



Missoula City-County Air Pollution Control Board Hearing on February 20, 2020  
Missoula City-County Health Department Response to Comments

April 21, 2022

1. Impact Zone M should be redrawn so that it does not include Evaro Valley or the Flathead Reservation. The Air Program Rules do not apply on the reservation and Evaro Valley air flows north and not into the Missoula Valley.

The Department agrees that the definition of Impact Zone M should be changed to exclude the Flathead Reservation as the air program rules do not apply on the reservation. When dispersion is poor for the Missoula Valley, dispersion will frequently be poor for the Evaro Valley. Therefore, the parts of the Evaro Valley outside the Flathead Reservation should be kept in Impact Zone M.

2. Need more wood stove use educational efforts, wood stove inspections, and fuel requirements.

These ideas are outside the scope of this rule making process. National and local educational efforts, such as the EPA's Burn Wise program, have very detailed information on how to operate a wood stove and how wood should be seasoned before use. Wood stove and fuel inspections would be good for safety reasons and verification of cleaner burning habits, however these efforts would greatly increase the resources needed by the department and there has been little interest from the public

3. Realtors should not act as inspectors for the Department woodstove program.

The Department met with representatives of the Missoula Organization of Realtors to identify an alternative solution to the original proposal. The Missoula Organization of Realtors and the Department are currently working on an MOU to solidify ways that realtors can aid in ensuring our community has and maintains healthy air quality. The Missoula City-County Health Department appreciates Realtor's efforts with this effort and has worked with the Missoula Organization of Realtors to streamline their involvement since the air regulations were enacted in 1994.

4. The Certificate of Compliance should not be required for every change of ownership since most of the property within the Air Stagnation Zone is already in compliance.

Despite Certificates of Compliance and wood stove removal requirements being in place since 1994, the Department continues to find properties that are for sale and have sold since 1994 where wood stoves remain installed. The current draft of proposed rules requires all stoves, even previously permitted ones, to be removed on sale. The clarity in understanding that all wood stoves in the air stagnation zone must be removed on sale will decrease confusion and aid realtors in conveying this information. After discussions with the Missoula Organization of Realtors, this version of the rules does not require a Certificate of Compliance. Instead, the realtors suggested a voluntary disclosure to be distributed within the air stagnation zone.

5. Rules to reduce pollution from high emitting wood-burning fireplaces should be included in this rule re-write. While generally unused, fireplaces generate a large amount of particulate pollution when used. Fireplaces should not be grandfathered in forever.

The Missoula City-County Health Department (Department) agrees that when used, fireplaces produce more pollution than a wood or gas stove. Removal of a fireplace, however, is not reasonable since fireplaces are built of masonry and are structurally part of the house; fireplace removal cost could be extremely high. New houses may not be built with fireplaces.

Other possible options to address existing fireplaces constructed in the Missoula Air Stagnation Zone prior to 1986 include not using the fireplace, plugging the chimney, or converting to natural gas or pellets. The Department will consider including this information in outreach efforts.

6. It is time for all stoves to be removed. Comments support the proposed changes to the Missoula City-County Air Pollution Control Program and support changes that will decrease the number of wood and pellet burning devices in the Air Stagnation Zone.

The proposed air rules will not immediately remove wood stoves that exist in the Missoula Air Stagnation Zone, but as properties change ownership the number of wood stoves will decline. The Department recommends that the option to install pellet burning devices in the air stagnation zone be maintained as it provides an alternative to electricity and natural gas while contributing significantly less pollution than wood stoves.

7. Chapter 9 (solid fuel burning devices) particulate matter emissions limits should be expressed in heat output lb/MMBTU (pounds per million British Thermal Units) or g/10,000 BTU (grams per 10,000 British Thermal Units) instead of grams per hour.

Federal emission testing results for smaller residential scale solid fuel burning devices (wood and pellet stoves for example) give results based on grams per hour. The Department recommends that emission limits for wood and pellet stoves be kept at grams per hour since the national test are designed to find an average emission rate based on grams per hour. Grams per hour is the emission rate readily available to the consumer and the wood stove vendors.

Proposed rule 9.204(c) and 9.205(b) for outside the Missoula Air Stagnation Zone already set emission limits based on lbs/MMBTU or g/10,000 BTU heat input. These emission limits apply to hydronic heaters and other devices.

8. Allow pellet boilers with heat input between 150,000 and 1 MMBTU/hour into the Missoula Air Stagnation Zone with an emission limit of 0.10 lb/MMBTU. Require that the pellet boilers use an electrostatic precipitator (ESP) or equivalent control device to reduce particulate emissions.

