

# Air Emissions Inventory Reporting – Industry Perspective

**David S. Greene, PE**

Evergreen Packaging

Canton, North Carolina



**Blue Ridge Paper Products Inc.**  
**Canton Mill**

# Air Emissions Inventory

What is it & why is it important to an Industrial facility?

# What is it & Why is it important?

In addition to what you've already heard, an AEI can also be described as:

- A legal requirement
  - A significant expense (for Title V facilities)
  - Public Disclosure
- 
- 3 “Touchy” Topics (*law, \$, & public perception*)

***Environmental Accounting***

# What is it?

A practical, minimalist definition:

An estimate of air pollution your facility emitted over the past year (*certified by the responsible official*)

# How to produce an AEI

- How to measure
- How to QC
- How to ensure management awareness
- How to complete clerical/administrative

details

# A word of caution: AElS can vary

Depending on permit requirements, differences can exist between facilities due to differences in:

- Reporting Frequency
- Complexity
- Regulatory Authority
- Corporate Structure

# How to Measure

The Twin Pillars :

- Production Data
- Emission Factors

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Typically:

(Production Data) x (Emissions Factor) =  
Emissions

*NOTE: For simplicity, ignoring control efficiency factor for now  
(could be viewed as  $E_A \times EF \times (1 - EF/100)$ )*

# The Twin Pillars:

## (Production Data) x (Emissions Factor)

Production Data expressed as process or machine throughput – e.g., gallons, tons, hours, etc.

- Start Early (*Tired, but useful cliché #1*)
- Understand production process (*Tired, but useful cliché #2*)
- Accounting Department is your friend (*as are other depts.*)

• ~~Keep track of units (Engr 101)~~

# The Twin Pillars:

(Production Data) x (Emissions Factor)

EPA definition:

*“An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.”*

Note the words “representative” & “attempts”

# The Twin Pillars:

(Production Data) x (Emissions Factor)

- Where do you find emission factors?
  - Actual emissions measurement (CEMs)
  - Site Specific Stack Tests
  - Industry Standards
  - EPA AP-42
  - Other methods:
    - Mass/Material Balance approach may also be appropriate & effective for some sources
    - Fuel Analysis
    - Software for emissions modeling (e.g., TANKS)
    - Best Engineering Judgment

General Data Quality ↑

# The Twin Pillars:

(Production Data) x (Emissions Factor)

- Be Careful
  - Keep in Mind: Hierarchy of Data Quality
    - *Data Quality & AP-42*
      - e. g., “D” Rating: ...small number of facilities...may ... not represent a random sample of the industry. There also may be evidence of variability within the source population”
    - Keep track of units (*Engr 101*)

# Emissions Calculation

## Simple Example:

NOx emissions from an uncontrolled tangentially-fired Natural Gas boiler

- **Production Data:** Gas usage: 20,000,000 SCF
- **Emission Factor:** 170 lbs NOX/ 10<sup>6</sup> SCF (AP-42 Emission Factor Quality Rating “A”)
- **Emissions:**

$$(20e6 \text{ SCF}) \times (170 \text{ lbs}/10^6 \text{ SCF}) = 3,400 \text{ lbs NOX emitted}$$

# More Than Production Data & Emission Factors: Other Necessary Data

- Physical Data: Release Points, Flow, Temp, Control Efficiency, etc.
- Machine Data: Changes to machines that would affect emissions (probably know that beforehand)
- Cleaning solvents
- Handling upset conditions (e.g., venting)
- Ensure AEI matches permit info
- Compare to applicable modeling

# How to QA/QC?

- Completeness (Use a checklist)
- Reality Check
- Data Validity
- “Peer Review”
- Comparison to Past Inventories/Others of similar industry
- Reasonable people can disagree

# How to QA/QC?

- SARA/CERCLA RQ - Federally Regulated Continuous Release?
- TEPR Check
- 3<sup>rd</sup> Party Use – “It’s Public Information”
- NEI / Residual Risk Studies
- Regional Haze Rule Development
- Attainment Modeling



# Additional

- How to ensure management awareness / “buy-in”
- How to complete clerical/administrative details

# Preparing for Submittal

- Deadlines
- Management awareness & signature
- Prepare/Budget for \$\$\$\$ to come
- Don't underestimate the administrative details  
(*Tired, but useful cliché #3*)

# Greenhouse Gas Emissions & Inventories

- Additional gases to report
- Required in 2009 (CY2008) for NC
- Know:
  - Your state's protocol
  - Your Corporate protocol

# Make Them Work For You

Turn an emissions inventory into a valuable corporate resource for environmental info – not just “another thing that has to happen”

# Make Them Work For You (con't)

- Go “Beyond Compliance”
- View as part of a larger environmental database  
(air, water, solid waste, energy, etc.)
- Use to identify business opportunities  
(Areas to Address, Key Performance Indicators, absolute vs normalized, etc.)

# Make Them Work For You (con't)

- TRI (air and/or fugitives)
- Support for GHG credit opportunities & option development
- Tool to monitor & drive environmental progress internally
- Tool to demonstrate environmental progress

# General Tips

- Don't make it hard on yourself:
  - *Start Early (Return of the Tired, but useful cliché #1)*
  - *Solicit help from others (teamwork)*
  - *Mine historical submittals*
  - *Know your exclusions*
  - *Use effective data management software*
- Avoid a crisis when you can:
  - *Calculate annually even if you don't have to submit an*
  - *Know the "clerical/admin stuff"*
- Don't waste your future time:
  - *Document for easy reference in future*
  - *Track facility changes as they occur*
- Make the most of your efforts:
  - *Think of ways to make your AEI useful to you*

