华盛顿州儿童和青少年空气质量活动指南

Washington State Department of HEALTH

请访问 AirNow.gov 查询当前及预测的空气质量；在野火烟雾期间，请访问 wasmoke.blogspot.com 查询相关信息

（请参见附录 A）

以下公共卫生最佳实践旨在保护儿童和青少年（18 岁及以下）免受细颗粒物空气污染 ($PM_{2.5}$) 的影响。本指南适用于学校、儿童保育机构、体育训练和比赛、课前及课后项目、夏令营、校外教学活动以及其他户外项目和活动。

室外空气质量指数 (AQI)：PM2.5

活动时长	良好 (0-50 AQI)	中等 (51-100 AQI)	对敏感人群不健康 (101-150 AQI)	不健康、非常不健康或危险 (≥151 AQI)
15 分钟至 1 小时（例如：课间休息、体育课、通常在户外进行的课程）	不作限制。	允许健康存在问题的儿童和青少年选择不参加活动或留在室内。如有必要，应限制这些儿童和青少年的活动强度。	户外活动应限制为中等强度活动。对于健康存在问题的儿童和青少年，如有必要，应进一步限制活动强度，或转移至空气质量更安全的区域。	取消户外活动，或将活动转移至空气质量更安全的区域，包括配备空气过滤系统的室内场所或其他地点。如果室内 PM2.5 水平升高，应仅进行室内低强度活动。
1 至 4 小时（例如：体育活动和训练）	不作限制。	允许健康存在问题的儿童和青少年选择不参加活动或留在室内。如有必要，应限制这些儿童和青少年的活动强度。	仅限进行低强度活动，或将中等强度活动的总体持续时间限制在 1 小时以内。如果无法调整活动强度和持续时间，应考虑取消户外活动，或将活动转移至空气质量更安全的区域，例如室内场所或其他地点。对于健康 存在问题的儿童和青少年，如有必要，应进一步限制活动时间或强度。	取消户外活动，或将活动转移至空气质量更安全的区域，包括配备空气过滤系统的室内场所或其他地点。如果室内 PM2.5 水平升高，应仅进行室内低强度活动。
> 4 小时（例如：户外学校活动、日间夏令营、过夜夏令营）	不作限制。	如有必要，应将健康存在问题的儿童和青少年转移至空气质量更安全的区域，例如室内场所或其他地点。允许没有健康问题的儿童和青少年选择不参加活动或留在室内，并限制活动强度。	仅限进行低强度活动，并将总体持续时间控制在 4 小时以内。如果无法调整活动强度和持续时间，应取消户外活动，或将活动转移至空气质量更安全的区域，例如室内场所或其他地点。对于健康存在问题的儿童和青少年，如有必要，应进一步限制活动时间或强度。	取消户外活动，或将活动转移至空气质量更安全的区域，包括配备空气过滤系统的室内场所或其他地点。如果室内 PM2.5 水平升高，应仅进行室内低强度活动。

其他注意事项

当活动转移至室内进行时，请关闭门窗。注意防暑。*请参见附录 D。*

室内空气过滤可降低室内升高的 PM2.5 水平。*请参见附录 C。*

如需测量室内 PM2.5 水平，*请参见附录 B。*

在确定活动持续时间时，应考虑交通途中所花费的时间。

所有儿童和青少年（18 岁及以下）均被视为敏感人群。需要考虑的健康状况包括但不限于：哮喘及其他肺部疾病、心脏疾病、糖尿病以及呼吸道感染（例如：呼吸道合胞病毒 (RSV) 感染和肺炎）。

Washington State Department of HEALTH

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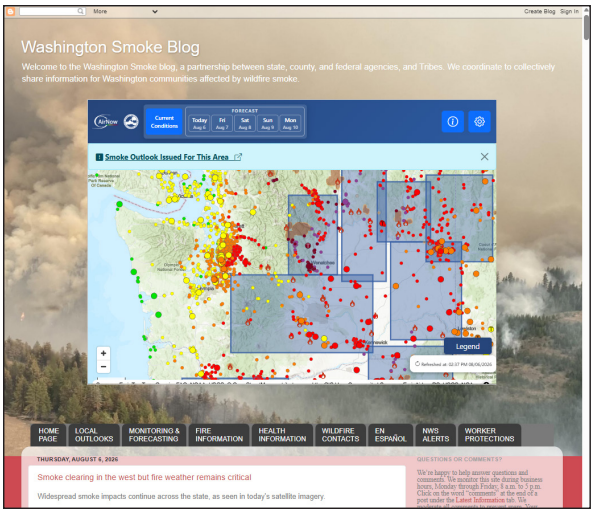
如欲索取本文件的其他版本格式，请致电 1-800-525-0127。耳聋或重听人士请拨 711（Washington Relay）或发送电子邮件至 doh.information@doh.wa.gov。

