

# PM2.5:

## The Most Demonstrable Science Fraud of Our Time

By Steve Milloy

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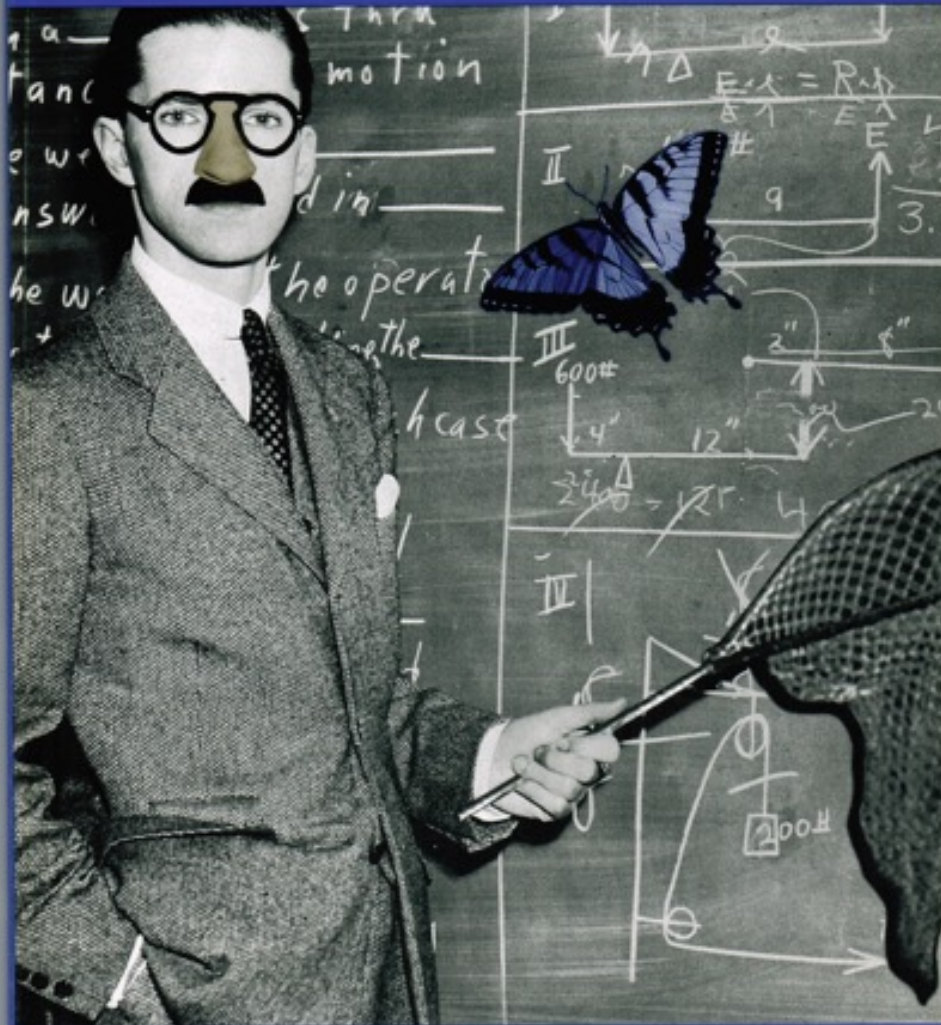
May 18. 2021

# Who is Steve Milloy?

- Education
  - B.A., Natural Sciences, Johns Hopkins University
  - Masters, Biostatistics, Johns Hopkins University
  - J.D., University of Baltimore,
  - L.L.M., Securities Regulation, Georgetown University
- Work
  - Led and affiliated with free market think tanks
  - Consultant to Fortune 50 companies
  - ‘Junk Science’ columnist for FoxNews.com
  - Mutual fund co-founder, portfolio manager
  - Executive for coal company
  - Trump EPA Transition Team

