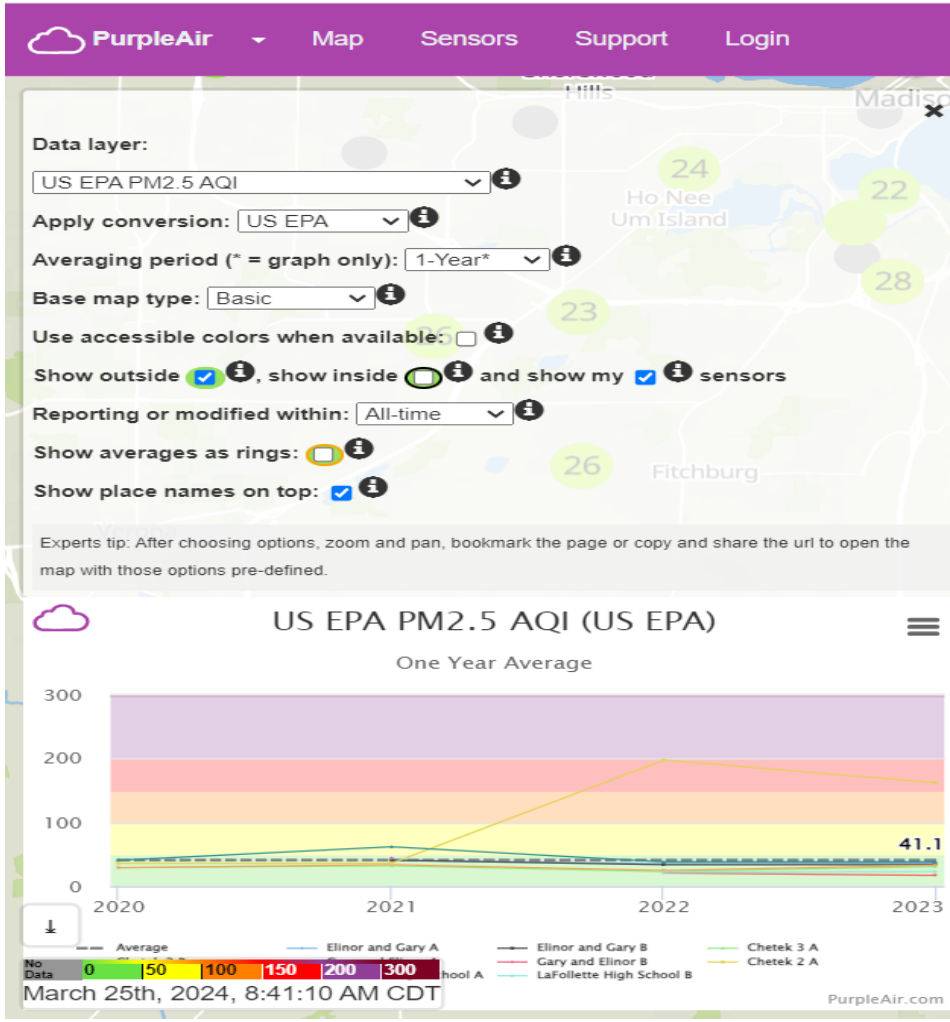
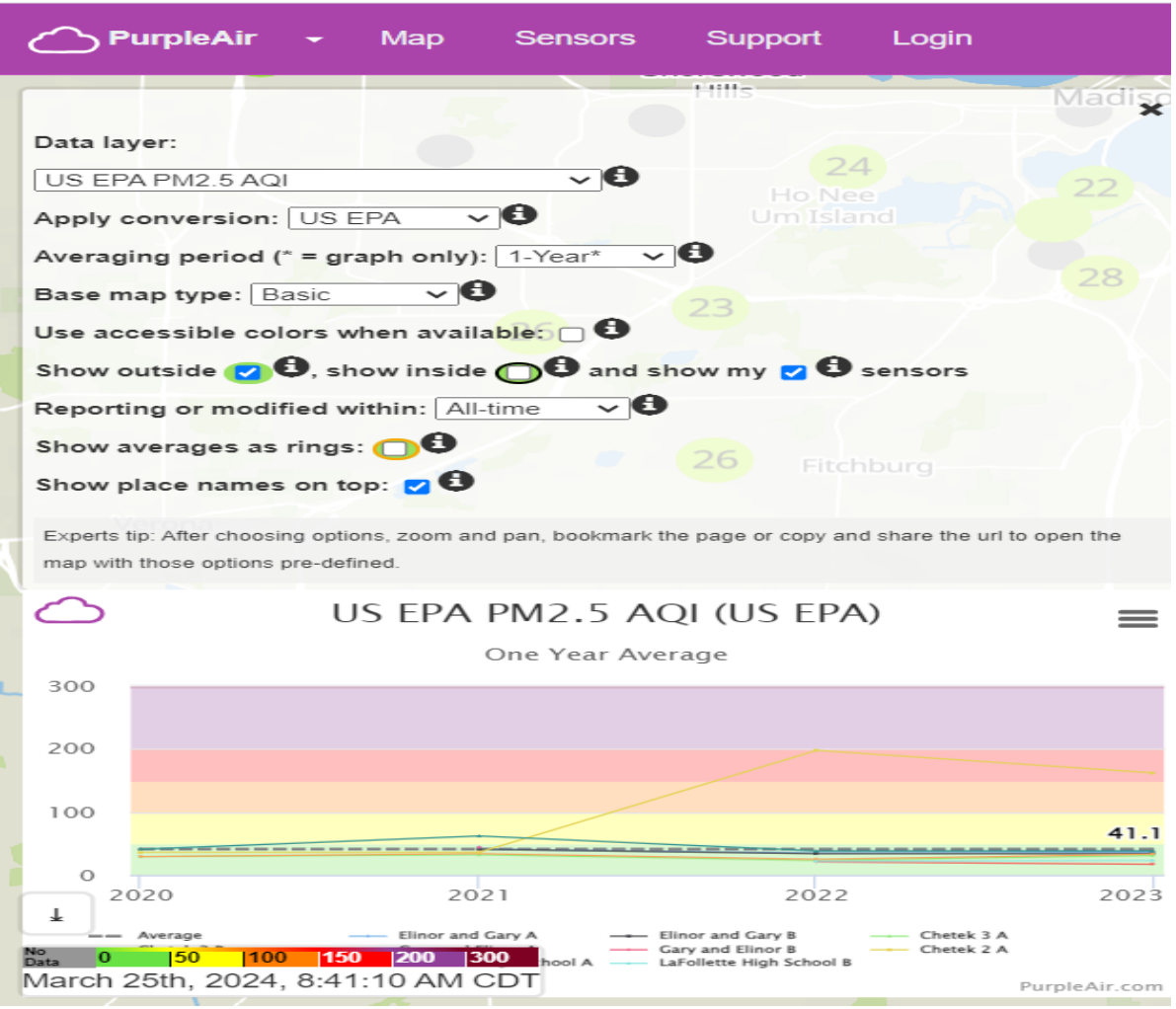
Episode 56SG March 25, 2024. PurpleAir PM2.5 Wisconsin Worst of the Worst Comparison. 2024 PurpleAir PM2.5 Wisconsin Worst of the Worst Comparison. How to make a Worst of the Worst Comparison, using the example of Wisconsin, from Residents Against Wood Smoke Emission Particulates (RAWSEPresidents), a 501c3 nonprofit organization which is writing a grant with the help of Expert Match at the Department of Energy to hand out PurpleAir PM2.5 monitors to any near neighbor of an indoor residential wood burner whose wood smoke enters the near neighbor's yard and sickens the near neighbor. RAWSEP's editor has been downloading PurpleAir PM2.5 data from first Madison, Wisconsin, then Dane County Wisconsin, and finally from all PurpleAir PM2.5 monitors in the State of Wisconsin since mid-October 2023 and putting the downloaded data and its analysis using United States Environmental Protection Agency National Ambient Air Quality Standards (EPA NAAQS) on the RAWSEPresidents sites as Excel Files, PDFs, PowerPoints, Spotify podcasts and Youtube videos. This had to be done every three days until this month of March 2024, when PurpleAir made downloads of longer periods of data collection again easily available to the public and to residents who own PurpleAir PM2.5 monitors. There was a period from August 2023 to March 2024 when data downloads of longer periods of data collection was not easily downloadable. Since March 2024 downloads of all time as well as yearly, monthly and weekly can be made by clicking on the Chart's top line of an individual monitor, and choosing the Averaging Period dropdown 1 year, for instance. How did RAWSEP's editor come up with a Worst of Worst Comparison, today, 3/25/2024? She had noticed that Chetek 2, and to a lesser extent Chetek 3, in Wisconsin were routinely Wisconsin's Worst of the Worst in March 2024, when Chetek 2 either appeared as a Purple or Red spot on the map or when the data analysis showed Chetek was in the quadruple or triple digits in data downloads of 10 minute periods in a 3 day period. Now that three day data collection can be a thing of the past, RAWSEP's editor did a data download of all time PM2.5 levels divided by year. Since the monitor named Elinor and Gary in Madison, Wisconsin has routinely been the Worst of the Worst for Dane County, RAWSEP's editor wanted to compare Chetek 2 to Elinor and Gary. She came up with this download which is evidence that since 2020 when Chetek 2 began using a PurpleAir PM2.5 monitor its annual PM2.5 level average for 2020 was 36, in 2021 was 36, for 2022 