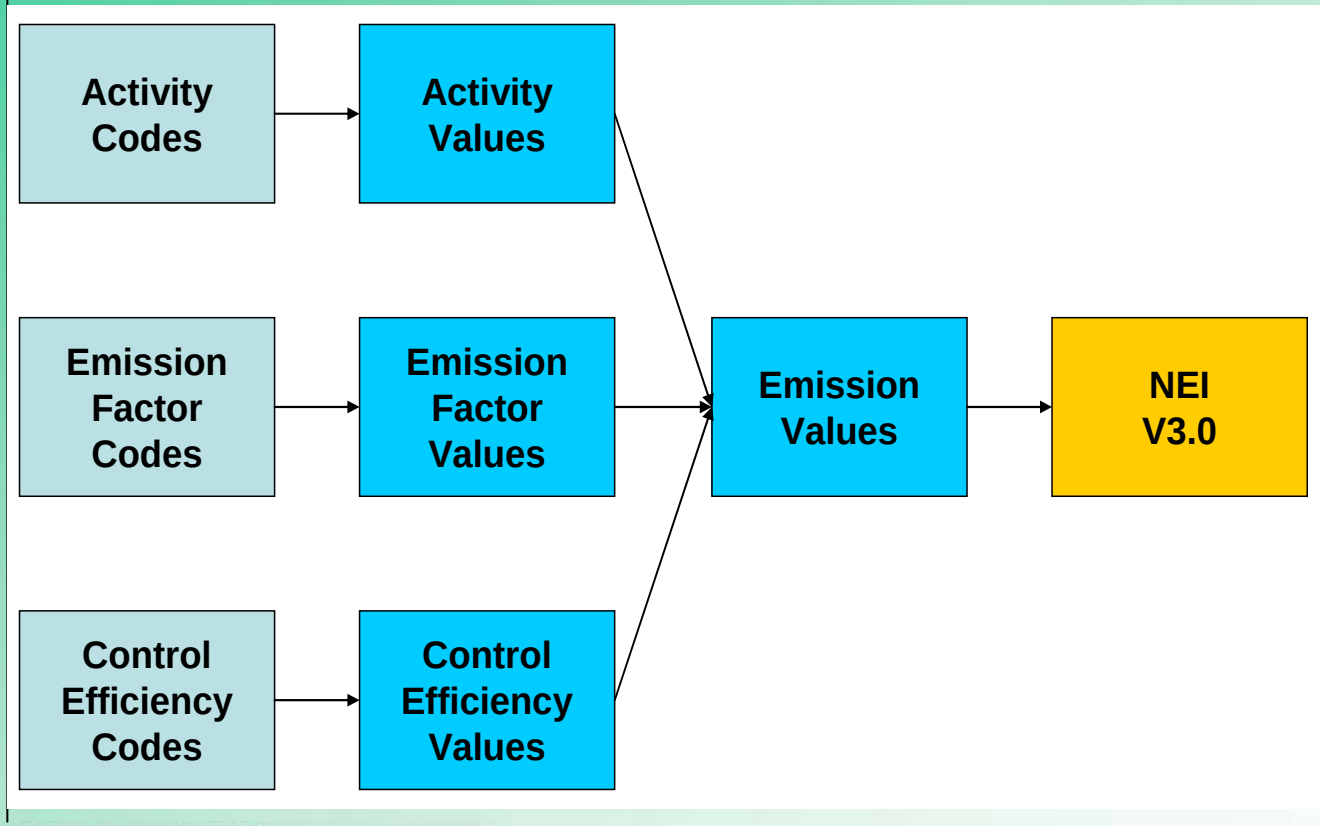
CEM = Controlled Emission Value
A = Activity
EF = Emission Factor
CE = Control Efficiency
RP = Rule Penetration
RE = Rule Effectiveness

