

**Pennsylvania Department  
of Environmental Protection**

**Outdoor Wood-Fired Boiler  
Proposed Regulation**

*25 Pa. Code* Section 123.14

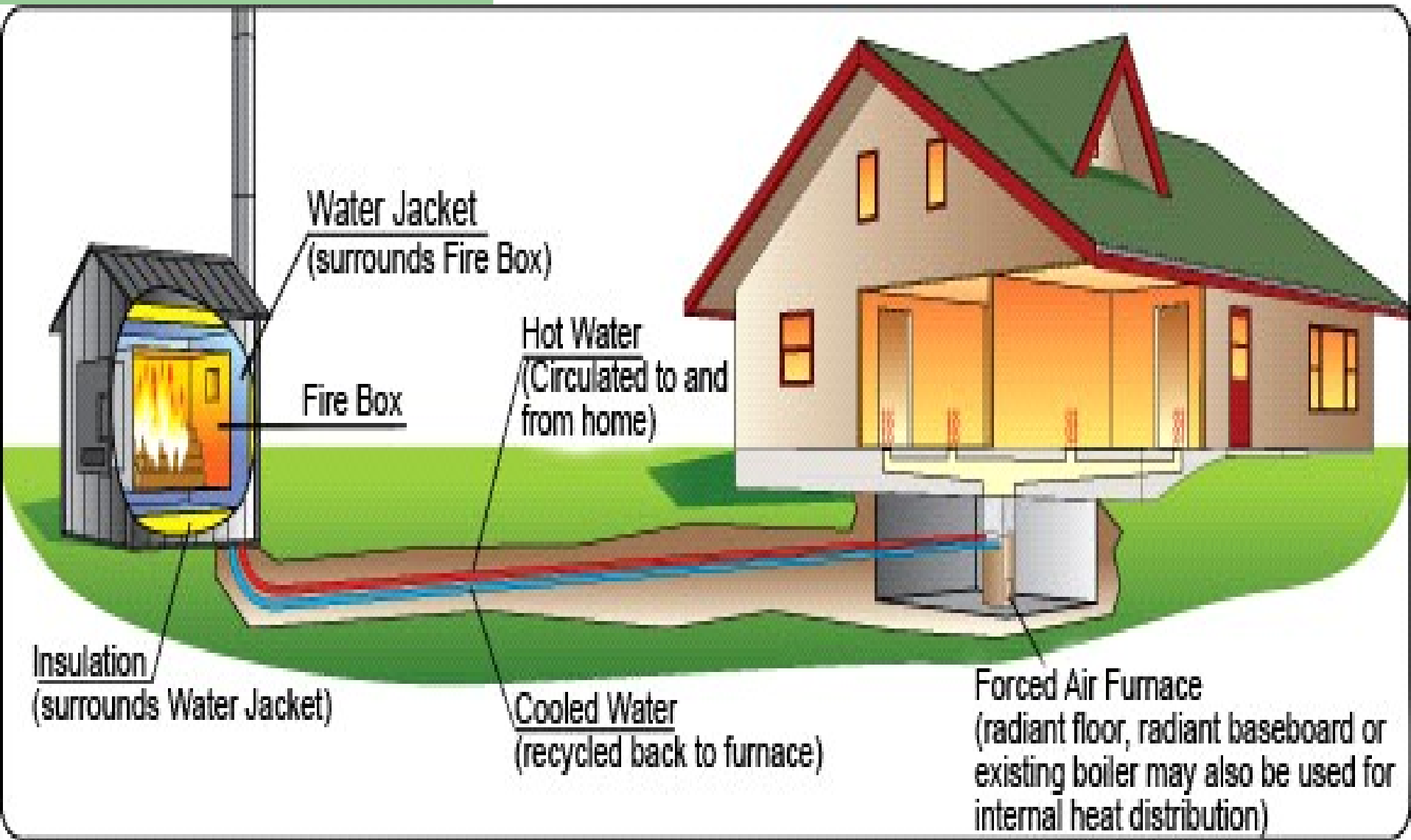
Jane Greber & Ron Davis  
Agricultural Advisory Board Meeting  
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# Outdoor Wood-Fired Boiler Proposed Regulation

- **Outdoor Wood-Fired Boilers** are free-standing fuel-burning devices that resemble a small shed or mini-barn with a short smokestack on top.
- They are used to heat homes and buildings, produce domestic hot water, heat swimming pools or hot tubs, and provide heat to agricultural operations such as greenhouses and dairies.
- OWBs have many other names, such as:
  - outdoor wood-fired furnaces
  - outdoor wood-burning appliances
  - outdoor hydronic heaters
  - outdoor water stove

# Outdoor Wood-Fired Boiler Proposed Regulation

- Outdoor wood-fired boilers are designed:
  - To burn clean wood or other approved solid fuels;
  - Specifically for outdoor installation or installation in structures not normally intended for habitation by humans or domestic animals (e.g., garages); and
  - To heat building space and/or water via distribution, typically through pipes, of a fluid heated in the device, typically water or a water/antifreeze mixture.





