

----- Forwarded message -----

From: **Delbert Eatough** <delbert@eatough.net>

Date: Tue, Jul 31, 2018 at 3:31 PM

Subject: RE: Proposed EPA Transparency Rule

To: Katy Grimes <fetchingjen@gmail.com>

Cc: Arden Pope <arden_pope@byu.edu>

I did not reply to the James Enstrom e-mail because I recognize a phony when I see one.

1. I cannot comment on the "Proposed Rule" because I do not know what it says or who proposed it.
2. NO
3. NO, what in the world does it mean anyway. His research has been validated by many and a voice of discontent by one is not a scientific peer review change of the past.
4. NO. The premise of the statement is false. I assume you are on a campaign to smear a solid researcher and will not take my input seriously.

I have served on the CASAC PM committee.

Delbert J. Eatough
Professor of Chemistry, Emeritus
Brigham Young University
Provo, UT
delbert@eatough.net
(801) 375-5535

From: Katy Grimes <fetchingjen@gmail.com>

Sent: Tuesday, July 31, 2018 2:05 PM

To: Delbert Eatough <delbert@eatough.net>

Subject: Proposed EPA Transparency Rule

Professor Eatough,

I am a credentialed California State Capitol Reporter and Investigative Journalist, and publish at many news sites. I have read Dr. James Enstrom's 2017 Fine Particulate Matter and Total Mortality in Cancer Prevention Study Cohort Reanalysis which describes his 2017-2018 epidemiologic research documenting NO robust relationship between PM_{2.5} and total mortality in the ACS CPS II cohort. His findings contradict the seminal 1995 findings of Professor Pope and ACS and no errors have been identified.

I have studied, investigated and written about these air quality rules for many years.

Dr. Enstrom shared with me his May 17 email message to you.

I am now also asking the same questions Dr. Enstrom asked. I would also appreciate your comments about the proposed EPA transparency rule to ensure that the regulatory science underlying Agency actions is fully transparent, and that underlying scientific information is publicly available in a manner sufficient for independent validation.

Dr. Enstrom's questions again:

Since you have been involved in some way with Professor Pope's PM2.5 health effects research, please email me as soon as possible your YES or NO answer to the following four questions:

1. Do you support the Proposed EPA Rule "Strengthening Transparency in Regulatory Science"?
2. Is there extensive valid evidence that contradicts Professor Pope's evidence relating PM2.5 to premature deaths?
3. Should Professor Pope be held fully accountable for the validity of his research relating PM2.5 to premature deaths?
4. Should Americans, particularly Californians, be relieved of PM2.5 regulations that are based on a scientifically invalid relationship of PM2.5 to premature deaths?

Sincerely,

Katy Grimes

Katy Grimes

Investigative Journalist

916.417.6780

Website: [KATY GRIMES](#)

Twitter: @KatySaccitizen

Facebook: [Katy Grimes](#)

Katy Grimes's new book, "California's War Against Donald Trump: Who Wins? Who Loses?" co-authored with James Lacy, is available at [Amazon](#)

"Truth is a demure lady, much too ladylike to knock you on your head and drag you to her cave. She is there, but people must want her, and seek her out." William F. Buckley Jr.

May 17, 2018

BYU President Kevin J. Worthen
BYU Professor Michael R. Ransom ransom@byu.edu
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Re: Request re BYU Professor Pope and Proposed EPA Transparency Rule

Dear Colleagues of BYU Professor Clive Arden Pope III,

I am writing regarding the Proposed EPA Rule “Strengthening Transparency in Regulatory Science” (<https://www.federalregister.gov/documents/2018/04/30/2018-09078/strengthening-transparency-in-regulatory-science>). The Summary of this Rule is “This document proposes a regulation intended to strengthen the transparency of EPA regulatory science. The proposed regulation provides that when EPA develops regulations, including regulations for which the public is likely to bear the cost of compliance, with regard to those scientific studies that are pivotal to the action being taken, EPA should ensure that the data underlying those are publicly available in a manner sufficient for independent validation.”