PM2.5 的来源	$PM_{2.5}$ 的主要来源通常是温暖月份的野火烟雾和寒冷月份住宅取暖产生的烟雾，具体情况因地区而异。其他来源还包括机动车尾气、工业排放以及计划性焚烧。
儿童健康与风险增加	儿童和青少年因吸入 $PM_{2.5}$ 而受到健康影响的敏感性更高，因为按体重计算，他们吸入的空气量比成年人更多。这会增加他们吸入空气污染物的总量。此外，呼吸系统会持续发育，直到大约 21 岁。与没有健康问题的儿童相比，健康存在问题的儿童和青少年（包括哮喘及其他肺部疾病、心脏疾病以及糖尿病）前往急诊科就诊和住院的风险更高。儿童和青少年还可能面临学业成绩下降、神经发育问题以及成年后患慢性疾病的风险。患有哮喘的儿童应遵循其 **Asthma Action Plan（哮喘行动计划）**。
症状	暴露于 $PM_{2.5}$ 后出现的症状包括眼睛灼痛、咳嗽、喉咙和鼻腔刺激、疲劳、头痛、喘鸣以及呼吸急促。请密切关注身体症状。如果症状加重，请及时就医。这些症状可能持续存在，还可能在接触 $PM_{2.5}$ 后的一周内出现。
身体活动	**Centers for Disease Control and Prevention（CDC，疾病控制与预防中心）建议**，6 至 17 岁的儿童和青少年每天进行 1 小时或以上的运动，这是保持健康的重要组成部分。Washington Administration Code（WAC，华盛顿州行政法典）第 110-300-0360(2)(c) 条规定，儿童保育计划必须安排最低限度的户外活动/积极游戏，但极端天气情况除外。当 $PM_{2.5}$ 水平较高时（尤其是在持续数天或数周的情况下），进行安全的户外游戏需要采取预防措施。运动时，人们会进行更深的呼吸，使更多空气进入肺部，因此会吸入更多的空气污染物。与静息状态相比，儿童和青少年的呼吸频率在低强度身体活动期间增加 2 倍以上，在中等强度活动期间增加 4 倍以上，在高强度活动期间增加 8 倍以上。活动强度水平与身体用力程度有关，并且因人而异，以下为示例： » 低强度活动：玩棋盘游戏、玩接球游戏、堆积木。 » 中等强度活动：在游乐场攀爬、躲避球、四方格游戏、高尔夫球、体操、跳房子、轻松骑三轮车/自行车、行进乐队活动、中速或快走、投篮、垒球/棒球、乒乓球、排球、力量训练和瑜伽。 » 高强度活动：有氧舞蹈、篮球、啦啦队活动、竞技游泳、橄榄球、慢跑、开合跳、跳绳、空手道、竞走、跑步、足球、游泳、网球以及高强度骑自行车。 如需更详细的列表，请参阅 **Centers for Disease Control and Prevention（CDC，疾病控制与预防中心）指南“如何测量身体活动强度”**。
减少暴露	随着 $PM_{2.5}$ 污染程度升高，每一项减少暴露的措施对于保护健康都变得越来越重要：限制户外身体活动的持续时间和强度（例如：增加休息时间），尽可能留在室内，并保持室内空气清洁。应综合考虑儿童全天候（包括白天和夜间）的总体暴露情况，包括在学校、家中以及交通途中所花费的时间。步行、骑自行车或乘坐开窗行驶的公交车，均应计入户外暴露时间。有些儿童在家中可能也无法获得更清洁的空气。
口罩与呼吸器	当无法通过其他方式避免接触野火烟雾时，可选择使用 National Institute for Occupational Safety & Health（NIOSH，美国国家职业安全卫生研究所）批准的 N95 或其他的颗粒物防护呼吸器。经 NIOSH 批准的呼吸器没有适合非常年幼儿童使用的尺寸，且尚未经过儿童广泛使用方面的测试。有效使用呼吸器需要正确选择型号、合适的尺寸，并确保佩戴贴合。有关儿童使用呼吸器的相关信息，请参阅 **Western States PEHSU 指南 (PDF)**。更多 **NIOSH 相关信息**请参阅此处。
空气质量监测与低成本传感器	**室外空气监测：**对于非野火烟雾造成的空气污染，请使用 **AirNow.gov** 上的空气污染预报和政府机构监测数据。对于野火烟雾，请使用 **Washington Smoke Blog**。该 Smoke Blog 包含低成本传感器信息，并在野火季期间提供与华盛顿州野火烟雾相关性最高的预报。请参见附录 A。 **室内空气监测：**低成本室内传感器可用于室内活动场所的监测。请勿将未经校正的传感器数据与 AQI 进行比较。应比较设施内不同位置的传感器数据，以及室内与室外的传感器数据。请参见附录 B。
室内空气质量	当 $PM_{2.5}$ 水平较高或空气质量不佳的情况持续较长时间时，采取措施改善室内空气质量尤为重要，因为 $PM_{2.5}$ 会渗入建筑物内部。如果不确定室内 $PM_{2.5}$ 水平是否低于室外，请假定室内外水平相近，并加强减少暴露的措施。室内空气过滤（具有 MERV 13 级或更高等级颗粒物过滤功能的暖通空调 (HVAC) 系统，或 HEPA 便携式空气净化器）可降低室内 $PM_{2.5}$ 的水平。请勿使用会产生臭氧或采用附加技术的空气净化器，例如离子化技术和等离子技术。请参见**便携式空气净化器**。请参见附录 C。
成年员工与志愿者	成年员工和志愿者可能会受到空气污染的影响，请参阅**华盛顿州颗粒物污染空气质量指南**。有关野火烟雾期间户外工作者的相关政策，请参阅 **Washington State Labor and Industries（WA L&I，华盛顿州劳动与工业部）的《野火烟雾工作场所安全与健康》网页**。
学校停课	如果无法将室内 $PM_{2.5}$ 水平维持在 125.5 µg/m³ 以下（AQI 值为 201），应考虑停课并关闭相关设施。请参阅**《野火烟雾导致学校停课的简要指南》(PDF)**，其中列出了需要考虑的因素。
资源	**网站：**Washington State Department of Health（WA DOH，华盛顿州卫生部）的**《火灾烟雾与健康》**、WA DOH 的**《室内空气质量》**，以及 Environmental Protection Agency（EPA，环保局）的**Air Quality Flag Program（空气质量旗帜计划）**。 如需技术支持，请联系：**airquality@doh.wa.gov**。

