Greetings from North Carolina DAQ (JS)

"Benefits, Trials and Tribulations of Building an Emission Inventory Point Source Inventory Software Integrated With Permits and Compliance Needs"

James H. Southerland, A. Hall, H. Hawkins, S. Macieira, T. Manning, S. Moser, T. Sabetti; C. Walker & J. Sheppard
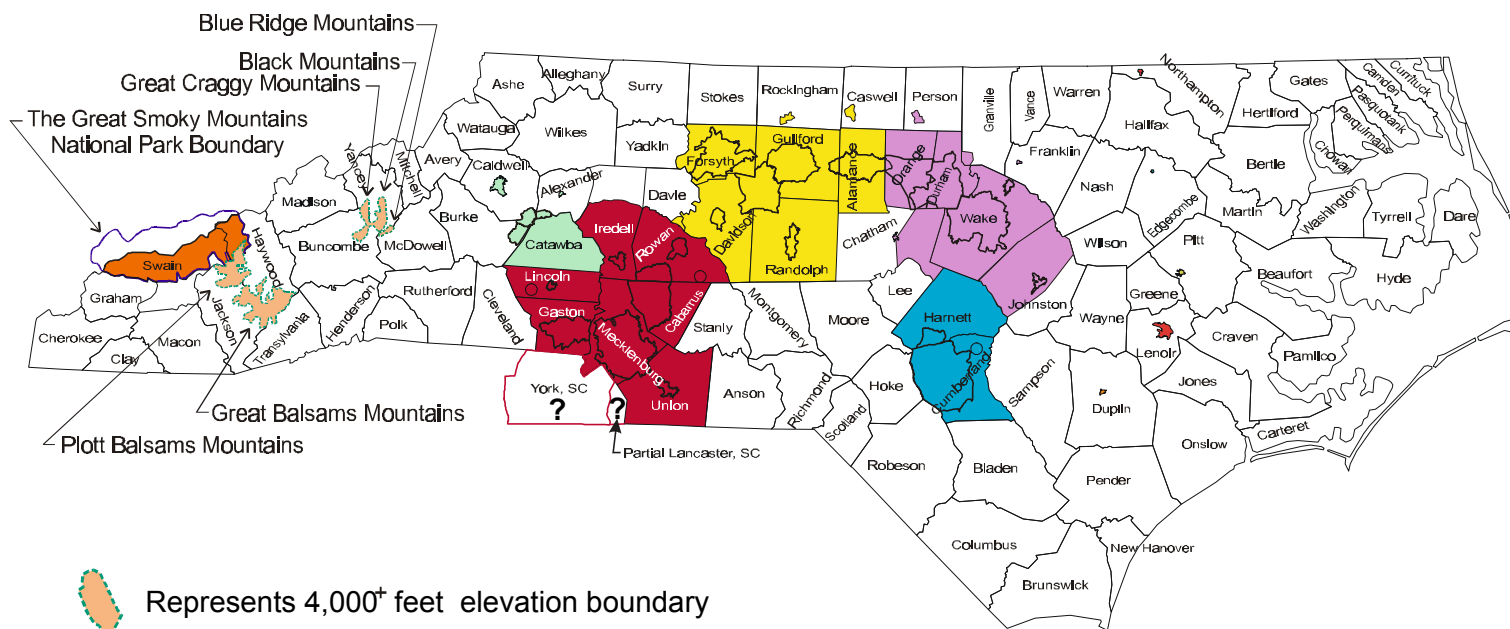
"The EIUG is With You"

North Carolina Division of Air Quality

Department of Environment and Natural Resources

Raleigh, NC 27699-1641

Background

➤ NC's is basically a permit-oriented program

➤ NC DAQ has had an inventory and permit program for many years (30+)

➤ TV Required some major program revamping

➤ NC has previously been Ozone non-attainment but now classified as in attainment

➤ <u>NOW</u> - will soon be in the process of <u>potentially</u> almost half of state's counties (100 total) being in non-attainment for Ozone and/or PM2.5

Map 1
North Carolina's Recommendations
to US-EPA on 8-hour Ozone Nonattainment
Designations Consistent with Adoption and Implementation
of the Governor's Clean Air Plan

N

Blue Ridge Mountains
Black Mountains
Great Craggy Mountains
The Great Smoky Mountains National Park Boundary
Great Balsams Mountains
Plott Balsams Mountains

York, SC ?
? Partial Lancaster, SC

Represents 4,000$^+$ feet elevation boundary

Reductions in emissions will be required in areas as needed, even in areas not designated nonattainment, as part of the Governor's Clean Air Plan and as allowed by State Statutes.