The Department agrees that pellet boilers that meet specific emissions criteria can be installed inside the air stagnation zone. With the 2015 NSPS there is a federally approved testing method for these types of devices and the air program already allows pellet stoves and units over 1 million BTU per hour heat input to be constructed and installed in the air stagnation zone. Allowing pellet boilers that are 2020 NSPS compliant inside the air stagnation zone is equivalent to the other devices already allowed for installation.

9. Installation of clean burning wood stoves should be allowed inside the Missoula Air Stagnation Zone. Clean burning solid fuel burning devices could be restricted to automated solid fuel burning devices and single burn rate devices. This would allow people to heat their homes with a more carbon neutral heat source than natural gas or electricity.

Climate change is a threat to the local and global environment and striving for reduced CO<sub>2</sub> emissions into the atmosphere is important. The Missoula Valley has a confined air shed with frequent winter inversions and a growing population. When looking at the installation of new solid fuel burning devices in the Missoula Air Stagnation Zone, the global environment as well as the unique conditions found locally were considered.

The wood stove testing methodology used by the EPA to certify wood stoves was designed as a repeatable test that would give a relative comparison between stoves; the test was not designed to give actual emissions rates achieved by the customers who use the stoves in their homes or businesses. Particulate emissions from a stove operated by the customer vary greatly based on fuel shape, species of wood used as fuel, fuel moisture content, stove operation, stove design, and maintenance of the stove.

To permit the installation of potentially hundreds of wood stoves in the Missoula Air Stagnation Zone would be a gamble with Missoula's air quality and the public's health. Our experience with the 2012-2014 Seeley Lake wood stove change out program has shown that newer EPA certified stoves can burn cleaner than older wood stove designs, but violations of the PM<sub>2.5</sub> National Ambient Air Quality Standards from EPA certified devices still occur (January 2017 had 15 days over the daily PM<sub>2.5</sub> standard). The winter of 2021-2022 had seven days over the daily standard.

As part of the rule-making process, the Department must propose rules that are as stringent as existing rules. Currently, the rules only allow pellet stoves that emit 1 gram per hour particulate matter or less in the Missoula Air Stagnation Zone. Based on testing methods for wood stoves, the Department would not be able to prove that the installation of stick wood stoves is as stringent as the current rule which only allows pellet stove installations in the Missoula Air Stagnation Zone.

The Department does not recommend that stick type wood stove installation be allowed in the Missoula Air Stagnation Zone. Pellet stoves and boiler units over 1 million BTU heat input are wood burning options available in the Missoula Air Stagnation Zone. The Department has proposed in this rule packet that the installation of low emitting pellet boilers be allowed in the air stagnation zone.

10. Fireplaces in the Missoula Air Stagnation Zone should be replaced with New Source Performance Standard (NSPS) 2020 compliant automated wood stoves or single burn rate devices.

In the residential setting, automated and single burn rate wood stoves may likely have lower emissions than other NSPS 2020 compliant wood stoves. Both types of devices do take some user variations out of the operation. However, emissions in the residential setting will usually be higher than the lab certification results because of varied moisture content, different wood species burned, and the amount of fuel loaded.

Another factor to keep in mind is that while modern wood stoves are cleaner burning than fireplaces, wood stoves are used much more frequently than fireplaces because they do provide space heat. Fireplaces provide very little heat to a house and tend to be used for aesthetic purposes rather than for daily heating. The net effect is that wood stoves replacing fireplaces could easily produce more PM<sub>2.5</sub> in the air because of the increased use for heating purposes.

The 2000 Missoula Carbon Monoxide Emission Inventory estimated that 2,689 fireplaces exist in the Missoula Air Stagnation Zone. These fireplaces are in homes constructed prior to 1986. With thousands of existing fireplaces concentrated in the older neighborhoods in the Missoula Air Stagnation Zone, allowing wood stoves to replace fireplaces could result in thousands of new wood stove installations.

Current PM<sub>2.5</sub> National Ambient Air Quality Standards are 35 µg/m<sup>3</sup> for the 24-hour average and 12 µg/m<sup>3</sup> for the annual average. The World Health Organization recommends that the annual average PM<sub>2.5</sub> levels not exceed 10 µg/m<sup>3</sup> and that the 24-hour average not exceed 25 µg/m<sup>3</sup>.

In their January 2020 final Policy Assessment for the Review of the National Ambient Air Quality Standards for Particulate Matter, EPA staff concluded: “When taken together, we reach the conclusion that the available scientific evidence, air quality analyses, and the risk assessment, as summarized above, can reasonably be viewed as calling into question the adequacy of the public health protection afforded by the combination of the current annual and 24-hour primary PM<sub>2.5</sub> standards.” In the final PM Policy Assessment (PM PA), EPA staff advised that available information suggests that an annual primary PM<sub>2.5</sub> standard in the range of 8 micrograms per cubic meter (µg/m<sup>3</sup>) to <10 µg/m<sup>3</sup> (versus the current standard of 12 µg/m<sup>3</sup>) is supported and a 24-hour PM<sub>2.5</sub> standard as low as 30 µg/m<sup>3</sup> (versus the current standard of 35 µg/m<sup>3</sup>) is supported.

