

# The Great American Wood Stove Changeout



U.S. EPA Office of Air Quality  
Planning and Standards

[www.epa.gov/woodstoves](http://www.epa.gov/woodstoves)

# Presentation Overview



- What's the Great American Woodstove Changeout – 6 min. DVD
- Old Woodstoves vs. New Technologies
- Why should we care (health, safety, efficiency)?
- Tribal Woodstove Changeouts
- Funding Woodstove Changeouts

# What is The Great American Wood Stove Changeout?



A voluntary effort to encourage people to replace or “changeout” their inefficient, old (built before 1990) wood stoves with cleaner-burning technologies.

# Old “Conventional” Wood Stoves Built before 1990

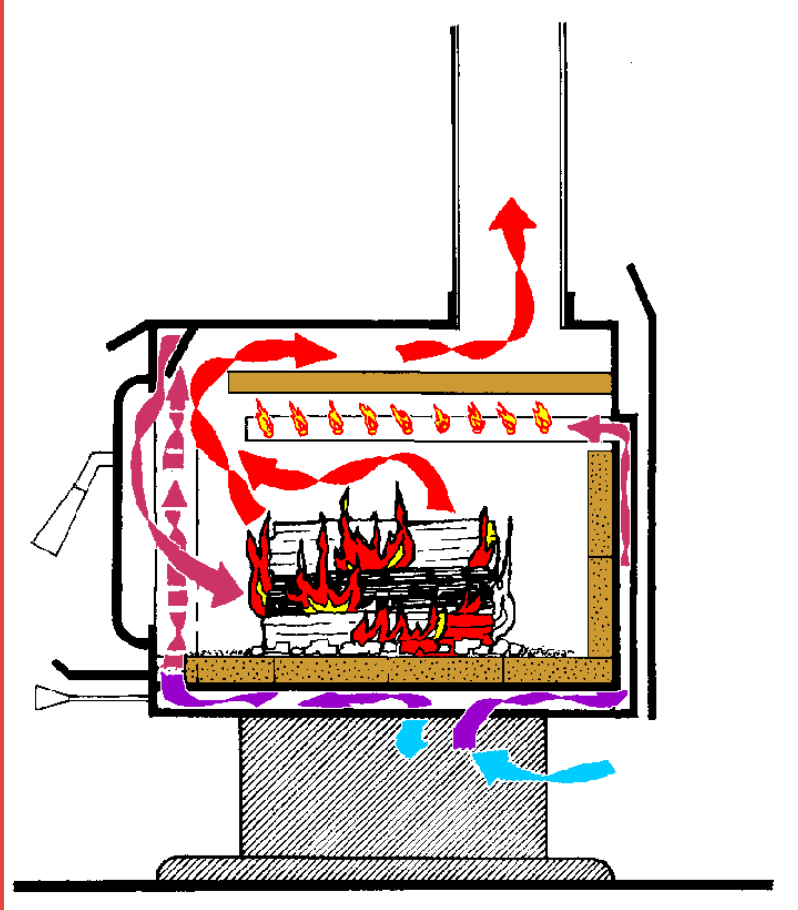


# EPA – Certified Woodstoves (after 1990)



Slide from Wood Heat Organization Inc

# Inside a 'non-cat' wood stove



1. Firebox insulation
2. A large baffle
3. Preheated combustion air

# Wood Pellet Stove



# How to Identify an EPA - certified Wood Stove



U.S. ENVIRONMENTAL PROTECTION AGENCY

Certified to comply with July, 1990 particulate emissions standards.

