The background features several large, overlapping, colorful swirls in shades of purple, green, and blue. Scattered throughout are numerous small, yellow, triangular shapes that resemble sun rays or confetti.

Lower Columbia College's Lecture Series
The Green Earth – Our Playground & Responsibility

Air Quality and You

Southwest Clean Air Agency

Kathy Finkle

November 18, 2010

...With a focus on human
behavior and choices

About SWCAA

Southwest Clean Air Agency
*Serving Clark, Cowlitz, Wahkiakum,
Lewis and Skamania Counties*

11815 NE 99th Street, Suite 1294
Vancouver, WA 98682

www.swcleanair.org

360-574-3058

1-800-633-0709

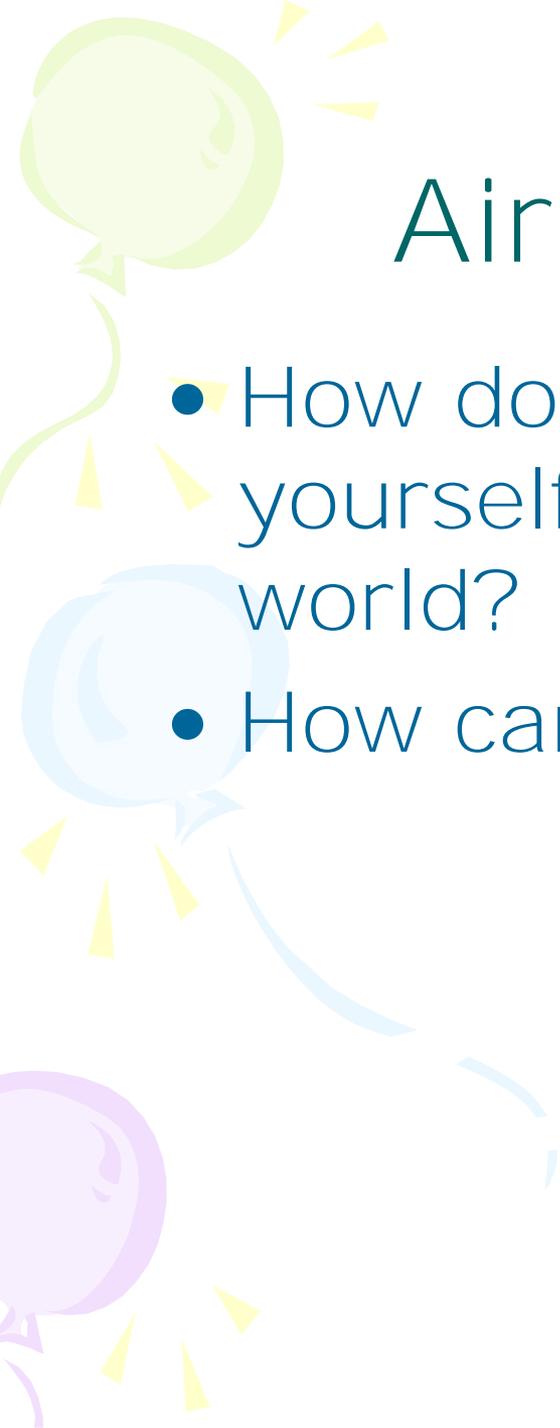




SWCAA

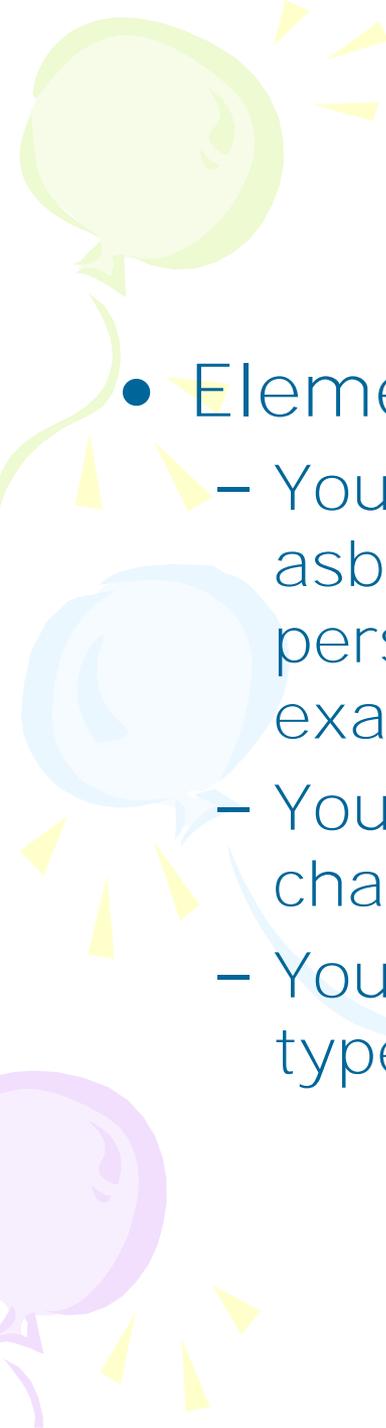
Programs & Services

- Public Information & Education
 - Complaint Response & Enforcement
 - Outdoor Burning
 - Wood Stoves
 - Asbestos
 - Business Assistance, Air Operating Permits (industry compliance except pulp and paper and aluminum)
- 
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Air Quality and You

- How do **you** impact air quality for yourself, your neighbors, your world?
- How can you improve air quality?