Appendix A: Outdoor Air Quality Monitoring for Decision Making During Wildfire Smoke Events

Wildfire smoke can fluctuate throughout the day, or it can linger and be stable. It is difficult to predict. This makes it challenging to plan activities in advance. Forecasts and current measurements can inform your decision-making around canceling, modifying, delaying, or ending activities early. For longer duration activities, check measurements throughout the day. When decisions need to be made several hours in advance, it may not reflect conditions at the time of the activity.

The Washington Smoke Blog (https://wasmoke.blogspot.com) is the best source of outdoor air quality information when making decisions about outdoor activities when there is wildfire smoke. Use a combination of forecasts and current measurements from agency monitors and/or outdoor low-cost air sensors, as described below. Your regional clean air agency may have additional information for your area.



For activities planned in advance, use forecasts for your area or in the area the activity is occurring. Forecasts up to 5 days in advance, including the current day, are available on the WA Smoke Blog map by regions during wildfire season. The forecasts for the first 2 days are more accurate than for days 3-5. Written blog posts and comments often include additional forecast information. Keep in mind that forecasts are for daily (24-hr) conditions, and the real-time conditions may be better or worse due to fluctuations throughout the day.

In the hours leading up to the activity (or throughout the day for long duration activities, such as summer camp), track the current measurements as described below.

