

The World of PM_{2.5} and Engine Update

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PM_{2.5}?

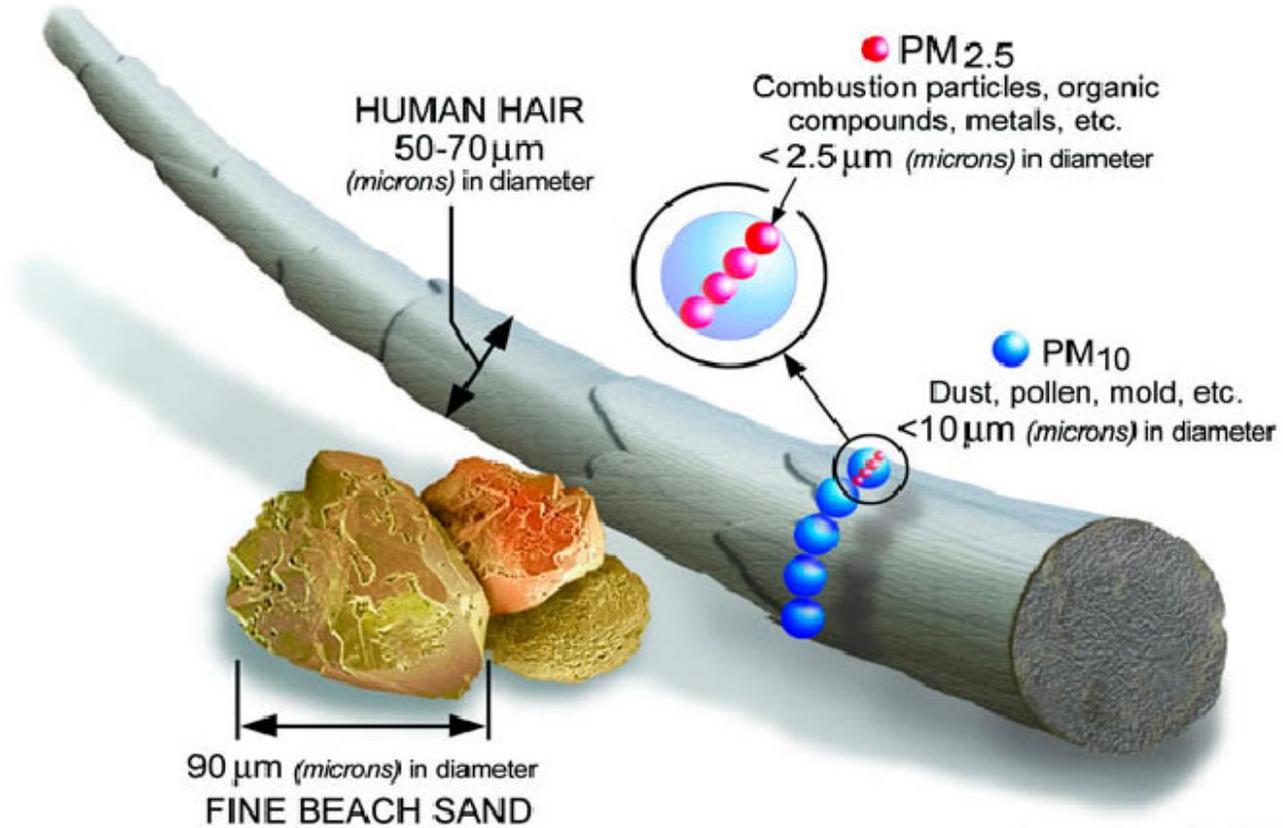


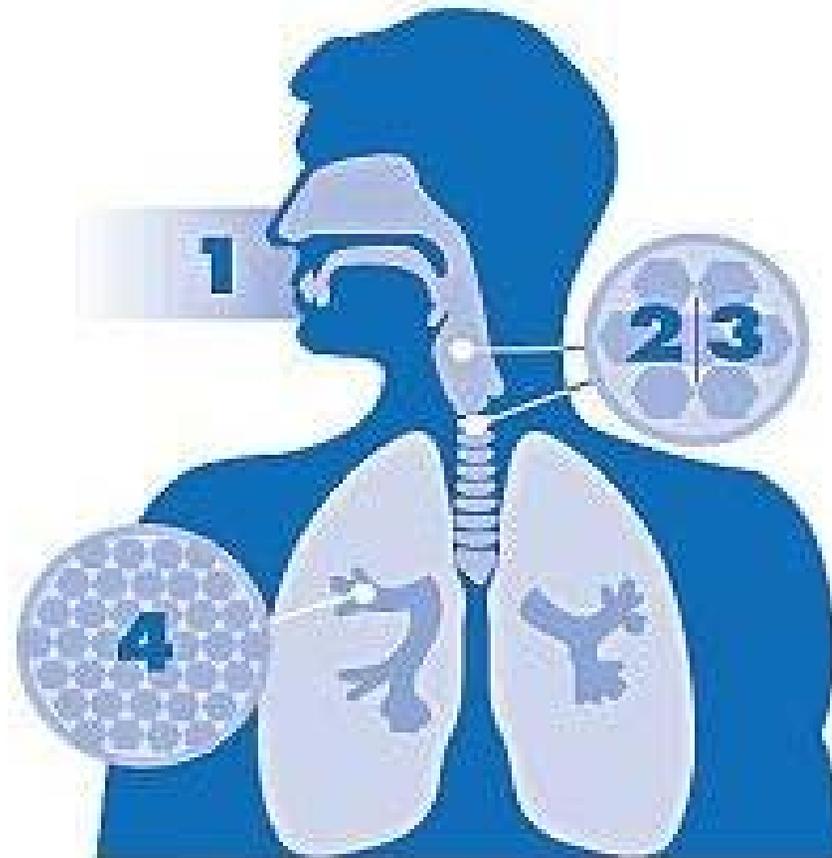
Image courtesy of the U.S. EPA

Image Source: www.iowadnr.gov/Portals/idnr/uploads/air/environment/majorpollutants/humanhair.jpg



Nebraska
Department
of Environmental
Quality

What's the **BIG** Deal with $PM_{2.5}$?



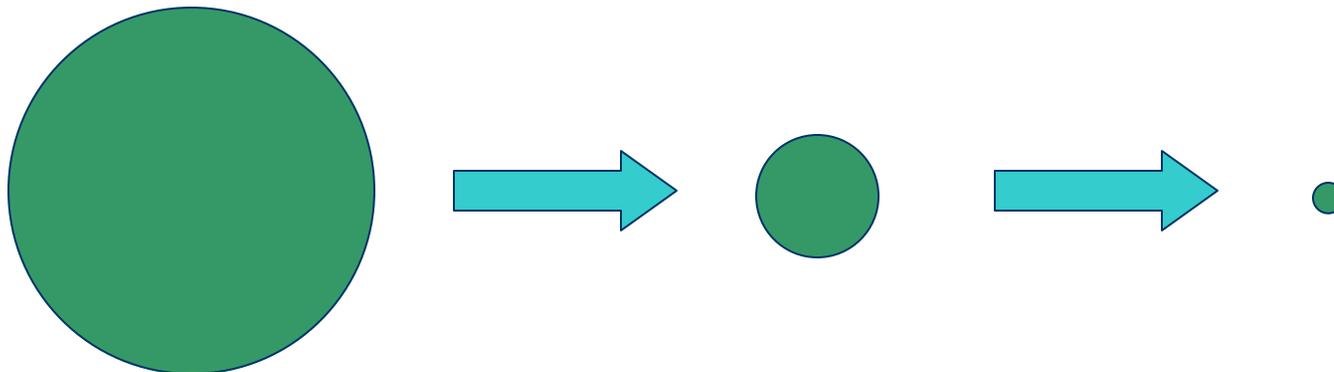
<http://www.aqfairbanks.com/wp-content/uploads/2010/04/lungs.gif>

History of PM ... Part 1

- 1971 - EPA issues NAAQS for TSP
- 1987 - EPA replaced TSP with PM₁₀
 - 24 hour PM₁₀ NAAQS of 150 $\mu\text{g}/\text{m}^3$
 - Annual PM₁₀ NAAQS of 50 $\mu\text{g}/\text{m}^3$
- 1997 - EPA adds PM_{2.5} standards
 - 24 hour PM_{2.5} NAAQS of 65 $\mu\text{g}/\text{m}^3$
 - Annual PM_{2.5} NAAQS of 15 $\mu\text{g}/\text{m}^3$
 - Seitz PM₁₀ surrogacy Policy
 - Show compliance with PM₁₀ NAAQS