Air Quality and You

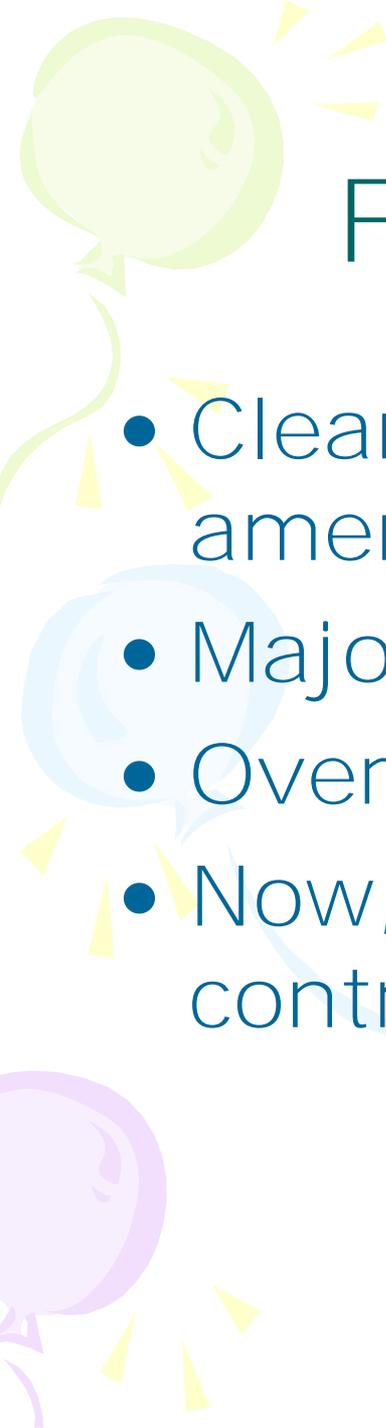
- Elements:

- Your house: appliance purchases, energy use, asbestos removal, painting, cleaning products, personal products (e.g., hairspray, other examples? Cleaning products?)
- Your yard: products you apply, lawn mowing, chain saws, yard waste disposal
- Your transportation choices – planes, trains, type and use of automobiles

Sources of Air Pollution

- Cars & Trucks
- Smoke from Wood Burning
 - Wood Stoves & Fireplaces
 - Outdoor Burning
 - Industries/Businesses
- Planes, Trains, Boats, Yard Equipment





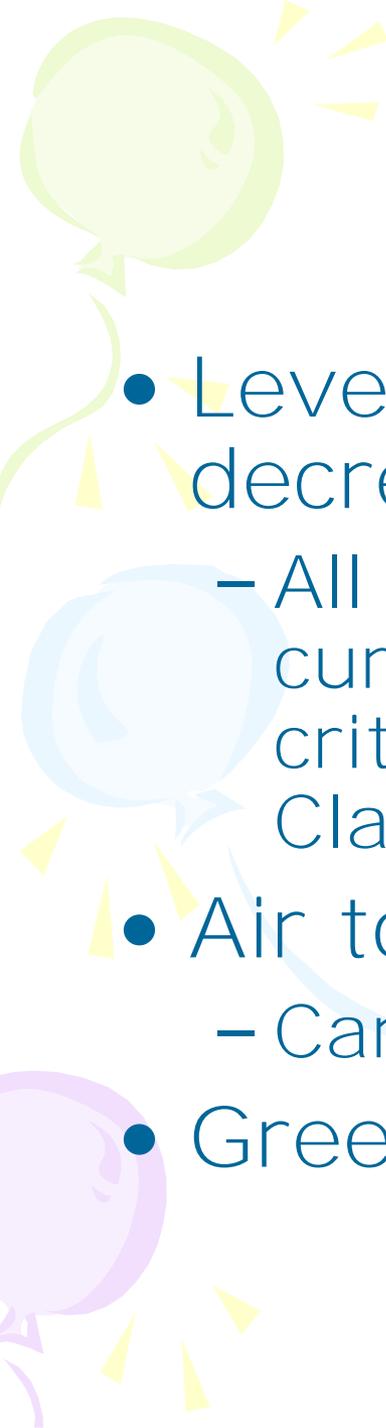
First, Some history...

- Clean Air Act passed in 1970 and amended in 1977 and 1990
- Majority of pollution from industries
- Over time, reductions in industry
- Now, many small sources combine to contribute to majority



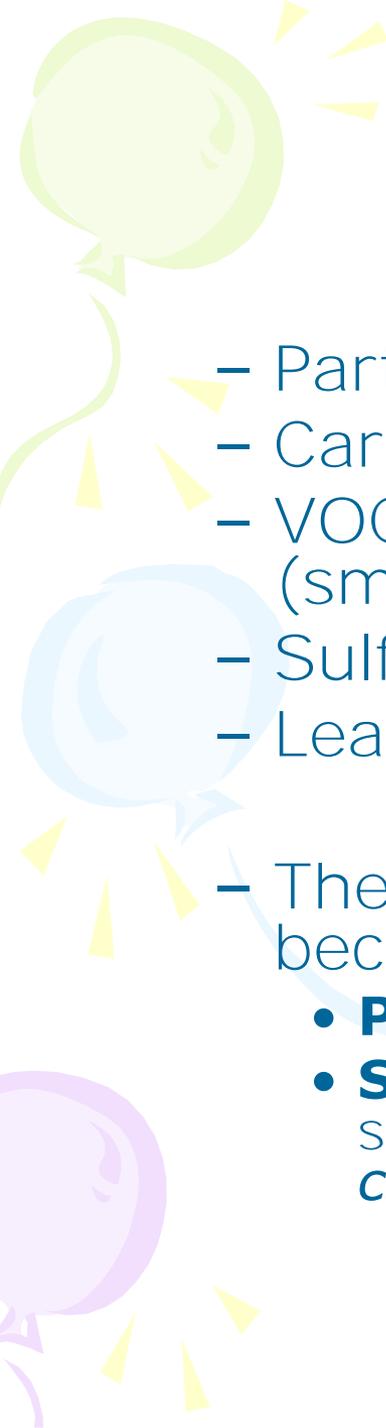
Regulation of different pollution classes

- 1970 - Criteria pollutants - Clean Air Act
- Before 1990 - asbestos, mercury, benzene
- 1990 - Clean Air Act Amendments expanded Air Toxics regulations
- Most Recently: Greenhouses gases - Climate Change policy/rules



Pollution Levels

- Levels of criteria pollutants decreasing
 - All areas in SWCAA five county area currently meet air quality standards for criteria pollutants (close for $PM_{2.5}$ in Clark County)
- Air toxics – nationwide decreasing
 - Cars cleaner, fuels cleaner
- Greenhouse gases – increasing