Not To Scale
8-hrOZnonATT
06/29/00bn

Background-Continued

- **NC Division of Air Quality**
  - ~>3174$\underline{+}$ Permitted Point Sources
    - ~ 410$\underline{+}$ are TV- require <u>annual</u> inventory of '<u>actuals</u>'- used for permit fee calculation each year
    - ~ 644$\underline{+}$ are Synthetic Minors
    - ~ 2100$\underline{+}$ are Smalls
    - ~< 500 meet requirement for CERR action/reporting
  - Survey and Data Entry by 7 Regional Offices
    - Total Staff in NC DAQ < 275 (EI involves maybe 25 "parts")
    - No Separate EI Group/Branch (But a State-wide Coordinator)
    - EI Work integrated w/inspections, permits, etc.

EPA's New Combined Emissions Reporting Rule (CERR-2002) for NC

Pollutant	Type A (tpy)	#/% of NC Emissions	Type B (tpy)	#/% of NC Emissions
SOx	2500	21/94	100	80/99.4
VOC (moderate)	250	79/65	100	169/88
NOx	2500	18/83	100	75/97
CO	2500	7/58	1000	17/75
Pb	-	-	5	0
PM-10	250	23/78	100	38/85
PM-2.5	250	12/83	100	20/91
NH^3	250	2/58	100	4/78

Background- Continued

- EI System Used Previously:
  - Not Custom to NC EI "Business Rules"
  - Proprietary - changes not always possible
    - Short term response not acceptable
    - Within "reasonable" costs
    - At all (other users elsewhere w/different needs)
  - Multiple manual coding efforts required

Major Objectives in Project **Scope**

- Centralized Functionality: integrate with IMPAQ Emission Source, Fees, Facilities, Permits and other modules

- Improve functionality of inventory: data integrity, data requirements, system access, ease & efficiency, eliminate problems with current system

- Make the facility model used compatible with future automated permit application formats and review process

- Make accessible on Web and allow potential addition of three Local Counties data

Emission Inventory User Group (EIUG)

- Working under auspices of IT Steering Committee Reporting Monthly

- Authorized to challenge the sanctity of many existing business practices

- Identify where functionality might be lost and report it to the IT Steering Committee

- Eventually encompass mobile & area sources as well as other integrated components of inventory and NC's program

- Dependent upon strong management support

Major Deliverables

- Revised/new EI data module
  - Ability to easily interface with other Department and Division databases and systems
  - Minimize, if not eliminate, double entry
  - Capability for facility staff to update and provide new information, efficiently
  - Ability to track mailing, notification, receipt and other status and physical requirements

Major Deliverables (cont'd)

- Auto-generation of pre-filled detailed web-based and other emission inventory input formats for direct completion by facilities

- Report generation capabilities that are simple and easy to use and serve the purpose

- Allow central office, regions and public read-only access to statewide EI information

EIUG Work History

- Emission Inventory User Group
  - No Centralized EI Organization (beyond Coordinator & Data Requests function)
  - 7-10 Members over 30 months
  - Meeting (9 am-3 pm) 1 to 4 times per month
  - Total of ~ 60 meet days or >5000 person hours
  - Probably 1-2 hours per day, per person, beyond meetings

Benefits of Interconnected Modules/Programs

- Consistent definitions across organization
- Standardizes terms and definitions for minimum of unique data elements
- Forces each part of organization to think of each other part
- Promotes ultimate efficiencies
- Accommodates/provides a single face/data set in eye of facility customer

Example of "Merger" Benefits

- **Reminder Letter:** SM & Smalls are now sent one letter – reminder of permit renewal and notification of EI requirement.

- **Locations – Coordinates**: only one set and they have much higher quality control.

- **Uniformity:** Emission Sources, Control Devices and Related Descriptions, benefits both facility and DAQ.