History of PM ... Part 2

- 1999 - NE starts monitoring PM_{2.5}
- 2006 - EPA Revised PM Standards
 - 24 hour PM_{2.5} NAAQS of 35 $\mu\text{g}/\text{m}^3$
 - Annual PM₁₀ NAAQS revoked
- 2012 - Scheduled Revision to PM NAAQS





Current NAAQS

- PM_{10} 24 hour: $150 \mu\text{g}/\text{m}^3$
- $PM_{2.5}$ 24 hour: $35 \mu\text{g}/\text{m}^3$
- $PM_{2.5}$ annual: $15 \mu\text{g}/\text{m}^3$
- Background values vary by location
 - Natural Sources
 - Nearby Sources
 - Unidentified Sources

Potential Future NAAQS

- 2012 Promulgation of PM₁₀ and PM_{2.5} NAAQS
- PM₁₀ 24 hour: 150 µg/m³ → 65-85 µg/m³
 - Considering to change both level and form
- PM_{2.5} 24 hour: 35 µg/m³ → 30-35 µg/m³
- PM_{2.5} annual: 15 µg/m³ → 11-13 µg/m³
- NAAQS Review Documents
 - www.epa.gov/ttn/naaqs/standards/pm/s_pm_index.html

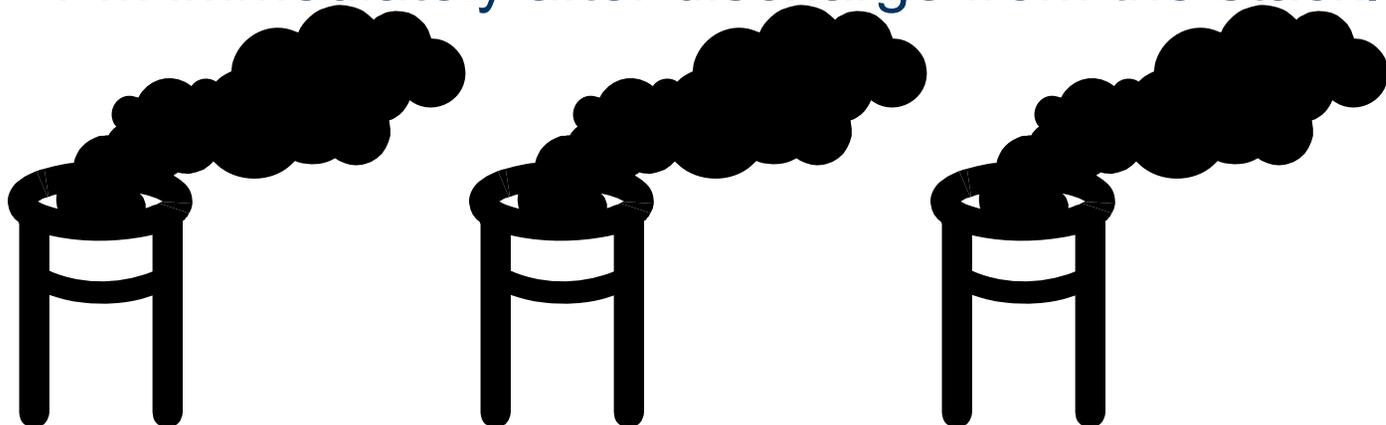
PM_{2.5} Rulemaking - Surrogacy

- 2/11/2010 Notice of Proposed Rulemaking
 - Repeal PSD grandfather provision
 - PM₁₀ surrogacy for sources with a complete application as of July 15, 2008.
 - End early the use of PM₁₀ Surrogate Policy (PSD)
- Final Rule Published 5/18/2011 and effective 7/18/2011
- No action taken on PM₁₀ Surrogacy Policy
 - Default end date was May 16, 2011



Condensable PM

- $PM_{2.5}$ = Filterable + Condensable PM
- Condensable PM
 - Material that is vapor phase at stack conditions, but condenses and/or reacts upon cooling and dilution in the ambient air to form solid or liquid PM immediately after discharge from the stack.