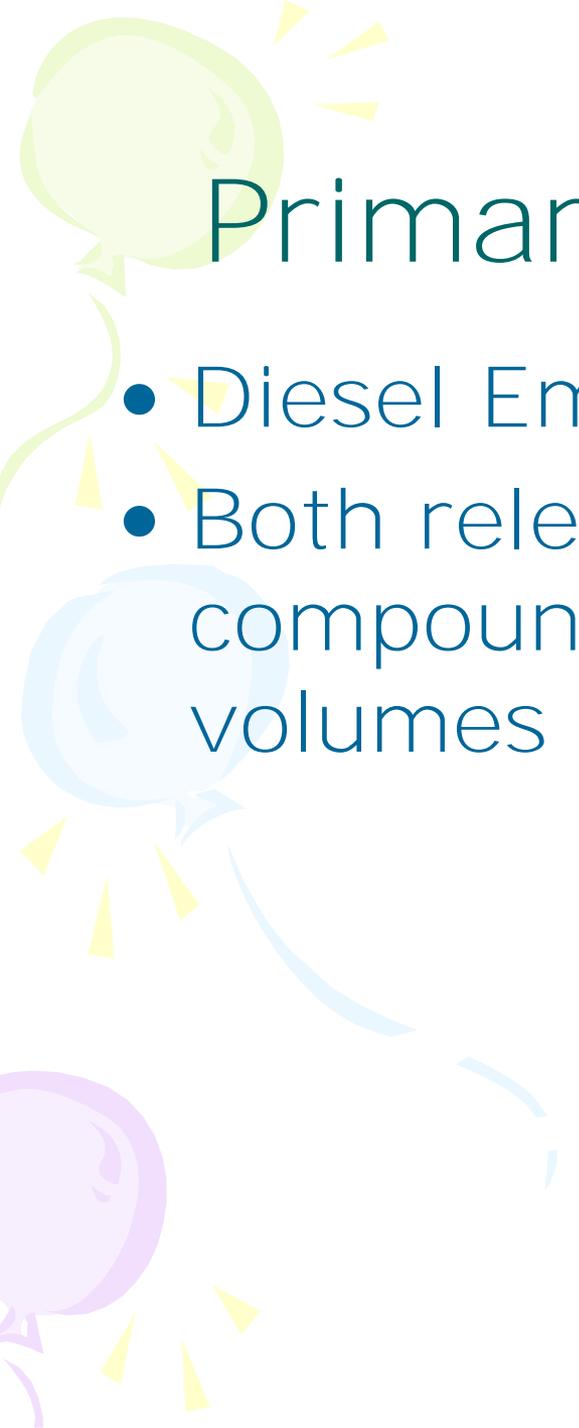
Criteria Pollutants

- Particulate Matter (PM)
 - Carbon Monoxide (CO)
 - VOC and NO_x which create ground-level ozone (smog)
 - Sulfur Dioxide (SO_2)
 - Lead (Pb)
- These pollutants were called criteria pollutants because they were based on two **criteria**:
- **Primary standards** to protect **public health**; and
 - **Secondary standards** to protect **public welfare**, such as *decreased visibility* and *damage to animals, crops, vegetation and buildings*.



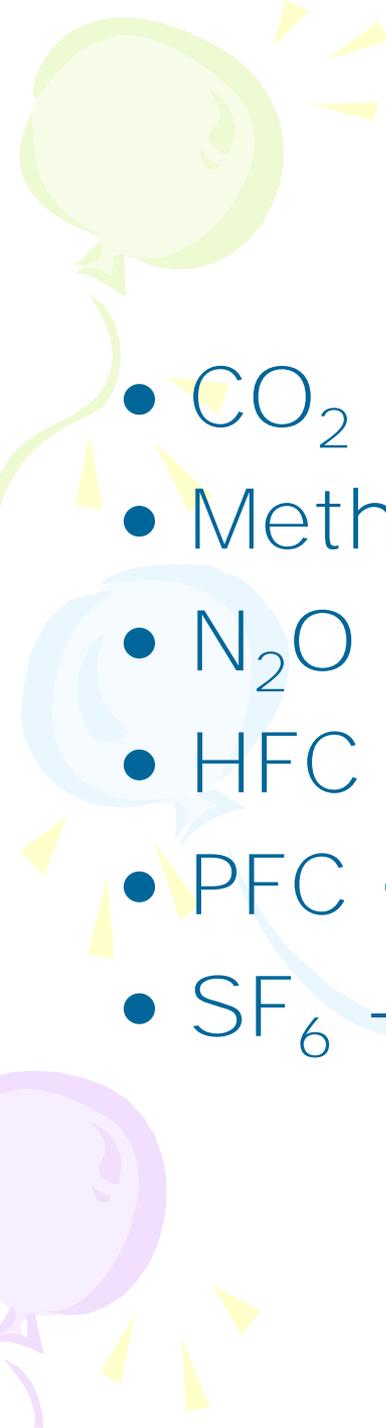
Air Toxics

- Hundreds of compounds
 - 188 compounds on federal HAP list
 - e.g., acetaldehyde, toluene, formaldehyde, metals
 - 33 air toxics are focus of EPA Integrated Urban Air Strategy
 - Sources: cars and trucks, large and small commercial and industrial sources
 - **Small sources called “Area Sources” include:** gas stations, dry cleaners, metal fabrication shops, foundries, auto body shops, wood treatment



Primary Air Toxic Sources

- Diesel Emissions and Wood smoke
- Both release many different toxic compounds and are emitted in large volumes



Greenhouse gases

- CO_2
- Methane
- N_2O – nitrous oxide
- HFC – hydrofluorocarbons
- PFC – perfluorocarbons
- SF_6 – Sulfur hexafluoride