Important: *Low-cost sensor measurements on their own can be very inaccurate during wildfire smoke events. It is important to follow the steps below to view low-cost sensor data on public agency websites, where it has been adjusted for wildfire smoke. We do not recommend using private or third-party websites (including third-party weather apps) where the data may not have been verified and adjusted.*

To view current outdoor air quality data near you:

Step 1:

Use the Fire and Smoke Map on the WA Smoke Blog (https://wasmoke.blogspot.com) or on the "Smoke" tab of the AirNow app.

Step 2:

Find the agency $PM_{2.5}$ monitor (larger circles, or medium-size circles labeled with a "T" on the map) and/or low-cost $PM_{2.5}$ sensor (smaller circles on the map)") closest to your event. Low-cost $PM_{2.5}$ sensors are commercially available devices that can be operated by anyone. Low-cost sensors are generally less accurate than the agency monitors, and since many are operated by members of the public, their performance, siting, and maintenance are unknown. One exception is the SensWA sensors, which are low-cost sensors operated by Ecology. The data from SensWA sensors are generally more reliable than other low-cost sensors. Low-cost sensor data can be inaccurate, but on the WA Smoke Blog and Fire and Smoke Map, sensor data are adjusted for wildfire smoke.

The monitor and sensor data you view on the map will be more or less similar to your actual location based on how far away the monitor/sensor is from your location and other factors. Consider differences in elevation, terrain, wind direction, and weather between your location and the monitor/sensor location. For example, a nearby monitor/sensor in a location with similar elevation and weather and is not separated from your location by a ridge, will probably provide

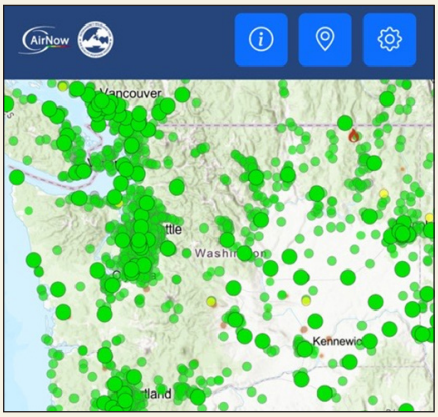
better information for your location than a monitor/sensor that is on the other side of a ridge or at a different elevation, like in a valley. You might find that you need a sensor at your specific location. As of 2025, outdoor Purple Air and Clarity sensors are displayed on the EPA Fire and Smoke map.

Remember to also consider the air quality along routes of transit that people will be exposed to when they travel to and from your event.

The markers on the map show the color of the NowCast Air QualiIy Index (AQI) hazard level, which is approximately based on the conditions over the past few hours and is updated hourly. For tracking data over the last 30 minutes, see steps 3 and 4.

Click or tap on the monitor (larger circle) or low-cost sensor marker (smaller circle) closest to your event

(Screenshots are from the "Smoke" tab of the AirNow phone app, May 2025.)



A window like this should pop up

Current NowCast AQI number

Current NowCast AQI category

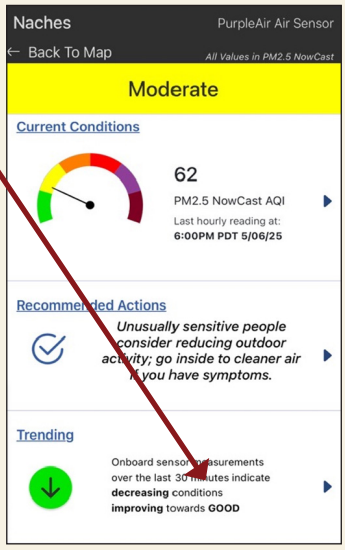
Recent trend *(click or tap here for more information on the trend)*

To view the NowCast AQI number, click or tap on the monitor or sensor marker. A new window should pop up, showing you the NowCast AQI number and category, as well as a trend (air quality is getting better, getting worse, or staying the same). Click or tap on the "trend" icon to see more information about the trend.

In addition to using a forecast and NowCast AQI for planning purposes, use the trend information to make a decision about activities happening within about an hour. This is especially important if the current conditions are changing quickly or seem different from the forecast or the NowCast AQI. The trend shows how recent values compare to the NowCast. If the recent values are higher, then the trend is increasing (worsening air quality). If the recent values are lower, the trend is decreasing (improving air quality). The AQI Trend category is what was observed in the past 30 minutes for sensors and monitors with sensors nearby, or from the last hourly concentration for monitors without sensors nearby.