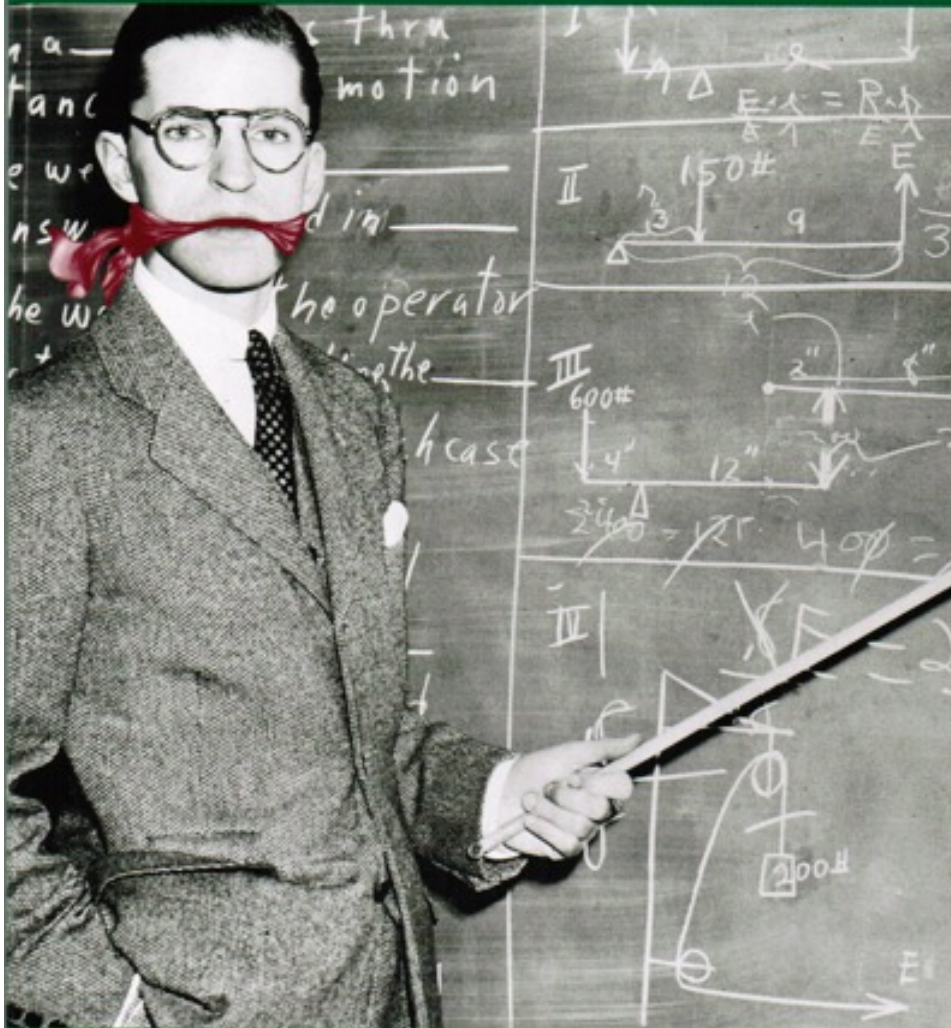
# SCIENCE WITHOUT SENSE

The Risky Business  
of Public Health Research



BY STEVEN MILLOY

# SILENCING SCIENCE



by STEVEN MILLOY and MICHAEL GOUGH

Secondhand Smoke Dioxin Salt Cell Phones  
Agent Orange Saccharin Mad Cow Disease  
PCBs Alar Silicone Breast Implants Radon  
Arsenic Endocrine Disruptors Nuclear Waste  
Lead Mercury Asbestos Biotechnology Smog

Aspartame Radiation Pesticides Cholesterol  
Duck Shield Benzene Diet Fiber DDT  
Metformin Parathion Sugar MMS Chernobyl  
Electric and Magnetic Fields Trans Fatty Acids

Food Preservatives Three Mile Island Fen-phen  
Air Pollution Anti-microbials Bisphenol A  
Cyclamate Gun Control Atrazine Love Canal  
Times Beach Water Pollution Toxic Waste Sites

SELF-DEFENSE AGAINST  
HEALTH SCARES & SCAMS

STEVEN J. MILLOY

"This book describes why the world can't afford  
to fall for global warming alarmism and environmental hysteria."  
—Vaclav Klaus, *President of the European Union and President of the Czech Republic*

# GREEN HELL

How Environmentalists Plan to Control  
Your Life and What You Can Do to Stop Them



STEVE MILLOY

Founder and Publisher of [JunkScience.com](http://JunkScience.com)

# SCARE POLLUTION

WHY AND HOW TO FIX THE EPA



STEVE MILLOY

# Disclosures

- I am 'biased' in favor:
  - Limited government
  - Individual liberty
  - Free enterprise
  - Facts and reality
- I have earned a living for the past 30+ years by advocating for the above as a
  - Consultant to businesses
  - Think tanker & activist
  - Publisher & author
  - Mutual fund manager
  - Corporate executive