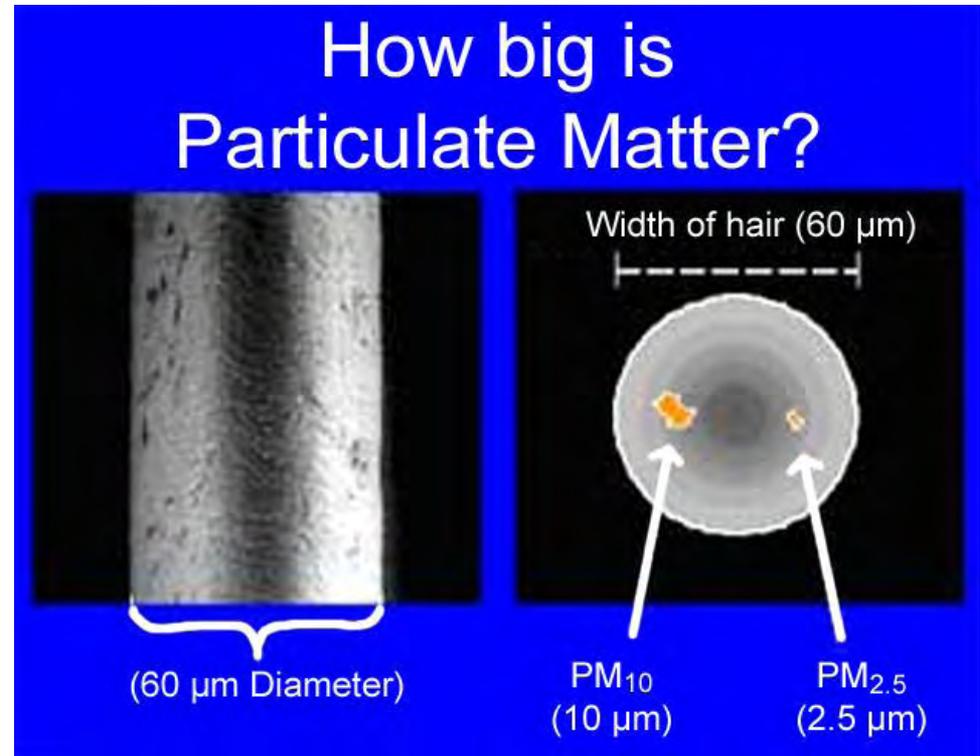


Greenhouse Gases

- Climate change
 - Starting with requirements to report emissions
 - Some states, cities have started their own program to reduce
 - Washington state – 2009 Executive Order “Washington’s Leadership on Climate Change”
- 
- 

Particulate Matter (PM_{2.5}, PM₁₀)

- Dust
- Dirt
- Smoke
- Soot
- Combustion



Criteria pollutants

Health Effects of PM

- Reduced lung function
- Asthma aggravation
- Worsen bronchitis and pneumonia
- Irritation of lungs, throat and sinuses
- Increased hospital admissions



Ozone (O_3) is “Good up high, bad nearby”

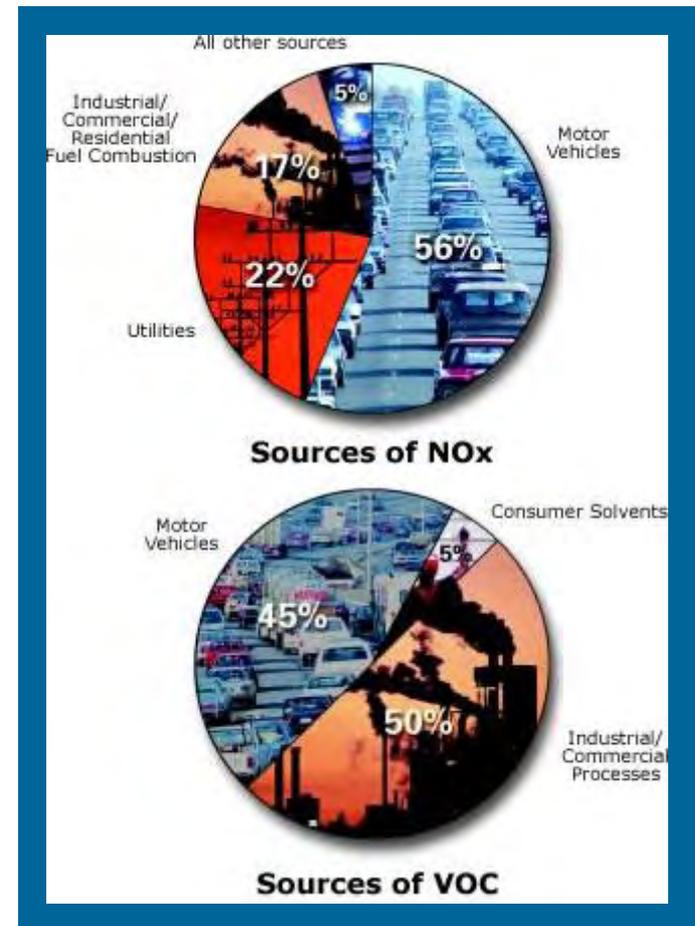
- “Good” ozone protects Earth from the sun’s harmful ultraviolet rays.
- “Bad” ozone, or smog, is formed near ground level when pollutants undergo a photochemical reaction.

Air pollution + hot, sunny weather = **Smog**



Sources of Ozone Pollution

- Cars & Trucks
- Power Plants
- Household Activities
 - Lawn mowers
 - Paint
 - Some hair sprays
- Hot, stagnant weather



Health Effects of Ozone

- Inflamed and irritated lung airways
- Asthma aggravation
- Reduced lung function
- Cellular lung damage
- Expect hotter summers due to climate change, more ozone problems



What can you do to reduce ozone levels?

- On hot, still summer days
 - listen for “Air Quality Advisories” from Clark County
- Carpool on those days
- Pump gasoline in cool part of day
- Postpone painting and lawn mowing (it’s too hot anyway!)