Missoula’s annual PM<sub>2.5</sub> averages between 2013 and 2020 are in the table below. This data does include wildfire smoke. PM<sub>2.5</sub> data collected at the Missoula Boyd Park site shows how close Missoula can get to the current PM<sub>2.5</sub> standards and, based on current scientific information, that PM<sub>2.5</sub> concentrations are high enough to impact public health.

Annual PM<sub>2.5</sub> Average – Missoula Boyd Park

Year	2013	2014	2015	2016	2017	2018	2019	2020
PM <sub>2.5</sub>	8.2	6.9	10.9	7.3	12.5	8	7.2	7.6

When the right weather conditions are in place over western Montana or the Missoula Valley, the 24-hour PM<sub>2.5</sub> standard can be threatened. Between January 7-18, 2017, daily PM<sub>2.5</sub> values of 27.7, 30.9, 33.6, 34.3, 36.4, 32.9 and 29.3 µg/m<sup>3</sup> were measured in Missoula. All 7 of these values are above the World Health Organizations recommended daily ceiling of 25 µg/m<sup>3</sup>.

As shown in chemical mass balance studies, residential wood combustion for space heating is one of the major sources of wintertime particulate matter in the Missoula Valley. With the Missoula Valley close to exceeding the National Ambient Air Quality Standard for PM<sub>2.5</sub>, the installation of wood stoves in the Missoula Air Stagnation Zone would likely increase the number of days that the PM<sub>2.5</sub> concentrations are elevated above recommended daily ceilings and harm public health. The Department must protect public health and plan for lower PM<sub>2.5</sub> standards in the future to avoid a non-attainment area designation.

The Department understands that many people would like to use wood stoves for heating to reduce their carbon footprint, for aesthetics, or financial savings. In the Missoula Air Stagnation Zone, we need to balance climate change concerns with the impacts on public health from wood burning. In a confined air shed with over 80,000 people and growing, methods for heating that do not generate particulate pollution will need to be selected. Some alternatives available to reduce carbon footprint include weatherization, efficient heat pumps, district heating or pellet stoves.

11. Allow wood stoves back into the Missoula Air Stagnation Zone but require annual inspections and require fuel meet minimum moisture content levels less than 25%. Operator error is eliminated with automated wood stoves and single burn rate devices.

See previous response to comment.

The Department does not have sufficient resources to pursue this. With a growing population, this would likely still result in unhealthy air quality.

12. In the Air Stagnation Zone, encourage legally installed wood stoves to be replaced with NSPS 2020 compliant automated wood stoves or single burn rate devices.

The Department does not support the installation of wood stoves in the Missoula Air Stagnation Zone. The proposed rules would require the removal of every wood stove currently installed in the air stagnation zone when property changes ownership. If the air program allowed some people to new install wood stoves to replace existing devices, many people would consider it unfair that they could not install a woodstove just because they currently do not have a legal device. Enforcement of allowing a few specific people, and not everyone, to install new stoves would be impractical.

Wood stove installations are allowed in the county outside the air stagnation zone.

13. The proposed county-wide standard for wood burning devices between 250k and 1.0 million btu/hr is 0.2 lb/MMBTU or 0.9 g/10,000 BTU. This brings it into compliance with EPA's NSPS 2020 standard. See Rule 9.205(1)(c). We feel this should extend down to 150k BTU and the 250k stated.

The Department agrees that this comment can be incorporated into the proposed rules. With the 2020 New Source Performance Standards for hydronic heaters, furnaces and other central heaters, specifying heat input levels in the rules is no longer required.

14. In the air stagnation zone, the rule is silent on all devices except pellet stoves. Therefore pellet, wood chip and chunkwood boilers, furnaces, such devices are completely excluded even though they can achieve comparable or lower emission rates listed on the approved pellet stove list.

The proposed rules have been changed to allow the installation of pellet boilers and pellet furnaces in the Missoula Air Stagnation Zone if specific emission criteria are met. The proposed rules do not allow wood chip or chunkwood devices.

Current rules allow the installation of chip or chunk wood units when the heat input exceeds 1 million BTU per hour. The possibility exists in the air stagnation zone for small neighborhood, commercial to larger wood chip/chunk based district heating units. The benefit of the larger scale units is that their size can provide higher efficiencies and all units would go through the industrial permitting and inspection process.