was 198, and for 2023 was 162. Since 2020 when Chetek 3 began using a PurpleAir PM2.5 monitor its annual PM2.5 level average for 2020 was 29, in 2021 was 32, for 2022 was 23, and for 2023 was 31. Since 2021 when the Elinor and Gary monitor in Madison began using a PurpleAir PM2.5 monitor its annual PM2.5 level average for 2021 was 41, for 2022 was 35, and for 2023 was 36. Since 2022 when the Lafollette High School monitor in Madison began using a PurpleAir PM2.5 monitor its annual PM2.5 level average for 2022 was only 21, and for 2023 was only 17. This shows that one average in the triple digits (Chetek 2) and another average in double digits up to 32 micrograms per cubic meter of PM2.5 (Chetek 3) were collected from two monitors close to each other in a rural area, at or near Chetek in Barron County in Northern Wisconsin. The third annual average in the lower 40s to mid 30s was collected from a monitor near the intersection of Elinor and Gary Street, with an indoor wood burner only 60 feet away, in Madison, Wisconsin, while a Madison monitor at a High School only 1.8 miles away, surrounded on two sides by a Golf Course, one side by a cemetery and one side by a

| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DateTime | Chetek 2 A | Chetek 2 B | Chetek 3 A | Chetek 3 B | Elinor and | Elinor and | LaFollette | LaFollette | High School B | |
| 2 | 1/1/2020 0:00 | 36 | 41 | 29 | 29 | | | | | | |
| 3 | 1/1/2021 0:00 | 36 | 62 | 32 | 34 | 41 | 41 | | | | |
| 4 | 1/1/2022 0:00 | 198 | 38 | 23 | 25 | 35 | 34 | 21 | 22 | | |
| 5 | 1/1/2023 0:00 | 162 | 38 | 31 | 33 | 36 | 34 | 17 | 23 | | |



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | DateTime | Chetek 2 A | Chetek 2 B | Chetek 3 A | Chetek 3 B | Elinor and ( | Elinor and ( | LaFollette | LaFollette High School B | | |
| 2 | 1/1/2020 0:00 | 36 | 41 | 29 | 29 | | | | | | |
| 3 | 1/1/2021 0:00 | 36 | 62 | 32 | 34 | 41 | 41 | | | | |
| 4 | 1/1/2022 0:00 | 198 | 38 | 23 | 25 | 35 | 34 | 21 | 22 | | |
| 5 | 1/1/2023 0:00 | 162 | 38 | 31 | 33 | 36 | 34 | 17 | 23 | | |
| 6 | | | | | | | | | | | |




street, thus shielded by distance from any nearby indoor residential wood burning emissions, collected data only in the low 20s to high teens. This demonstrates that PM2.5, particulates of 2.5 micrometer size, the perfect size to infiltrate the human lung, setting off a cascade of human health problems and early deaths, when the PM2.5 from wood burning is hyper-locally generated, can only be detected hyper-locally, such as from a PurpleAir PM2.5 monitor hanging from the eaves of a near neighbor of an indoor residential wood burner, whose wood smoke