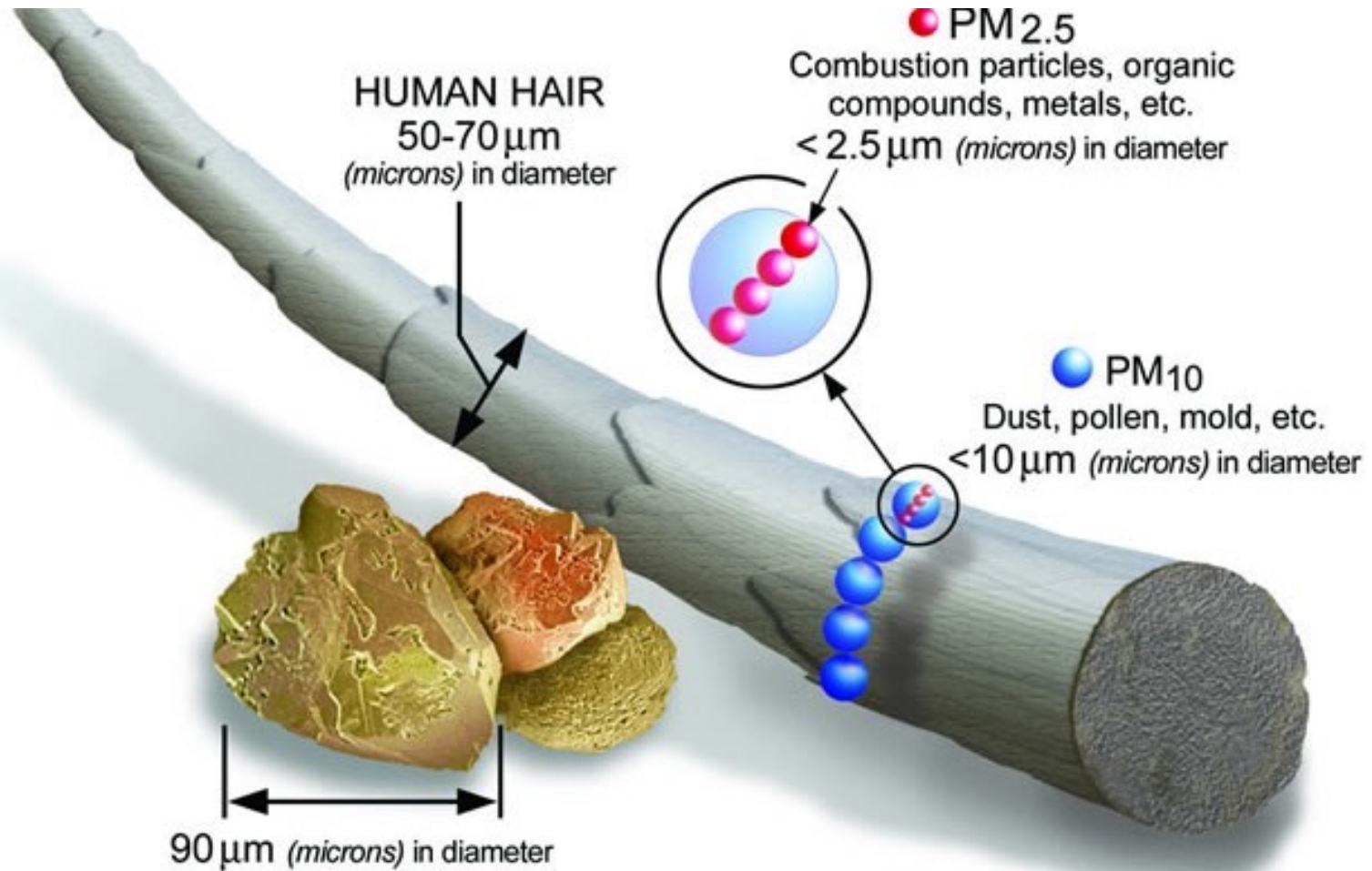
**The Key Question:**

**Does inhalation  
of PM<sub>2.5</sub>  
kill anyone?**

# What is PM<sub>2.5</sub>?

- Fine particulate matter, called 'PM<sub>2.5</sub>'
- Dust, soot, gaseous material
  - 2.5 millionths of a meter wide (about 1/20 the width of a human hair)
  - Can be manmade
    - Smokestacks, tailpipes, chimneys, smoking
  - Can be natural
    - Dust, pollen, mold

# Imagining PM<sub>2.5</sub>



# Why is PM<sub>2.5</sub> important?



Harvard John A. Paulson  
School of Engineering  
and Applied Sciences

## Deaths from fossil fuel emissions higher than previously thought

Fossil fuel air pollution responsible for more than 8 million people worldwide in 2018

By [Leah Burrows](#) | [Press contact](#)  
February 9, 2021

<https://junkscience.com/2021/02/harvard-liars-up-the-pm-body-count/>

# How is PM<sub>2.5</sub> (Mis)Used?

- To justify expensive government regulations
- Invented as a pollutant by US EPA in 1996
  - Air quality rules
  - Climate rules
- Rig or game benefit-cost analysis
  - Each death prevented by regulation counts as \$10 million in benefits