The Department is opposed to the installation of smaller non-pellet fueled solid fuel burning devices into the air stagnation zone. Over the decades the technology has improved, and emissions appear to have been reduced for current devices when compared to devices made in decades past. However, the Department has concerns with potentially allowing hundreds of smaller non-pellet boilers into the air stagnation zone when staying under the daily PM<sub>2.5</sub> standard is a struggle in the winter when high pressure ridges trap pollution close to the valley floor. Variability in wood species used, fuel moisture content, customer operation and maintenance of these types of devices can result in higher emissions than the results found in the testing procedures.

As Missoula's population continues to grow, the amount of particulate matter that each person can put into the air shed without exceeding the particulate standards decreases. Other sources of fine particulate matter, such as vehicle exhaust, nitrogen oxides from space heating, and vehicle break wear will increase as the valley population grows. When changing the solid fuel burning device rules, the increase in other sources of fine particulate matter as the population grows needs consideration. We also need to keep in mind that based on current scientific studies there is a possibility that the particulate standards may become more stringent.

To maintain air quality in the Missoula Valley and the air stagnation zone, it is important that the cleanest methods of space heating be used. While newer chip and wood burning devices may be cleaner than older devices, the Department recommends that pellet fired devices,

energy efficient measures and heat pumps be emphasized in the air stagnation zone and that chunk wood and wood fired solid fuel burning devices remain restricted.

15. Modify the pellet stove definition by removing “and is a free-standing room heater or fireplace insert.”

The Department agrees that this change can be incorporated into the rules.

16. Add a definition for “automated solid fuel burning device.”

This definition is not required since these devices are included under the definition of “solid fuel burning device.” Outside of the Missoula Air Stagnation Zone, an automated wood stove may be installed under the proposed rules.

17. Add a definition for “single burn rate” wood device – a stove, insert or fireplace that does not have an operator damper to control air flow.

This definition is not required since these devices are included under the definition of “solid fuel burning device.” Outside of the Missoula Air Stagnation Zone, a single burn rate wood stove may be installed under the proposed rules.

18. Add language regarding the permissible emissions for the 150,000 to 1 million BTU/hr automated/single burn rate devices similar to 9.205(1)(c) except reduce the allowable emission to 0.1 lb/MMBTU and the installation of an electrostatic precipitator or equivalent control device the same as for Chapter 6.502 equipment between 1 and 10 million BTU.

See previous responses to comments.

19. Rules to limit the stench from the city wastewater treatment plant and composting operation should be part of the rule updates. All new housing development in the valley should cease until the city-wide odor problem is fixed.

Chapter 12 of the Missoula City-County Air Pollution Control Program already states that odors may not create a public nuisance past their property lines. The Missoula City-County Health Department has been involved in odor complaints several times over the years. The Department feels that this comment is already addressed in existing rules. Limiting new housing development is outside the scope of the air pollution control program rules.

20. Firepits and recreational fires should not be allowed in city limits and businesses should not be allowed to sell firepits.

Missoula Municipal Code Title 8 Health and Safety (8.60 Outdoor Burning Regulations) prohibits recreational fires and list the city fire department as the lead enforcement agency for this rule. Any fire that creates a nuisance can be ordered to be put out. City police and the Department may also enforce the city outdoor burning rules. This comment is addressed in city code and the Department does not recommend this comment be incorporated into the proposed rule changes. Chimeneas and other “fire pits” can be used outside city limits and the Department does not recommend a rule against the sale of chimeneas and other firepits.

21. Recreational fires fueled by gas should be exempt from the outdoor burning definition. The prohibition of recreational fires during air alerts should specify "solid fuel" recreational fires. One could prohibit gaseous fuel recreational fires during Stage III Emergency and Stage IV Crisis.

The Department recommends that this comment be incorporated into the rule updates to clarify that liquid or gas fires are not considered outdoor burning under these rules. The Department does not recommend that gas or liquid fueled fires be prohibited during Stage III Emergencies and Stage IV Crisis since emissions from these activities is minimal and the air pollution control program does not typically regulate small gas or liquid fired devices.

22. Does the Department have any specific plans to limit CO2 emission within the county? The Department should look at methods to utilize wood slash piles as a source of electrical energy.

While limiting CO2 emissions should be done to minimize climate change impacts, limiting CO2 emissions and requiring slash piles be used for electrical generation are outside the scope of the air pollution control program rules. Where possible, the Department supports CO2 reduction strategies and the clean disposal of wood slash piles.

23. Missoula County major burners should not be required to call the outdoor burning hotline on the day that they wish to burn since coordination of all burns is already done at the online Airshed Management System.

The Department agrees that this comment should be incorporated into the rule updates.