

**Environment and Human Health, Inc.**  
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**Testimony of Environment and Human Health, Inc.**

**Bill S.B. 830**

**AN ACT PROHIBITING THE USE OF CERTAIN OUTDOOR WOOD-BURNING FURNACES.**

**To Chairs Senator Ed Meyer, Representative Richard Roy, Vice Chairs Senator Maynard and Representative Davis and Members of the Environment Committee:**

My name is Nancy Alderman. I am president of Environment and Human Health, Inc. (EHHI) a group of 9 doctors and health professionals dedicated to protecting human health from environmental harms. We receive no money from businesses or corporations. I am a resident of North Haven, CT.

**Environment and Human Health, Inc., after much research, finds there is no other way to protect human health and property values other than to ban outdoor wood furnaces statewide.**

**The question to be asked is why cannot outdoor wood furnaces be regulated instead of banned?**

Although some states have tried to regulate outdoor wood furnaces none have been able to protect either people's health or their property values through regulations other than the state of Washington where they are not allowed.

Connecticut has tried to protect people's health and property values by passing regulations on outdoor wood furnaces that have:

- (1) Setbacks of 200 feet from neighboring properties;
- (2) Smokestack regulation height that requires a stack of an outdoor wood furnace to be higher than the roof peak of the nearest house within 500 feet; and
- (3) Only clean, dry wood can be burned.

**Why have these regulations proven insufficient to protect people's health or their properties?**

**(1) Why Set Back Regulations do not protect the public's health or their property values**

EHHI monitored houses in the vicinity of outdoor wood furnaces. That study found that houses as far away as 850 feet from an outdoor wood furnace had wood smoke inside their home 6 times the levels of houses not near an outdoor wood furnace and 4 times the levels of the EPA air standards. A home 240 feet from an outdoor wood furnace had 12 times the levels of wood smoke as the houses not near an outdoor wood furnace and 8 times the levels of the EPA air standards. Both these heavily impacted homes had outdoor wood furnaces well within the state regulations.

The wood smoke from outdoor wood furnaces rises relatively cool - with incomplete combustion. This means that the smoke is heavy, it does not dissipate and can travel in a plume for up to 1/2 a mile. That means a 200-foot setback is meaningless and the house 850 feet away means a set back of 800 feet is also meaningless.

**(2) Why stack height regulations do not protect the public's health or property values.**

The wood smoke coming out of the outdoor wood furnace smoke stack is relatively cool, heavy and dense. The dense plume of smoke will fall towards the ground no matter how high the stack -- and will travel relatively low in a plume for up to 1/2 a mile.

**(3) Why burning only clean, dry wood will not protect the public's health or property values.**

Wood smoke, if you breath it all day, 7 days a week, even wood smoke from cleanest driest wood, will cause you in the short term to get red eyes, sore throat, headaches, bronchitis, pneumonia, and for some, asthma. In the long term it can permanently harm your lungs -- and because the components of wood smoke are carcinogenic -- can lead to lung cancer.

Outdoor wood furnaces are a flawed technology. Our states own Connecticut Department of Environmental Protection's fact sheet includes the question: "Are OWFs harmful to the environment and human health?" They answer, "Yes, OWFs produce a lot of thick smoke, which in addition to being a nuisance to neighbors, has serious health and air pollution impacts. Smoke from OWFs contains unhealthy amounts of particulate matter, dioxin, carbon monoxide, nitrogen dioxide, sulfur dioxide, hydrochloric acid, formaldehyde and other toxic air pollutants. Exposure to smoke from an OWF can increase adverse respiratory and cardiovascular symptoms. Exposure to other pollutants listed above is associated with a diverse range of harmful health effects, including asthmatic sensitivity, lung illnesses and cancer."

Outdoor wood boilers emit smoke 24 hours a day, seven days a week. These outdoor wood furnaces are not to be confused with indoor wood stoves. Indoor wood stoves are tested and certified by the U.S. Environmental Protection Agency. Outdoor wood furnaces are not. Outdoor wood furnaces have been estimated by NESCAUM to emit 20 times the amount of smoke as an indoor wood stove and the same amount of particulate matter as 50 to 500 diesel trucks - depending on the truck's age and pollution controls.

The state of Washington has banned them throughout their state because the OWFs wood smoke emissions do not fall within their air emission standards. The Connecticut Department of Environmental Protection's Web site has a fact sheet that includes the question: "Are OWFs harmful to the environment and human health?" They answer, "Yes, OWFs produce a lot of thick smoke, which in addition to being a nuisance to neighbors, has serious health and air pollution impacts. Smoke from OWFs contains unhealthy amounts of particulate matter, dioxin, carbon monoxide, nitrogen dioxide, sulfur dioxide, hydrochloric acid, formaldehyde and other toxic air pollutants. Exposure to smoke from an OWF can increase adverse respiratory and cardiovascular symptoms. Exposure to other pollutants listed above is associated with a diverse range of harmful health effects, including asthmatic sensitivity, lung illnesses and cancer."

