د هوا کیفیت په برخه کې د واشنګټن د ماشومانو او ځوانانو فعالیتونه

Washington State Department of HEALTH

د عامې روغتیا لاندې غوره کړنې د کوچنیو ذرو د هوا ککړتیا ($PM_{2.5}$) څخه د ماشومانو او ځوانانو (18 کلن او کم عمره) د خوندي ساتنې لپاره په پام کې نیول شوې دي. دا لارښود په ښوونځي، د ماشوم‌پالنې، د ورزش تمرینونو او لوبو، له ښوونځي مخکې او وروسته پروګرامونو، کمپونو، ساحوي سفرونو او نورو بهرني پروګرامونو او فعالیتونو کې عملي کړئ.

د هوا اوسنی او اټکل شوی کیفیت په AirNow.gov یا د اور لوګي په بهیر کې په wasmoke.blogspot.com کې وګورئ.

(A ضمیمه وګورئ)

د بهر هوا د کیفیت شاخص: PM2.5

د فعالیت موده	ښه (0-50 AQI)	منځنی (51-100 AQI)	د حساسو ډلو لپاره ناسالم (101-150 AQI)	ناسالم، ډېر ناسالم یا خطرناک (151 AQI)
15 دقیقې تر 1 ساعت پورې (لکه رخصت، PE، هغه ټول‌ګ چې معمولا بهر و)	محدودیت نشته.	هغه ماشومان او ځوانان چې روغتیايي ستونزې ولري، پربږدئ چې بهر ووځي یا په کور کې پاتې شي. که ارتیا وي، د دې ماشومانو او ځوانانو لپاره د فعالیتونو شدت رامحدود کړئ.	د بهر فعالیتونه تر منځنۍ کچې پورې رامحدود کړئ. د هغو ماشومانو او ځوانانو لپاره چې روغتیايي ستونزې لري، شدت لا نور هم رامحدود کړئ یا د ارتیا په صورت کې د هوا خوندي کیفیت لرونکې سیمې ته لاړ شئ.	د بهر فعالیتونه لغوه کړئ یا د هوا خوندي کیفیت لرونکې سیمې ته لاړ شئ، که هغه پر کور دننه فلټر شوې هوا یا بل ځای وي. که پر کور دننه د PM2.5 کچه لوړه وي، نو د کم شدت لرونکي فعالیتونه رامحدود کړئ.
1-4 ساعتونه (لکه ورزش تمرینونه او کړنې)	محدودیت نشته.	هغه ماشومان او ځوانان چې روغتیايي ستونزې ولري، پربږدئ چې بهر ووځي یا په کور کې پاتې شي. که ارتیا وي، د دې ماشومانو او ځوانانو لپاره د فعالیتونو شدت رامحدود کړئ.	کم شدت لرونکي فعالیتونو پورې محدود اوسئ یا د منځني شدت لرونکو فعالیتونو ټولټال وخت 1 ساعت ته رامحدود کړئ. که د شدت کچه او وخت نه شي تعدیل کېدای، نو د بهر فعالیت لغوه کړئ یا یوې داسې خوندي سیمې ته لاړ شئ چې د هوا کیفیت یې خوندي وي، که هغه ماشومانو او ځوانانو لپاره چې روغتیايي ستونزې لري، د ارتیا په صورت کې فعالیت وخت یا شدت لا نور هم رامحدود کړئ.	د بهر فعالیتونه لغوه کړئ یا د هوا خوندي کیفیت لرونکې سیمې ته لاړ شئ، که هغه پر کور دننه فلټر شوې هوا یا بل ځای وي. که پر کور دننه د PM2.5 کچه لوړه وي، نو د کم شدت لرونکي فعالیتونه رامحدود کړئ.
> 4 ساعتونه (لکه په بهر کې ښوونځي‌پاروګرام نیول، د ورځې کمپ، د شپې کمپ)	محدودیت نشته.	هغه ماشومان او ځوانان چې روغتیايي ستونزې لري، یوې داسې خوندي سیمې ته بوځئ چې د هوا کیفیت یې خوندي وي، که هغه پر کور دننه یا بل ځای وي. هغه ماشومان او ځوانان چې روغتیايي ستونزې ولري، پربږدئ چې بهر ووځي یا په کور کې پاتې شي او د فعالیت شدت را محدود کړئ.	کم شدت لرونکو فعالیتونو پورې محدود اوسئ او ټولټال وخت یې دې له 4 ساعتونو څخه کم وي. که د شدت کچه او وخت نه شي تعدیل کېدای، نو د بهر فعالیت لغوه کړئ یا یوې داسې خوندي سیمې ته لاړ شئ چې د هوا کیفیت یې خوندي وي، که هغه پر کور دننه یا بل ځای وي. د هغو ماشومانو او ځوانانو لپاره چې روغتیايي ستونزې لري، د ارتیا په صورت کې فعالیت وخت یا شدت لا نور هم رامحدود کړئ.	د بهر فعالیتونه لغوه کړئ یا د هوا خوندي کیفیت لرونکې سیمې ته لاړ شئ، که هغه پر کور دننه فلټر شوې هوا یا بل ځای وي. که پر کور دننه د PM2.5 کچه لوړه وي، نو د کم شدت لرونکي فعالیتونه رامحدود کړئ.