- Uncontrolled

UEM = A x EF

UEM = Uncontrolled Emission Value
A = Activity
EF = Emission Factor

Methodology – Flow Chart



- Activity
- Emission Factor
- Control Efficiency

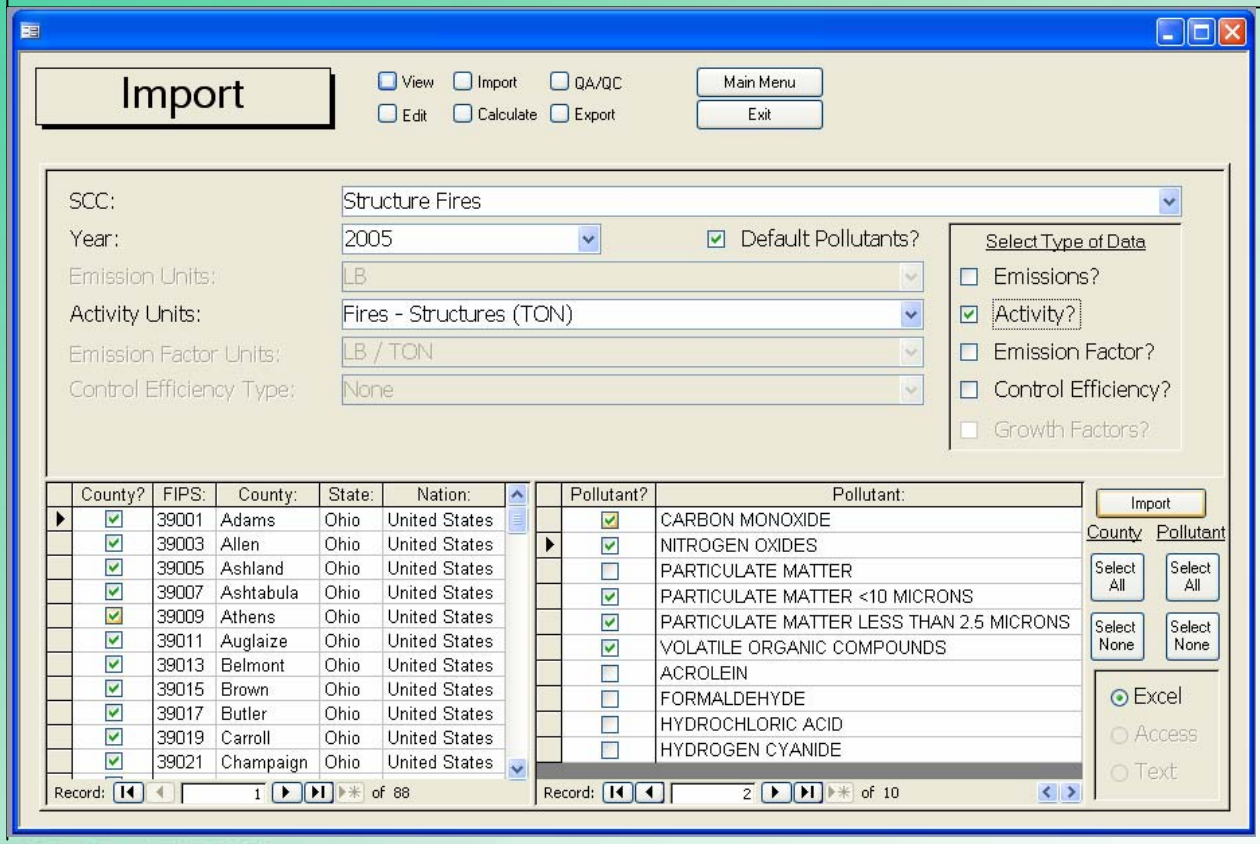