The state must begin to protect its citizens from a serious health hazard. While owners of OWFs are claiming they have the right to save a few thousand dollars on their heating bills - they are causing their neighbors to lose the entire value of their homes and for many their health.

Smokers once claimed the state should not have told them what and where they could smoke - and bar and restaurant owners said they would lose business if their customers could not smoke. Yet the state decided that it had a responsibility to protect its citizens from breathing in other people's tobacco smoke. Outdoor wood furnace smoke has many of the exact same components as tobacco smoke - and the people in the homes near outdoor wood furnaces cannot escape breathing in the wood smoke 7 days a week - 24 hours each and every day. Now whom should the state protect?

Nancy Alderman

Nancy Alderman, President  
Environment and Human Health, Inc.  
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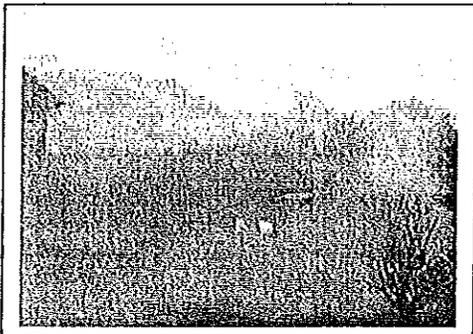
## What are Outdoor Wood Burning Furnaces?

An outdoor wood burning furnace, or OWF, is essentially a wood-fired boiler in a small, insulated shed with a smoke stack. OWFs heat water that is carried through underground pipes to heat a home or building, domestic hot water, a swimming pool, a Jacuzzi or a hot tub. Please note that Public Act 05-227 specifies new requirements for the installation and operation of all OWFs installed after July 11<sup>th</sup> 2005. See also DEP fact sheet entitled Public Act 05-227 and Outdoor Wood Burning Furnaces.

## Are OWFs Harmful to the Environment and Human Health?

Yes, OWFs produce a lot of thick smoke, which in addition to being a nuisance to neighbors has serious health and air pollution impacts. Smoke from OWFs contains unhealthy amounts of particulate matter (PM), dioxin, carbon monoxide, nitrogen dioxide, sulfur dioxide, hydrochloric acid, formaldehyde and other toxic air pollutants.

Exposure to PM in smoke from an OWF can increase adverse respiratory and cardiovascular symptoms. Exposure to other pollutants listed above is associated with a diverse range of harmful health effects, including asthmatic sensitivity, lung illnesses and cancer. Studies show that children, the elderly and individuals with pre-existing cardio-respiratory diseases or diabetes are most at risk.



While OWFs are advertised to burn wood, owners sometimes add yard waste, packing materials, construction debris -- even household garbage and tires. Burning these other substances in an OWF is both illegal and produces additional toxic and hazardous air pollutants.

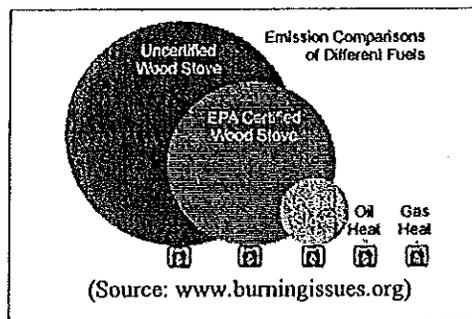
The federal government requires indoor wood stoves to meet air pollution standards, however no such standards are required for OWFs. In Connecticut, the CT DEP requires the smoke from combustion sources including OWFs to meet strict opacity limits. Failure to meet these limits could result in fines and other enforcement actions. The CT DEP is unaware of any

currently manufactured OWFs that are capable of being operated in full compliance with Connecticut's regulatory standards. Be aware that some manufacturers of OWFs are making inaccurate claims about their product's environmental benefit and efficiency.

## How High are Emissions Levels from OWFs?

While there is only limited data at this time, it is known that PM emissions from OWFs are very high. One study showed emissions to be significantly higher than indoor wood stoves that are regulated by federal standards. Such high emissions result from low efficiency and incomplete burning of fuel. The CT DEP compared emissions from homes heated with natural gas (the cleanest option), oil, and OWFs.

Emissions from a conventional oil furnace are approximately equal to emissions from 39 homes using gas. If an EPA certified indoor wood stove were to be used to produce the same amount of heat, the PM emissions would equal 2000 homes heated by natural gas. In contrast, the emissions of one OWF to heat a home equals 3,000 to 8,000 homes being heated with natural gas.



## Why do OWFs produce so much unhealthy smoke?

The basic design causes fuel to burn incompletely. OWF systems consist of a single closed combustion chamber, or firebox, that is surrounded by a water jacket. Since wood cannot be combusted completely at temperatures below 1000°F, the steel firebox surfaces backed up by water at 150°F chill and quench the flames before combustion is complete. As a result, smoke is produced. The smoke and combustion products are vented through a smokestack directly to the outside air.