# Three Key PM<sub>2.5</sub> Assumptions

- Breathing PM<sub>2.5</sub> kills people
  - Especially the elderly and/or sick
- ANY inhalation of PM<sub>2.5</sub> can kill
  - Even one molecule
- Death can occur:
  - Short-term (within hours or days)
  - Long-term (after decades of inhalation)

# In a nutshell....

- PM<sub>2.5</sub> is the most deadly substance known to man
  - No other substance kills by means of ‘any’ exposure.
- Death may occur from one molecule or a lifetime of molecules

# Deadly Air in the Netherlands

What 12 micrograms/m<sup>3</sup> PM<sub>2.5</sub> looks like





# US EPA 'scientific' assessment

- Population death rates increase by up to 1.2% per 10 microgram/m<sup>3</sup> increase in PM<sub>2.5</sub>
  - Increase is from zero exposure
- 'Strong evidence' that death can occur in the 'short-term (hours, days)'

# If you think I am making this up:

- Obama-era chair of EPA's outside air quality science advisory group in *New England Journal of Medicine*:

**For ozone and particulate-matter pollution, because no thresholds have been identified below which there is no risk at all, the EPA is using scenarios of risk and exposure to gauge the effects of setting the standards at various concentrations and giving consideration to the burden of avoidable disease. In promulgating the**

# If you think I am making this up:

- Obama EPA chief Lisa Jackson testimony to Congress, September 2011:



# If you think I am making this up:

- EPA chief Lisa Jackson testimony to a House subcommittee, September 2011:
  - *Particulate matter causes premature death. It doesn't make you sick. It's directly causal to dying sooner than you should.*
  - *If we could reduce particulate matter to levels that are healthy we would have an identical impact to finding a cure for cancer.*

# Jumping the Shark

EPA chief says PM<sub>2.5</sub> kills

570,000

Americans per year\*

\* - About 23% of annual U.S. deaths

# Jumping the Shark

- Blue sky breathing kills 570,000 Americans per year
- Smoking kills 440,000 Americans per year



# Challenge to EPA

## The Washington Times

MILLOY: Show us the bodies, EPA

*Green agency uses phony death statistics to justify job-killing rules*

# EPA's Response to Milloy

- EPA official to Congress, July 20, 2011:

*... these are not fabricated, they're based on peer-reviewed science, both clinical and epidemiological studies.*



# EPA Claims 3 Lines of Evidence Support PM<sub>2.5</sub> Claims

- Epidemiology studies
  - Study of disease patterns in human populations
- Toxicology studies
  - See what happens when you poison animals
- Clinical studies/human testing
  - See what happens when you poison people

# EPA Epidemiology Claims

- Hundreds/thousands of studies support notion that  $PM_{2.5}$  kills
- All report similar statistical correlations between outdoor monitor measurements of  $PM_{2.5}$  and increased rates of death

# PM<sub>2.5</sub> Epidemiology Reality

- Poor quality data -- GIGO
  - No actual exposure data
  - No determinations on cause of death
- Weak correlations – harvesting statistical noise, at best
- Ignore contradictory studies
- Corrupt peer review
  - EPA pays researchers to produce studies and then hires same researchers to review their own/colleagues' research.
- ***EPA admits in lawsuit over PM<sub>2.5</sub>***: 'Epidemiologic studies do not generally provide evidence of direct causation.'

# PM<sub>2.5</sub> Toxicology Reality

- Animals exposed to PM<sub>2.5</sub> at levels 100s times greater than outdoor air.



- NO animal has ever died in an experimental setting from PM<sub>2.5</sub>.

# PM<sub>2.5</sub> Clinical/Human Testing Reality



# PM<sub>2.5</sub> Human Testing Reality (cont'd)



EPA Gas Chamber



# PM<sub>2.5</sub> Human Testing Reality (cont'd)

The US Environmental Protection Agency is seeking

## **ADULT VOLUNTEERS**

**Ages 50 to 75 for Research**

**This is a research study about genetics,  
diet supplementation and exposure  
to air pollution.**

We are looking for healthy older adults to study diet supplementation and the effects of air pollution exposure on heart and lung function.

Total time commitment after screening is about 15 hours over 6 to 7 weeks. You will receive payment for screening, the study, and out of town travel. Parking is provided.

1-888-279-9353 or

919-966-0604

[www.epastudies.org](http://www.epastudies.org)



The Human Studies Facility is located on the UNC-CH campus



# PM<sub>2.5</sub> Human Testing Reality (cont'd)


The US Environmental Protection Agency is seeking

## Older Adults with Asthma

For Research Study

Now recruiting non-smoking adults ages 45 to 65 with mild asthma for a study about genetics and air pollution. Study requires screening and two exposures with follow up bronchoscopy.