- Emission

Functions

Importance

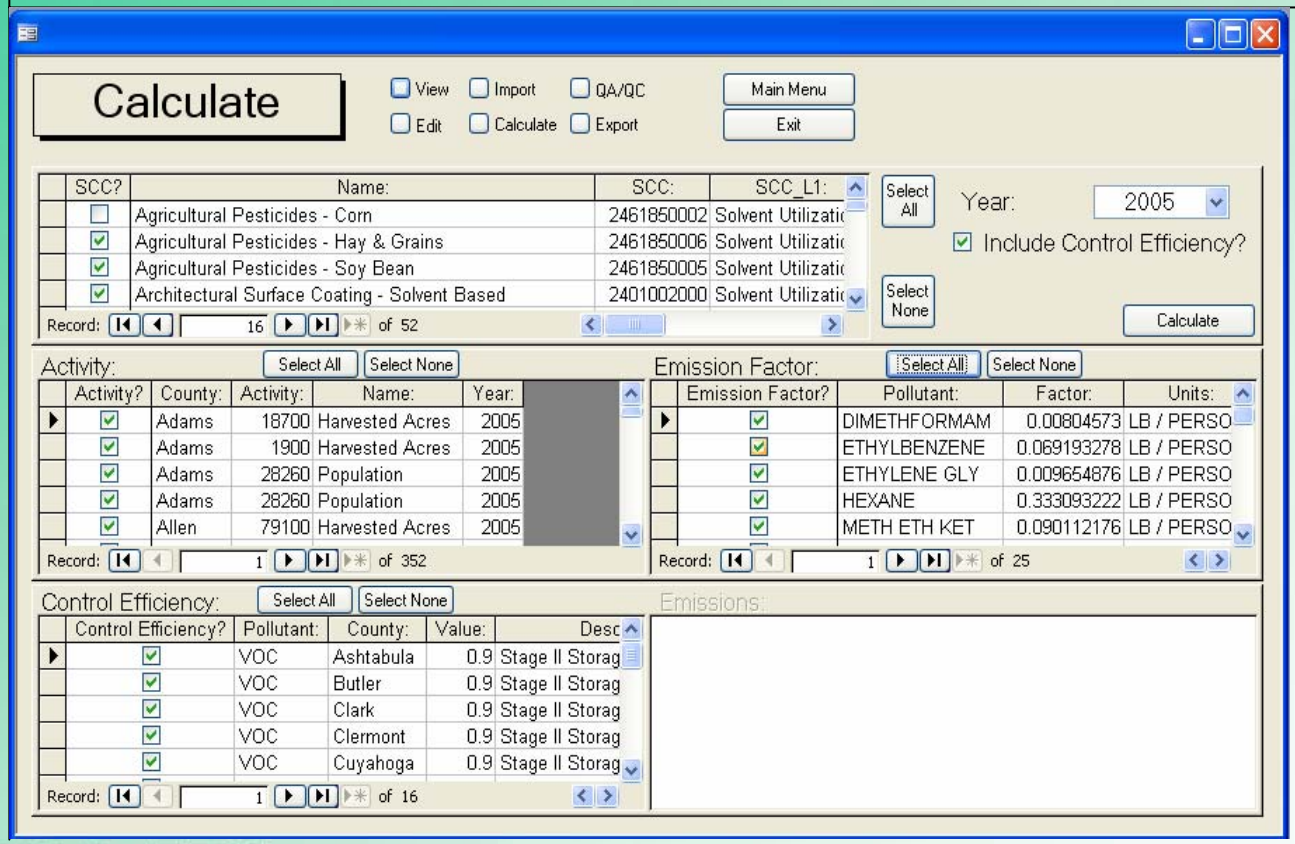
- Primary
  - Import
  - Calculate
  - Export
- Secondary
  - View
  - Edit
- Tertiary
  - QA/QC
  - Point Source Correction
  - Inventory Back Up