This rule is necessary in large part because Professor Pope and the American Cancer Society (ACS) have conducted ‘secret science’ epidemiologic research on fine particulate matter (PM2.5) and mortality that has been used by EPA to establish and tighten the 1997 PM2.5 National Ambient Air Quality Standard (NAAQS). My March 28, 2017 *Dose-Response* article “Fine Particulate Matter and Total Mortality in the Cancer Prevention Study Cohort Reanalysis” (<http://journals.sagepub.com/doi/full/10.1177/1559325817693345>), based on my independent reanalysis of the 1982 ACS Cancer Prevention Study (CPS II) data, found that Professor Pope’s research is seriously flawed and does not support a scientific and public health basis for the PM2.5 NAAQS. My reanalysis clearly demonstrates the importance of access to underlying data and shows the need for the EPA Transparency Rule.

Since you have been involved in some way with Professor Pope’s PM2.5 health effects research, please email me as soon as possible your YES or NO answer to the following four questions:

- 1) Do you support the Proposed EPA Rule “Strengthening Transparency in Regulatory Science”?
- 2) Is there extensive valid evidence that contradicts Professor Pope’s evidence relating PM2.5 to premature deaths?
- 3) Should Professor Pope be held fully accountable for the validity of his research relating PM2.5 to premature deaths?
- 4) Should Americans, particularly Californians, be relieved of PM2.5 regulations that are based on a scientifically invalid relationship of PM2.5 to premature deaths?

Please let me know if you need clarification of these questions or this request. Until you respond to the contrary, I will assume that your answers to all four questions are NO.

Thank you very much for your consideration of this important request.

Sincerely yours,

James E. Enstrom, PhD, MPH, FFACE
UCLA and Scientific Integrity Institute
[http://www.scientificintegrityinstitute.org/
jenstrom@ucla.edu](http://www.scientificintegrityinstitute.org/jenstrom@ucla.edu)
(310) 472-4274

From: JunkScience.com [<mailto:donotreply@wordpress.com>]

Sent: Thursday, September 21, 2017 11:04 AM

To: jenstrom@ucla.edu

Subject: [New post] Air pollution mafia tries to stop Enstrom from speaking to Utah legislators

Steve Milloy posted: "Jim Enstrom's epidemiology terrifies the junk science-fueled greens. Last Tuesday, UCLA epidemiologist and air quality epidemiologist all-star Jim Enstrom addressed Utah's Clean Air Caucus, a bipartisan group of Utah state legislators wo"

New post on JunkScience.com



[Air pollution mafia tries to stop Enstrom from speaking to Utah legislators](#)

by [Steve Milloy](#)

Jim Enstrom's epidemiology terrifies the junk science-fueled greens.

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[Steve Milloy](#) | September 21, 2017 at 2:04 pm | URL: <http://wp.me/p6SqJi-o2S>

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<https://junkscience.com/2017/09/air-pollution-mafia-tries-to-stop-enstrom-from-speaking-to-utah-legislators/>

<http://saltlaketribune.ut.newsmemory.com/publink.php?shareid=005fb6026>

[The Salt Lake Tribune](#) | [Page A09](#) Tuesday, 19 September 2017

No question that air pollution is bad for your health by Jessica Reimer
[with responses *in italics* by James Enstrom]

In our world where ‘alternative facts’ hold water and scientific evidence is pushed to the side, it is paramount that our state policymakers weed through the noise and identify critical information to support strong policies.

Utah policymakers can generally be commended for doing so successfully. In fact, earlier this year, Pew Charitable Trusts and the MacArthur Foundation found Utah to be one of the top five states in the country for evidence-based policymaking.

