

## Science: Air Pollution and the Environment

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Washington Post environment writer **Juliet Eilperin** was online **Monday at 11 a.m. ET** to discuss the environmental effects of smog and air pollution.

In Monday's **Science Page** feature, she reports on new findings that show government scientists underestimated the amount of pollutants generated annually by diesel trains: Research has linked soot and smog to premature heart attacks as well as lung disease and childhood asthma, leading environmental activists to argue that the government has no choice but to impose tighter rules on locomotives.

Read the rest of the story: **[Attention to Locomotives' Emissions Renewed](#)** (Post, Aug. 14, 2006).

**A transcript follows.**

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**Kensington, Md.:** I'm curious how the emissions from gasoline-powered lawnmowers compare to those of other sources. I understand that mowers have no emission controls whatsoever, yet this source of pollutants (and greenhouse gases) is seldom mentioned by the media. There are alternatives - electric and push/reel mowers - but people may not be aware that the gas ones are a problem.

**Juliet Eilperin:** This is an excellent question: gas-powered lawnmowers are a significant source of pollution, and Congress has been fighting for a while over whether to require manufacturers to put catalytic converters on them in order to cut down on pollution. Sen. Kit Bond (R-Mo.), whose state boasts a major manufacturer of lawnmower engines, has been able to block such rules in the past, but it's an ongoing source of debate. California, which under the Clean Air Act can go beyond the federal government in cutting down on air pollution, is moving ahead with new regulations for lawnmowers.

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**Brunswick, Md.:** As a commuter that lives in Brunswick, where a major train yard exists that services commuters from Frederick County and the West Virginia Panhandle, how concerned should I be about this? I ride the train into DC from Brunswick every day and live only 1/4 mile from the train yard. Needless to say, this article definitely caught my eye.

**Juliet Eilperin:** Well, I don't want anyone to panic because of my piece, but I think it's fair to say you are more exposed to air pollution than folks who live further away from the railyard. A spokesman from the American Association of Railroads told me that his members are working on ways to cut down on the idling trains do at railyards: that's a major source of railyard-related pollution. Chicago has a pilot project aimed at testing this new technology.

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**Los Angeles, Calif.:** Isn't it true that if enough soot gets into the atmosphere, maybe it will block the sun and we can reverse global warming?

**Juliet Eilperin:** You've referenced an interesting development in climate science: some researchers are looking at how soot in the atmosphere blocks the sun's rays and in doing so, reduces the impact of global warming. Unfortunately, policy makers have a strong incentive to reduce soot because of its impact on public health, so I don't think we'll be relying on this effect in the years to come.

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**Thane, India:** Pollution is everybody's problem and hence it has become nobody's problem...The chaos now is due to a lack of Governmental initiatives or true willingness of all the people/establishments involved...

An approach to solve the problem could be a Public Private Partnership (PPP) where the findings of the Government Scientists could be analysed by an independent body of scientific community.

The delay in setting the priorities right is a cause for alarm... We need to get the willpower from the Governments worldwide to ascertain on the matter...This can be done by the media alone and effectively.

Thanks for allowing me to participate/comment on the problem.

**Juliet Eilperin:** You're very welcome. I think policy makers and activists across the globe are becoming more open to the idea of creating international alliances in order to deal with air pollution, since people are becoming more aware of how this pollution can travel across wide distances.

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**Arlington, Va.:** My husband and I are planning to have children, and are concerned about the poor air quality in DC. A number of colleagues and friends in the area have children with asthma or respiratory problems. Are the incidences of these childhood diseases higher in the DC Area, or does it just seem that way? What can we do to reduce our children's exposure to smog and other pollutants? (e.g. are certain times of day worse than others to be outdoors, etc.) Thank you!

**Juliet Eilperin:** I don't know the precise answer in terms of childhood asthma rates in DC, though it's certainly true that DC's air quality fails to meet federal standards. As a native Washingtonian, I would hate to tell anyone to move away from DC—you could check with a local environmental group, or call the DC government's information hotline and I'm sure they could tell you the answer. I would say you might want to avoid moving to California's Central Valley, where there is serious air pollution and the childhood asthma rates are four times higher than the national average.

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**Clifton, Va.:** Hello, thanks for doing this chat on this vital issue. Can you refer me to studies on the long-term health effects of exposure to smog? The current standards for 8-hour exceedences for severe/moderate non-attainment can mean that only a few days of smog puts a community in non-compliance. Some years ago, I was trying to convince some (conservative) local politicians on the health effects of smog, since the DC region is in non-compliance. The meta-studies I found said that during exposure, lung function decreased, but recovered shortly thereafter.

I was disappointed, because I was hoping the smog issue could help us get ahold of our traffic challenge here! (I used to say, "clean cars and clean engines mean we'll be stuck in traffic in clean cars", and strove to achieve other traffic management strategies.)

I have devoted the last 25 years of my professional life to environmental protection, but/and try to be scrupulous about truly "good science" - not that political term meaning, if you can't prove it don't regulate it. I know that soot/particulate matter has proven long-term health effects, but I want to learn more about smog. Texas A&M had some good meta-studies.

