

Episode 56DA through 56 DC, April 22, 2023, The “Comparing Stack Emissions: Fossil Fuel emissions versus Wood Burning emissions” issue. And Happy Earth Day!

Episode 56DA

Residents Against Wood Smoke Emission Particulates (see RAWSEPresidents.wordpress.com and Scroll Down for PDFs of articles with U R L’s to search on, and on the website are links to 10 minute Tiktok and Youtube videos and 30 minute podcasts on Spotify, Podbean, podcasts.google.com, Amazon Music Prime (free for Prime subscribers), Cast Box, and Pocket Cast (Pocket Cast is only free on the phone App)

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United States

RAWSEP View: The E P A will propose the first controls on Greenhouse Gas Emissions **at the stack** of existing power plants. RAWSEP doesn’t yet understand if this requirement for companies to reach emissions limits, by either cleaning up what is emitted or performing Carbon Capture before the emissions leave the stack, will **apply to biomass (wood burning) power plants**. “Three regulations, to 1)cut stack greenhouse gas emissions at plant stack, 2)cut tailpipe emissions from cars, and 3)curb methane leaks, together with 4)the 2022 Inflation Reduction Act pouring \$370 billion into clean energy programs, the U S might meet Mr. Biden’s pledge to cut U S emissions in half by 2030.

Three factors have emboldened the Biden administration 1)**carbon capture technology has advanced**, 2)In the Inflation Reduction Act 2022, Democrats **added language that classified greenhouse gases as pollutants to be regulated by the E.P.A.** and 3) **financial carbon credits** can be issued to companies for using Carbon Capture, making it economically feasible.

**Instead of creating one limit** that all power plants must comply with, the E.P.A. intends to be flexible, with 1)targets based on size of the plant, 2)whether it runs regularly or intermittently, and 3)whether it is already scheduled for retirement. 4)**Some coal plants that are scheduled to shut down in the next decade may not have to meet the new standards at all.”**

The idea of measuring emissions at the stack (or at the fence line if the fence line is the yard of a near neighbor of a residential wood burner), whether it is a biomass power plant or a residential wood stove, is a good precedent for measuring PM2.5 pollution. This precedent can be applied to Residential Wood Burning. The flexibility of coming up with a solution with HOW to cut emissions at the stack is up to the wood burner. If they ditch their wood burning stove altogether, it will be financially logical. If they employ Carbon Capture technology at the stack of their residence, it may be expensive, and residential wood burners cannot be expected to be helped financially to use expensive and possibly, probably, futile Carbon Capture on their residential wood stoves. The success of Carbon Capture can be easily ascertained, if it does not bring down the percentage of PM2.5 in the air from residential wood stove emissions. PM2.5 is particulate matter of 2.5 micrometer size, the perfect size to infiltrate the human lung, setting off a cascade of human health problems. Wood smoke consists of 90% PM2.5

Companies who try Carbon Capture and find it doesn’t work can turn to limiting their emissions or scrap their old ways and turn to clean sources of power, such as wind, solar and geothermal. Or in the case of residential wood burning, turn to wind, solar and geothermal power sent to an electric grid, from which residents can power the low or no particulate emitting Heat Pumps that work at temperatures well below zero Fahrenheit.

<https://www.nytimes.com/2023/04/22/climate/epa-power-plants-pollution.html>

New York times

E.P.A. to Propose First Controls on Greenhouse Gases From Power Plants

If the regulation is implemented, it will be the **first time the federal government has limited carbon emissions from existing power plants**, which generate 25 percent of U.S. greenhouse gases.

If the proposed regulation is implemented, coal and gas-fired power plants, like the Plant Bowen power station in Georgia, would have to cut their carbon dioxide emissions by 2040 .

April 22, 2023

Excerpts edited by RAWSEP for brevity and clarity.

WASHINGTON — President Biden’s administration is poised to announce limits on greenhouse gas emissions from power plants that could **compel them to capture the pollution from their smokestacks**, technology now used by fewer than **20 of the nation’s 3,400** coal and gas-fired plants.

If implemented, the proposed regulation would be the first time the federal government has restricted carbon dioxide emissions from existing power plants and future plants, which generate about 25 percent of the planet-warming pollution produced by the United States.