So, it is concerning when Utah legislators invite a scientist to speak whose credibility and scientific integrity have been continually questioned by his own academic peers [*I have NOT been questioned by my ‘own academic peers’, only by activist air pollution scientists who disagree with my ‘politically incorrect’ research findings. which are ENTIRELY accurate.*]

Tuesday, the Clean Air Caucus, a group of legislators who care about developing robust air quality policy, are hosting Dr. James Enstrom, a physicist [*and epidemiologist who holds two 1976 UCLA degrees in epidemiology, who has been a Founding Fellow of the American College of Epidemiology since 1981, and who has been a biographee in Who’s Who in America since 1990*] from UCLA who studies the impacts of air quality on public health. Enstrom is one of the only scientists in his field who asserts there is no relationship between air pollution and cardiovascular and respiratory disease [*This sentence is ABSOLUTELY FALSE, because of I have focused entirely on total mortality (premature deaths). I assert that PM2.5 does not CAUSE premature deaths in the United States and that current EPA and CARB PM2.5 regulations are scientifically unjustified. In addition, there are many other scientists and air pollution experts who assert that PM2.5 does not CAUSE premature deaths.*]

Earlier this year, Enstrom published a questionable and weak ‘re-analysis’ of a small subset of data collected in the 1980s through an ongoing project of the American Cancer Society [*my March 28 Dose-Response article is profoundly important and accurate, NOT ‘questionable and weak’. NO errors have been identified by ACS or Dr. Pope or anyone else.*] This re-analysis claims to debunk the pioneering research led by BYU economist Dr. C. Arden Pope, which established a causal link between fine particulate matter exposure, or PM2.5, and premature death from cardiovascular disease, respiratory disease, and lung cancer [*My PIONEERING re-analysis DOES DEBUNK the ‘secret science’ research led by Dr. Pope and ACS since 1995 that claims a ‘causal link’ between PM2.5 and premature death.*]

These foundational studies spurred a vast body of scientific literature based on increasingly representative data and sophisticated analyses that overwhelmingly corroborate the initial findings [*These ‘foundational studies’ all violate the principles of epidemiology because they generate weak associations based on ‘secret science’ that Dr. Pope and others know do not satisfy the Hill Criteria for causal relationships.*] The Environmental Protection Agency relies

on this literature to set regulatory limits of 'safe' levels of air pollution [*Environmental activists inside and outside of EPA turned the weak and inaccurate associations of Dr. Pope and ACS into PM2.5 regulations beginning in 1997 and these regulations have been continually and aggressively contested right up to the present.*]

In essence, there is scientific consensus that exposure to PM2.5 pollution causes premature death [*ABSOLUTELY FALSE claim—my March 28 article provides strong evidence that there is NO such 'scientific consensus'.*] Scientific consensus is only established after years, often decades, of intense debate within a field of experts [*REAL science is NEVER based on consensus—it is based on transparent and reproducible evidence that is properly conducted.*] It is the primary reason that our understanding continues to evolve and improve. Slowly but surely, issues are studied from every angle, critiqued and criticized from many sides, and eventually data and analyses converge on an answer [*The PM2.5 studies have NEVER converged to 'an answer', as my March 28 article shows.*]

This is exactly what the science that underpins air quality policy has endured [*The 'science that underpins air quality policy' has been promoted by environmental activists and environmental lawyers who have violated the principles of science and epidemiology in order to create a regulatory agenda that is scientifically unjustified.*] And through that same process, Enstrom's research has consistently been rejected (and these rejections from top-tier journals can, curiously, be read on his own website) [*This sentence is a complete distortion of my Reference 27, which provides detailed documentation of the publication bias that exists against evidence of no PM2.5 premature deaths.*] If policymakers give the same weight to his research as they do to the scientific consensus, this is a problem [*Utah policymakers should be allowed to hear my views, especially when they request that I speak to them, and it is up to them to determine how much weight to give to my views relate to the so-called 'scientific consensus'. Environmental groups like HEAL Utah want to block me from even presenting my views.*]

It is understandable that policymakers want to hear from all sides of an issue. Indeed, considering impacts to all stakeholders is the foundation of good policymaking. However, it is irrelevant when it comes to considering the science. Science, fundamentally, is non-partisan [*Real science is non-partisan. Air pollution science is VERY partisan and is currently controlled primarily by activist scientists, activist environmental groups, ALA, ATS, and NRDC lawyers.*] There are not 'both sides.' Yes, there is often active and ongoing debate of an issue among scientists that is critical for moving science forward. But that is not what is going on here. [*There are always 'both sides' in science. My March 28 article is strong evidence of 'active and ongoing debate.'*]