اضافي ملاحظې

که چې فعالیتونه پر کور دننه ترسره کېږي، نو کړکۍ او دروازې وتړئ. تودوخې ته پام وکړئ. *D ضمیمه وګورئ.*

پر کور دننه هوا فلټر کول کولی شي پر کور دننه د PM2.5 لوړه کچه راټیټه کړي. *C ضمیمه وګورئ.*

پر کور دننه PM2.5 کچې اندازه کولو لپاره *ضمیمه B وګورئ.*

د فعالیت په موده کې په ټرانزیټ کې مصرف شوی وخت په پام کې ونیسئ.

ټول ماشومان او ځوانان (18 کلن او کم عمره) حساسه ډله ګڼل کیږي. روغتیايي ملاحظې لاندې موارد په بر کې نیسي، خو یوازې په دغو پورې محدود نه دي: ساه لنډي او سږو نورې ناروغي، د زړه ناروغي، د شکر ناروغي او تنفسي انتانات (لکه RSV او سینه‌بغل).

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په بل فارمټ کې د دغه سند د غوښتلو لپاره 1-800-525-0127 شمېرې ته زنګ ووهئ. د کړنو او هغو پېښدونکو لپاره چې په اوربدو کې ستونزه لري، مهربانۍ وکړئ 711 (Washington Relay) سره اړیکه کې شئ یا دلته بریښنالیک ولیږئ doh.information@doh.wa.gov.