Use this AQI category to decide about activities happening within about the next hour. If more than one category is displayed, use the higher (worse) category.

(Screenshots are from the "Smoke" tab of the AirNow phone app, May 2025.)



In Step 2 (above): Click or tap on the "trend" icon. This will take you to a more detailed view, as shown to the left.

Step 3:

Use this Trending AQI category to decide about activities happening within about the next hour. If more than one category is displayed, use the higher (worse) category.

Step 4:

Repeat step 3 every 30 minutes, or sooner if it appears that conditions are changing rapidly and change your activity decisions accordingly.

Example scenario 1:

You are deciding whether to have outdoor recess, and you do not need to make this decision in advance. Earlier in the morning, the NowCast AQI category was "Unhealthy." Now it is time for recess and the current Trending AQI category is "Moderate." Based on the Trending AQI category of "Moderate" you decide to have outdoor recess but allow children and youth with health conditions to opt out or stay indoors.

Example scenario 2:

You are deciding whether to hold an athletic event and this decision must be made several hours in advance due to the logistics involved. The forecast for the day is "Unhealthy for Sensitive Groups" but the NowCast is "Unhealthy." You decide to follow the guidance for the "Unhealthy" category. This is a challenging decision because the air quality conditions could change by the time of the event, but because you need to plan several hours in advance, you decide to cancel using the best information that you have.

Alternatively, you decide to move forward with planning the activity with the understanding that it may not be possible. You check the Trending AQI category at the start time of the activity and decide based on that AQI category. If you decide to start the event, you continue checking the Trending AQI category every 30 minutes to see if the AQI category worsens and the event needs to end early.

Example scenario 3:

You are planning a day of summer camp. Based on the forecast of "Good" the day before, you had planned a day of high intensity activity. Prior to starting the activity, you check the Trending AQI category, and it is "Moderate." Therefore, you come up with an alternate activity indoors for children and youth with health conditions, and those without health conditions who wish to opt out of the high intensity activity. You continue checking the Trending AQI category every 30 minutes to see if the high intensity activity needs to be modified later in the day.

Why does my sensor/commercial weather app/sensor map display different AQI numbers or colors from what I see on the Washington Smoke Blog, Fire and Smoke map, or AirNow?

» Sensors use a variety of averaging times to display the AQI, for example the Purple Air map default is to show the AQI level from the last 10 minutes. The numbers on government sites, such as AirNow and the Fire and Smoke Map, use a NowCast averaging time of 3-12 hours. If the air quality is changing rapidly, the two numbers could be very different.

» Even when a correction factor is applied to sensors (for example, Purple Air data on the Fire and Smoke Map), sensors are less accurate than government air quality monitors.

» A commercial site or device may use a different color scheme or AQI category cut-off than the official AQI.

» Sometimes the air quality is different even over a short distance. If your closest agency monitor is not very close, your local air quality measured by a nearby sensor may be different than the air quality around the agency monitor.

Appendix B: Indoor Air Quality Monitoring

A portable handheld sensor can show how indoor $PM_{2.5}$ levels vary throughout a facility. A stationary indoor sensor can track changes in indoor air quality over longer periods. See Wildfire Smoke Guidance for Canceling Events or Activities and Closing Schools section "Indoor $PM_{2.5}$ Measurement in Schools" for more information about using indoor sensor data for decisions that need to be made in advance. Use the information below for immediate decision-making.

If you don't have an indoor air sensor:
If you're not sure whether indoor $PM_{2.5}$ levels are lower than outside, assume levels are similar and increase steps to reduce exposure, including filtration methods. Using a low-cost sensor can give you a better idea of your indoor $PM_{2.5}$ levels. If you're considering purchasing a low-cost $PM_{2.5}$ sensor, check the performance evaluations developed by the South Coast AQMD. A Field R-squared value near 1 and a relatively low Field MAE indicate a better-performing sensor.

