

# New National Ambient Air Quality Standards

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# Outline

- What Are NAAQS?
- How Do They Affect Me?
- What Can CIBO Do?

# Basic NAAQS Facts

- Clean Air Act Requires EPA to Set **National Ambient Air Quality Standards (NAAQS)**, 40 CFR Part 50
- Protective of Human Health and Welfare, Including Sensitive Populations
- Air Pollutants with Health and Welfare “Criteria” are Called Criteria Air Pollutants
- Requires EPA to Determine which Areas of the US Attain, or do Not Attain the Standards (“Attainment Areas” or “Non-Attainment Areas”)
- EPA & States Must **Prevent Significant Deterioration** of Areas that Already Attain NAAQS (i.e. **PSD** Program)
- EPA & States Must Bring Areas of Non-attainment into Attainment (i.e. Non-attainment New Source Review and **State Implementation Plans – SIP’s**)
- EPA is Required to Revisit NAAQS Every Five Years

# NAAQS to the Max!

- Fine Particulate (PM<sub>2.5</sub>) 35 µg/m<sup>3</sup> 24-hr - 1997
- 1-hr Sulfur Dioxide (SO<sub>2</sub>), 75 ppb (= 196 µg/m<sup>3</sup>) – 2/9/2010
- 1-hr Nitrogen Dioxide(NO<sub>2</sub>), 100 ppb (= 188 µg/m<sup>3</sup>) – 6/22/2010
- More Stringent Ozone (O<sub>3</sub>) – (60-70 ppb) - next week!!!!
- CO - 2011
- Even More Stringent PM<sub>2.5</sub> - (11-13 µg/m<sup>3</sup>) by October 2011

# New NAAQS Lack;

- **NAAQS Levels Set VERY Low**
  - Historical Modeling Tools and Policies Too Crude for Needed Precision
  - Modeling Predicts Thousands of Existing Violations Where None Are Observed
  - EPA - Increased Reliance on Dispersion Models to Define Attainment
- **Monitored Background Data Lacking**
  - 3+ Years to Site Monitors, Collect Data
  - Example – Model Predicted 1,000  $\mu\text{g}/\text{m}^3$ ; Monitor Never Exceeded 100  $\mu\text{g}/\text{m}^3$ !
- **Significant Impact Levels (SIL's) Set Too Low**
  - 4% of an Already Very Low NAAQS No Longer Practical
  - Even Trivial Sources' Impacts Exceed SIL's
  - Huge Cumulative Modeling Domain
  - Only Impacting an Existing Modeled Exceedance by 4% Will Preclude New Permit
  - Contributing 4% to Someone Else's Problem is Now Your Problem
- **Sooner or later, You Will Be Modeled!**

# Impractically Low SIL's

- SIL's Drive Air Dispersion Modeling Demonstrations
  - 24-hr PM<sub>2.5</sub> – NAAQS is 35 µg/m<sup>3</sup>, **SIL 1.2 µg/m<sup>3</sup>**
  - 1-hr NO<sub>2</sub> – NAAQS is 188 µg/m<sup>3</sup>, **SIL 7.5 µg/m<sup>3</sup>**
  - 1-hr SO<sub>2</sub> – NAAQS is 196 µg/m<sup>3</sup>, **SIL 8 µg/m<sup>3</sup>**
- Traditional Modeling Tools, Guidelines and Practices Too Clumsy for Modeling Single Digit NAAQS Thresholds

## ***“The Intolerable NAAQS”*** © 2010

George greets his friend Patrick who has just stepped outside a restaurant to get some fresh air.

“Patrick, you old thorn-in-the-side!”, cries George, “Let’s do lunch!”

Patrick yells back – “These new rules are just unworkable - even Jo’s restaurant doesn’t comply!”

George coughs (“damn frosty morning”) and hurries on his way to an important meeting at the Capitol.

**Slide 7**

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**RJP2**

This slide could be dropped. This section does not have the impact of the aliens version for MACT.

PaineB, 10/13/2010



# *Josiah Chowning's Tavern*

## Patrick's Inputs to the Air Dispersion Model



Two Fireplaces, One Armload of Wood/hr ~ 0.175 MMBtu/hr Each

AP-42 Emission Factors (Each)

- 0.5 lb/hr PM<sub>2.5</sub>
- 0.4 lb/hr NO<sub>2</sub>
- 0.006 lb/hr SO<sub>2</sub>

Each Chimney Exhausts at 3 m/sec and 120 degrees F (322 K)

## Slide 8

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**RJP3**

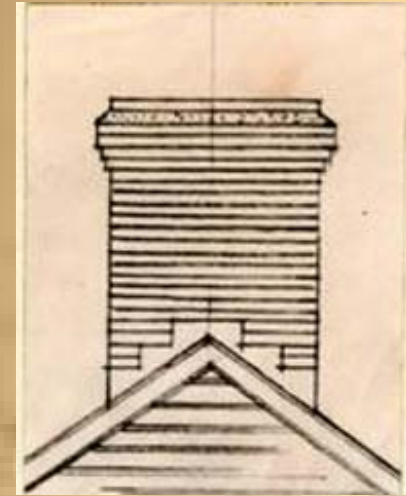
PaineB, 10/13/2010

**RJP4**

**Why is there a car in this scene?**

PaineB, 10/13/2010

## Good Engineering Practice (GEP) Stack Height Analysis



- Squat Building,  $GEP = 2.5 \times 30'$  Building Height
- GEP Would Require an Additional 40 Feet
- In the Model, Both Chimneys Downwash

# Results

PM<sub>2.5</sub> NAAQS Violations Predicted on Duke of Gloucester (75 µg/m<sup>3</sup> vs. 35).  
Royal Governor Issues Yet Another Decree.