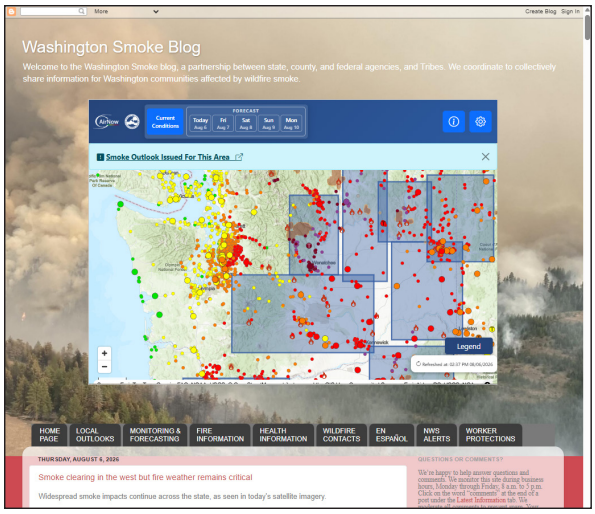
Washington State Department of HEALTH

د PM2.5 سرچينې	د $PM_{2.5}$ اصلي سرچينې معمولاً د ګرمو مياشتو په بهير کې د اور لوګی او په سړو مياشتو کې د کور له ګرمولو څخه رامنځته شوی لوګی دی، که څه هم دغه چاره د موقعيت له مخې توپير لري. نورې سرچينې د موټرو د لوګي صنعتي ګازونه او تجويز شوي سوځول په بر کې نيسي.
د ماشومانو روغتيا او زيات خطر	ماشومان او ځوانان د $PM_{2.5}$ روغتيايی اغيزو پر وړاندې ډېر حساس دي ځکه د خپل بدن وزن لپاره تر لويانو ډېره هوا تنفس کوي. دغه چاره يې د هوا له ډېرې ککړتيا سره مخ کوي. تنفسي سيستم هم تر 21 کلنۍ پورې وده کوي. هغه ماشومان او ځوانان چې روغتيايي ستونزې لري (د ساهلنډۍ او د سړو نورو ناروغيو، د زړه ناروغۍ، او شکر ناروغۍ په ګډون) د هغو ماشومانو په پرتله چې روغتيايي ستونزې نه لري، د بيرۍ ځانګې ته تګ او روغتون کې د بستر کېدو لوړ خطر لري. ماشومان او ځوانان ممکن د اکاډمیک فعاليت کمښت، د عصبي ودې ستونزو او په لويوالي کې د اوږدمهاله شرايطو له خطر سره هم مخ وي. هغه ماشومان چې د سالنډۍ ناروغي لري، بايد خپل [د Asthma Action Plan (د ساه لنډۍ د عمل پلان)] تعقيب کړي.
د ناروغۍ نښې نښانې	ل $PM_{2.5}$ سره د تماس د ناروغۍ نښو نښانو کې د سترګو سوځيدل، ټوخی، د ستوني او پزې خارښت، سترپا، سر درد، د ستوني غڑهاری او تنفس لنډوالی راځي. د ناروغۍ نښې نښانې وخاړئ. که د ناروغۍ نښې نښانې جدي شي، طبي پاملرنه وغواړئ. د ناروغۍ نښې نښانې کېدای شي له $PM_{2.5}$ سره له تماس وروسته د اونۍ په بهير کې دوام وکړي يا پکې را خرګندې شي.
فزيکي فعاليت	[د Centers for Disease Control and Prevention (CDC)، د ناروغيو د کنټرول او وقايې مرکزونو) سپارښتنې] د روغتيا د يوې مهمې برخې په توګه 6-17 کلن ماشومان او ځوانان دې هره ورځ يو ساعت يا ډير تمرين وکړي. د WAC 110-300-0360(2)(c) له مخې د ماشوم‌پالنې په پروګرامونو کې په بهر کې اصغري فعاليت/فعالې لوبې وشي، البته په سخته هوا کې استثنا شته. کله چې د $PM_{2.5}$ کچه لوړه شي، په ځانګړې توګه د ورځو يا اونيو لپاره، په بهر کې خوندي لوبې کول احتياطي تدابير غواړي. خلک ژوره ساه اخلي او د تمرين پر وخت ډېره هوا خپلو سرو ته لېږدوي، په دې توګه د هوا ککړتيا ډېره جذبوي. د استراحت په پرتله، د ماشومانو او ځوانانو د تنفس کچه د کم شدت لرونکي فزيکي فعاليت په بهير کې 2 برابره، د منځنۍ شدت لرونکي فعاليت په بهير کې 4 برابره او د لوړ شدت لرونکي فعاليت په بهير کې د آرام په پرتله 8 برابره زياتيږي. د شدت کچه له تمرين سره تړاو لري او په انفرادي ډول توپير لري، خو د مثال په توګه: » کم شدت لرونکي فعاليتونه: د تختې لوبې کول، د کيچ يا نيولو لوبې کول او بلاکونه سر پر سر اېښودل » منځنۍ شدت لرونکي فعاليتونه: د لوبې په ډګر کې ختل، ډاجبال، څلور مربع، ګالف، جمناسټيک، هاپ‌سکاچ، دری ټايره سايکل/بايسکل کم چلول، مارچيګ بيند، په منځنۍ اندازه يا تيز چلول، د باسکيټبال ډزې کول، سافټبال/بيسبال، د مېز ټينس، واليبال، د وزن روزنه، او يوګا » لوړ شدت لرونکي فعاليتونه: ايروبيک نڅا، باسکيټبال، چيئر، رقابتي لامبو وهل، فوټبال، منډې وهل، د جمپنګ جيکونه، له رسۍ ټوپ وهل، کراته، په مبارزه کې قدم وهل، منډه وهل، فوټبال، لامبو وهل، ټينس او سخت بايسکل چلول د لا زياتو تفصيلي نوملړ لپاره د [Centers for Disease Control and Prevention (CDC)، د ناروغيو د کنټرول او وقايې مرکزونو) لارښوونې، "څنګه د فزيکي فعاليت شدت اندازه کړو" وګورئ]