Payment for screening and study  
919-966-0604 or 1-888-279-9353  
[www.epastudies.org](http://www.epastudies.org)



The Human Studies Facility is located on the UNC-CH campus

APPROVED FOR UNC-CH

NOV 21 2008

Web Site Announcement: [www.epastudies.org](http://www.epastudies.org)

# What does EPA tell its human guinea pigs?

*PM exposure:* During the exposure to the concentrated air pollution particles, you may experience some minor degree of airway irritation, cough, shortness of breath or wheezing. These symptoms typically disappear 2 to 4 hours after exposure, but may last longer for particularly sensitive people. You will be monitored continuously during the exposure session

No disclosure of risk of death!

**Recall: Netherlands Average:  
12 micrograms/m<sup>3</sup>**



# PM<sub>2.5</sub> Human Testing Reality (cont'd)

concentration. Our past experience provides a basis to expect the particle mass delivered to the mask will be up range ~~between levels of~~ 50 to 600 ug/m<sup>3</sup>. The particle burden, on a mass basis

# PM<sub>2.5</sub> Human Testing Reality (cont'd)

- The PM<sub>2.5</sub> concentration level of 600 micrograms per cubic meter is:
  - 60 times greater than PM<sub>2.5</sub> in average U.S. air
  - 17 times greater than the maximum PM<sub>2.5</sub> allowed by EPA in U.S. air (35 micrograms)
  - Undefined times greater than PM<sub>2.5</sub> exposure EPA says is safe. (Anything divided by zero is 'undefined'.)

# PM<sub>2.5</sub> Human Testing Reality (cont'd)

Why is EPA testing high concentrations of PM<sub>2.5</sub> on elderly and sick people? EPA told a federal court:

*These studies help to determine whether the mathematical associations between ambient (outdoor) levels of air pollutants and health effects seen in large-scale epidemiological studies are biologically plausible (or are not). They help to determine the mechanisms by which air*

# **PM<sub>2.5</sub> Human Testing Reality (cont'd)**

- What are the results of this testing?

# PM<sub>2.5</sub> Human Testing Reality (cont'd)

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- Anyone killed?



# PM<sub>2.5</sub> Human Testing Reality (cont'd)

- What are the results of this testing?
- Anyone killed?
- NO!

EPA takes its responsibility for the safety of participants very seriously. EPA has conducted 297 controlled human exposures to PM with only one clinically significant event, in which the study participant experienced no harm or injury.<sup>8</sup> These studies are an integral part of EPA's effort to understand the effects of particulate air pollution on human health, and support its statutory mandate to protect human health and the environment.

# US EPA's PM<sub>2.5</sub> Logical Box

- If PM<sub>2.5</sub> as lethal as EPA says, it has committed crimes via its human testing program.
  - Violated every law and principle concerning human testing since the Nuremberg Code
- If crimes not committed, EPA has lied to the public and Congress about the dangers of PM<sub>2.5</sub>.
- No escape hatch.

# PM<sub>2.5</sub> Reality

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- From average outdoor air, a breather inhales about 10 micrograms per hour
- In a car with smoker and windows closed, occupants inhale up to 4,000 micrograms per hour
- **From smoking, a smoker can inhale 40,000 micrograms in 5-10 minutes.**

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- In a car with smoker and windows closed, occupants inhale up to 4,000 micrograms per hour
- From a cigarette, a smoker can inhale 40,000 micrograms in 5-10 minutes.
- **From a marijuana joint, a smoker can inhale up to 180,000 micrograms in minutes.**

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- From average outdoor air, a breather inhales about 10 micrograms per hour
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- From a cigarette, a smoker can inhale 40,000 micrograms in 5-10 minutes.
- From a marijuana joint, a smoker can inhale up to 180,000 micrograms in minutes.
- **In a hookah bar, one can be exposed to the equivalent of 100 cigarettes in one session.**



# PM<sub>2.5</sub> Reality (cont'd)

- Long-term exposures
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- Long-term exposures
  - The sorts of decades exposures to PM<sub>2.5</sub> supposedly examined by EPA's epidemiology studies
- If PM<sub>2.5</sub> can kill in hours, how does EPA know that a long-term death wasn't really a short-term death?

# PM<sub>2.5</sub> Reality (cont'd)

- Long-term exposures
  - The sorts of exposures to PM<sub>2.5</sub> studied in EPA's epidemiology studies
- Mining exposures to diesel particles (95% of which are PM<sub>2.5</sub>) can hit 2,000 micrograms/hr

Exposures in the mining industry are of particular concern because diesel particulate concentrations in mines [62, 83, 84] sometimes exceed 2 mg/m<sup>3</sup>, which is one thousand times higher than a typical environmental level. In its final rule [62] on metal and nonmetal mines,

- But miners have greater life expectancy!