Date of Manufacture

2002	2003	2004	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DO NOT COVER OR REMOVE THIS LABEL

Made in U.S.A. 3300-626



# Gas and Propane Stoves



# Why do we care about residential wood smoke?



- Residential wood burning in the U.S. emits 420,000 tons of fine particle pollution (PM2.5) each year
  - More than all
    - Petroleum Refineries
    - Pulp and Paper Mills
    - Cement Manufacturers combined
- To put it in perspective:
  - Changing out 1 old, dirty, inefficient stove is equivalent to taking 5 old diesel buses off the road

# What else is in wood smoke?



- Benzene
- Toluene
- Aldehyde gases
- Polycyclic aromatic hydrocarbons
- Dioxin



# Why we care about residential wood smoke



A small community in Washington state  
That's not fog, it's wood smoke

# Who's affected by wood smoke?



- Everyone, especially children and the elderly
- People with existing diseases such as:
  - Coronary artery disease
  - Heart failure
  - Asthma
  - Chronic bronchitis and emphysema



# How can a Wood Stove Changeout help your community?



- Improves the health of children and your community
- Improves safety of home
- Improves visibility
- Improves indoor air quality

# 2006/2007 Residential Fine Particle Indoor Air Quality Sampling, Libby MT



## Preliminary Findings from University of Montana

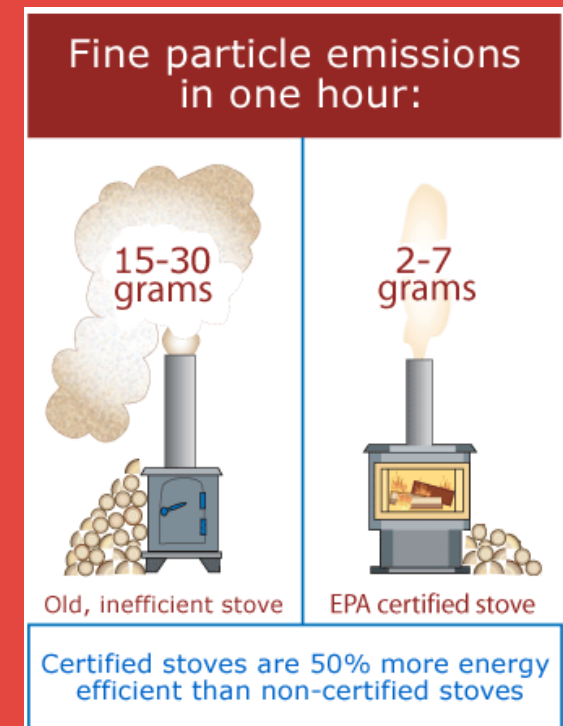
- Sampling 21 woodstove homes that were changed out during the winter of 2006/2007. (5 were eliminated from study for various reasons)
- 24-hour PM<sub>2.5</sub> sampling
- EPA health based standard for 24 hour exposure = 35 ug/m<sup>3</sup>
- Pre-changeout average PM<sub>2.5</sub> concentrations within 21 homes: 53.4 ug/m<sup>3</sup>.
- Post-changeout average PM<sub>2.5</sub> concentrations within 16 homes: 15.0 ug/m<sup>3</sup>.
- Average reduction in indoor PM<sub>2.5</sub> within 16 homes:

**72%**

# Benefits to the Home Owner



- **Cleaner Burning Technologies:**
  - Pollute less – 70% less PM<sub>2.5</sub> outdoors, improves indoor air
  - Are 50% more energy efficient
  - Use 1/3 less wood for same heat
  - Cut creosote buildup in chimneys, reducing fire risk
  - Save money and require less work





# Tribal Woodstove Changeouts



- Swinomish Tribal Indian Community (WA)
  - Changing out all old stoves
- Nez Perce Tribe (Idaho)
  - Before and after indoor air quality study
- Oneida Indian Nation (Wisconsin)
  - Used EPA indoor air grant funds to changeout stoves

# Tribal Woodstove Changeouts



- Swinomish Indian Tribal Community (WA state)
  - Changed out 44 woodstoves to date
  - Plan to changeout every tribal home
  - Housing authority contributed funds to assist effort
  - Major motivation: improve health of children and elderly, e.g., help reduce asthma attacks, reduce health cost at the tribal health clinic