Problems/Solutions

- **Communication and Cooperation**
  - Remember to check for same data element already defined someplace else. Be ready to understand what other folks do (and why) that may be similar or sound similar to what the EI does and to work out differences to common good

- **NIF**
  - Most all NIF was also needed for in-house purposes
  - NIF was base standard – If "mandatory" provide
  - If "necessary" <u>usually</u> provide as if mandatory
  - Flexibilities - if Permit & Facility call for longer field, provide with a NC cross-reference table at export

Problems/Solutions

- **Pollutant List**
  - Old system had "hoards" of <u>wrong choices</u>: errors in data entry and data reporting
  - Lists now "tuned" to CAA: criteria pollutant terminologies now standardized, HAP definitions exact from CAA, Groups or "families" of HAP compounds now defined and handled much more logically and clearly (system tool)
  - State Toxic Air Pollutants (TAPs): supplemental to HAPs w/overlap, some definition differences

Problems/Solutions

- **Control Device Codes**
  - Familiar/useful to neither the Permit nor Facility communities, but necessary for NIF, for Modeling, etc.
  - Tables (pull downs) devised internally: Simplified table list, sub-divided and organized according to removal or control mechanism, selected at time of permit entry (into sister module)

- **Control Devices "in Parallel"**
  - Many "screwy" real-world situations to be represented (e.g. woodworking operations)
  - One of few partings with permit representation
  - Need to be flexible & consistent on how entered into system: from emission source to ERP or ERP to emission source

Problems/Solutions

- **Source Classification Codes**
  - Useful only/mostly to NIF & modelers
    - Deleted non-NC source types from list, and reorganized into AP-42 Chapter bins
    - Transformed to 4-level pull-down hierarchical table, and decoupled from emission units to maximum degree
    - Completed by EI staff at time of data coding and/or review

Remaining Issues - examples

- **Pre-Fill Data Entry**
  - Must have sources & devices in system to enter emissions – either spread out in year before entry or during entry process.

- **Malfunctions, Start-ups and Shutdowns**
  - Rules exclude from TV fees
  - May be significant in model
  - Other compliance reports, but not quantitative

- **"Insignificant" Sources**
  - Defined in Permit; used by inspectors; needed in EI for bookkeeping integrity and perhaps emissions at times
  - Can be time consuming

Summary

- It is a lot of hard work!

- It will never be done – always in need of updates and modifications

- It requires a lot of cooperation, imagination and, at times, bending of sharp corners to pound square pegs into round holes

- It will make data entry much easier after first round is complete

- It will improve the ease of use and integrity of the information available

Facility Id	6300069	Facility Name	Homes by Oakwood Inc Plant #3 ** INACTIVE **	Inv Year	2001
Source/s Id	PB-1	Operating Scenario	Surface Coating Application – General		

*Operating Scenario Description **Wall building station - adhesive operation**

Actual Annual Throughput: **45.45** Numerator **TONS** /Yr

Normal Operating Schedule:

*Hours Per Day **8**	*Days per Week **5**	*Weeks per Year **50**	Hours per Year **2000**

Percentage Annual Throughput for this Operating Scenario during months of:

*Dec-Feb **15**	*Mar-May **30**	*June-Aug **30**	*Sept-Nov **25**

*Start Date **Jan** **01** **2001**   *End Date **Dec** **31** **2001**

Typical Start & End Times for Operating Scenario   *Start: **0000**   *End: **2359**

Release Point Id	Description	%thru Release Point from this operating scenario
STACK1	manufacturing building	100

Emissions for this Operating Scenario Only

Pollutant Criteria Pollutants	Actual Emissions Tons/year	CAS # or Symbol	Estimation Method
CO	0	CO	03. . MATERIAL BALANCE
NOx	0	NOx	03. . MATERIAL BALANCE
PM(TSP)	0	TSP	03. . MATERIAL BALANCE
PM10	0	PM10	03. . MATERIAL BALANCE
PM2.5	0	PM2.5	03. . MATERIAL BALANCE
SO2	0	SO2	03. . MATERIAL BALANCE
VOC (Meeting Federal Definition as photochemically reactive)	10.30	VOC	03. . MATERIAL BALANCE

HAPs/TAPs-Including Billable HAPs	Pounds/year	CAS # or Symbol	Estimation Method
○ Hexane, n-	7227	110-54-3	03. . MATERIAL BALANCE
○ Methyl ethyl ketone	974	78-93-3	03. . MATERIAL BALANCE
○ Toluene	10488	108-88-3	03. . MATERIAL BALANCE

Help   Logoff

Done   Internet

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   Media   History   Print   Mail

Links   Customize Links   RealPlayer

Address   http://aqdev02.aq.ehnr.state.nc.us/index.jsp   Go

North Carolina Department of Environment and Natural Resources

Division of Air Quality

Logon to AERO

User ID

Personal Identification Number(PIN)