Air Toxics

- EPA – focus on 33 urban air toxics
- Instead of pollutant by pollutant approach – by broad classes of industry
 - Area source rules: smaller businesses/industries (e.g., spray coaters, metal platers, wood treaters)
 - Area sources: gas stations, dry cleaners, woodstoves

Diesel Emissions

- Focus of concern locally and nationally
- Diesel exhaust is toxic and a likely carcinogen
- Diesel emission reductions targeted by state and national efforts



Criteria pollutants

Air toxics

Greenhouse gases



Potential Effects of Air Toxics

- Headaches, dizziness, and nausea
- Difficulty in breathing and respiratory damage
- Reduced immunity
- Developmental delays
- Birth defects
- Cancer

Source: EPA publication 453-F-99-002

Asbestos

- Mineral fiber used in construction and other industrial uses (insulation, etc.)
- When released in air can get deep into lungs - can cause lung cancer
- Disturbing asbestos can expose you and others to hazard
- Not a hazard if undisturbed

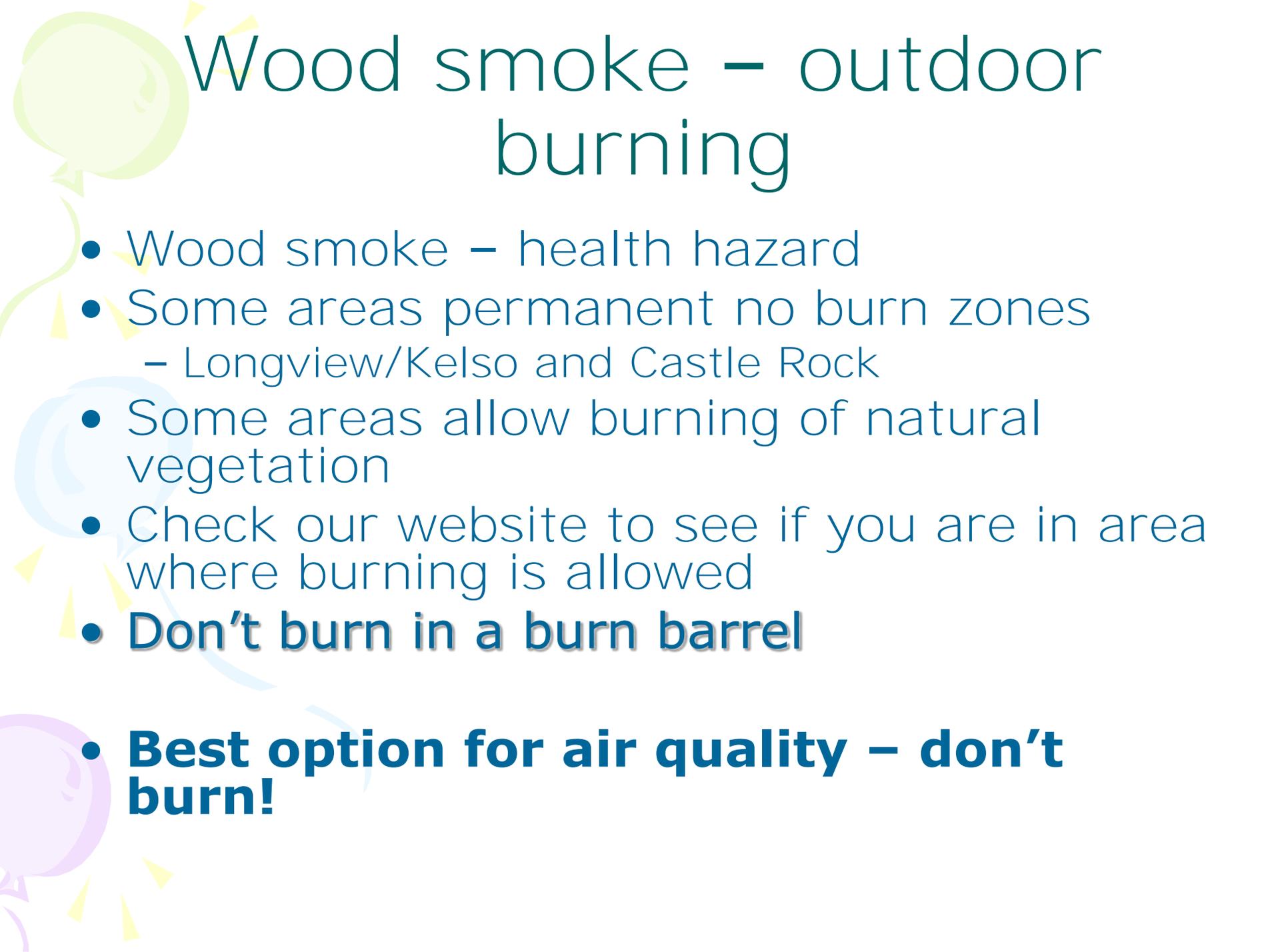


Your home - Asbestos

- Did you know?
 - Before you start home renovation you are required to find out if there is asbestos present?
 - Can be found in insulation on old furnaces hot water pipes?
 - **It is also in spray on “popcorn” ceilings, vinyl flooring, cement siding, etc. >3000 products**
 - Still found in **new construction**. Not true that they quit installing it or made it illegal after a certain year (it is a regulated substance, not illegal)
 - Can still buy it over the counter (roof sealant for mobile homes)

Asbestos

- Protect yourself and others
- Learn about asbestos when considering remodeling
- *See our pamphlets, flyers*
 - *Asbestos in Your Home*
 - *Demolishing/Renovating – Check for Asbestos Before You Start*



Wood smoke – outdoor burning

- Wood smoke – health hazard
- Some areas permanent no burn zones
 - Longview/Kelso and Castle Rock
- Some areas allow burning of natural vegetation
- Check our website to see if you are in area where burning is allowed
- **Don't burn in a burn barrel**
- **Best option for air quality – don't burn!**



Alternatives to Outdoor Burning

- Yard debris
 - Chipping
 - Composting
 - Hauling
 - Curbside pickup (in many areas)

Wood Burning Devices

- Wood smoke is a public health concern
 - Children, elderly
 - People with asthma, lung disease
 - Smokers
 - Allergy sufferers
 - Healthy people are at risk too