Coal and gas-fired power plants would have to cut or capture nearly all of their carbon dioxide emissions by 2040. The proposed rule will be opposed by the fossil fuel industry, and power plant operators. It will be legally challenged by a group of U S state Republican attorneys general. A future Presidential administration could also weaken the regulation. The regulation, proposed by the Environmental Protection Agency, is being reviewed by the White House's Office of Management and Budget.

It would not mandate the use of carbon capture equipment, nascent and expensive. Gas plants may switch to a cleaner fuel source like green hydrogen. But the regulation could lead to the broader adoption of carbon capture technology. Air pollution. Implementing stricter limits on fine particulate matter PM2.5 could reduce mortality rates by up to 7% for Black and low-income Americans over 65 who are already exposed to some of the dirtiest air in the United States, according to a new study. The research could inform a crucial E.P.A. decision to tighten limits on fine particulate matter.

60% of electricity generated in the United States in 2022 came from burning fossil fuels like coal, natural gas and petroleum.

Biden administration plans to cut tailpipe emissions dramatically by speeding up the country's transition to electric vehicles, and curb methane leaks from oil and gas wells.

Patrick Morrisey, the Republican attorney general of West Virginia, a major coal-producing state, said "we'll be ready once again to lead the charge in the fight against federal overreach,".

Some environmental groups are also critical of carbon capture technology, arguing that it makes more sense to switch to wind, solar and other clean energy sources that don't pollute in the first place.

The regulation will have a public comment period and will be implemented in 2024.

The Biden administration is racing to implement the trio of proposed regulations before Republicans can have a chance to nullify them if they win control of Congress in 2024. Under the Congressional Review Act, a new Congress elected next November could reach back and overturn agency regulations that were finalized within 60 days of the previous Congress.

The crackdown on emissions from automobiles, oil and gas facilities and power plants comes as Mr. Biden prepares to announce his bid for re-election,

Two related actions by the Administration this past week. President Biden will seek \$500 million from Congress to fight deforestation in the Amazon. On 4/21/2023, President Biden signed an executive order to create the White House Office of Environmental Justice and to require every federal agency to develop plans to address the disproportionate impact of pollution and climate change on minority and tribal communities.

Biden said, "Since 2020 thousands of acres of land burned flat by wildfire ,communities turned to rubble by storms growing more frequent and ferocious. It's an existential threat."

Still, electric utilities have complained that any policy that forces them to install carbon capture technology would be far too expensive, driving up energy costs for consumers.

A 2021 report by a group of 600 global investors, including BlackRock, State Street Global Advisors and other top shareholders of U.S. investor-owned utilities, said the high costs of carbon capture "make it a risky and potentially expensive decarbonization strategy."

But, conditions surrounding carbon capture technology are shifting. Calpine Corporation, one of the country's largest generators of electricity from natural gas, is building enormous carbon capture and sequestration facilities for its power generators in Deer Park, Texas. But only about 40 power plants have Carbon Capture equipment worldwide.

The Inflation Reduction Act offers incentives to speed up adoption of Carbon Capture. The law raised existing federal tax credits for electric utilities that capture their carbon dioxide pollution from \$85 to \$135 per ton of carbon dioxide, up from \$30 to \$50.

Episode 56DB

4/19/2023 Residents Against Wood Smoke Emission Particulates (RAWSEPresidents) Information Sheet given to Wisconsin State Senators and Representatives on Lung Action Day at the Wisconsin State Capitol

2023 Wisconsin Department of Natural Resources (DNR) and Wisconsin Conservation Congress (WCC) Resolutions

\* 131523 : Would you support legislative action to provide citizen-scientist residents 2.5 micrometer Particulate Matter (PM2.5) Purpleair monitors to end residential wood burning, which emits excessive hyper-localized PM 2.5 harm to health of near neighbors? (requires legislation)

\* 131623 : Would you support legislative action to use citizen-scientist PM2.5 residential wood burning emissions online data using hyper-localized Purpleair monitors to enforce ordinances or laws to shut down residential wood burning for health of neighbors? (requires legislation)

### **Background to Resolutions**

**The problem.** PM2.5 is Particulate Matter of 2.5 micrometer size. PM2.5 is the perfect size to infiltrate the human lung, producing a cascade of human health problems and early deaths. Wood smoke is 90% PM2.5. Wood burning emits more PM2.5 than coal burning. Residential wood burning in even United Kingdom (UK) Ecodesign certified wood stoves, which are comparable to or less polluting than U S certified wood stoves, produces 450 times the polluting PM 2.5 as residential natural gas furnaces and more than coal burning. Indoor wood stove manufacturers and their wood burning industry lobbyists have created loopholes for residential wood stove compliance with Environmental Protection Agency (E P A) emission limits.

