

US EPA strengthens PM_{2.5} air pollution limits

On Feb 7, 2024, the US Environmental Protection Agency (EPA) finalised stricter limits on air pollution from fine particulate matter (PM_{2.5}), predicting that the update will prevent 4500 premature deaths each year. The new rule moves the limit from 12 to 9 µg/m³.

This update to the National Ambient Air Quality Standards is the first since the Obama administration; the Trump administration disbanded the agency's PM Review Panel (since reconvened) and ignored their conclusion that the existing PM_{2.5} limit was too high to protect human health. PM_{2.5} penetrates deep into the lungs and passes into the bloodstream, increasing the risk of asthma attacks, lung and heart disease, premature birth, and lung cancer.

"This update is well past due", said Chitra Kumar (Union of Concerned Scientists, Washington, DC, USA). "We have been stuck with an outdated, insufficiently protective annual standard for far too long due to an abuse of science and perversion of process during the past administration."

The new standard also updated the EPA's colour-coded Air Quality Index, used in local warnings about moderate, unhealthy, and hazardous air quality days. This change will help to protect susceptible populations, such as people with asthma, noted John Bachmann (Environmental Protection Network, Washington, DC, USA), who worked at the EPA Air Office for 33 years on science and policy. Together with EPA's proposed greenhouse gas regulations for power generation, the new standard will hasten the day that all US coal-fired power plants are closed, Bachmann said.

The new standard also advances the Biden administration's

environmental justice goals because the communities facing the worst PM_{2.5} air pollution tend to be racial minority neighbourhoods, Bachmann noted. The new standard will help to reduce the resulting racial disparities in the impact of air pollution on health, but some believe that it does not go far enough.

"As the EPA's National Ambient Air Quality Standards PM advisory committee noted, communities of colour are impacted disproportionately by soot pollution", Kumar said. "While a lower annual standard will narrow the gap between risk for White and Black populations, a substantial disparity will remain, which is why we will continue to advocate specifically for a stronger 24 h standard." The EPA update only affects limits to the annual average levels of air pollution, not separate daily pollution limits, which remain unchanged.

Establishing the updated standard is just the starting point. Enforcement will require ongoing air quality monitoring, particularly in the most exposed communities. But the polluting industries will probably sue, seeking to reverse the new standard before implementation or enforcement. Lobbyists for the cement, construction, and oil and gas industries warned that stricter limits would damage the US economy. But the EPA contends that the new standard would strengthen the economy, avoiding an estimated 290 000 workdays lost to PM_{2.5}-associated illnesses each year and saving up to US\$46 billion in health-care costs in 2032.

Industry claims about economic calamity "are just not true", said Paul Billings (American Lung Association, Washington, DC, USA). "Since 1970, we have seen a 304% increase in the gross domestic product

and a 78% decrease in pollution emissions. These data confirm that economic growth and air pollution decreases go hand in hand. Cleaner air makes people healthier and more productive."

The US Clean Air Act requires the EPA to review scientific research every 5 years, updating air quality standards for PM, ozone, carbon monoxide, sulphur oxides, nitrogen oxides, and lead.

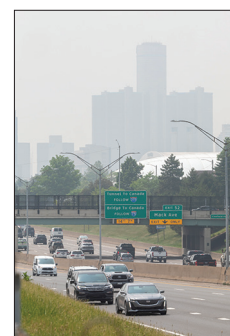
The updated PM_{2.5} standard is "a critical course correction, reflecting advances in scientific understanding and promising major benefits for people across the country", Kumar said. No safe concentration of PM_{2.5} exposure has been definitively identified, she noted. There is still more work to do on shoring up PM protections, experts agreed.

One increasingly common source of PM exposure is wildfires, which are becoming more frequent with climate change. But they are considered exceptional events under the US Clean Air Act, and state and local governments can petition the EPA not to count wildfire smoke when assessing compliance with the new PM_{2.5} standard, Billings said.

The next few months will be "make or break time on some really important rules", Billings said, citing a particulates rule for gasoline-powered vehicles that would improve air quality and help to address climate change. "The EPA has a big to-do list."

"There is newer science coming to light that particles even finer than PM_{2.5}, or ultrafine particles, can pose a specific danger to public health and may require distinct action—something the EPA must continue to evaluate moving forwards", Kumar said.

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For the **US EPA announcement** see <https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-implementation-fact-sheet.pdf>

For more on **disbanding of the PM Review Panel** see **News** *Lancet Respir Med* 2019; 7: 737–38

For more on **health hazards of ultrafine particulates** see https://cfpub.epa.gov/ncer/abstracts/index.cfm/fuseaction/display.abstractDetail/abstract_id/1098