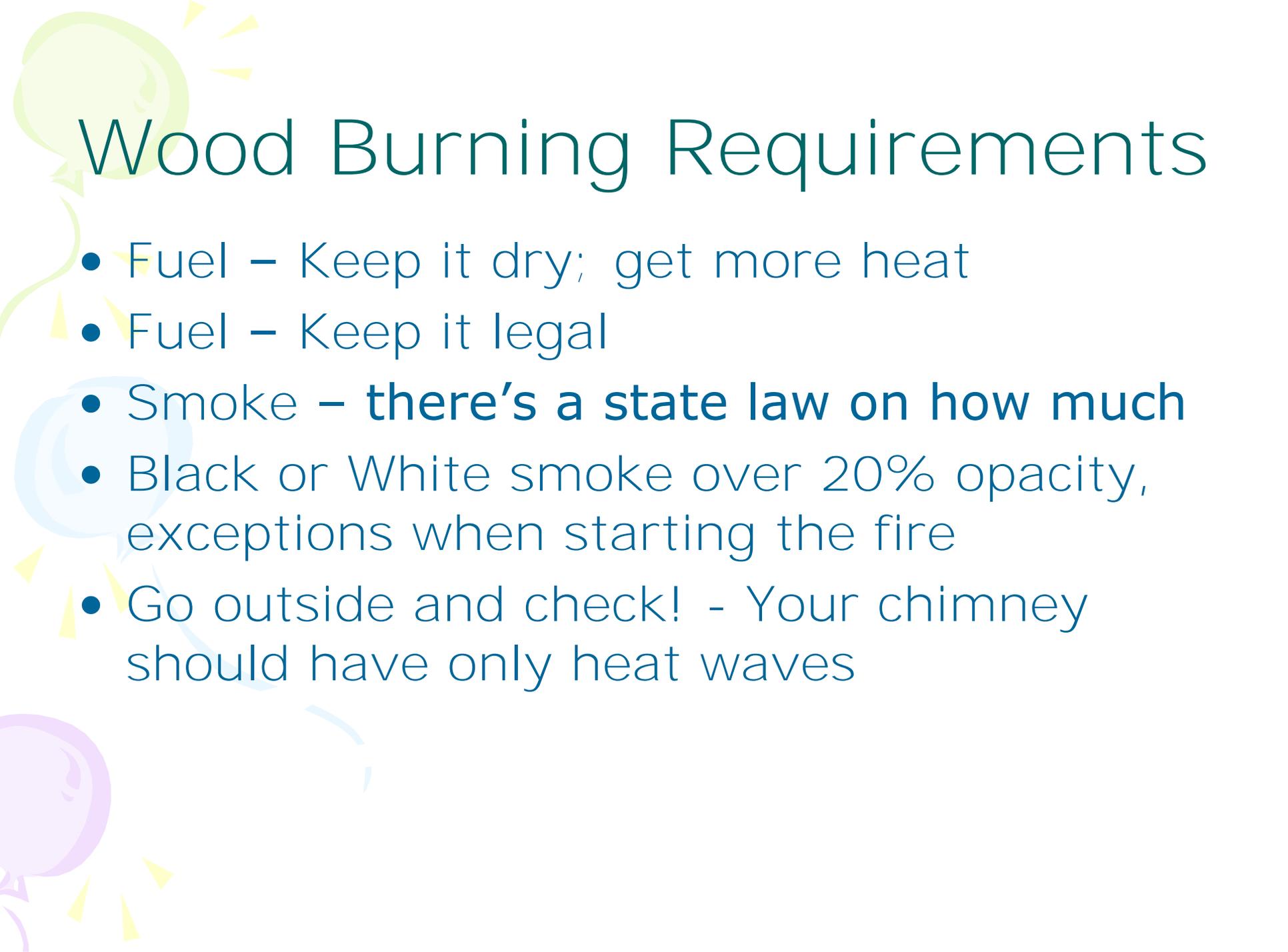


- ***See our pamphlets: Cleaner Wood Burning, Wood Smoke and Your Health, When You Burn Garbage In Your Fireplace or Woodstove, You Make Poison***



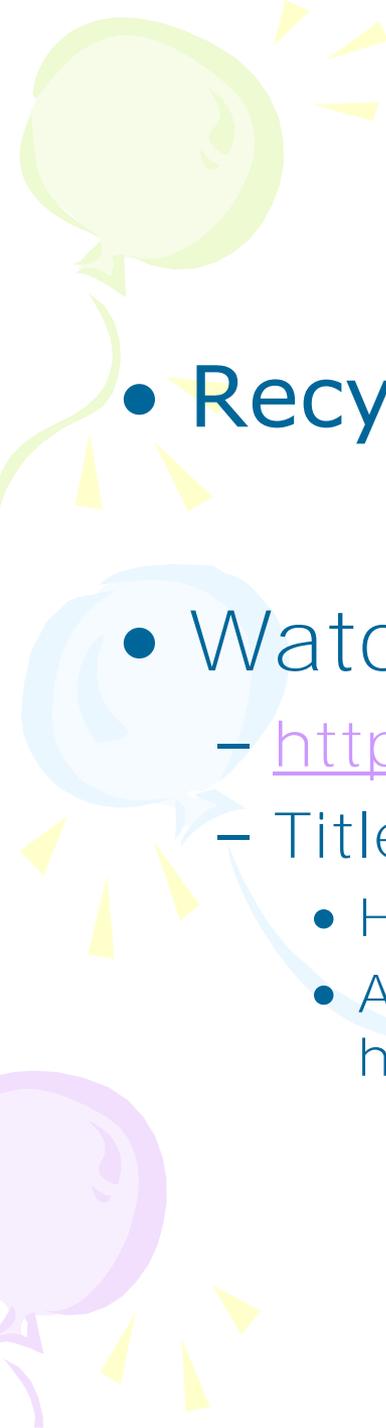
Wood Burning Devices

- Nearly half of Washington households have wood burning devices
 - Wood smoke poses a health threat to wood stove and fireplace users and to their neighbors.
 - Wood smoke is composed of small particles – can seep into houses through cracks around closed doors and windows, penetrates deeply into the lungs
- 
- 



Wood Burning Requirements

- Fuel – Keep it dry; get more heat
- Fuel – Keep it legal
- Smoke – **there's a state law on how much**
- Black or White smoke over 20% opacity, exceptions when starting the fire
- Go outside and check! - Your chimney should have only heat waves