Primary - Import



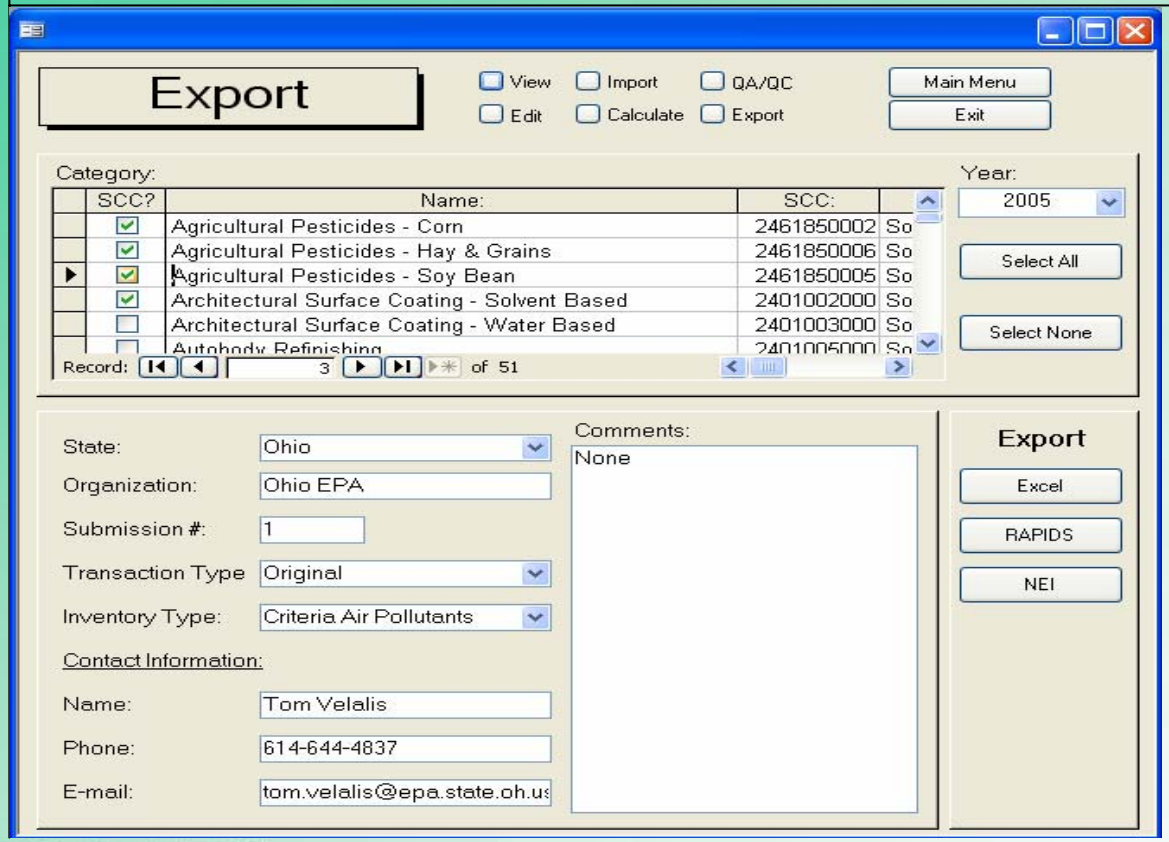
- **Import**
  - Emission
  - Activity
  - Emission Factor
  - Control Efficiency
- **By**
  - SCC
  - Pollutant
  - County
  - Year

Primary - Calculate



- **Calculate**
  - Controlled
  - Uncontrolled
- **By**
  - SCC
  - Year
  - Activity
  - Emission Factor
  - Control Efficiency

Primary - Export



- **Export**
  - Emission
- **By**
  - SCC
  - Year
- **To**
  - Microsoft Excel
  - NIF V3.0
  - RAPIDS V2.4.1