*Decree – All Existing Structures in the Virginia Colony Shall be Limited to No More Than One Fire at a Time. No New Fireplaces May be Constructed Without Compliance Demonstration. M<sup>rs</sup>r. Chowning Shall Extend Both Existing Chimneys as Necessary.*

1-hr NO<sub>2</sub> SIL Exceedance Predicted Throughout the Capitol (100 µg/m<sup>3</sup> vs. 7.5). Royal Governor Declares that Every Structure From Newport News to Richmond Now be Included in a Massive Cumulative Dispersion Model. Regulars Are to Be Housed and Fed While Collecting Emissions Inventory Door to Door.

*Josiah Chowning Shall Demonstrate That His Tabern Does not Significantly Contribute to any and All NO<sub>2</sub> Violations in the Colony of Virginia, or must Forfeit Said Tabern to the Crown.*

# 1-hr NO<sub>2</sub> Cumulative Modeling Domain



# Additional Proclamation - Suspected 1-hr SO<sub>2</sub> Violations

1-hr SO<sub>2</sub> NAAQs 1/2 the SIL (4 µg/m<sup>3</sup> vs. 8) While Burning Wood, But, Questions Raised Regarding Potential Non-Compliance by Blacksmiths Who Use Coal.

By Proclamation - Any and All Subjects Making Fires With Coal in the Virginia Colony Shall Perform 1-hr SO<sub>2</sub> Dispersion Modeling Satisfactory to HRH George III Within 30 Days of this Proclamation, or Cease to Operate. Any Smithy's So Closed Shall Revert to Ownership of the Crown.

Therefore Resolved that it is the indispensable Duty of the Inhabitants of this Country, by the best ways and means, to observe the said Acts of Parliament, and to prevent the execution of such Acts of Parliament.

Resolved that in Order to prevent the execution of the late Acts of Parliament respecting the Courts of Justice, the Inhabitants of this Country will attend in Person, the next inferior Court of common pleas & general Sessions to be holden at Westminister in & for said Country, on the 22<sup>d</sup> of August next, and that the Governor will send one or more Regiments of the Militia, properly armed to repel any hostile force which may be employ'd for that purpose.

## ***News of a Tea Party***

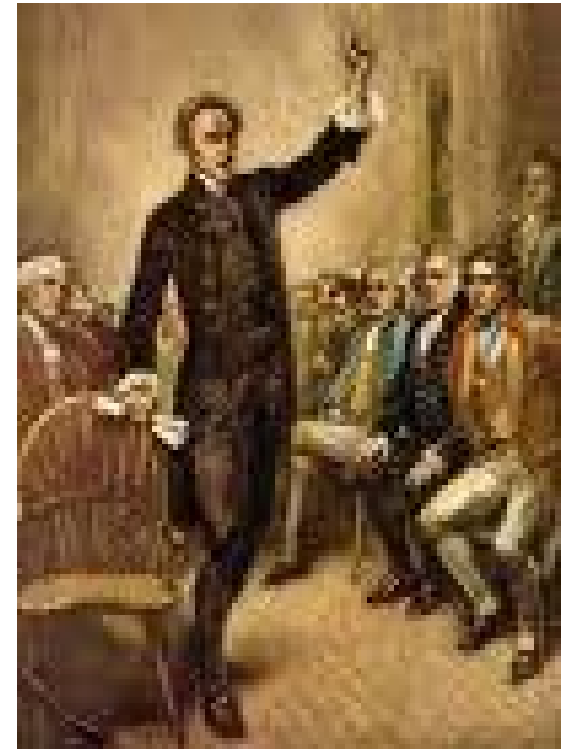
George Washington Arrives at the Capitol to Find that the Governor has Disbanded the House of Burgesses, Yet Again.

Over at the Raleigh Tavern, Before Two Great Fires, Patrick Henry Rails Against Overreaching Government Tyranny.

A Lone Rider Gallops Along Duke of Gloucester Street with News of Rebellion in Boston...

# What Can CIBO Do?

- Lobby to Suspend Further Modeling Demonstrations Until Issues are Resolved
- Help EPA to Squeeze the Over Predictions Out of the Dispersion Model
- Lobby EPA to Establish SIL's at Practical Levels
- Lobby Congress and Politicians to Coerce EPA to Fix Another Unworkable Rule Before There is no Industry Left to Model



*As for Industrial Boiler Owners, Give Us Liberty or Give Us Death!*



# Questions?

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