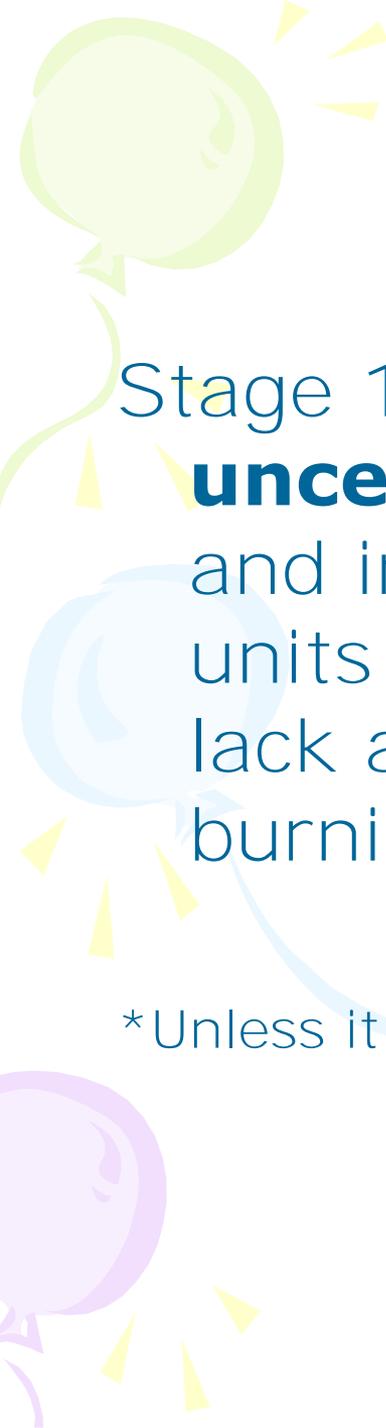
More tips

- Recycle paper, don't burn it
- Watch our clean burning videos at:
 - <http://www.swcleanair.org/burnclean.html>
 - Titles:
 - How to operate your woodstove more efficiently
 - A quick guide on how to select a new stove for home heat



Wood Burning Device Restrictions

- During stagnant air conditions, **winter inversions**, when air quality is rapidly deteriorating
 - Observe Mandatory Burn Bans
 - Sign up to receive e-mail notices
 - Stage 1 Burn Ban
 - Stage 2 Burn Ban

A decorative graphic on the left side of the slide features a stylized sun with yellow rays and three balloons in light green, light blue, and light purple. The sun is at the top, and the balloons are arranged vertically below it, with their strings trailing off to the left.

Winter Burn Bans

Stage 1 – use of all **fireplaces** and **uncertified** wood stoves, pellet stoves and inserts is prohibited. * Uncertified units are typically older than 1990 and lack a certification label. All outdoor burning is prohibited

*Unless it is your only source of adequate heat

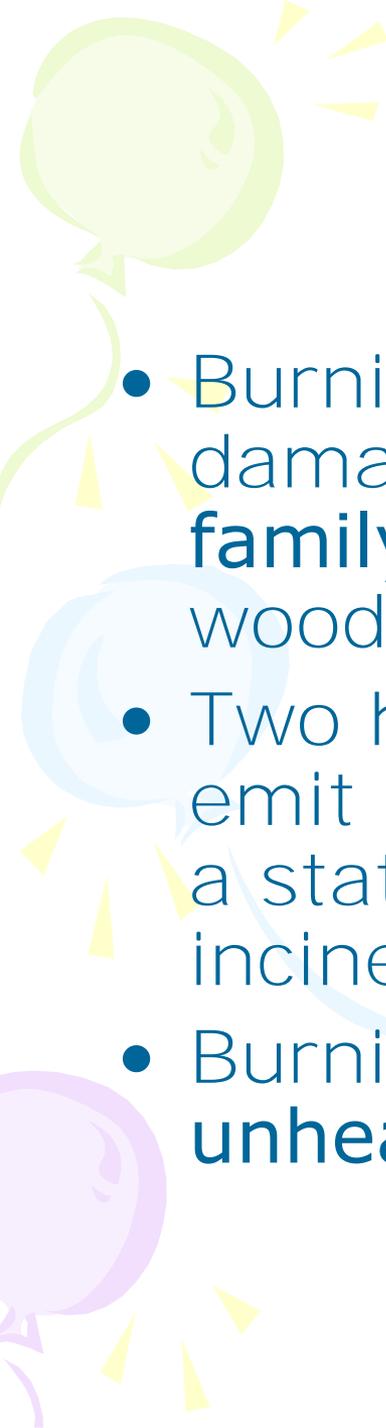
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Winter Burn Bans

- Stage 2 - **All wood heating prohibited**,* including certified units. All outdoor burning is prohibited
- Sign up to receive SWCAA winter Burn Ban notices by e-mail

• *See our bookmark/flyer "What You Need to Know About Burn Bans"*

*Unless it your only source of adequate heat



Burning garbage – never do it!

- Burning garbage in your woodstove is damaging to the environment, to your **family and neighbor's health and to your wood burning system.**
- Two households burning their garbage emit more cancer causing substances than a state-of-the-art municipal solid waste incinerator
- Burning garbage creates toxic and **unhealthy smoke; that's why it's illegal!**

Tips for Cleaner Burning in Your Wood Burning Device

- Clean, dry, untreated, **seasoned** (i.e., 6 months) firewood
- **Store under cover**
- Burn small, hot fires
- Never allow fire to smolder
- Make sure fire gets enough air
- Never burn wet, painted, stained or treated wood, colored newsprint, plastic, garbage, diapers or magazines
- Wet firewood is smoky and provides less heat



Your Heating Choices Matter!

- Use alternative form of heat!
 - Natural gas or electric
- Pellet stoves better than wood stoves
- Certified stoves better than older uncertified stoves (older than 1990)
- Fireplaces – most of heat is lost up the chimney, emissions terrible!

What can you do to reduce emissions from wood smoke?