# PM<sub>2.5</sub> Reality (cont'd)

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

## 21st-Century Hazards of Smoking and Benefits of Cessation in the United States

Prabhat Jha, M.D., Chinthanie Ramasundarahettige, M.Sc.,  
Victoria Landsman, Ph.D., Brian Rostron, Ph.D., Michael Thun, M.D.,  
Robert N. Anderson, Ph.D., Tim McAfee, M.D., and Richard Peto, F.R.S.

### RESULTS

For participants who were 25 to 79 years of age, the rate of death from any cause among current smokers was about three times that among those who had never smoked (hazard ratio for women, 3.0; 99% confidence interval [CI], 2.7 to 3.3; hazard ratio for men, 2.8; 99% CI, 2.4 to 3.1). Most of the excess mortality among smokers was due to neoplastic, vascular, respiratory, and other diseases that can be caused by smoking. The probability of surviving from 25 to 79 years of age was about twice as great in those who had never smoked as in current smokers (70% vs. 38% among women and 61% vs. 26% among men). Life expectancy was shortened by more than 10 years among the current smokers, as compared with those who had never smoked. Adults who had quit smoking at 25 to 34, 35 to 44, or 45 to 54 years of age gained about 10, 9, and 6 years of life, respectively, as compared with those who continued to smoke.

# PM<sub>2.5</sub> Reality (cont'd)

- Lifetime nonsmoker living in the US for 80 years inhales 7 million micrograms of PM<sub>2.5</sub>.
- 15-year, ½ pack/day US smoker for 80 years inhales 7 million micrograms (outdoor air) plus 2.19 billion micrograms of PM<sub>2.5</sub> from smoking.
- So a 15-yr Richmond smoker inhales 314 times MORE PM<sub>2.5</sub> over the course of a lifetime but has the same life expectancy as a Richmond nonsmoker.

# PM<sub>2.5</sub> Reality (cont'd)

## Nonsmoker vs. 15-yr Smoker



# PM<sub>2.5</sub> Reality (cont'd)

- US
  - PM<sub>2.5</sub> = 10 micrograms
  - Life expectancy = 79.1



# PM<sub>2.5</sub> Reality (cont'd)

- US

- PM<sub>2.5</sub> ~ 10 micrograms/m<sup>3</sup>
- Life expectancy ~ 79



- Beijing, China

- PM ~ 100 micrograms/m<sup>3</sup>
- Life expectancy ~80+





# **Three Incidents of Deadly 20<sup>th</sup> Century Air Pollution Often Blamed on PM2.5**

- 1930 Meuse Valley, Belgium
- 1948 Donora, Pennsylvania
- 1952 London

# Meuse Valley, 1930



# Donora, PA 1948



# London Fog 1952



# Deaths NOT Attributable to PM2.5

- All three events involved weather inversions – i.e., trapped air
- Local industrial facilities not shut down despite the inversions
- Result: Acidic gases trapped in the air harvested vulnerable people
- London event also confounded by influenza