Condensable PM

- Condensable PM transition period
 - State NSR Programs didn't have to address CPM
 - Discrepancies in how states treated CPM
- NPRM for PM Test Methods 3/25/2009
- Test Method Rule promulgated 12/21/2010
- No action taken
 - Condensable PM transition period ended by default on 1/1/2011



Condensable PM

- **PM_{2.5} Test Methods Rule**
 - Published 12/21/2010, effective 1/1/2011
- **Modification to test methods**
 - Method 201A
 - Method 202
- **EPA concluded that Updated Method 202 does not produce artifacts**

PM_{2.5} Rulemaking - IPTP

- Inter-Pollutant Trading Policy
 - Allow sources in PM_{2.5} nonattainment areas to use emissions from precursors of PM_{2.5} as offsets for significant increases of PM_{2.5} emissions
 - July 21, 2011 EPA Memo
- Still considering options – Stay tuned





PM_{2.5} Modeling

- NDEQ has required PM_{2.5} modeling
 - 10 ton/yr PM_{2.5} threshold



PM_{2.5} Modeling

- 3/23/10 EPA Guidance Memo
 - Discusses options for PM₁₀ Surrogacy
 - Recommended methods for PM_{2.5} model

<http://www.epa.gov/region7/air/nsr/nsrmemos/pm25memo.pdf>
- 10/20/10 Federal Register
 - PM_{2.5} Increments
 - PM_{2.5} Significant Impact Levels
 - PM_{2.5} Significant Monitoring Concentrations
- June 28, 2011 EPA Guidance Memo
 - Updates to 24 hour PM_{2.5} attainment test



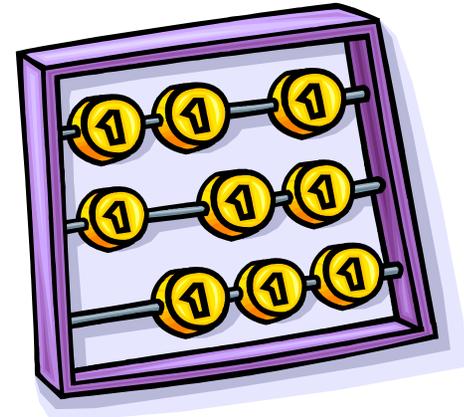
Future EPA Guidance

- PM_{2.5} Implementation Rule and Guidance for 2011 NAAQS Revision
 - Expected early 2012
- EPA Support Center for Regulator Atmospheric Modeling (SCRAM)
 - <http://www.epa.gov/ttn/scram/>



PM_{2.5} Emission Calculations

- Stack Test Data
- AP-42
 - May need to look in footnotes
 - Appendix B
- South Coast Air Quality Management District
 - www.aqmd.gov/ceqa/handbook/pm2_5/finalAppA.doc
 - CA Emission Inventory Data and Reporting System
- Always looking for new sources
 - No longer using Reisman, Frisbie (2002)



PM_{2.5} in Title 129 (Not yet Final)

- Incorporation of Condensable PM
 - Title 129, Chapter 17
 - 10 ton/yr PM_{2.5} threshold (State CP)
 - Title 129, Chapter 19 (Significance)
 - 10 ton/yr PM_{2.5}
 - 40 ton/yr SO₂
 - 40 ton/yr NO_x
- } Significant for PM_{2.5}



Nonroad Engines

- 40 CFR 89.2 and 40 CFR 1068.30
- NSPS/NESHAP Implications
- Any internal combustion engine (abridged)
 - in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function
 - in or on a piece of equipment that is intended to be propelled while performing its function
 - by itself or in or on a piece of equipment, is portable or transportable



Nonroad Engines

- An internal combustion engine is not a nonroad engine if:
 - the engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Act
 - the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act
 - Or the engine otherwise included in paragraph (1)(iii) of this definition (portable/transportable)...



Nonroad Engines

- Will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source.
 - A location is any single site at a building, structure, facility, or installation.
- Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period.
- An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source.
 - A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year.
- This paragraph does not apply to an engine after the engine is removed from the location.

Nonroad Engines

- Key Questions

- Is the Engine attached to anything?
- Does the Engine move?
- Why does the Engine move?
- What is the Engine used for?
- Is the Engine replacing another Engine?



- Site-Specific details are needed for an accurate determination



Nonroad Engines

- NDEQ Fact Sheet
 - Should be finalized soon
 - Includes example determinations
 - Look for it on our web site



Nonroad Engines

- Example Determination
 - A diesel engine powers an air compressor
 - Cleaning metalworking areas throughout plant
 - Is the engine nonroad?
- Yes – we have a nonroad engine
 - Remains at each location < 12 months
 - Moved for operational purposes



Emergency Engines

- January 22, 2010 NO₂ NAAQS
- March 1, 2011 EPA Modeling Guidance
 - Recommended exclusion for “intermittent emissions”
 - Emergency engines operate intermittently
- Modeling not always required for emergency engines



Questions?

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