11/18/14  
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CAUTION

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# Outdoor Wood-Fired Boiler Proposed Regulation

## Pollutant of Concern – PM2.5

PM2.5 (also referred to as fine particulates) are tiny particles of particulate matter that can penetrate the deepest part of the lungs and may even get into the bloodstream.

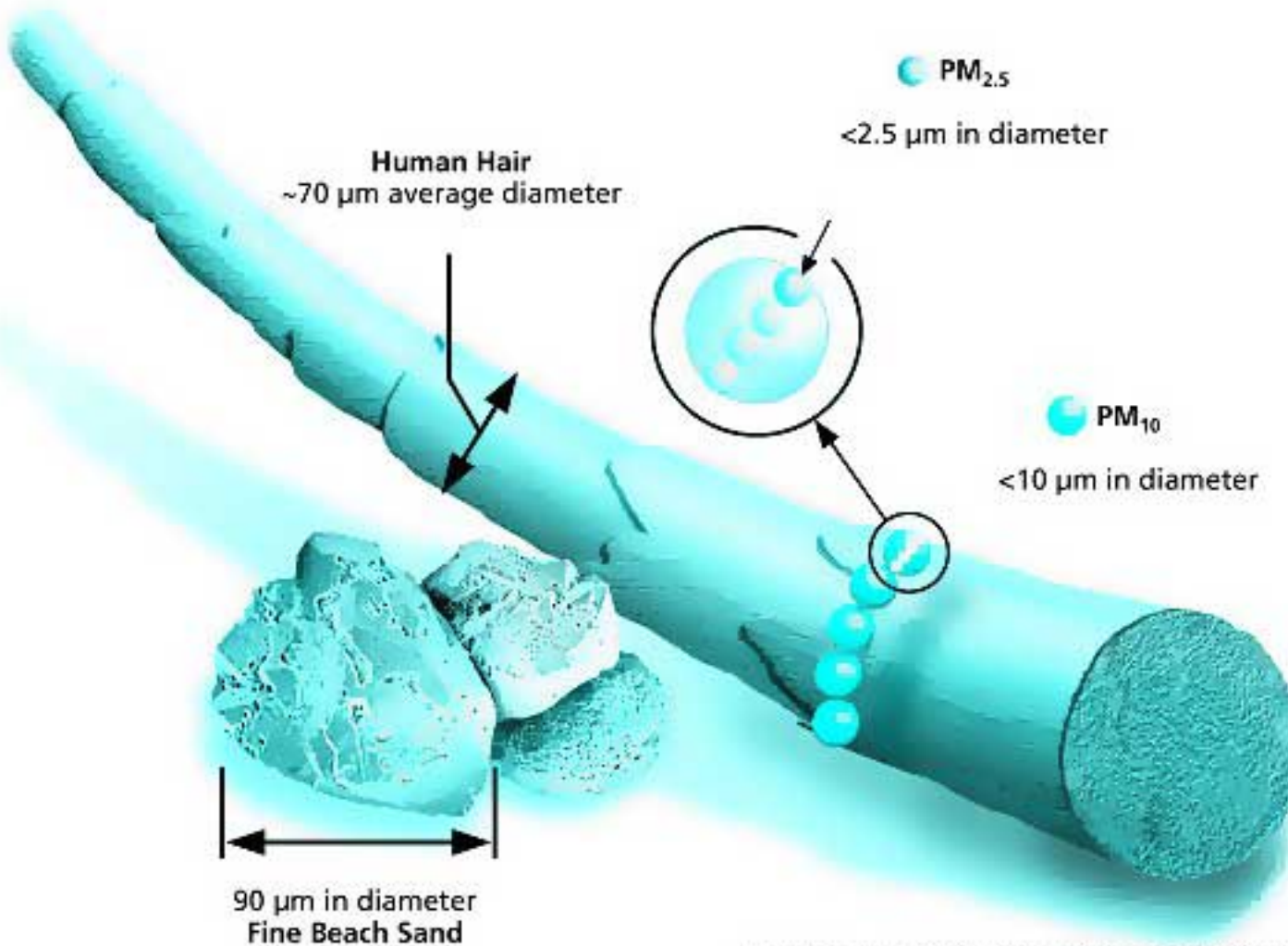


Image courtesy of EPA, Office of Research and Development

# Outdoor Wood-Fired Boiler Proposed Regulation

## Health concerns linked to PM2.5 exposure:

- Increased respiratory symptoms such as irritation of the airways, coughing or difficulty breathing
- Decreased lung function
- Aggravated asthma
- Development of chronic bronchitis
- Irregular heartbeat
- Nonfatal heart attacks
- Premature death in people with heart or lung disease

# Outdoor Wood-Fired Boiler Proposed Regulation

## Susceptible Population:

- People with heart and lung disease
- All children under 4 years old
- All older adults
- People with diabetes
- People with asthma
- ~ 50% of the American population
- Even healthy adults are susceptible to elevated levels of PM2.5
- PM levels from OWBs can rise dramatically in as little as 1 – 6 hours and cause high risk exposures resulting in hospital or emergency room visits and asthma or cardiovascular events.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Other health concerns:

- Wood smoke also emits carbon dioxide, hydrogen chloride, hydrogen cyanide, benzene, styrene, formaldehyde, arsenic, lead, chromium dioxins, furans, PCBs, polycyclic aromatic hydrocarbons (PAHs).
- Because of the large firebox and outdoor location of OWBs, some owners burn garbage, hazardous waste, tires, etc that produce other toxic and hazardous air pollutants.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Why was rulemaking initiated?