Another reason why OWFs produce smoke is the operation during "off" cycles. When an OWF does not need to generate heat, the combustion air fan is turned off and/or the air damper closes, thereby starving the fire for air. The fire then smolders, creating smoke and creosote that condenses on the cold steel internal surfaces. When heat needs to be produced, the air dampers open and/or a small fan forces combustion air into the firebox, thereby pushing the smoke and air pollutants out the stack.

## What's Being Done and What Can You Do?



Throughout New England, state regulatory agencies have received numerous complaints about OWFs. The CT DEP is working with NESCAUM (Northeast States for Coordinated Air Use Management) and other states to encourage the US EPA to establish adequate national uniform testing methods and comprehensive national regulatory emission standards for OWFs. Due to the increasing number of complaints, some municipalities are investigating the establishment of bans.

Before buying an OWF, you should consider the resulting health and environmental impacts to your family and neighbors, and the nuisance you could create. Keep in mind that OWFs operated in Connecticut are very likely to violate long-standing DEP regulations that require all fuel burning sources to meet standards for opacity (smoke) and odors. The DEP may take enforcement actions against the owner/ operator of the OWF for non-compliance. Owner/operators may also be subject to private lawsuits from affected neighbors. After considering your needs and the alternatives, you may choose to use a different and perhaps cleaner, more efficient heating system. One alternative may be an indoor wood stove; the U.S. Environmental Protection Agency requires all indoor wood stoves manufactured after the late 1980s to be certified to meet air emissions standards. If you still chose to buy an OWF, burn only recommended wood fuel, set the unit as close to your home as possible and make sure that the smokestack is higher than your house and your neighbor's.

## For More Information

The CT DEP operates an **Air Pollution Complaint Line** at 860-424-3436. This line is open to all citizens with concerns regarding smoke and other air pollution. It is operated from 8:00 am - 4:30 pm, Monday through Friday; voice mail is available for complaints made during evening and weekend hours or you can e-mail a complaint to [dep.aircomplaints@po.state.ct.us](mailto:dep.aircomplaints@po.state.ct.us).

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**A study done by Environment and Human Health, Inc. (EHHD) shows that homes as far away as 850 feet from an outdoor wood furnaces are impacted by enough smoke to cause illness.**

- A house as far away as 850 feet from an outdoor wood furnace (OWF) had 6 times the levels of PM 2.5 as the houses not near an outdoor wood furnace and 4 times above the levels of the EPA air standards.
- A house 240 feet from OWF had 12 times the levels of PM 2.5 as the as the houses not near an outdoor wood furnace and 8 times above the levels of the EPA air standards.
- Both those heavily impacted homes were within the CT setback regulations for an OWF of 200 feet.
- For some homes that are near OWFs that have been grandfathered in -- they have wood smoke levels as high as 14 times that of houses not near outdoor wood furnaces and 9 times above the levels of the EPA air standards.
- High levels of wood smoke were present in every 24-hour period tested inside homes neighboring outdoor wood furnaces.
- The particles of wood-smoke are so small that windows and doors cannot keep smoke out.
- NESCAUM has estimated that each OWF emits 20 times the wood smoke as one certified indoor wood stove and the same amount of particulate matter as 50 to 500 diesel trucks - depending on the truck's age and pollution controls.
- Public Health Toxicologist David Brown, Sc.D., an expert on the health effects of wood smoke, states, "Episodes of short-term exposures to extreme levels of fine particulates from wood smoke and other sources for periods as short as two hours can produce significant adverse health effects."
- Oncologist D. Barry Boyd, MD, says, "Wood smoke contains a number of organic compounds that are both potential and recognized carcinogens. Exposure to wood smoke over time may raise the risk of both chronic lung disease and lung cancer.

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**Phase II outdoor wood furnaces will not protect people or their property values – the technology is still flawed and remains harmful.**

- Industry is claiming that phase II outdoor wood furnaces (OWFs) are less polluting than the Phase I units. Phase II OWFs remain very polluting. Smoking one pack of cigarettes a day is less polluting than smoking 3 packs of cigarettes but that does not mean that smoking one pack of cigarettes a day is safe.
- The Phase II outdoor wood furnaces have not been independently tested in the field nor has EPA tested them in the field. People who live near them say they are almost as polluting as the old ones. The technology is still the same and it is still a flawed technology.
- Exposures to wood smoke from OWFs for two hours or more is enough to cause serious health problems for people. The Phase II "cleaner claim" of industry is based on wood smoke emissions for over a 24-hour average period --- yet people are exposed to wood smoke during "peak exposures." It is these "peak exposures" of 2 hours or more that causes so much harm to health. The phase II units will not bring those peak exposures down to levels that will protect health nor will people's ability to sell their homes get any better.
- Phase I OWFs are so incredibly polluting that they emit the same amount of wood smoke as 22 indoor wood stoves. Although industry claims phase II units are cleaner -- they are still not clean enough to protect human health or people's property values.
- The only way to protect the health of citizens in CT and also protect their property values is to ban outdoor wood furnaces statewide with an exception for farmers and their farmhouses.