# Acidic Gases Are the Problem, NOT PM2.5

## Delhi Air Pollution: Real-time Air Quality Index (AQI)

LONI, GHAZIABAD

DELHI INSTITUTE  
OF TOOL

SATYAWATI  
COLLEGE, DELHI

ITI JAHANGIRPURI,  
DELHI

VASUNDHARA,  
GHAZIABAD

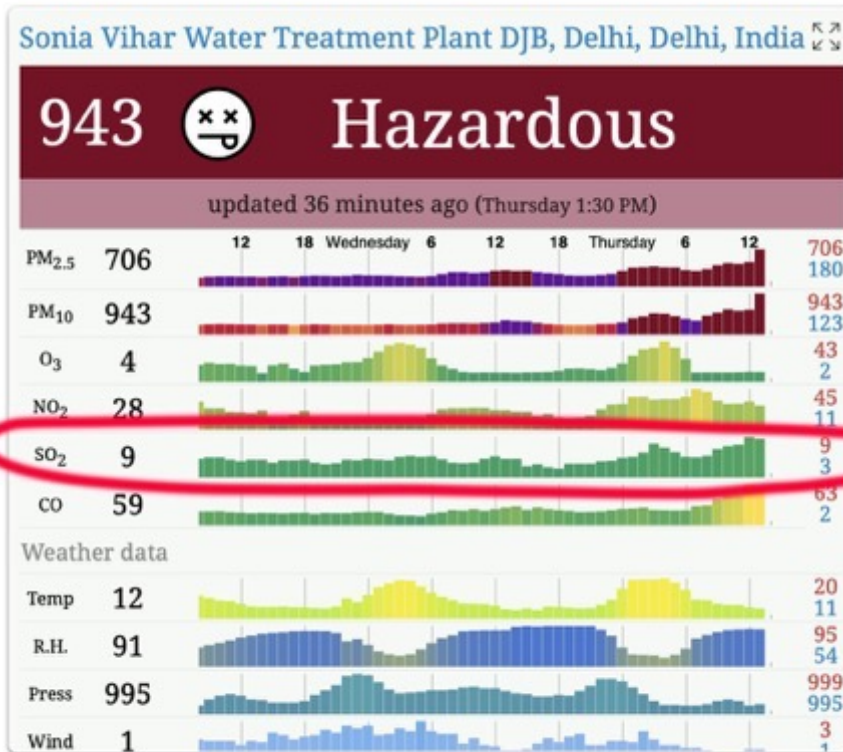
PUNJABI BAGH,  
DELHI



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NEAREST CITY



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YOUR CITY



# How Does EPA Get Away With It?

- EPA PM<sub>2.5</sub> claims fail tests of:
  - Epidemiology
  - Toxicology
  - Human experiments
  - Reality

# How Does EPA Get Away With It?

- EPA PM<sub>2.5</sub> claims fail tests of:
  - Epidemiology
  - Toxicology
  - Human experiments
  - Reality
- So EPA relies on:
  - Industry fear/inability to seriously confront EPA
  - Public ignorance, confusion, apathy
  - Activist groups/captured media parrot EPA
  - Congressional inaction (lack of time, complexity of issue, EPA obfuscation/stonewalling/defiance, need EPA favors)



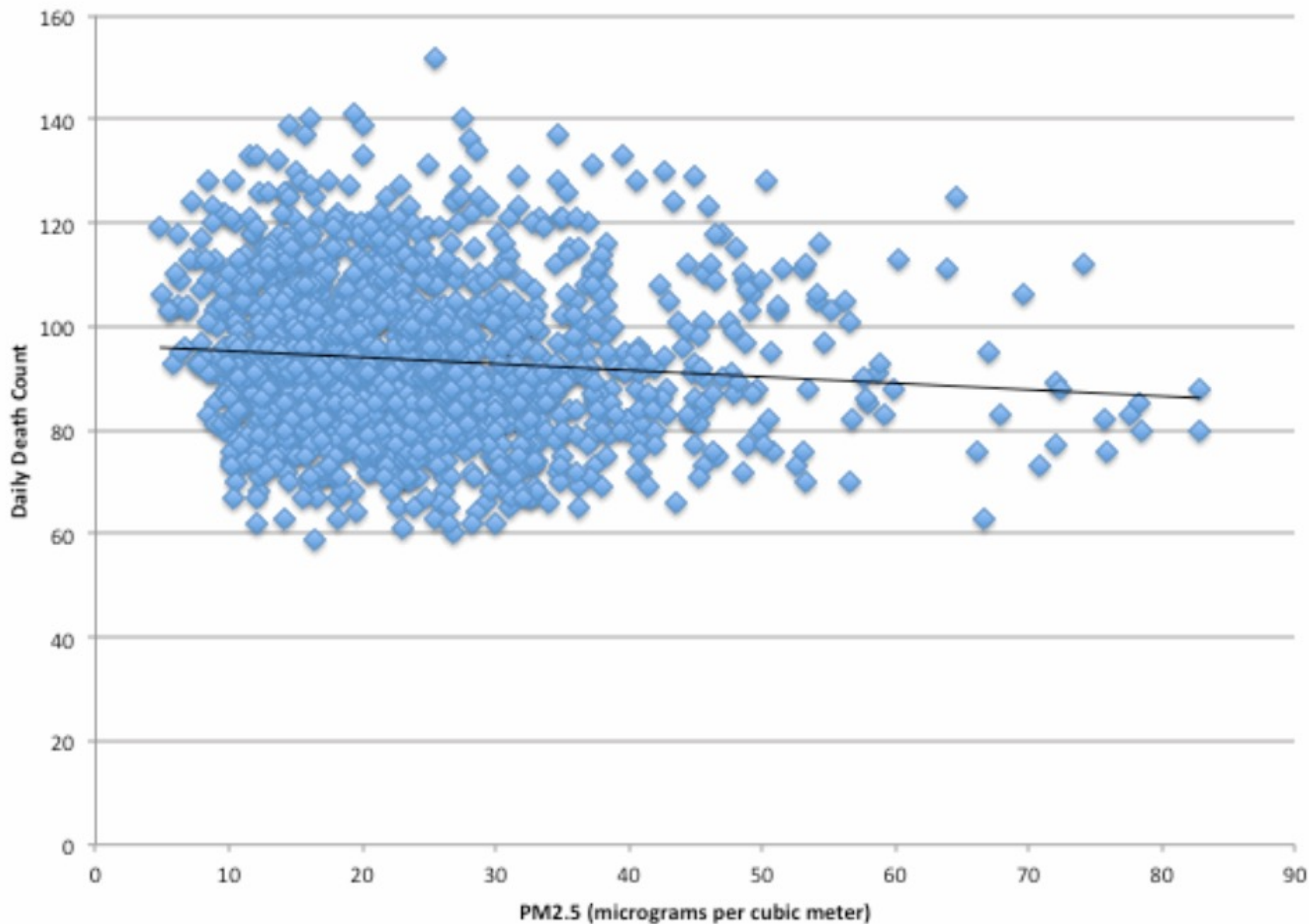
# Example of EPA Defiance: Secret Science