There is no active scientific debate regarding the causal link between PM2.5 and cardiovascular and respiratory disease. [*This sentence is FALSE, as per the explanations above. There IS 'active scientific debate regarding the causal link between PM2.5 and cardiovascular and respiratory disease', as well as regarding total mortality (premature deaths). Simply note the changes that have taken place at US EPA during 2017 in order to reverse the excesses that occurred before 2017.*] In fact, recent work has started to shed light on the physiological mechanisms of this link – what is actually happening in our bodies. Thus, listening to the supposed 'other side' of air pollution science makes no sense. [*Listening to the 'other side', including accomplished*

scientists like myself, is essential if legislators and regulators want to made valid policy that is in the best interest of their constituents and America as a whole. It is anti-science for HEAL Utah to try to discredit and silence 'politically incorrect' experts like myself.]

Ensuring that science is credible and well-accepted by the scientific community is vital to crafting policy that has strong legs to stand on and contributes to solving the complex issues we face at both a local and global level. Scientific consensus, not just any random scientist, deserves a voice. *[The Utah Clean Air Caucus needs to understand that there is no 'scientific consensus' regarding the lethality of air pollution and they need to listen to highly qualified experts like myself in order to understand the invalid claims of activist groups like HEAL Utah and 'consensus scientists' like Dr. Pope.]* Legislators can and should debate the balance of regulations, economic growth, public health, and job creation. What they can't debate is the science behind the air quality problem itself. Less pollution exposure is healthier for all of us. And the science supports that. *[Legislators need to properly understand the scientific controversy regarding PM2.5 and premature deaths from experts like myself. Safe levels of air pollution have now been achieved in the U.S. and the effort now needs to focus on the unsafe levels of air pollution in China, India, and Africa.]*

Jessica Reimer has a master of science in ecology and has spent many years communicating with both scientists and policymakers. She is currently a policy associate at HEAL Utah.



From: Terry Marasco <tmarascoutah16@gmail.com>

Date: September 19, 2017 at 1:24:22 PM MDT

To: "Timothy D. Hawkes" <thawkes@le.utah.gov>, Cherise Udell <nomadimuse@yahoo.com>, Patrice Arent <parent@le.utah.gov>, Joel Briscoe <jbriscoe@le.utah.gov>, Angela Romero <angela.romero37@gmail.com>, Rebecca Houck <rchouck@le.utah.gov>, Becky Edwards <beckyedwards@le.utah.gov>, Edward Redd <eredd@le.utah.gov>, Todd Weiler <tweiler@le.utah.gov>, Lowry Snow <vlsnow@le.utah.gov>, Mark Alvarez <alvarez_mark2004@yahoo.com>, "Mark A. Wheatley" <markwheatley@le.utah.gov>, Kathy Van Dame <dvd.kvd@juno.com>, Brian Moench <drmoench@yahoo.com>, Luz Escamilla <lescamilla@le.utah.gov>, Kent Stewart Udell <udell@mech.utah.edu>, Kent Udell <Kent.Udell@utah.edu>, Dan Adams <adams@mech.utah.edu>, David Folland <dsfolland@gmail.com>, Margaret Dayton <ltmdm@comcast.net>, Denni Cawley <dcawleyuphe@gmail.com>, michelle.hofmann@hsc.utah.edu, Linda Johnson <gostalinda73@gmail.com>, bshiozawa@le.utah.gov

Subject: Sufficient reason(s) to not allow Enstrom to the meeting tonight

Attached please find a summary of the history of rejection letters regarding Enstrom's paper and a compilation of peer reviews. Additionally, there is a summary of major papers on pm2.5.

There is no legitimate reason to allow Enstrom to speak to the AQ Caucus. The Utah Legislature is wadding into an area that threatens its legitimacy by enabling this author.