Logon   Cancel   Reset

Enter User ID and PIN

System Requirements

AERO is a means for facilities to obtain their facility-specific emission inventory forms in pdf format. A copy of the free Acrobat Reader software must be installed on the computer used to print the pdf files.
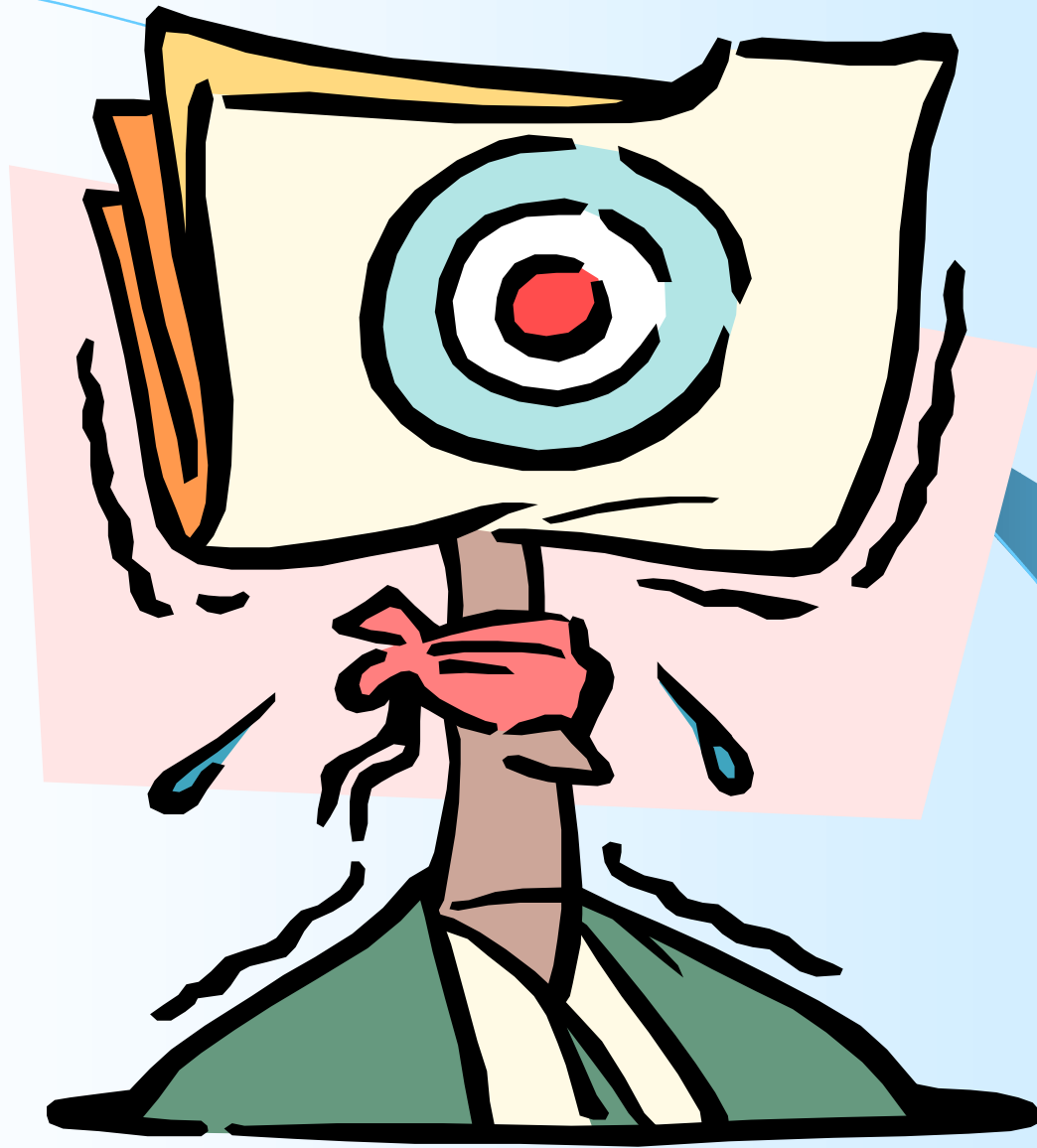
AERO is also the portal through which those Title V facilities participating on the AERO on-line beta test (for CY 2002 inventories) may access their (CY 2001) data and revise them, or by which Small and Synthetic Minor permitted facilities may access for initial data entry.

Entry to the On-Line update option for familiarization or testing will not commit the user to use of that option for final filling. Facilities should have received a letter of notification containing the unique Personal Identification Number (PIN). Only representatives of the facility with this authorized identification are allowed access to these forms.

Feedback   NCDENR   Top of Page

Done   Internet

Any Questions?!?!?

Come See NC!