enters the yard of the near neighbor and sickens them. There are two main ways to detect PM2.5 air pollution, 1)by a resident-owned PurpleAir PM2.5 monitor or 2)by physically experiencing the incursion of wood smoke into one's yard or into one's residence if the residence is not tightly sealed or if a door or a window is opened. Near neighbors, of course, would prefer to detect PM2.5 pollution from PurpleAir PM2.5 monitors rather than physically experiencing the PM2.5 and its adverse health effects. Near neighbors would like the hyper-local data collected showing air pollution from PM2.5 wood smoke from a nearby indoor residential wood burner to be used as evidence to shut PM2.5 polluting indoor residential wood burning appliances down, one by one if necessary. This should be done by a complaint based system of local ordinances, state laws or federal laws, based on the evidence from PurpleAir PM2.5 monitors. PurpleAir PM2.5 monitors are already used on United States EPA AirNow Maps of Smoke and Fire, alongside EPA regulatory PM2.5 monitors, to inform the general public of wood smoke air pollution such as the Canadian wildfire wood smoke incursion into the United States in June 2023. In June 2023 United States citizens were advised by health authorities to stay inside their sealed homes with multiple air purifiers running. That is how near neighbors of indoor residential wood burners have lived their lives day by day, without recourse to ordinances that end indoor residential wood burning PM2.5 smoke that enters near neighbors yards and sickens them. A second part of the grant that RAWSEPresidents is writing would subsidize the exchange of indoor residential wood burning appliances for Heat Pumps that work down to 40 degrees below zero (Fahrenheit and Centigrade temperature scales briefly converge at 40 degrees below zero). Federal rebates for Heat Pumps will be available in Wisconsin by September 2024, and the RAWSEPresidents subsidies are designed to supplement the federal rebates. Federal rebates for Heat Pumps will be up to $8,000 based on a sliding income scale. There need to be more PurpleAir PM2.5 monitors and more hyper-localized PM2.5 monitors to provide more evidence of PM2.5 pollution from indoor residential wood burning that is going undetected. Besides the adverse health effects of PM2.5, PM2.5 also hastens climate change. The U S EPA National Ambient Air Quality Standards (NAAQS) PM2.5 "safe" limits in 2024 are 9 micrograms per cubic meter annually and 35 micrograms per cubic meter in a 24 hour period. The World Health Organization PM2.5 "safe" limit is 5 micrograms per cubic meter annually.