[Text Deleted]

Terry Marasco

Salt Lake City, Utah

[775.293.0189](tel:775.293.0189)

On Fri, Sep 8, 2017 at 11:24 AM, Timothy D. Hawkes <thawkes@le.utah.gov> wrote:

Terry and others:

I'm just wading into this, and don't even know the context that gives rise to this. (What's the triggering event?) I must say, however, that this notion of equating certain voices with "flat earthers" or saying that even allowing them to present "delegitimizes" a forum troubles me. The only thing that "delegitimizes" a scientific forum is when it becomes an echo chamber and minority views are silenced. And there's a certain irony in pointing to a study and claiming that it categorically proves [X], which isn't the way science works. Both science and the law thrive on different perspectives and voices and, perhaps more importantly, testing those perspectives and voices, often by re-examining the data or questioning the assumptions.

Are there crackpot scientists? Sure. Are there ones whose work is compromised either by personal bias or personal interest? Sure. But the peer review process, publication of results, etc. are all designed to reduce the effects of bias or financial motive.

Given that, if you'd like to argue to question Dr. Enstrom's methodologies and explain why he drew the wrong conclusions (without attacking him personally), that strikes legitimate dialog and legitimate use of the scientific method. Categorically excluding him as unwelcome and illegitimate simply because he reached a different conclusion is not, however, scientific, nor does it comport with the marketplace of ideas that lies at the heart of free speech in this country.

I am in no position to opine on the quality of Dr. Enstrom's research. All I know is that he holds a Ph.D from Stanford University, and has taught at UCLA (not exactly cupcake U) for decades. When UCLA fired him in 2012, he sued and, as a result, was (partially) reinstated, which means the University didn't feel like they were on strong enough grounds to stand on their original decision.

His conclusions—controversial or not—rely on publicly available data sets and his conclusions are generally published in peer-reviewed journals, near as I can tell.

Given all that, it strikes me as eminently reasonable to hear what he has to say, just as we hear what Dr. Pope and other researchers have to say. That their research may not always align is not, in and of itself, a bad thing, because the scientific method should refine the analysis over time and help sort the legitimate conclusions from the erroneous ones. That process isn't helped, IMO, by excluding a voice simply because it runs counter to other research or our own preconceived notions of what's "fact" and what ain't.

Respectfully yours,

Rep. Tim Hawkes

From: Cherise Udell <nomadcmuse@yahoo.com>

Date: Friday, September 8, 2017 at 8:50 AM

To: Terry Marasco <tmarascoutah16@gmail.com>

Cc: Patrice Arent <parent@le.utah.gov>, Joel Briscoe <jbriscoe@le.utah.gov>, Angela Romero <angela.romero37@gmail.com>, Rebecca Chavez-Houck <rchouck@le.utah.gov>, Becky Edwards <beckyedwards@le.utah.gov>, Edward Redd <eredd@le.utah.gov>, Todd Weiler <tweiler@le.utah.gov>, Lowry Snow <vlsnow@le.utah.gov>, Mark Alvarez <alvarez_mark2004@yahoo.com>, Mark Wheatley <markwheatley@le.utah.gov>, Timothy Hawkes <thawkes@le.utah.gov>, Kathy Van Dame <dvd.kvd@juno.com>, Brian Moench <drmoench@yahoo.com>, Luz Escamilla <lescamilla@le.utah.gov>, Kent Stewart Udell <udell@mech.utah.edu>, Kent Udell <Kent.Udell@utah.edu>, Dan Adams <adams@mech.utah.edu>, David Folland <dsfolland@gmail.com>

Subject: Re: Enstrom

If Enstrom is allowed to participate in a scientific forum you might as well also invite someone to speak from the Flat Earth Society.

Sent from my iPhone

On Sep 7, 2017, at 9:48 AM, Terry Marasco <tmarascoutah16@gmail.com> wrote:

All, this is a series of emails that will attempt to discourage you from allowing one of the most disrespected individuals in the scientific community to appear in a legitimate Utah forum. If you allow this it will deligitimize your caucus. This study, as well as the numerous reanalyses of Dr Pope's work confirms the effect of pollution on populations. Enstrom is published in a minor journal whose editor is a personal friend of his.