- Smallest conventional outdoor wood-fired boilers (OWBs) emit ~ 1 ton particulate matter (mostly PM<sub>2.5</sub>); equivalent to:
  - 22 EPA-certified indoor woodstoves,
  - 205 oil furnaces
  - 8,000 natural gas furnaces
- There are OWB models available that are 90% cleaner-burning.
- Numerous citizen complaints – Odors, smoke, improper fuel, short stack heights, summer use

# Outdoor Wood-Fired Boiler Proposed Regulation

## Why was rulemaking initiated? (continued)

- 2005 Data –
  - PA was 6<sup>th</sup> in Nation for number of OWBs
  - ~12,000 units
- Numbers have increased substantially since 2005
- Measures are reasonably necessary to help achieve and maintain the 1997 and 2006 health-based 24-hour PM<sub>2.5</sub> National Ambient Air Quality Standard.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Federal and state initiatives:

- OWBs are exempt from the Federal regulations for indoor woodstoves.
- EPA voluntary program
  - Phase 1 emission standards – 70% cleaner-burning
  - Phase 2 emission standards – 90% cleaner-burning
  - 7 Phase 2 models made by 5 manufacturers
- 8 Mid-Atlantic and New England states have passed or proposed regulations. Additional states use existing regulations.

# Proposed Outdoor Wood-Fired Boiler Regulation

## Provisions:

- The proposed rulemaking adds 4 new definitions under 25 *Pa. Code* Section 121.1 (relating to definitions).
- The proposed rulemaking adds 25 *Pa. Code* Section 123.14 (relating to standards for contaminants).
  - Establishes emission standards, setback, written notice and recordkeeping requirements for newly installed OWBs.
  - Establishes stack height and fuel requirements for all OWBs.

# Proposed Outdoor Wood-Fired Boiler Regulation

## Applicability:

The proposed new 25 *Pa. Code* Section 123.14 will:

- Apply to a person, manufacturer, supplier or distributor who sells, offers for sale, leases or distributes an OWB for use in this Commonwealth, or
- Apply to a person who installs purchases, receives, leases, owns, uses or operates an OWB in this Commonwealth.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Exemptions:

This section does not apply if the person, manufacturer, supplier or distributor demonstrates both of the following:

- The outdoor wood-fired boiler is intended for shipment and use outside of this Commonwealth.
- The person, manufacturer, supplier or distributor has taken reasonably prudent precautions to ensure that the outdoor wood-fired boiler is not distributed to or within this Commonwealth.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Purpose:

- Add requirements for OWBs that will reduce PM<sub>2.5</sub> emissions from newly installed OWBs
- Submission to the EPA as a revision to the State Implementation Plan
- Address nuisances created by OWBs that cause numerous citizen complaints

# Outdoor Wood-Fired Boiler Proposed Regulation

## Expected results:

- PM2.5 emissions will be reduced by 90% for every OWB that is installed after effective date when compared with a conventional model
- Reduce citizen complaints re: odor, smoke and improper fuel
- Response to citizen complaints and potential enforcement will be more effective

# Outdoor Wood-Fired Boiler Proposed Regulation

## Costs to the regulated community:

- Manufacturers – one time cost for R & D and testing (~\$30,000 + shipping per model tested)
- Purchasers – Phase 2 OWBs are ~ 15% more expensive; offset by being more efficient
- Operators – stacks of existing and new units must meet requirements (Less than \$85 for 2 ft section – Less than \$150 for 4 ft section – of chimney pipe.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Compliance and Enforcement:

- All provisions of the proposed rulemaking would become effective on the effective date of adoption.
- A Phase 2 OWB has been certified or qualified by the EPA as meeting a PM emission limit of 0.32 lbs per million Btu heat output.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Compliance and Enforcement (continued):

- A written notice, signed by the buyer or lessee and the distributor, seller or lessor, would be required prior to the sale or lease of an OWB. It must:
  - Advise the buyer of the provisions of this regulation, and
  - Be kept for on-site 5 years
- Enforcement of regulation will be complaint-driven.

# Outdoor Wood-Fired Boiler Proposed Regulation

## Schedule:

- Draft proposed rulemaking discussion:
  - Local Govt Assoc – 5/15 & 6/18
  - AQTAC - 5/28/09
  - CAC - 6/16/09
  - SBCAC - 7/22/09
  - AAB – 8/19/09
- Present proposed rulemaking to EQB on 9/15/09 (expected)

# Outdoor Wood-Fired Boiler Proposed Regulation

**Questions?**

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