**Juliet Eilperin:** The American Lung Association would probably be the best place to get information on this issue, since they've been quite active in collecting the relevant scientific studies when it comes to pollution and health effects. Alternatively, you could check with the group Environmental Defense, which is based in New York but has a DC office as well.

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**Washington, D.C.:** So if I live in DC's exurbs, I shouldn't drive because that's bad for pollution, and now I shouldn't take VRE or MARC because they idle and cause pollution? Maybe I should just walk. I think I'll get to work in about a day.

**Juliet Eilperin:** Well, you could move closer to DC so you could bike or walk, the revival of urban areas is really one of the keys to cutting down on pollution. (My colleague Michael Grunwald wrote about this in the Outlook section on August 6.) And trains are still more fuel efficient and less polluting than trucks and buses right now, it's just that once the new federal diesel rules take full effect in 2030, trains will be behind unless they, too, will be subject to stricter rules. I have a sense that they will be.

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**Memphis, Tenn.:** Hi Juliet! I'm the Air Quality Coordinator for Memphis and Shelby County, Tenn. I'm so glad that you are hosting this forum on diesel emissions from trains. What are the best voluntary reduction programs/projects available for railroad? Memphis has all five of the major railroads in town, and we are going to get more, so finding a way to reduce their impact is important! Thanks!!

**Juliet Eilperin:** Nice to hear from you-I'm a fan of Memphis, so I'm glad to hear you're on the case. I'm not sure what are all the various voluntary projects, but I'm sure the Environmental Protection Agency keeps track of these-as I mentioned earlier in the chat, I do know of a pilot program in Chicago. If not I would bet you could find out more from the State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials-William Becker is their executive director, and they're based in Washington DC.

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**Berkeley Springs, W.Va.:** I was wondering if there are any plans for alternative fuel trains in the future?

**Juliet Eilperin:** I know that train engine manufacturers, such as General Electric, have been developing cleaner engines, but I believe these still use diesel. I'm not sure if they've explored powering locomotives with alternative fuels, it's a good question.

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**Washington, D.C.:** Has there been any response to these findings from other countries that rely more on trains, or have most already taken measures to keep their engines running cleaner?

**Juliet Eilperin:** I'm not sure about that, but I know some countries, such as Switzerland, have recently adopted transportation policies that emphasize trains over trucks and buses. It's a question that's worth exploring.

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**Silver Spring, Md.:** I heard that air pollution is one of the leading causes of water pollution. Can you verify that and, if so, what are the most important steps we should take to minimize air pollution's impact on the Chesapeake Bay?

**Juliet Eilperin:** It's true that nitrogen oxide emissions, which come from trains, cars, trucks and buses, contribute to water pollution once they come down from the atmosphere in the form of precipitation. It's also true that some of the excess nitrogen in our waterways, including the Bay, stem from fertilizer that farmers use. So I think most experts think you need to work on several fronts to reduce the amount of nitrogen that's entering the Chesapeake Bay and elsewhere.

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**Baltimore, Md.:** I remember an essay written several years ago by a locomotive design engineer, in which he proposed, half-farcically and half-seriously, that the answer to the pollution concerns of railroads was to revert back to steam locomotives. The gist of his argument, as I recall, was that the by-products of burning coal in a steam locomotive were largely carbon dioxide and carbon monoxide and other organic compounds more readily processed by nature, whereas diesel locomotives by comparison produced an "alphabet soup" of more noxious and inorganic compounds such as nitrous oxides. True, steam locomotives can produce particulates, but they are mostly cinders that fall to the ground in seconds as opposed to soot remaining in suspension for minutes or hours.

Now, this gentleman was also a known railroad historian and steam locomotive enthusiast, so it's safe to say that one had to take his arguments with a grain of salt or a sense of humor. Besides which, it's far more important to improve the overall efficiency of a locomotive (and reduce unburned fuel belching from the stack in the form of smoke, for example) than to change modes so drastically.

Left unnoted in your article, however, is the growing trend of the major railroads in North America to experiment with hybrid technology. Several railroads have hybrids (engines running generators charging battery banks) at work in high-pollution areas like Los Angeles, and many more are on order to replace aging switchers in yards.

**Juliet Eilperin:** First I have to thank you for providing an answer to a question posed by another reader—that some trains are experimenting with hybrid technology. Los Angeles has been working hard to reduce pollution from its port, which includes railyards: my colleague John Pomfret had a good piece about this earlier in the month.

And in terms of steam locomotives, I'm no expert, but carbon dioxide emissions have an obvious downside, which is contributing to climate change, even if they're not as obviously damaging to the public's health.

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**Alexandria, Va.:** In Alexandria we have a power plant that has had some major environmental violations. For a while it was shut down, and now it's running again. Should I and residents living near and around this plant have to be worried and what kind of precautions can we take?