You need to cancel this presentation as you are giving an outlier in the scientific community a forum that gives him some legitimacy *and depreciates yours*.

There is no **OTHER SIDE**. Air pollution kills and especially in certain communities more than others.

BTW Enstrom and certain congressmen have tried to depreciate Arden's work but investigations and many reanalyses by BYU have sustained his work.

Note with importance: *This effect was most pronounced among self-identified racial minorities and people with low income.*

For starters: **ORIGINAL ARTICLE**

Air Pollution and Mortality in the Medicare Population

Qian Di, M.S., Yan Wang, M.S., Antonella Zanobetti, Ph.D., Yun Wang, Ph.D., Petros Koutrakis, Ph.D., Christine Choirat, Ph.D., Francesca Dominici, Ph.D., and Joel D. Schwartz, Ph.D.

N Engl J Med 2017; 376:2513-2522 [June 29, 2017](#) DOI: 10.1056/NEJMoa1702747

[Text Deleted]

CONCLUSIONS

In the entire Medicare population, there was significant evidence of adverse effects related to exposure to PM_{2.5} and ozone at *concentrations below current national standards*. This effect was most pronounced among self-identified racial minorities and people with low income. (Supported by the Health Effects Institute and others.)

Terry Marasco

Salt Lake City, Utah

775.293.018

PROVISIONAL REPORT

1950-1951

The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the work done in each of the various departments.

The second part of the report deals with the results of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

The third part of the report deals with the results of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

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The tenth part of the report deals with the results of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

The eleventh part of the report deals with the results of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

The twelfth part of the report deals with the results of the work done during the year. It is followed by a detailed account of the work done in each of the various departments.

<https://www.scientificamerican.com/article/to-kill-climate-rule-epa-proposes-redefining-the-dangers-of-soot/>

SCIENTIFIC AMERICAN

E&E NEWS

POLICY & ETHICS

To Kill Climate Rule, EPA Proposes Redefining the Dangers of Soot

Against prevailing science, the agency
is suggesting a “safe” threshold for
particulate pollution

By [Niina Heikkinen](#), [E&E News](#) on August 6, 2018



Credit: [Bryan Chan](#) Getty Images

Whether it's in haze-shrouded cities, plumes of car exhaust or even clear skies, fine particle pollution can be found just about everywhere in the United States.

These pollutants are so small they can slip inside buildings and penetrate deep into lung tissue. On hot summer days, high concentrations of the pollutant help trigger poor air quality alerts, warning the very young, elderly and sick to stay indoors. Exposure to fine particles is linked to premature death and higher risks of asthma and heart attacks.

After decades of increasingly strong assertions that there is no known safe level of fine particle exposure for the American public, EPA under the Trump administration is now considering taking a new position. The agency is floating the idea of changing its rulemaking process and setting a threshold level of fine particles that it would consider safe.

The change would affect how EPA counts the health benefits of reducing fine particles when crafting rules aimed at reducing other pollutants, like greenhouse gases. If the plan moves forward, it could have implications for how well EPA's regulations protect human health.

The Trump administration introduced the idea in the fall of 2017, when it publicly released a proposal for repealing the Clean Power Plan, an Obama-era rule to cut greenhouse gas emissions from power plants. While the rule wasn't focused on fine particles, it would have reduced them anyway by requiring plant operators to install new technology to cut CO2 emissions.

The authors of the rule had counted the health benefits from reducing particles in their justification for why the benefits of regulating greenhouse gases outweighed the costs of implementing it. The health benefits of cutting CO2 become even more evident when paired with the "co-benefits" of cutting fine particles.

This process of weighing the economic pluses and minuses of any particular rule is known, in EPA lingo, as a cost-benefit analysis. It's a key factor in determining whether a rule makes sense both in terms of its environmental and health benefits and in the costs it imposes on industry.

Critics see EPA's latest proposal on particulates as a way to undermine efforts to establish strict controls on greenhouse gas emissions from power plants, by making the benefits of regulating them seem significantly lower.

