Episode 13: July 9th, two thousand twenty-two, In winter, a fearful walk around the block. Residents Against Wood Smoke Emission Particulates (RAWSEP) Priority 1: Clean Air for residents to breathe. Priority 2: Insulated residences. Objective: Hyper-localized health protection for asthmatics.

A state government Asthma Prevention program, in at least one United States' state, called "Safe Homes" is awarding grants for Environmental Services Providers who have the capacity to provide in-home environmental assessment, remediation of environmental triggers of asthma, and coordination of these environmental management services for children and pregnant women in three primarily urban counties which have high levels of childhood asthma, often within disadvantaged populations. This is a laudable grant program. For obtaining this type of grant, the applicant or at least one member of the grant staff is required to complete online training in insulating a home, within the first month of the grant. This online insulation installation training ensures that home insulation installation is available for asthma trigger remediation. Training is available from the Building Performance Institute (BPI) Healthy Homes Evaluator (HHE) which trains in insulating pipes, walls, floors, and ceilings of a residence. A Healthy Housing Principles Certificate from BPI aims to show the recipient has been trained to keep a home clean, dry, pest-free, contaminant-free, safe, ventilated, comfortable, and maintained. Insulating a home well prevents heat from escaping from a home. Insulating a home well prevents cold air from infiltrating a home during the winter, allowing a residence to remain warmer and healthier in the winter. A well-insulated home requires less blown-in heat from a natural gas furnace or a heat pump, allowing a residence to be heated more economically. Home insulation can prevent some particulate pollution from entering a home, and prevent some pest infestations, both of which aggravate or "trigger" asthma. If asthmatics live in a well-insulated home their living conditions are healthier because they are not stressed by higher heating bills, and they are less likely to have their asthma aggravated by excessive cold or by pest infiltration. However, in the view of Residents Against Wood Smoke Emission Particulates (RAWSEP), insulation of a home most importantly also partially protects against particulates from wood burning infiltrating a home. Residential wood burning is 90% PM 2.5, the particulate matter of 2.5 micron size, the perfect size to infiltrate the human lung, causing a cascade of human health problems, including asthma. A well-insulated home fills some of the cracks that allows PM 2.5 to infiltrate a home, but insulation does not assure PM 2.5 will not infiltrate a home.

Prevention of PM 2.5 particulate emissions being created in the first place, by wood burning neighbors, in the hyper-localized area of a city block, will protect asthmatics better than home insulation. Together both insulation and prevention of residential wood burning can protect asthmatics. Priority 1: Clean Air for residents to breathe. Priority 2: Insulated residences. Objective: Hyper-localized health protection for asthmatics. Preventing PM 2.5 from occurring in hyper-localized air that an asthmatic breathes in their neighborhood, and which can infiltrate the most well-insulated home, can also prevent many cases of asthma.

Look to the example of Asthma Australia. Asthma Australia is increasingly supportive of neighbors of residential wood burners. Asthma Australia in 2022 has begun helping asthmatic neighbors pass ordinances against residential wood burning across Australia. The United States would do well by asthmatics in the United States by following Asthma Australia's example. This can be done by first distributing low-cost PM 2.5 air quality monitors to asthmatics in the United States, collecting hyper-localized data, analyzing the PM 2.5 data in comparison to asthmatics' symptoms during time of high PM 2.5 levels, then using that data, even in some cases combining it with photo or video data showing smoke coming from wood burning neighbors' stacks, as evidence of the source of the PM 2.5 pollution, in order to pass ordinances against residential wood burning in the municipalities of the asthmatic residents concerned with this threat to their health and for asthmatic residents concerned about the threat to their lives from PM 2.5. These ordinances can be passed with the help of PurpleAir monitors, data, and maps showing proximity of air pollution affecting asthmatics to the wood burning neighbors of asthmatics. PurpleAir monitor data is automatically uploaded to PurpleAir maps, and on U.S. government AirNow Maps of Fire and Smoke alongside more $100,000 official EPA air quality monitor data. PurpleAir data is automatically correlated with EPA monitor data using a simple mathematical formula, before being put on AirNow maps.

In winter, a walk around the block can become an exercise in fear - WAtoday Western Australia Today online. The problem is that the smoke from these wood heaters is extremely bad for asthmatics such as myself. The fine particles can get very deep into your lungs. RAWSEP View: This news article "In winter, a walk around the block can become an

exercise in fear" is the first-person account of an asthmatic woman living in Melbourne, Australia in a neighborhood with wood burners. Terrible brushfires in Victoria made the air quality so bad she was unable to leave the house for many days. She has double-glazed windows and two air purifiers inside her house. Smoke from woodfire heaters is created by a small number of neighbors who warm their homes every winter by burning wood. She writes "This is a leafy inner-city suburb so this kind of heating (residential wood burning) is not driven by financial needs (unlike the situation say in rural parts of Victoria, where it might make more sense to have a wood fire.)" She thinks it is about the aesthetic pleasure of burning wood for some people. Once or twice she's nearly called for an ambulance because of the wood smoke near her home. She has been on a walk and turns the corner on a street filled with smoke. She suddenly feels like she is suffocating. She takes out her puffer and hopes she will get home or "be rescued" by her husband if she phones her husband to pick her up. Apparently, the writer does not have an outdoor PM 2.5 monitor in her yard, and apparently the writer's neighbors do not have outdoor PM 2.5 monitors in their yards. She says the other issue is very localized, or "hyper-localized". She checks apps on her phone to see the air quality in her area. Often the apps will show "good" or "very good" air quality in her suburb, which is no doubt true near the measuring station. However, the air quality can be terrible within a few houses of anyone using a wood heater. She has been lobbying her local council in Melbourne, Australia and she's pleased they are taking decisive action in asking residents not to use their wood heaters if possible. It's already made some difference in the last few weeks. Her street has families with babies or elderly people or those with lung and heart conditions. There are others who cannot understand why they are struggling to breathe at night. In the 1970s we realized cigarette smoking leads to cancer. Soon we will come to a similar realization regarding wood smoke. Banning wood heaters immediately doesn't seem realistic. She would like them to be phased out over time, especially in urban and built-up areas. To speed this up, the Victoria government could offer more incentives for replacement of wood stoves. The RAWSEP view is that replacement of wood stoves is not enough, and RAWSEP believes Asthma Australia could help pass an outdoor wood boiler ordinance in Melbourne, as they have helped pass more comprehensive ordinances in communities across Australia in 2022.