مخ کېدنه يا تماس را کمول	دا د $PM_{2.5}$ ککړتيا زياتېږي، د روغتيا ساتنې لپاره هر عمل خورا مهم دی: په بهر کې د فزيکي فعاليت موده او شدت رامحدود کړئ (لکه د استراحت موده زياته کړئ)، د امکان په صورت کې په کور کې پاتې شئ او پر کور دننه هوا پاکه وساتئ. د ماشوم د ورځې او شپې په اوږدو کې ټولټال مخ کېدنه يا تماس په پام کې ونيسئ او په ښوونځي، کور او ترانزيت کې تير شوی وخت په پام کې ونيسئ. قدم وهل، بايسکل چلول يا په بس کې د پرانيستو کړکيو سره سفر کول په بهر کې وخت ګڼل کېږي. ځينې ماشومان ښايي په کور کې پاکه هوا ونه لري.
ماسکونه او ريسپايرېټورونه	کله چې تاسو د اور لوګي د مخنيوي لپاره بله لاره نه لرئ، د National Institute for Occupational Safety and Health (NIOSH)، د حرفوي خوندیتوب او روغتيا ملي انستيتوت) لخوا تاييد شوی N95 يا بل ذراتو ريسپايرېټور کېدای شي يو انتخاب په پام کې ونيول شي. د NIOSH لخوا تاييد شوي ريسپايرېټورونه د ډيرو کوچنيو ماشومانو لپاره په مناسبو اندازو کې نه راځي او په ماشومانو کې د پراخې کارونې په موخه نه دي ازمويل شوي. اغيزناکه کارونه يې مناسب انتخاب، اندازه او فټ‌والی غواړي. د ماشومانو د ريسپايرېټور کارولو په اړه د [Western States PEHSU لارښود (PDF)] وګورئ. د [NIOSH په هکله معلومات] دلته پيدا کېدای شي.
د هوا د کيفيت څارنه او ټيټ لګښته سينسرونه	**د بهر هوا څارل:** د اور د لوګي پرته د ککړتيا لپاره د هوا د ککړتيا اټکلونه او د دولتي ادارو څارونکي په [AirNow.gov] کې کار واخلئ. د اور لوګي لپاره [Washington Smoke Blog] وکاروئ. په Smoke Blog کې کم لګښته سينسرونه شامل دي او د اور فصل په بهير کې د واشنګټن د ځنګلي اور لوګي لپاره خورا اړونده اټکلونه لري. A ضميمه وګورئ. **پر کور دننه هوا څارل:** پر کور دننه فعاليتونو لپاره ارزانه داخلي سينسرونو کارول کېدی شي. د سينسر نا اصلاح شوي معلومات له AQI سره مه پرتله کوئ. د تاسيساتو په ټولو ځايونو کې او پر کور دننه او بهر د سينسر ډيټا پرتله کړئ. B ضميمه وګورئ.
پر کور دننه هوا کيفيت	د $PM_{2.5}$ لوړې کچې يا د هوا د خراب کيفيت د اوږدې مودې په بهير کې پر کور دننه هوا د کيفيت ښه کولو لپاره ګامونه پورته کول خورا مهم دي، ځکه $PM_{2.5}$ ودانيو ته ننوځي. که ډاډه نه ياست چې پر کور دننه د $PM_{2.5}$ کچه تر بهر ټيټه ده، نو داسې وانګيرئ چې دا کچه سره ورته ده او د تماس را کمولو لپاره ګامونه زيات کړئ. پر کور دننه هوا تصفيه (د HVAC سيستمونه چې MERV 13 يا ذراتو لوړ فلټر يا تصفيه لري يا د HEPA د لېږد وړ د هوا پاکونکي ماشينونه) کولی شي د $PM_{2.5}$ پر کور دننه کچه راټيټه کړي. د هوا داسې پاکونکي ماشينونه مه کاروئ چې اوزون توليدوي يا اضافه ټيکنالوژي لري، لکه ايونيزيشن او پلازما. د [د لېږد وړ د هوا پاکونکي ماشينونه وګورئ]. C ضميمه وګورئ.
بالغ کارکوونکي او داوطلبان	بالغ کارکوونکي او داوطلبان د هوا له ککړتيا څخه اغيزمن کېدای شي، د ذراتو ککړتيا لپاره [د واشنګټن د هوا کيفيت لارښود] وګورئ. د ځنګلي اور لوګي پر مهال د بهر کارګرانو په اړه د پالیسيو لپاره، [په کارځای کې د ځنګلي اور لوګي څخه خوندیتوب او روغتيا لپاره د WA L&I وېبسايټ وګورئ].
د ښوونځي ټرل	که تاسو نه شئ کولی چې پر کور دننه $PM_{2.5}$ له 125.5 µg/m3 (AQI ارزښت 201) څخه ښکته وساتئ، نو د ښوونځيو او تاسيساتو ټرل په پام کې ونيسئ. [د ښوونځيو د ټرلو لپاره د ځنګلي اور د لوګي لارښود لنډيز (PDF)] وګورئ چې لاندې عوامل پکې شامل دي چې په پام کې ونيول شي.
سرچينې	**وېب سايټونه:** د Washington State Department of Health (د واشنګټن ايالت د روغتيا اداره) [له اورونو څخه رامنځته شوی لوګی او روغتيا]، د WA DOH [پر کور دننه د هوا کيفيت] او د [Environmental Protection Agency (EPA)، د چاپېريالي خوندیتوب اداره) Air Quality Flag Program (د هوا کيفيت بيرغ پروګرام)]. د تخنيکي مرستې لپاره: 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