"It would be hard for the Trump administration to say [the Clean Power Plan] is a net bad for the American people; the total benefits were significantly more than the cost," said Richard Revesz, director of the Institute for Policy Integrity at New York University.

Revesz noted that Trump's EPA was only able to legally justify rolling back the rule by "mangling" the Clean Power Plan's direct greenhouse gas benefits and its additional co-benefits of cutting pollutants like fine particles.

Roughly half of the estimated benefits from reducing greenhouse gases at power plants comes from the accompanying reductions of fine particles. The Obama administration estimated that the Clean Power Plan would have \$20 billion in climate benefits and an added \$13 billion to \$30.3 billion in benefits from reductions in particulates.

FROM COAL PLANTS—AND CIGARETTES

EPA is considering changes to its cost-benefit analysis, even as researchers studying fine particles warn that federal regulations already fail to fully protect the public from the pollutants' effects on human health.

Fine particles, or particulate matter, get their shorthand name, PM 2.5, from their size. Measuring in at a minuscule 2.5 micrometers, these particles are a tiny fraction of the width of a human hair.

They can come from sources like power plants and automobiles, and from smaller sources like fireplaces and cigarette smoke. Fine particles can also form from other pollution sources in the atmosphere through a chemical reaction. They're everywhere.

Because of their ability to travel deep into the lungs, a number of its effects are linked to the cardiovascular system. The pollutants have been found to enter the bloodstream. Health studies have also drawn connections between fetal exposure and low birth weight, and increased risk of lung cancer, according to the Centers for Disease Control and Prevention.

"The PM 2.5 index is most strongly associated with health effects than any other," said C. Arden Pope, an economics professor at Brigham Young University. He is one of the researchers involved in the landmark studies of the pollutant called the "Harvard Six Cities" and the American Cancer Society study. Both outlined the connections between human health and exposure to fine particles.

Pope describes the relationship between fine particle exposure and its harm on people as linear. Like lead or cancer-causing compounds, there is no known safe level of exposure. In other words, PM 2.5 is not a "threshold pollutant," meaning there is no level below which no risk exists.

It's this fact that has Pope and other experts concerned about the EPA proposal on particulates buried in the proposed repeal of the Clean Power Plan.

To reset that threshold, the agency turned to another air regulation, the National Ambient Air Quality Standards.

This nationwide standard limits emissions of particle pollutants to within an "adequate margin of safety." Currently, that standard is set at an annual average concentration of 12 micrograms per cubic meter.

In its proposal, EPA suggested it would assume there were no health benefits in cutting fine particle pollution below the levels set in the NAAQS. Such an approach would leave out the very lowest concentrations of fine particle exposure.

DEBATE OVER SMALL LEVELS OF POLLUTION

It's still unclear whether the particle proposal will make it into the final replacement for the Clean Power Plan. A draft notice is still under White House review and could become public in the coming weeks. Because the benefits of cutting fine particles, to health and the economy, are included in a variety of federal rules, the implications of altering those values could extend beyond the Clean Power Plan.

Pope said it was “absurd” for EPA to make the argument that there was no benefit to reducing fine particles below the current national standard set by NAAQS.

“There is no evidence there is anything magical in 12 micrograms,” said Pope.

Similarly, EPA’s proposal to not count fine particles below the “lowest measured level,” or LML in epidemiological studies, also raised concerns about not fully accounting for health risk. (The lowest measured level EPA took comment on in its repeal proposal was between 8 or 5.8 micrograms per cubic meter.) Just as EPA is assuming adequate health protections from controls of fine particles set by NAAQS, in this approach it’s assuming that any concentration of NAAQS that hasn’t been tested in health studies carries no risk.

Using LML instead of NAAQS would mean that EPA counts more benefits of cutting fine particles but still suggests that some exposure for the American public is OK.

“LML is just a better arbitrary threshold than the NAAQS,” said John Bachmann, former associate director for science, policy and new programs in EPA’s Office of Air Quality Planning and Standards. Bachmann pointed out that recent research using Medicare data found there was an increased risk of premature death from fine particle exposure at less than half the concentrations controlled by NAAQS.