*“Based on conversations with parents who have asthmatic children, wood stove changeouts have played an important role in improving indoor air quality and reducing asthma attacks”*

Tony Basabe Ph.D., Swinomish Air Program Manager

# Older woodstoves in Nez Perce Tribal homes



# Oneida Nation Woodstove Changeout



**Old Stove**



**New Stove**

Model: Saffron Mears

# U.S. Dept. of Housing and Urban Development – Office of Native American Programs



- **Indian Housing Block Grant Program (IHBG)**  
**(\$624 million available in FY 2007)**
  - Most Tribes/Tribally Designated Housing Dept. receive IHBG funds through this program
  - Have discretion to do most anything housing-related with IHBG
  - Wood stove changeouts would be an eligible activity for Low Income households (80% of the Area Median Income = Low Income)

# HUD Office of Community Planning and Development



## Rural Housing and Economic Development Program (RHED): (\$16.8 M available in FY 2007)

- Designed to support innovative housing activities and economic development in rural areas and includes tribal lands.
  - Non-profit organization, e.g., United South & Eastern Tribes, could apply for RHED funds to cover costs related to changing out wood stoves on a reservation for Low-Income households.
  - Maximum RHED grant is \$300,000 in any given year.

**For Program Descriptions:**

[www.hud.gov/funds/index.cfm](http://www.hud.gov/funds/index.cfm)

# Potential Funding: USDA Grant and Loan Program



## Home Improvement Loans & Grant Program (\$30 mill. for grants & \$30 mill for loans)

- Loans: are available to lower income rural (less than 10,000 population) to make repairs.
- Grants: are available to enable *very* low-income, rural elderly (62 +) homeowners to remove health and safety hazards from their homes.
- Administrative funds may be available to manage these grants, depends on your USDA local office.

For more info: [www.rurdev.usda.gov/rhs/](http://www.rurdev.usda.gov/rhs/)

# Pilot Project and Success Story



- Libby, MT
  - Non-attainment for PM<sub>2.5</sub> annual standard
  - 82% of PM<sub>2.5</sub> came from wood smoke
  - Changed out 1,100 wood stoves
  - Preliminary data suggests significant improvement in indoor and outdoor air quality



# Wood stove changeouts are happening: 2005-2007



CA - Sacramento  
CA - Yolo-Solano  
CA - Butte County  
CO - Delta County  
ID - Pinehurst  
ID - Cache Valley  
ID - Nez Perce Tribe  
MT - Libby  
NM - Questa  
NV - Washoe Co.  
OH - Dayton area  
OH - Marietta  
OR - Oakridge

PA - Southwest counties  
VA - Christiansburg  
WA - Darrington  
WA - Ferry County  
WA - Yakima  
WA - Bellingham  
WA - Spokane  
WA - Stevens County  
WA - Swinomish Tribe  
WI - Oneida Nation  
WV - Parkersburg

# Summary/Questions



We believe this voluntary effort:

- Is a very effective tool for addressing indoor air quality issues and safety
- Tools and examples are available, but financial incentives are a challenge
- We have willing partners;
- Questions?

Steve Rosenthal  
(312) 886-6052

[www.epa.gov/woodstoves](http://www.epa.gov/woodstoves)

# How do I get started?



- **Identify potential partners**
  - e.g. local elected officials, non-profits, industry
- **Identify sources of funding**
  - e.g. in-store discounts, supplemental environmental projects (SEPs), local utility companies, USDA and HUD grants
- **Develop a project plan**
  - determine staff, timing, resources and set goals

# How can EPA help?



- Wood Stove Changeout “How To” Guide
  - Example brochures, posters, fact sheets, video footage available, case studies
- Strong Partnerships (e.g., hearth industry, American Lung Association)
- Wood Stove Changeout state implementation plan (SIP) credit guidance
- Options for securing funds, (e.g., grants, industry rebates, SEPs)
- Technical assistance
  - State/local benefits modeling