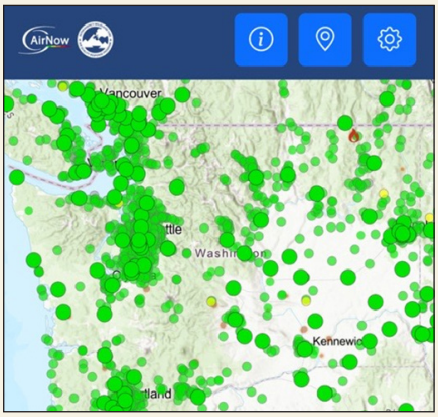
better information for your location than a monitor/sensor that is on the other side of a ridge or at a different elevation, like in a valley. You might find that you need a sensor at your specific location. As of 2025, outdoor Purple Air and Clarity sensors are displayed on the EPA Fire and Smoke map.

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

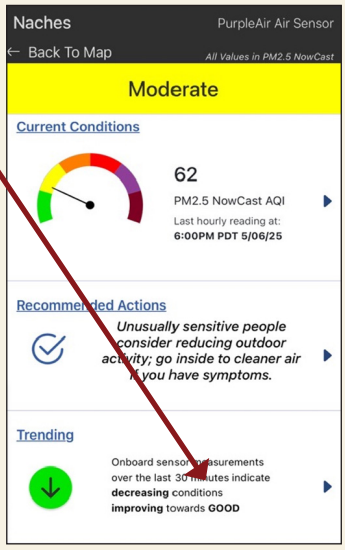
Recent trend *(click or tap here for more information on the trend)*

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.

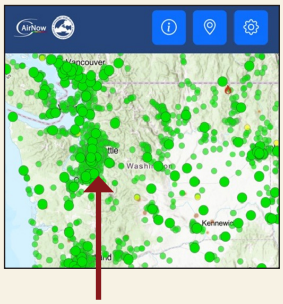
When indoor $PM_{2.5}$ concentrations are higher than outdoor, opening windows can help clear out indoor $PM_{2.5}$. When outdoor $PM_{2.5}$ concentrations are higher than indoor, closing windows can help keep $PM_{2.5}$ out. At the same time, pay attention to the indoor and outdoor temperatures when 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)

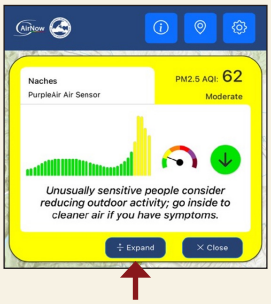
- Include measurements in rooms used by children and youth that are expected to have worse ventilation or indoor air quality (like no air filtration), rooms where physical activity is usually more vigorous (like the gym), rooms with external doors opened frequently, any external buildings (like portables), 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:



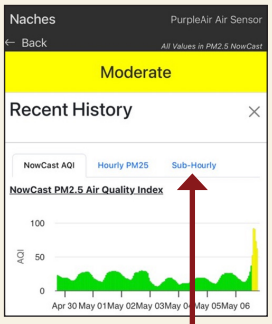
1. Click or tap on the monitor (larger circle) or low-cost sensor (smaller circle) closest to you

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

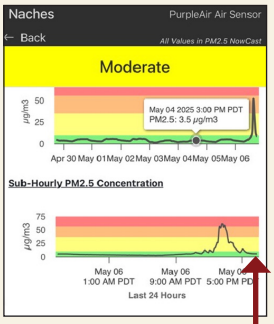


2. A window like this should pop up. Click or tap on "Expand."

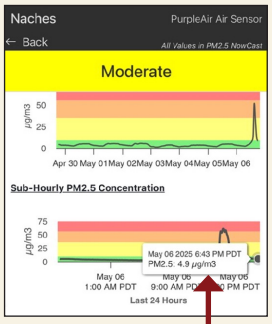
   Scroll down within the pop-up window to get to "Recent History". Click or tap on "Recent History."



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.

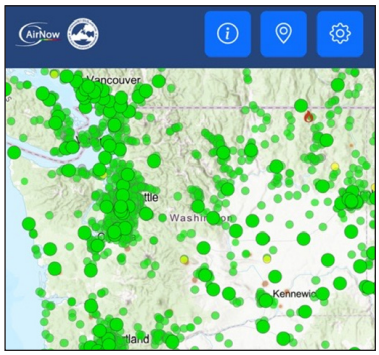
When someone is exposed to both extreme heat and poor air quality at the same time, the health impacts can be more severe than they would be separately. It is important to track conditions and forecasts of both air quality and heat.

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

DOH 334-332 August 2026

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