That 2017 study relied on data from 60 million Medicare recipients nationwide.

The EPA proposal on fine particles is supported by industry representatives like Robert Kappelmann, an energy and environmental consultant working for the Florida Municipal Electric Association. Kappelmann and other critics of the Clean Power Plan argue that EPA is “double-counting” health benefits already accounted for under NAAQS, which requires states to craft their own plans to control particulate pollution. He noted that most places in the country are already compliant with NAAQS standards.

Kappelmann pointed to EPA’s standard for fine particulate matter, stating EPA had established 12 micrograms to be within a “margin of safety.” That means either EPA’s value is wrong or particulate levels below that are safe enough for human exposure, he said.

“Something is out of whack there. We think that’s inappropriate,” Kappelmann said of the Clean Power Plan’s original co-benefit analysis.

Other groups, like the Utility Air Regulatory Group, have raised similar concerns in public comments to EPA.

The group noted that EPA’s own modeling from 2016 predicted that just 5 percent of the population would be exposed to particle levels that reach 12 micrograms per cubic meter. Most of the predicted benefits of the Clean Power Plan would come from reducing fine particles below that level, the group said.

“Because, as discussed above, NAAQS are set at the level EPA has determined is protective of public health, it is improper to claim benefits below that level,” the group wrote.

TRUMP AIMS FOR 'UNDERPINNINGS'

But former EPA officials noted that when the agency talked about bringing fine particle levels down to within a "margin of safety," officials weren't saying that level of exposure was without risk.

"That doesn't mean zero pollution—there's a judgment for the administrator to make each time the NAAQS are reviewed, looking at the newest science, weighing public health protection against the certainty of scientific information," said Janet McCabe, former acting assistant administrator of EPA. She argued that the Trump administration's main target is the "underpinnings" of public health protections.

Bachmann, the former EPA official, also rejected the idea that EPA was double-counting benefits. Factoring in the co-benefits of other regulations is a regular part of drafting rulemaking, he said. Besides, he added, the Clean Power Plan was looking at benefits of fine particle reductions below the levels controlled under NAAQS.

"Most of the things we regulate, it's hard to quantify the benefits, so we quantify what we can," said Bachmann. In this case, it was cutting particulate pollution.

If EPA does go forward with its proposal on particles, it could have ripple effects on other federal rules. In a recent working paper in the *Minnesota Law Review*, NYU's Revesz and co-author Kimberly Castle said that if the proposed changes are finalized, the ensuing court challenges could have "far-reaching consequences" for climate and other public health rules. That's because the co-benefits of particulate reductions below 12 micrograms are widely used in regulations on emissions from stationary sources.

In addition to the Clean Power Plan, the value of reducing fine particles plays a major role in backing up the Mercury and Air Toxics Standards. The Obama administration estimated that reducing mercury and toxics would save between \$4 million and \$6 million, while a whopping \$37 billion to \$90 billion would come from the byproduct of lessening particle pollution.

Revesz said it's hard to imagine the courts would accept any attempt by EPA to undo its use of co-benefits. That would deviate from standard practice at the agency. He and Castle slammed the Trump administration's proposed changes.

"The Administration, and other regulation opponents, suggest theirs is a logical way to account for effects, arguing that including these benefits artificially inflates the positive effects of regulating. But what they advocate is a dishonest attempt to obscure the actual effects of regulations from the public," they wrote.

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AIR POLLUTION

To kill climate rule, EPA wants to redefine danger of soot

Niina Heikkinen, E&E News reporter

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Whether it's in haze-shrouded cities, plumes of car exhaust or even clear skies, fine particle pollution can be found just about everywhere in the United States. After decades of assertions that there is no known safe level of fine particle exposure for the American public, EPA is now floating the idea of setting a threshold level of fine particles that it would consider safe.

World Health Organization Map

2015 Annual Mean Ambient PM_{2.5} ($\mu\text{g}/\text{m}^3$)

<http://www.who.int/airpollution/en/>

