SIERRA CLUB
IOWA CHAPTER

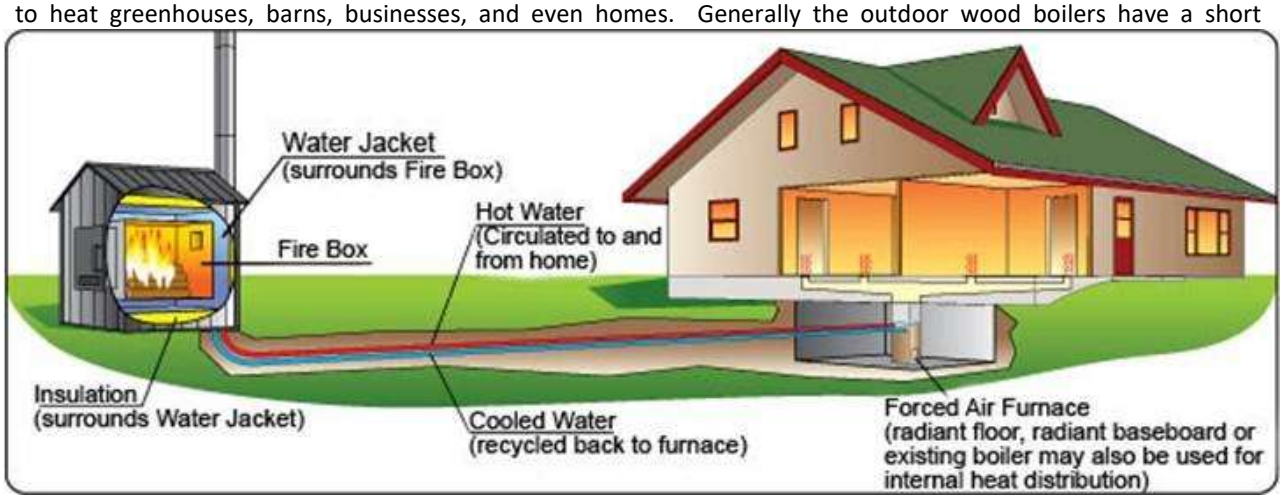
Policy on Outdoor Wood Boilers

Although it is a temptation to purchase an outdoor wood boiler, there are significant air quality problems caused by the boilers. Therefore the Iowa Chapter recommends banning outdoor wood boilers. All existing outdoor wood boilers should be phased-out within a three-year timeframe.

What are outdoor wood boilers?

Smoke from an outdoor wood boiler, photo credit Harold Hensel

Outdoor wood boilers, also known as hydronic heaters, burn wood in an insulated firebox that is located outdoors. The boilers heat water or a water-antifreeze solution that is then piped into a building and used to heat the building and/or heat water. The burn rate is controlled by a thermostat that regulates the amount of air supplied to the firebox. When the temperature of the building or the water is reached, less air is supplied to the fire box and the wood smolders. When the space or water needs to be heated, a greater amount of air is supplied to the firebox and the wood burns at a higher rate. They can be used to heat greenhouses, barns, businesses, and even homes. Generally the outdoor wood boilers have a short



Source: Hearth, Patio and Barbecue Association (HPBA)

smokestack. A common design for the firebox is similar to a small storage shed. The wood boilers may also be placed inside a building. In addition to wood, the boilers can burn pellets, corn, or other biomass. For those boilers

used to heat a building, the boilers are only used during the heating season. However in the case of boilers used to heat water, the boilers are run 24-hours a day, 365 days a year.

Smoke from an outdoor wood boiler, photo credit Harold Hensel

Although the manufacturers have been improving the designs of the boilers, they still emit large quantities of air pollutants.

In Iowa the outdoor wood boilers are more prevalent in areas of the state where there is an adequate supply of wood. They are more common in rural areas, but there are outdoor wood boilers in some urban areas of the state.

For example, in 2010 the city of Marion knew of two residents and two commercial establishments that were using outdoor wood boilers, but suspected that there were others.[1] One resident living in a residential community outside of Mount Vernon reported that six outdoor wood boilers surrounded her acreage.[2]

The problem caused by outdoor wood boilers

One of the biggest problems with outdoor wood boilers is that they do not fully combust the wood, which results in smoke being emitted. Further when the wood is smoldering, creosote collects on the walls of the firebox. When the fire is rekindled, the creosote is burned and is emitted as soot. Additionally the units burn wood at lower combustion temperatures, which creates more pollution than an indoor wood stove.

A neighborhood dealing with smoke from several outdoor wood boilers, photo credit Harold Hensel

The chemicals emitted by outdoor wood boilers include particulate matter which can be drawn deeply into the lungs. Toxics emitted include benzene, naphthalene, formaldehyde, and 7-polycyclic aromatic hydrocarbons (PAH) - a suspected carcinogen.

Because of the short smokestack, the smoke can easily drift to neighboring properties.

The smoke is irritating to people – exacerbating respiratory illnesses and asthma, as well as causing burning eyes and runny noses.

Burning green, unseasoned wood increases the smoke from the boilers.

[1] Cathleen Beke, "Marion boiler ban has opposition but moves forward", Cedar Rapids Gazette, October 22, 2010
[2] Cathleen Beke, "Marion boiler ban has opposition but moves forward", Cedar Rapids Gazette, October 22, 2010

Some people burn garbage and construction waste in their outdoor wood boilers. That adds additional chemicals to the air, some of them may be harmful to human health.

Regulatory Status

When setback distances are adequate, neighbors are not bothered by the emissions from the outdoor wood boilers. However when neighbors are close to a boiler or when several outdoor wood boilers populate a community, the emissions can become a nuisance. Neighbors complain of the smoke permeating their homes and surrounding them when they are outdoors.

Currently the Iowa Department of Natural Resources and the Environmental Protection Agency do not regulate where the wood boilers can be placed. Neither is the density of the boilers in an area regulated.

Cities and counties can regulate the outdoor wood boilers. To date, little regulation is done. The neighbors have little recourse.

Smoke from an outdoor wood boiler, photo credit Harold Hensel

The county Board of Health can be called if the smoke is heavy. Sometimes the staff will work with the owner of the wood boiler to see if a resolution can be found, such as lengthening the smokestack, moving the boiler to another location on the property, and not burning trash or green wood.

The neighbors can pursue nuisance lawsuits, a costly endeavor that may result in a monetary settlement given to the neighbors but will not cause the wood boiler to be removed.

Therefore the Iowa Chapter supports a ban on outdoor wood boilers, especially in towns where neighbors live near each other.

Sources

"Outdoor Wood Boiler & Air Quality Fact Sheet", Michigan Department of Environmental Quality, September, 2009

"Consumers – Choosing Appliances – Choosing the Right Hydronic Heater", Environmental Protection Agency, August 4, 2011, http://www.epa.gov/burnwise/woodboilers.html

"Strategies for Reducing Residential Wood Smoke", U. S. Environmental Protection Agency, October 29, 2009

Judith Schreiber, Robert Chinery, Jared Snyder, Eugene Kelly, Emily Valerio, Ernesto Acosta, "Smoke Gets in Your Lungs: Outdoor Wood Boilers in New York State", Office of the Attorney General, Environmental Protection Bureau, October, 2005