Episode Seventeen. August 5th, Twenty Twenty Two. Diagnosis and Treatment of the Social Illness of Residential Wood Burning. By hyper-localized monitoring of PM 2.5 residential wood burning, near neighbors are told the cause of their illness, or **what is statistically likely to cause their future illness before they become ill**. ILLNESSES, **such as Asthma,** can be avoided by near neighbors. Diagnosis followed by **treatment: ordinances or other enforceable laws** for **shutting down residential wood burning.**

LOW COST PM 2.5 SENSORS as evidence of hyper-localized residential wood burning pollution, with Air quality MAP URLs at the RAWSEP Residents Wordpress site. Low-cost PM 2.5 sensors have the potential to democratize air pollution information. In RAWSEP's view, this democratization and resulting better dissemination of information about PM 2.5 pollution can pinpoint the sources of air pollution. As physicians demonstrate, only when an accurate **diagnosis** of an illness has been made can the best treatment for the illness be communicated to the sick patient, and only then can ultimately the best **treatment** for an illness be used. PM 2.5 pollution from residential wood burning is **hyper-localized to the near neighbors** around a residential wood burning property. Those near neighbors become ill from the PM 2.5 pollution. When hyper-localized monitoring of PM 2.5 pollution information is communicated in the form of map data to the general public and to the near neighbors, the near neighbors can be told the cause of their illness, or **better yet, the near neighbors can be told what is statistically likely to cause their future illness before they become ill**. With PM 2.5 sensors, illnesses, **such as Asthma,** can be avoided by near neighbors of residential wood burners. Although the PM 2.5 Sensors are relatively inexpensive compared to health care costs to near neighbors if PM 2.5 pollution continues to invade their homes and yards, these studies show that more must be done to provide these PM 2.5 sensors to poor, disadvantaged residents who are near neighbors of people who still burn wood residentially. The government distribution of low cost PM 2.5 sensors to disadvantaged residents can provide **environmental justice** to these residents, if the **diagnosis** provided by these real-time, hyper-localized sensors can, in addition to providing a diagnosis of the problem of PM 2.5 pollution caused by residential wood burning, be followed by **treatment** of the problem by use of **ordinances or other enforceable laws** that use this hyper-localized data as the basis for **shutting down residential wood burning.** The Climate Bill in the Senate (recently renamed the Inflation Reduction Act), and the pending Senate *Public Health Air Quality Act of 2022* bill allowing fence-line measurement of pollutants rather than stack measurement of pollutants, bolsters the argument that this hyper-localized sensor use from near-neighbor's property, slightly past the fence-line, which proves the source of the pollutants, can logically be used as proof of the source of air pollution. PM 2.5 Air Pollution data collected in this way, can logically be used as evidence that specific hyper-localized residential wood burning is the source of pollution which is infiltrating the yards and homes of near neighbors. The Climate Bill in the Senate provides for rebates on cleaner heating sources and tax incentives for the next ten years for cleaner or clean alternatives to residential wood burning. For the next ten years, people who are presently burning wood for residential heating can replace their polluting appliances, for free or at greatly reduced cost, with clean or cleaner heating appliances which do not burn wood. This can be pointed out to the residential wood burner at the time their residential wood burning is shut down. **Former wood burners could also use government help with funds to better insulate their houses, using the new Climate Bill provisions, to supplement heat provided in the future by non-wood burning heating appliances**. The following scientific research paper "National Institutes of Health on low cost PM 2.5 sensors to disadvantaged communities (Twenty twenty one)" and the papers the main paper cited (included on the RAWSEP site) looked at hyper-localized use of PM 2.5 Monitors, and concluded that their use resulted in democratization of data about air pollution, but that more must be done to bring these monitors to low-income communities so that there can be environmental justice for these disadvantaged communities. The paper and citations involved researchers and sites studied including the states of **California, Georgia and Pennsylvania** in the U.S., and the countries of **Australia, China, and Uganda.**

MAPS of PM 2.5 real-time data. Without government funding, citizen-scientists have been using these hyper-localized PM 2.5 monitors already. In the **United States, Canada, Australia and New Zealand**, PurpleAir PM 2.5 monitors are used extensively. Purpleair monitor data is used alongside EPA monitor data on U.S. Government AirNow Fire and Smoke Maps. The United Nations (UN) has also handed out low-cost sensors around the world and has a map called The IQ Air Map. With government funding, in the **United Kingdom** in May 2022 low-cost sensors were distributed free to residents of disadvantaged communities across the London area. A significant statistic in the developed world is that PM 2.5 pollution from residential wood burning has exceeded PM 2.5 from traffic for several years in areas of the United Kingdom. There have also been a significant number of PM 2.5 monitors handed out to low-income residents in disadvantaged communities in the **Chicago** area, sponsored by a network of radio stations and philanthropy. In **San Francisco**, California, a public map used by news stations maps real-time hyperlocalized street-by-street PM 2.5 pollution, with monitors which residents don't have to purchase themselves. There are more examples of this non-

government distribution of PM 2.5 monitors. Mapping air pollution with monitors that are not very low-cost is done at **Chicago** Air Pollution Tracker, and the ECLIPSE study. AirTracker tracks PM 2.5 among other pollutants and is apparently based in **Texas.** Those programs and the data they provide will be covered in a future RAWSEP episode.