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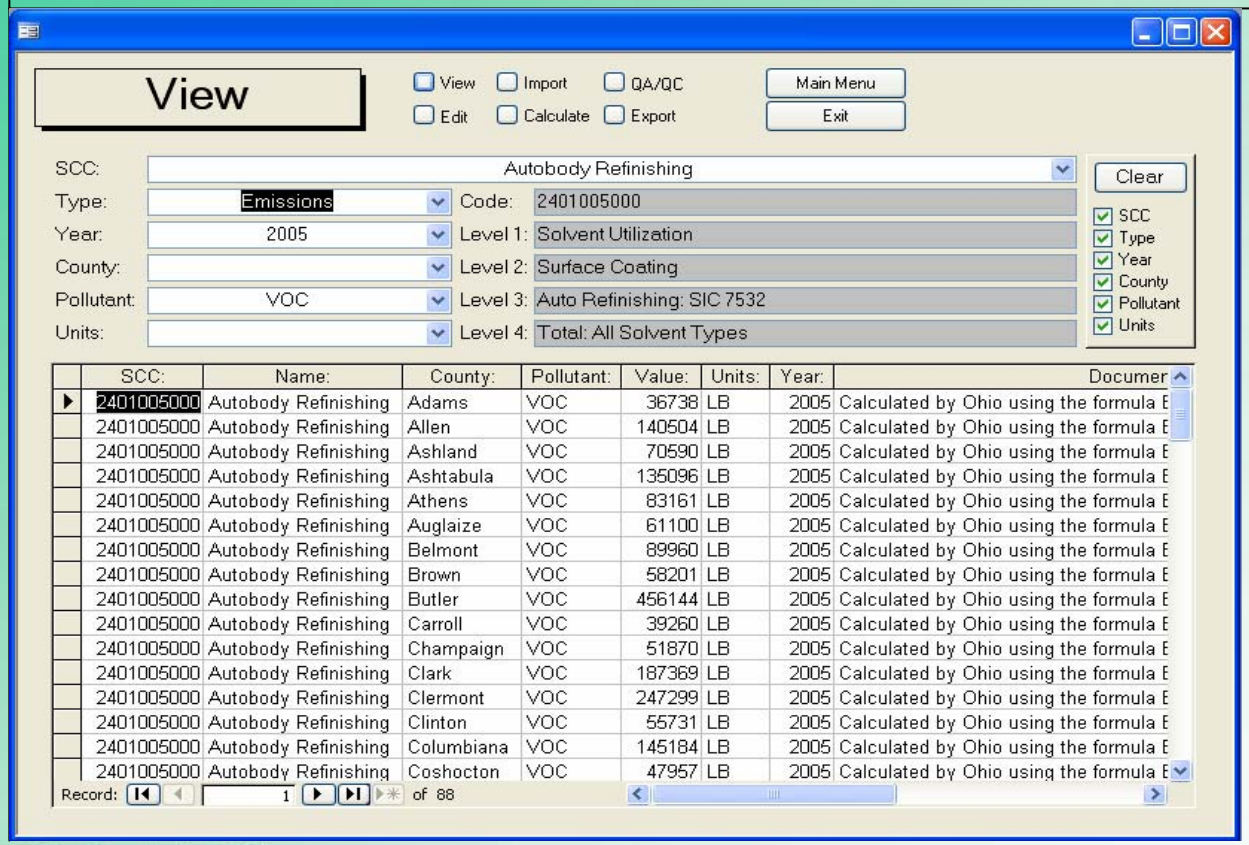
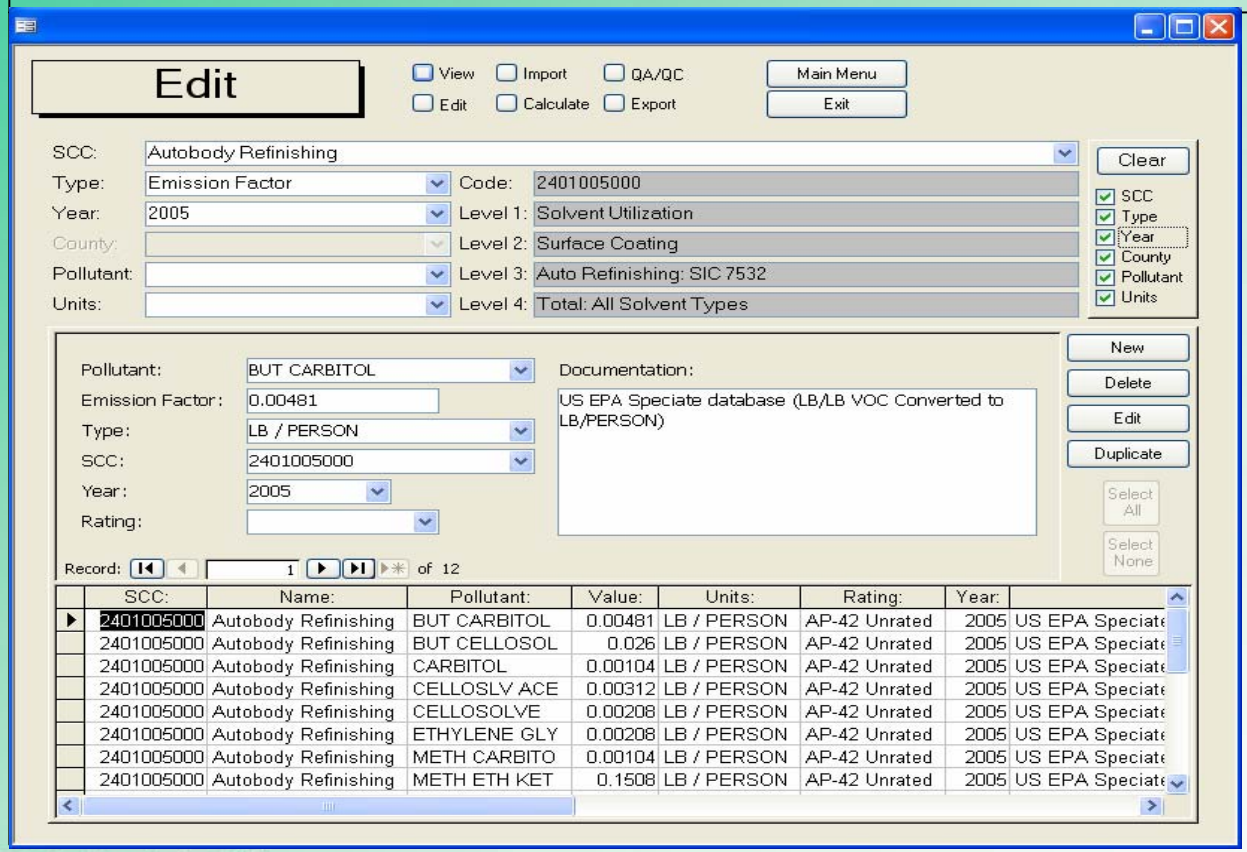
Secondary - View