- A key part of the scientific method is replication of study results
- To replicate a study, an independent scientist needs access to the study's data and methodology
- EPA has refused to make available to independent researchers the data used in its key PM<sub>2.5</sub> epidemiology studies, despite:
  - Taxpayers paid for the studies and data
  - Industry requests dating back to 1994
  - Multiple Congressional requests dating back to 1997, including a 2013 subpoena
  - Secret Science Reform Act of 2015 (HR 1030)
    - Passed by House and Senate EPW Committee

# Circumventing EPA's Secret Science:

- Need to create a new data set, but how?
- California to the rescue
- Electronic death certificates for all California deaths
- Compared state air quality data with deaths on a daily basis
- NO correlation found for daily PM<sub>2.5</sub> (or ozone) and daily death counts

# South Coast AB, Mortality vs. PM2.5, 2007-2010



# Circumventing EPA's Secret Science: The California Study

- Largest, newest, most comprehensive, best-conducted epidemiology on PM<sub>2.5</sub> of all time
  - Covers 94% of the deaths in California for the period 2000-2012
  - Conducted by world-class statisticians
- Study shows NO CORRELATION between PM<sub>2.5</sub> (or ozone) and short-term death.
- Raw data to be made available to public
  - NO SECRET SCIENCE

# California Study

Regulatory Toxicology and Pharmacology 88 (2017) 173–184

Contents lists available at [ScienceDirect](#)

Regulatory Toxicology and Pharmacology

journal homepage: [www.elsevier.com/locate/yrtph](http://www.elsevier.com/locate/yrtph)



## Air quality and acute deaths in California, 2000–2012

S. Stanley Young <sup>a,\*</sup>, Richard L. Smith <sup>b</sup>, Keneth K. Lopiano <sup>c</sup>

<sup>a</sup> CGStat, 3401 Caldwell Drive, Raleigh, NC 27607, United States

<sup>b</sup> University of North Carolina, Department of Statistics and Operations Research, University of North Carolina, Chapel Hill, NC 27599-3260, United States

<sup>c</sup> Consultant, Winterville, NC 28590, United States



<https://junkscience.com/wp-content/uploads/2017/11/Young-2017-CA-data-RTP.pdf>

# 2020 EPA Science Advisors



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON D.C. 20460

OFFICE OF THE ADMINISTRATOR  
SCIENCE ADVISORY BOARD

December 16, 2019

EPA-CASAC-20-001

The Honorable Andrew R. Wheeler  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

Subject: CASAC Review of the EPA's *Policy Assessment for the Review of the National Ambient Air Quality Standards for Particulate Matter (External Review Draft – September 2019)*

Dear Administrator Wheeler:

# 2020 EPA Science Advisors

The Draft PM PA depends on a Draft Particulate Matter (PM) Integrated Science Assessment (ISA) that, as noted in the April 11, 2019, CASAC Report on the Draft PM ISA, does not provide a sufficiently comprehensive, systematic assessment of the available science relevant to understanding the health impacts of exposure to PM, due largely to a lack of a comprehensive, systematic review of relevant scientific literature; inadequate evidence and rationale for altered causal determinations; and a need for clearer discussion of causality and causal biological mechanisms and pathways. Given these limitations in the underlying science basis for policy recommendations, and diverse opinions about what quantitative uncertainty analysis and further analysis of all relevant data using the best available scientific methods would show, some CASAC members conclude that the Draft PM PA does not establish that new scientific evidence and data reasonably call into question the public health protection afforded by the current 2012 PM<sub>2.5</sub> annual standard. Other members of CASAC conclude that the weight of the evidence, particularly reflecting recent epidemiology studies showing positive associations between PM<sub>2.5</sub> and health effects at estimated annual average PM<sub>2.5</sub> concentrations below the current standard, does reasonably call into question the adequacy of the 2012 annual PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS) to protect public health with an adequate margin of safety. The

# OZONE TRIGGERS LYING, NOT ASTHMA

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TWEET

1



Scott Olson/Getty Images



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