**Juliet Eilperin:** I've had a couple of questions about Mirant, which has come under scrutiny for the amount of pollution it emits. While it was shut down for a short time, government officials decided the local region needed the power Mirant supplied, so they reopened it. While our metro section has been covering this story, I think it's safe to say government officials are still looking at the power plant and trying to see how to reduce its pollution. The Environmental Integrity Project, which is based in DC, is a group that has focused on this issue.

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**Washington, D.C.:** Considering that, since the 1970s, the United States has made and continues to make remarkable progress with respect to pollution of our air, water and soil; and considering that a sizeable majority of the American public believes the opposite to be true (namely, that the pollution situation has gotten worse), why don't The Post and other major media outlets feel an obligation to publicize more of the good news?

**Juliet Eilperin:** I do write about good news, in fact on Saturday I had a piece in the Post about how the EPA had negotiated a pact with the auto and steel industry in which the two industries agreed to pay \$2 million each to help remove mercury switches from vehicles that are being scrapped, because once these autos are melted to make recycled steel, the mercury from these switches goes back into the atmosphere. This program won't cost taxpayers anything, and by 2021 it will likely remove 75 tons of mercury from the air. I always believe in giving the government and independent groups, whether it's industry or advocacy groups, credit for the work they do to make the environment better.

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**Crofton, Md.:** You mention in the article that trains will emit almost twice as much soot as trucks by 2030. Is that also true for greenhouse gases like CO2?

**Juliet Eilperin:** I've checked with some experts and since carbon dioxide emissions from trains have not been such a big public policy question, I would guess cars and truck emit far higher amounts of CO2 than trains.

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**Brookeville, Md.:** How do emissions from locomotives compare to pollution from cars, including particulate from tire wear? I've heard that tire dust is a significant asthma factor in cities.

**Juliet Eilperin:** Pollution from car exhaust is expected to drop sharply from automobiles in the coming years because of federal rules. I'm not sure about the question of particulate matter from tire wear-I know there have been some studies on it, but I don't have any definitive data on that issue.

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**washingtonpost.com:** [Pact on Mercury in Scrap Yards](#), Aug. 12, 2006

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**Memphis, Tenn.:** Thanks Juliet for answering my question! I have one more for you. What do you think about trains running on biodiesel? Have you seen or heard of trains using it as an alternative to petrodiesel?

**Juliet Eilperin:** I know trains are expected to transport biodiesel in the future, since there is not the kind of pipeline network for alternative fuels in the way we have a pipeline network for natural gas. I'm not sure what are the merits or disadvantages to running trains on biodiesel, but I'm sure it's worth looking into.

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**Washington, D.C.:** So what would it take for diesel locomotives to reduce pollution? Is the technology already out there in other countries like France and Japan, or is this a major overhaul that would cost train manufacturers and therefore commuter lines a prohibitive amount of money?

**Juliet Eilperin:** My understanding, from talking to EPA officials, is that in order to reduce nitrogen oxide and particulate matter pollution from trains by an order of 80 to 90 percent, engine manufacturers would have to change the design on train engines and there may also be a need to install new technology to treat locomotive exhaust. I'm not sure what the cost would be for this, though I know auto manufacturers have said they can comply with similar rules regarding trucks and buses.

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**washingtonpost.com:** Here is the story that Juliet referenced by Michael Grunwald: [Dig the Big Dig](#) and here is an earlier story, also by Grunwald, on a similar topic: [Warming to the Inconvenient Facts](#)

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**Arlington, Va.:** While electrified rail is probably the most clean (land-based) way for bulk goods movement, it has been widely cited that diesel-powered freight rail uses 1/8 as much diesel as 18 wheel freight per ton/mile. Does any recent findings refute this ratio? If so, what is the ratio of diesel-rail freight vs. diesel trucking per ton/mile?

**Juliet Eilperin:** The spokesman from the Association of American Railroads told me trains were three times as fuel efficient as trucks per ton/mile, not eight times as efficient. So those are the most up-to-date statistics I have on that issue, though again, that's a comparison under current conditions, not how trucks will be once the new federal diesel rules take full effect.

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**Washington, D.C.:** I was struck by the stat that trains spend 3/4 of their time idling -- why is that? Is there awareness in the industry that it's a waste of fuel or at least a public health hazard?

**Juliet Eilperin:** Yes, as I mentioned, the locomotive industry is working to cut down on idling since after all, it's not in its interest to waste fuel.

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**Washington, D.C.:** How close do you have to live to a railway station to experience the ill effects of the pollution? Your story mentions the Houston/Galveston area -- does that mean the whole

city is at risk or just the area close to the railway? Should D.C. residents ask questions about our own railway stations? What organization is a good contact?

**Juliet Eilperin:** I'm not sure about how close you have to be to a railyard to be at higher risk for pollution-I would suggest you contact the scientist I quoted in my piece from the Natural Resources Defense Council, who is based in San Francisco. And in terms of Houston/Galveston, that's obviously a very busy traffic center.

Thanks for all the great questions this morning: I'm signing off now.

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