**The solution.** Consider the analogy of Mothers Against Drunk Driving (M A D D). Citizens harmed by drunk drivers, who had family members killed only because they happened to be in the path of drunk drivers, campaigned to have breathalyzer tests for drunk drivers used, and the data from breathalyzers used to get drunk drivers off the road. RAWSEPresidents were harmed or died early, or their family members were harmed or died early because they happened to be in the path of the PM2.5 smoke from residential wood burning, as near neighbors. RAWSEPresidents is campaigning to have PM2.5 monitors placed hyper-locally and to have the data from those PM2.5 monitors used to shut down residential wood burning. RAWSEPresidents have already had costs to their health, and the cost of each PurpleAir 2.5 monitor is only under \$300. Monitoring and regulation can protect the health of near neighbors of residential wood burners. Indigent wood stove burners in the United States are eligible to apply to the Low Income Home Energy Assistance Program (**LIHEAP**) to get financial help to switch to alternate forms of home heating such as the new Heat Pumps that work at temperatures well below zero Fahrenheit.

**Wood burning is not Carbon Neutral.** In 2020, United States (US) Scientists wrote a letter to the U S Congress warning against declaring wood burning Carbon Neutral. High levels of particulates are shown on resident-owned PM 2.5 monitors of near neighbors of residential wood burners. U S Environmental Protection Agency (E P A) certification of wood stoves has been a failure in containing PM2.5 pollution. Hyper-localized Purpleair PM2.5 data, also shared on U S Airnow Smoke and Fire maps, is seen by the general public and government officials 24/ 7, allowing weekend and overnight data downloads from near neighbors' yards in normal working hours, with no need to enter residences to shut down residential wood burning. If U S E P A PM2.5 limits change to 8 micrograms per meter cubed annually and 25 micrograms per meter cubed daily, as expected, in 2023 PM2.5 polluting limits of residential wood stove use will be redefined. The European Union (E U) in 2022 stopped most subsidies for wood burning. In the United Kingdom only 8% of residents burn wood but produce more PM2.5 than traffic. PM2.5 helps cause climate change as well as causing human health problems and early deaths. The Paris Accords and subsequent international agreements that set Climate Goals for countries around the world leave out biomass (wood) burning from their counts of PM2.5, using the unscientific argument that wood burning is Carbon Neutral.

**Analogy of Heat Pumps to Electric Cars.** The E P A's current proposal to limit tailpipe emissions before cars come off the assembly line should serve as an example for how to limit all sources of PM2.5 emissions. The end result of the E P A's legislation will be replacement of polluting gas-powered cars by electric cars in the near future, saving us from catastrophic climate change and human health problems and early deaths from particulate pollution from that source, car emissions. Because cars are not a stationary source of PM2.5 pollution, cars are a mobile source of PM2.5 pollution, the E P A's specific proposal is appropriate and will work as a solution for PM2.5 emissions from cars. Because indoor wood stoves are stationary sources in residential areas, fence line or stack monitoring in the yards of near neighbors who complain of PM2.5 entering their yards and infiltrating their homes is appropriate, and appropriately hyper-localized, and will work as a solution for PM2.5 emissions from residential wood burning, if there are laws which use the PM2.5 monitor online data for each individual wood stove to solve PM2.5 emissions by shutting down those individual wood stoves one at a time. It is hard to make individuals responsible for their actions, but it can be done. The federal Low Income Home Energy Assistance Program (**LIHEAP**) can help pay for new Heat Pumps to replace wood burning stoves of indigent residential wood burners.

**Residents Against Wood Smoke Emission Particulates** [RAWSEPresidents.wordpress.com](https://rawsepresidents.wordpress.com) [rawsepresidents@gmail.com](mailto:rawsepresidents@gmail.com)

**MY YARD AND HOME.** I have been a near neighbor of a residential wood burner in the city of Madison, Wisconsin since 2005. I use three air purifiers inside my home when wood smoke infiltrates my home. I worry about developing cataracts and have one cataract scar. I have burning eyes from wood smoke on some occasions, despite using air purifiers inside. I recently pitched a tent and will try camping out in my own backyard for the first time in 18 years, this year, especially if laws are passed to limit pollution from wood stoves that affects near neighbors. I have limited the time I spend in my yard in the past, but I endure shortness of breath at times when I am forced to shovel snow in the middle of a cloud of wood smoke in my yard. Wood is burned as a hobby by my neighbor, who is hooked up to gas heat, but turns it down in order to burn wood. His average utility bill is twice as much as mine.