If you do have an indoor air sensor and/or a portable handheld sensor:
Low-cost sensors can be used to take $PM_{2.5}$ measurements to check indoor air quality. They are generally less accurate than agency air monitors, though correction factors can be applied to reduce bias. Sensor measurements can vary in three important ways: whether correction factors are applied (for example, a Purple Air that is used indoors with the US EPA correction factor applied), the time interval used for data averaging, and whether the sensor displays the AQI or the $PM_{2.5}$ concentration in µg/m3 units. To the extent possible, only compare data that is similar in these three ways (e.g., do not compare uncorrected sensor data to corrected sensor data or AQI breakpoints; do not compare real-time sensor data to longer-term averages). EPA provides a calculator to convert between $PM_{2.5}$ concentrations and AQI values: https://www.airnow.gov/aqi/aqi-calculator.

If indoor sensor shows...	...then...
Corrected real-time or 10-minute PM2.5 concentrations in µg/m3	» Compare sensor data to 10-minute or 1-hour data from Washington Smoke Blog or Fire and Smoke Map (see screenshots below). » Prior to each decision-point (e.g., before starting indoor recess or indoor PE class), check that the indoor real-time or 10-minute PM2.5 concentration is not elevated when deciding about activity intensity. During smoke periods, the threshold of 35.5 µg/m3 is a useful target of indoor concentration (the lower the better). Check sensor measurements again every 30 minutes and change activity decisions accordingly.
Uncorrected real-time or 10-minute PM2.5 concentrations in µg/m3	» No direct comparison to the AQI or a specific target concentration is possible. » Instead, compare indoor and outdoor sensor measurements to each other to estimate indoor concentrations. For example, if the indoor PM2.5 sensor measurements are half of the outdoor PM2.5 sensor measurements, assume that the indoor PM2.5 concentrations are half what is reported by the nearest 10-minute or 1-hour data from Washington Smoke Blog or Fire and Smoke Map (see screenshots below). » Example: outdoor sensor measurement = 100 µg/m3 and indoor sensor measurement = 50 µg/m3, so indoor is half of outdoors. • Washington Smoke Blog measurement = 76 µg/m3 → new indoor concentration estimate is half of 76, which is 38 µg/m3. • Use this new indoor concentration estimate: Prior to each decision-point (e.g., before starting indoor recess or indoor PE class), check that the indoor real-time or 10-minute PM2.5 concentration is not elevated when deciding about activity intensity. During smoke periods the threshold of 35.5 µg/m3 is a useful target of indoor concentration (the lower the better). Check sensor measurements again every 30 minutes and change activity decisions accordingly.

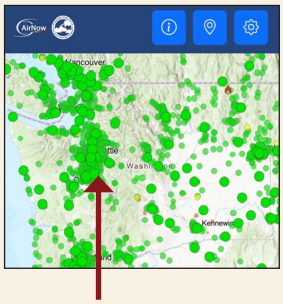
When indoor $PM_{2.5}$ concentrations are higher than outdoor, opening windows can help clear out indoor $PM_{2.5}$. When outdoor $PM_{2.5}$ concentrations are higher than indoor, closing windows can help keep $PM_{2.5}$ out. At the same time, pay attention to the indoor and outdoor temperatures when opening or closing windows to keep it from becoming too hot or cold indoors (See Appendix D). When opening windows, continue checking sensor measurements every 30 minutes.

If you have a portable handheld sensor:

When outside $PM_{2.5}$ levels reach "Unhealthy for Sensitive Groups," assess variation across the building(s)

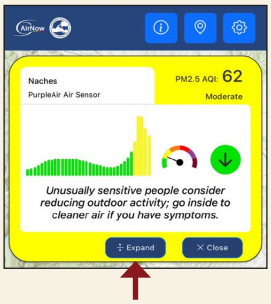
- Include measurements in rooms used by children and youth that are expected to have worse ventilation or indoor air quality (like no air filtration), rooms where physical activity is usually more vigorous (like the gym), rooms with external doors opened frequently, any external buildings (like portables), and rooms with children who may be more sensitive to air pollution.
- Wait for sensor measurements to stabilize in each room (about 1-2 minutes for measurements that appear to change in real-time on a screen).
- Repeat the portable sensor measurements in different conditions, such as changes in occupancy, and repeat prior to each decision-point.
- If you have more than one option for where to hold indoor recess, use a portable sensor to choose the location with lower $PM_{2.5}$.
- Prioritize steps to reduce exposure in the rooms with highest $PM_{2.5}$ levels.

