

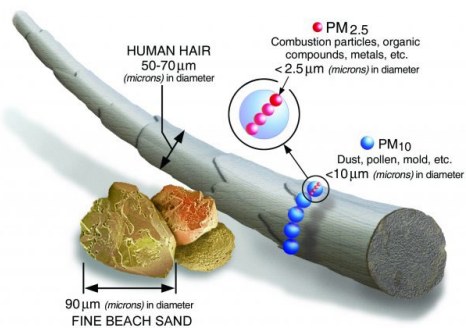
IN THIS ISSUE: AIR QUALITY, PARTICULATE MATTER, POLLUTION

Wintertime Air Pollution in the Truckee Meadows

Background

Wintertime air pollution from wood stoves and fireplaces (known as wood-burning devices or WBDs) has been a known public health concern in Washoe County for over 50 years. Wood smoke is made up of a mixture of gases and fine, microscopic particles that are produced from burning wood and other organic matter. These microscopic particulate matter pose the largest health threat from wood smoke as they can cause severe respiratory reactions or illnesses.¹ Data from ambient air monitoring stations in Washoe County that have been monitoring the air for particulate matter of various sizes since the 1970s, led the Washoe County District Board of Health to adopt several local regulations related to street sanding and sweeping, dust control, and WBDs to reduce particulate matter pollution

Figure 1: Comparison of Particulate Matter Sizes



Source: Size comparisons for PM particles. U.S. EPA. (2023, January 18). <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics>

Wood Smoke Health Effects

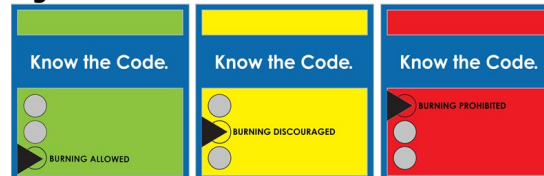
Acute exposure to wood smoke can cause coughing, wheezing, asthma attacks, heart attacks, and premature death.² Populations known to be at greater risk include children, teenagers, older adults, people with heart and/or lung disease, outdoor workers, healthy adults who are very active outdoors, pregnant women, and people of low socioeconomic status, including those who are homeless or have limited access to medical care.^{3,4,5} Wood smoke can cause respiratory inflammation, affect the immune system, and make anyone more prone to bacterial and viral lung infections including COVID-19. According to the CDC, people who currently have or who are

recovering from COVID-19 may be at an increased risk due to compromised heart/lung function.⁶

Know the Code

In 1987, Washoe County Air Quality Management Division (AQMD) started the Green. Yellow. Red Burn Code program to help reduce WBD emissions when the 24-hour air quality index (AQI) reaches or is expected to reach Unhealthy for Sensitive Groups (USG) or worse. Now known as Know the Code under the Keep It Clean brand, AQMD has issued a green, yellow, or red burn code every day between the beginning of November and the end of February for 36 years. For ZIP codes that are in the Truckee Meadows Hydrographic Area (HA87) and bordering it, Green means burning is allowed, Yellow means burning is discouraged, and Red means burning is prohibited.

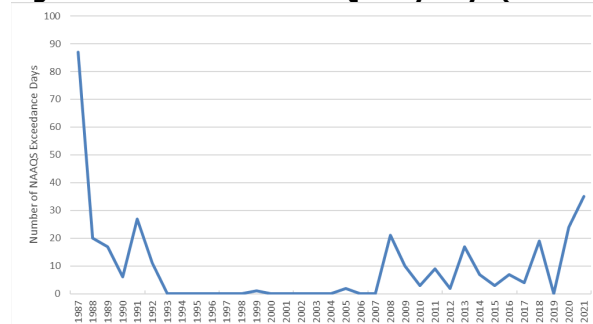
Figure 2: Know the Code Burn Code Icons



Source: Washoe County Health District Air Quality Management

The last red burn code issued was on December 29, 2017. The last winter USG day was on December 31, 2013. For comparison, the first year of the burn code had 87 USG days. See Figure 3.

Figure 3: USG or Worse Air Quality Days (1987-2021)



Source: Washoe County Health District Air Quality Management

In addition to this wintertime program, regulations related to phasing out of older, higher emitting WBDs have also led to an overall decrease in WBD emissions despite population and dwelling unit increases.⁷ Homeowners can also opt to change their

WBD to a cleaner burning appliance. To ensure compliance with local regulations, go through a local hearth retailer to make the best choice that suit your needs and budget.

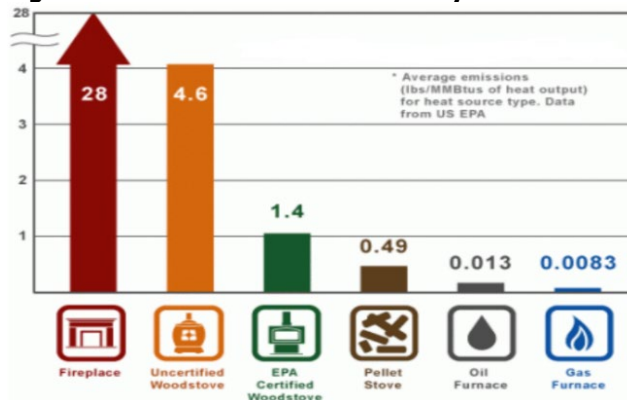
What Can You Do?

Everyone can do something to reduce particulate matter pollution during the winter months.

- Conserve energy. Passively heat your home with the sun.
- Weatherize your home.
 - Seal around doors and windows and insulate where needed.
- Change ceiling fans to spin clockwise and on low speed.
- Use cleaner heating appliances like electric or natural gas furnaces.
- Only use WBDs during Green burn code days.
- Burn dry, seasoned wood in small, hot fires instead of large, smoldering ones.
- Never burn trash, plastics, and painted/treated wood.

Consider efficiency, emissions, and size of space to be heated when choosing an appropriate wood burning appliance. The cleanest WBDs will be marked with EPA-certified and EPA-qualified labels. EPA-certified appliances meet regulatory emission requirements established by the EPA. These include: wood and pellet stoves, fireplace inserts, hydronic heaters (outdoor wood boilers), and forced air furnaces. Go to EPA's Burn Wise program (<https://www.epa.gov/burnwise>) for more information. Gas stoves or decorative fireplace gas logs are considered alternatives to wood burning appliances.

Figure 4: Relative PM2.5 Emissions by Heat Source Type



Source: Average emissions (lbs/MMBtus of heat output) for heat source type. U.S. EPA. (2018, March 20). <https://www.epa.gov/burnwise/energy-efficiency-and-your-wood-burning-appliance>

Figure 4 shows the particulate matter emissions by heat type source. Fireplaces emit the most particulate matter compared to an EPA-certified woodstove. The least particulate matter is emitted by gas furnaces.⁸

Actions to Reduce Air Pollution Year-Round

On-road and off-road mobile sources are the second largest source of particulate matter pollution in Washoe County.

- Choose a cleaner commute: carpool, take public transportation, ride bicycle, or walk.
- Drive less: combine errands and reduce amount of trips made.
- Keep car, boat, and other engines properly tuned.
- Ensure tires are properly inflated.
- Turn your key. Be Idle Free. (<https://www.washoecounty.gov/health/programs-and-services/air-quality/BeIdleFree.php#:~:text=How%20can%20we%20Be%20Idle,of%20using%20the%20drive%2Dthru.>) Consider an electric vehicle in the future.

References

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