**MY VIDEOS.** I've worked at UW Madison since 2001, first as a biochemist doing epilepsy research, and then in financial positions. I have been making podcasts since April 2022 and videos since August 2022. I testified to the Environmental Protection Agency (EPA) in favor of lowering PM2.5 "safe" levels on 2/23/2023. I purchased a PurpleAir PM2.5 monitor in August 2021. I download data from the monitor as evidence of air pollution from a known stationary source. I have communicated extensively with the Madison Health Department for 18 years on the subject of wood smoke emission particulates affecting my and my husband's health. The buck is passed up to the Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (DNR).

**MY RESOLUTIONS.** I submitted 2 resolutions to the Wisconsin Conservation Congress (WCC) 3/1/2023 and they were voted on, on 4/13/2023. The resolutions were 1. to ask the Wisconsin Legislature to pass laws to hand out low-cost laser PM2.5 monitors to any near neighbor of an indoor residential wood burner to put in their yards, and to 2. pass laws to use the data from PM2.5 monitors as evidence to shut down indoor residential wood burning. The Office of the Inspector General (OIG), "watchdog" of the EPA released a report 2/28/2023 that stated that the current practice of certifying wood stoves as "safe" is flawed by lobbying by the wood stove industry resulting in so many loopholes for compliance with "safe" levels of particulates that wood stoves today are sold when they are highly polluting.

#### Episode 56DC

I believe wood stove certification should be replaced by fence line monitoring of wood burning emissions using PM2.5 monitors, whether \$100,000 standard EPA PM2.5 monitors (11 on Wisconsin EPA AirNow Smoke and Fire Maps today) or PurpleAir resident owned PM2.5 monitors (55 on Wisconsin EPA Airnow Smoke and Fire Maps alongside standard monitors today. PurpleAir monitors are correlated with standard monitors using a simple mathematical formula). Historic data of weekend and overnight PM2.5 stored on the PurpleAir website can be downloaded by government officials during normal working hours. There is no need to enter a residence to know wood burning is occurring and to take steps, beginning with fines, to shut it down.

**INDOOR WOOD STOVE SMOKE IS THE SAME AS OUTDOOR WOOD BOILER SMOKE.** Twelve years ago, I helped pass local ordinances across Wisconsin against **Outdoor Wood Boilers**, but new laws will have to be passed for indoor wood stoves, although both forms of wood burning, indoor and outdoor, produce the same resulting emissions, PM2.5 that invades the yards and infiltrates the homes of near neighbors. PM2.5 emissions are produced, remain in the air of a locality long enough for humans to breathe them in, and then the particulates eventually fall to earth, so the PM2.5 pollution that can be measured in the air is **hyper-localized**. That doesn't mean that the pollution doesn't exist, but it is not caught on most traditional EPA PM2.5 monitors costing \$100,000, and not caught on any PM2.5 monitors at all if they are not near the stationary source. PM2.5 monitors have to be hyper-localized, and **they have to be near a Residential Wood Burner to count that particular wood burner's emissions**. PM2.5 monitors are not located in enough places to pinpoint each source of pollution and help near neighbors solve their health problems by shutting down indoor residential wood burning. Governments, probably Health Departments, whether federal, state, or local, should hand out low-cost PurpleAir PM2.5 monitors to any near neighbor who complains of their neighbor's wood burning polluting the air in the near neighbor's yard, endangering the near neighbor's health. There should also be laws accompanying those government PM2.5 monitor handouts saying that data from those monitors should be evidence to shut down each individual wood burner stove (or wood burning fireplace, et cetera) whose stack or fence line has PM2.5 levels above government limits (whether annual limits of 8 micrograms per meter cubed or daily limits of 25 micrograms per meter cubed). I believe that individual human actions are causing climate change, and stopping some individual human actions can slow climate change. I believe that wood burning is not Carbon Neutral. Indoor residential wood burning is 90% PM2.5, particulate matter of 2.5 micrometer size, the perfect size to infiltrate the human lung, producing a cascade of human health problems. Near neighbors' yards can be thought of as **fence line measurement sites**, or even stack measurement sites if neighbors are close enough to the wood burner's stack.