How to get 10-minute (corrected sensor data) or hourly (agency monitor) $PM_{2.5}$ concentrations from the Washington Smoke Blog or Fire and Smoke Map:



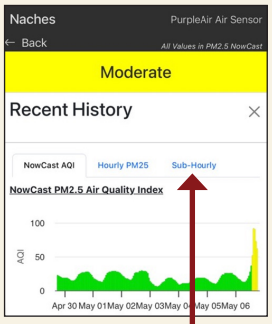
1. Click or tap on the monitor (larger circle) or low-cost sensor (smaller circle) closest to you

(Screenshots are from the "Smoke" tab of the AirNow phone app, May 2025.)

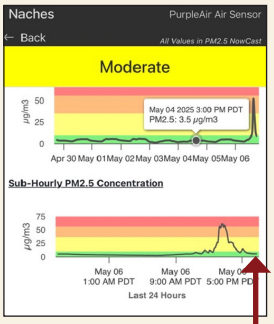


2. A window like this should pop up. Click or tap on "Expand."

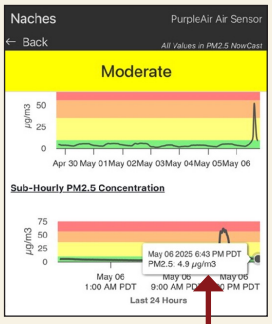
   Scroll down within the pop-up window to get to "Recent History". Click or tap on "Recent History."



3. Select the "Sub-Hourly" tab if available, otherwise select "Hourly PM25"



4. Tap, click, or hover on the end of the graph



5. This number is **NOT THE AQI**. This is the PM2.5 measurement. Note that the time of the most recent measurement may lag behind.

Indoor air pollution is made up of outdoor air pollution that comes inside, and pollution that comes from indoor sources. Consider monitoring for air pollutants besides $PM_{2.5}$, such as carbon monoxide (CO) and carbon dioxide (CO2).

Appendix C: Improving Indoor Air Quality

During outside air pollution events, reducing additional air pollution as much as possible to reduce exposures is especially important. To help reduce exposure, limit both outdoor activities, like vehicle idling, other vehicle emissions, and outdoor burning, as well as indoor activities, like frying without kitchen exhaust, smoking or vaping, using household chemicals, vacuuming without a HEPA filter, or burning candles.

Outside $PM_{2.5}$ gets indoors through windows, doors, small openings, and some ventilation systems. Buildings with well-maintained and enhanced filtration (i.e., MERV 13 or higher) on ventilation system air intakes have improved indoor air quality and should run the HVAC fan continuously. Supplementing with HEPA portable air cleaners or DIY box fan filters can reduce PM2.5 in single rooms. Use HEPA portable air cleaners that have a smoke Clean Air Delivery Rate (CADR) equal to at least 2/3 the room square footage (an **AHAM Verifide** smoke CADR is best), and uses HEPA and carbon filtration only (look for models listed as "mechanical" on the **CARB-Certified** air cleaner list). Do not use ozone generators, ionizers, UV, or other additive technologies in air cleaners because these technologies can add harmful pollutants to indoor air. See **Portable Air Cleaners** for more information and a list of air cleaners that meet WA DOH recommendations. For additional information, see **Improving IAQ and Ventilation in Schools During Wildfire Smoke Events** and **ASHRAE Protecting Building Occupants from Smoke**.

Extreme heat can overlap with wildfire season. Have plans for keeping buildings cooler to avoid the need to open windows during wildfire smoke if there is no air conditioning. See **Cooling Indoor Spaces Without AC**.

If wildfire smoke events are occurring at the same time as transmission of respiratory viruses, such as COVID-19 or other respiratory infections, it is important to balance the risk of both hazards when bringing children and youth inside to reduce exposure to smoke. Indoor air filtration mitigates the risk of both smoke and respiratory viruses. To bring in outdoor air, track the air quality and open windows and doors a few times a day when outdoor $PM_{2.5}$ is in the Good AQI category or better than indoors. To decide when to open and close window and doors, it is best to use the most recent air quality information, such as the Trending AQI category (see Appendix A) or 10-minute or hourly data (see Appendix B). You can find outdoor air quality information at AirNow.gov or during wildfire smoke events at the **Washington Smoke Blog**. For more information, see **WA DOH's Recommendations for wildfire smoke and respiratory viruses (PDF)**.