- **View**
  - Emission
  - Activity
  - Emission Factor
  - Control Efficiency
- **By**
  - SCC
  - Year
  - County
  - Pollutant
  - Units

Secondary - Edit



- **Modify**
  - Emission
  - Activity
  - Emission Factor
  - Control Efficiency
- **By**
  - New
  - Delete
  - Edit
  - Duplicate

Tertiary

- Quality Assurance/Quality Check (QA/QC)
  - Provide basic inspection
  - Minimize overlap with other programs
    - NIF 3.1 Basic Format and Content Checker
- Point Source Correction
  - Reduce instances of Point/Area source double counting
- Inventory Back Up

New Inventory

- Import new Activity (Import)
- Duplicate Emission Factor (Edit)
- Calculate Emissions (Calculate)
- Export to NIF V3.0 (Export)

Conclusions

- Advantages
  - Automation of some repetitive tasks
  - Easier management of data
  - Simple estimation method
  - Compatible with NIF V3.0
  - Low-risk experimentation of inventory concepts
  - “Source Category-Specific” Analysis

Conclusions

- Disadvantages
  - Limited to Area/Nonpoint inventories
  - Still requires some manual calculation of activities
  - May not encompass all inventoried SCC's
  - Size limitation: 1GB (imposed by Microsoft Access 2003)
  - Not a web application yet

Questions?

Thank You!

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