- Don't Burn, if you choose to burn then,
 - Don't burn garbage
 - Learn proper burning techniques
 - i.e., burn cleaner and hotter
- Educate your neighbors about burn bans
 - *See our pamphlets:*
 - *Wood Smoke and Your Health*
 - *When You Burn Garbage in Your Fireplace or Woodstove, You Make Poison*
 - *Cleaner Wood Burning*

Actions that have reduced pollution

- No-Idle Zones signs at schools
- Retrofit devices installed on many Cowlitz County diesel school buses
- On-road diesel fuel sulfur content changed in 2006



Criteria pollutants
Air Toxics
Greenhouse gases



Community Efforts to Reduce Diesel Emissions

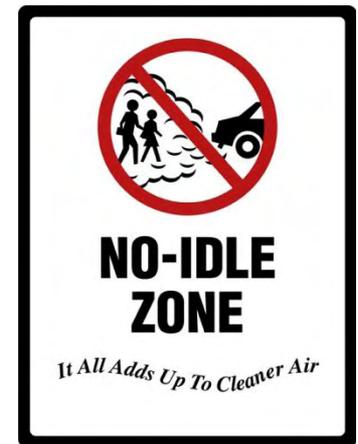
- Statewide program to reduce diesel emissions
- SWCAA and Ecology facilitated emission reduction retrofits for:
 - School Buses: more than 158 retrofits
 - Local Governments
 - Transit Fleets
 - Some Private Fleets for Public Benefit

Retrofits that have reduced diesel emissions and risk

- Cowlitz 2 Fire & Rescue vehicles
- WA DOT vehicles in Kelso
- City of Longview vehicles
- Community Urban Bus System (CUBS)
- School buses for Longview, Kelso, Castle Rock, Toutle Lake Districts

School Anti-Idling Programs

- Aimed at parents, bus drivers, delivery truck drivers
- Participating School Districts
 - Longview School District
 - Castle Rock School District
 - Toutle Lake School District
 - Possibly to be expanded to others in Cowlitz County
 - Others interested?



Other Changes That Will Reduce Emissions and Risk

- New Fuel Standards
 - Reduced levels of benzene allowed in gasoline by 2012
 - Less sulfur allowed in diesel fuel for nonroad engines and eventually in locomotives and marine engines
 - Reduces both SO₂ and Particulate Matter
 - Renewable Fuels (biofuels)
- Car emission standards (CAFE) results in cars emitting less pollution

What can you do?

- In your car:
 - Buy a fuel-efficient car (> 30 mpg)
 - Stay tuned-up, tires at best pressure
- Drive Less
 - Carpool
 - Take the bus (cubs-bus.com)
 - Ride a bike
- **Don't Idle Your Car**
 - Shut off engine if waiting for more than 30 seconds
 - Park instead of using the drive-through line
- **Don't top off your tank when refueling**
- *See our pamphlet: [Idling Gets You Nowhere, Car Care and Clean Air](#)*



Criteria pollutants

Air Toxics

Greenhouse gases



You Can Impact Air Emissions

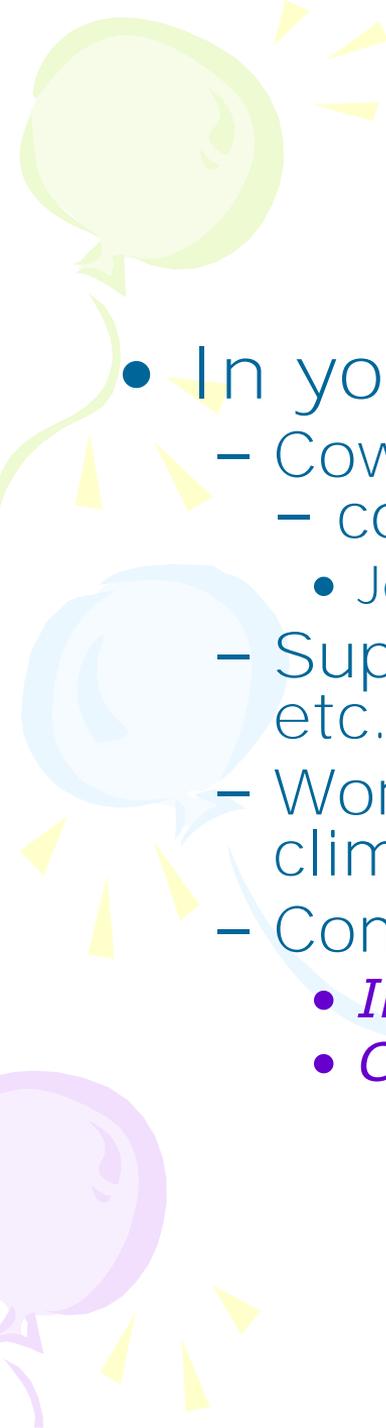
- In your home:
 - Buy local!
 - Recycle
 - Go to environmentally friendly businesses
 - Be an educated consumer
 - Minimize, optimize or eliminate wood burning
 - Keep stored gasoline and chemicals tightly sealed, away from living areas
 - Buy products that are less toxic
 - Buy products with less packaging

In your home: continued..

- To reduce Greenhouse gases
 - Purchase energy efficient “Energy Star” appliances, lamps and bulbs
 - Seal and insulate your home
 - Use green power
 - Reduce, reuse, recycle
 - Plant Trees
 - Be green in your yard (use mulching mower, compost, use less chemicals)
 - Save water
 - Spread the word



Source: <http://www.epa.gov/climatechange/wycd/home.html>

A decorative graphic on the left side of the slide features three balloons in shades of green, blue, and purple, with yellow sun rays emanating from behind them.

Community Tools Get Involved

- In your community:
 - Cowlitz County Community Health Workgroup
 - contact:
 - Jesse Smith: 360-414-5598
 - Support green community goals, bike paths, etc.
 - Work with your city or county to develop climate action plan
 - Community Resource list:
 - *Indoor Air Quality-Tools for Schools*
 - *Community Business Leader Guide*



Other Resources

- Environmental Protection Agency (EPA)
www.epa.gov
 - Urban air toxic strategy
 - www.epa.gov/climatechange
- WA Department of Ecology (DOE)
www.ecy.wa.gov
- American Lung Association of Washington
www.alaw.org/air_quality
- Southwest Clean Air Agency (SWCAA)
www.swcleanair.org



Questions?

Pamphlets/information available

Contact: Kathy Finkle

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