Appendix D: Considerations for when Heat and Poor Air Quality Overlap

Heat affects everyone differently. Some individuals may be more susceptible to heat-related illness due to factors such as their environment, level of activity, age, access to financial resources, or underlying health conditions – including the use of some medications that may reduce the body's ability to regulate temperature. Children are especially vulnerable to heat-related illness because they are often active and their bodies are still developing.

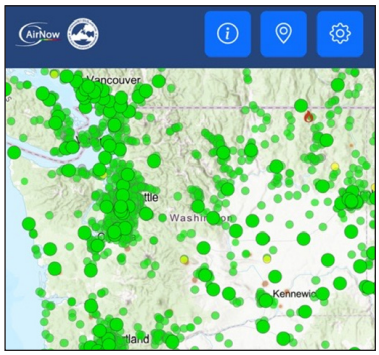
When someone is exposed to both extreme heat and poor air quality at the same time, the health impacts can be more severe than they would be separately. It is important to track conditions and forecasts of both air quality and heat.

The National Weather Service **HeatRisk forecast** provides a quick view of the risk posed by heat for the next seven days. HeatRisk is portrayed in a numeric (0 – 4) and color (green, yellow, orange, red, or magenta) scale, which is similar in approach to the Air Quality Index (AQI). HeatRisk provides one value each day for a location that indicates the approximate level of heat risk concern, along with identifying groups who are most at risk.

It can be a challenge to keep smoke from coming indoors when it's hot, especially without air conditioning, when windows are used for cooling. Pay attention to rising temperatures, as heat-related illnesses can occur quickly and can be life threatening. Rooms used by students or staff must be kept reasonably free of "excessive heat" (**Chapter 246-366 WAC**). School learning spaces should be no hotter than 79 °F (see guidance from **U.S. EPA**, following ASHRAE Standard 55, with some differences by season and humidity).

If it's hot indoors during poor air quality, use these steps to help stay cool and safe:

- Close windows and curtains or shades during the day. Use portable fans (be aware that fans are not effective for cooling when the temperature is above 95 degrees).
- Turn off sources of heat, such as kilns, ovens, and electronics.
- Stay hydrated, especially with water. Avoid sugary drinks since these can be dehydrating.
- Teach staff to recognize and prevent heat- and smoke-related illnesses.
- Track the air quality (See Appendix A) and monitor indoor temperatures. Ideally, only open windows when the outdoor air quality improves and it is cooler outside than inside. When checking the air quality to decide when to open and close windows and doors, it is best to use the most recent information, such as the Trending AQI category (see Appendix A) or 10-minute or hourly data (see Appendix B). However, opening windows during poor outdoor air quality may be necessary to maintain safe temperatures indoors. Open an additional door or window to be most effective and provide a cross draft. Keep safety protocols in mind when opening doors and windows. If possible, relocate to a cooler indoor space and take steps to filter indoor air (See Appendix C).



- Limit, modify, or move strenuous indoor and outdoor activities. If relocating indoors, go to a place that is cooler and has cleaner air. When student-occupied indoor areas are excessively hot or are smoky, discuss partial or full school facility closures with administrators and local health jurisdictions. For smoke, see **Summary Wildfire Smoke Guidance for Closing Schools**.
- For updated information on cooling centers in your community, visit **Washington 2-1-1**. Provide cooling center and cleaner air center information to families.

Consider whether to cancel, move, or reschedule outdoor activities and indoor activities taking place in uncooled locations without air filtration. This is especially important for activities taking place during the hottest period of the day. If possible, shift the times for activities to times of day that are cooler and have better air quality. However, sometimes the coolest part of the day can also be the smokiest. Also see the Washington Interscholastic Activities Association's Heat Index Policy.

For more information, see:

Cooling Indoor Spaces Without Air Conditioning (PDF)

DOH's hot weather safety guidance

About Heat and Your Health | Heat Health | CDC

CDPH Extreme Heat Guidance for Schools

Tips and Action Plans for Children and Teens with Asthma | Heat Health | CDC

Heat and Athletes | Heat Health | CDC

HeatRisk v2.6 - Understanding HeatRisk

For adult staff and volunteers: WA L&I's Outdoor Heat Exposure Rules for outdoor workers.

Washington State Department of HEALTH

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