Gabay para sa mga Aktibidad ng mga Bata at Kabataan para sa Kalidad ng Hangin sa Washington

Washington State Department of HEALTH

Ang mga sumusunod na pinakamahuhusay na kasanayan sa kaligtasan ng publiko ay upang protektahan ang mga bata at kabataan (18 taon pababa) mula sa polusyon ng pinong particle sa hangin ($PM_{2.5}$). Gamitin ang gabay na ito sa paaralan, sa pangangalaga ng bata, sa pag-eensayo at paglalaro ng athletics, sa mga programa bago at pagkatapos ng pasok sa paaralan, camp, field trip, at sa iba pang programa at aktibidad sa labas.

Tingnan ang kasalukuyan at tinatayang kalidad ng hangin sa AirNow.gov o kapag may usok mula sa wildfire sa wasmoke.blogspot.com

(Tingnan ang Apendiks A)

Air Quality Index (AQI, Indeks ng Kalidad ng Hangin) sa Labas: PM2.5

Tagal ng Aktibidad	Mabuti (0-50 AQI)	Katamta-man (51-100 AQI)	Hindi Mabuti para sa mga Sensitibong Grupo (101-150 AQI)	Hindi Mabuti, Talagang Hindi Mabuti, o Mapanganib (≥151 AQI)
15 minuto hanggang 1 oras (halimbawa, recess, PE, mga klaseng karaniwang isinasagawa sa labas)	Walang restriksiyon.	Payagan ang mga bata at kabataan na may kondisyon sa kalusugan na hindi sumali o manatili sa loob ng gusali. Limitahan ang tindi ng mga aktibidad para sa mga bata at kabataan na ito kung kailangan.	Limitahan sa katamdamang tindi ang mga aktibidad sa labas. Para sa mga bata at kabataan na may kondisyon sa kalusugan, limitahan pa ang tindi o lumipat sa isang lugar na may mas ligtas na kalidad ng hangin kung kailangan.	Kanselahin ang aktibidad sa labas o lumipat sa lugar na may mas ligtas na kalidad ng hangin, sa loob ng gusali na may nakasalang hangin o sa ibang lokasyon. Limitahan sa hindi gaanong matindi ang mga aktibidad sa loob ng gusali kung mataas ang antas ng PM2.5 sa loob ng gusali.
1-4 na oras (halimbawa, mga kaganapan at pag-eensasyo sa athletics)	Walang restriksiyon.	Payagan ang mga bata at kabataan na may kondisyon sa kalusugan na hindi sumali o manatili sa loob ng gusali. Limitahan ang tindi ng mga aktibidad para sa mga bata at kabataan na ito kung kailangan.	Limitahan sa hindi gaanong matindi ang mga aktibidad o sa loob ng 1 oras sa kabuoan ang mga aktibidad na may katamtamang tindi. Kung hindi mababago ang antas ng tindi at oras, pag-isipang kanselahin ang aktibidad sa labas o lumipat sa lugar na may mas ligtas na kalidad ng hangin, sa loob ng gusali o sa ibang lokasyon. Para sa mga bata at kabataan na may kondisyon sa kalusugan, limitahan pa lalo ang oras o tindi kung kailangan.	Kanselahin ang aktibidad sa labas o lumipat sa lugar na may mas ligtas na kalidad ng hangin, sa loob ng gusali na may nakasalang hangin o sa ibang lokasyon. Limitahan sa hindi gaanong matindi ang mga aktibidad sa loob ng gusali kung mataas ang antas ng PM2.5 sa loob ng gusali.
> 4 na oras (halimbawa, paaralan o programa sa labas, day camp, overnight camp)	Walang restriksiyon.	Ilipat ang mga bata at kabataan na may kondisyon sa kalusugan sa lugar na may mas ligtas na kalidad ng hangin, sa loob ng gusali o sa ibang lokasyon kung kailangan. Payagan ang mga bata at kabataan na walang kondisyon sa kalusugan na hindi sumali o manatili sa loob ng gusali at limitahan ang tindi ng mga aktibidad.	Limitahan sa hindi gaanong matindi ang mga aktibidad at nang hindi magtatagal nang lampas sa 4 na oras sa kabuoan. Kung hindi mababago ang antas ng tindi at oras, kanselahin ang aktibidad sa labas, o lumipat sa lugar na may mas ligtas na kalidad ng hangin, sa loob ng gusali o sa ibang lokasyon. Para sa mga bata at kabataan na may kondisyon sa kalusugan, limitahan pa lalo ang oras o tindi kung kailangan.	Kanselahin ang aktibidad sa labas o lumipat sa lugar na may mas ligtas na kalidad ng hangin, sa loob ng gusali na may nakasalang hangin o sa ibang lokasyon. Limitahan sa hindi gaanong matindi ang mga aktibidad sa loob ng gusali kung mataas ang antas ng PM2.5 sa loob ng gusali.

MGA KARAGDAGANG PAGSASAALANG-ALANG

Isara ang mga bintana at pinto kapag inilipat sa loob ng gusali ang mga aktibidad. Bigyang-pansin ang init. *Tingnan ang Apendiks D.*

Puwedeng bumaba ang mataas na antas ng PM2.5 sa loob ng gusali sa tulong ng pansala ng hangin sa loob ng gusali. *Tingnan ang Apendiks C.*

Upang masukat ang antas ng PM2.5 sa loob ng gusali, *tingnan ang Apendiks B.*

Isaalang-alang sa tagal ng aktibidad ang panahong gugugulin sa pagbiyahe.

Ang lahat ng bata at kabataan (18 pababa) ay itinuturing na sensitibong grupo. Kasama sa mga isinasaalang-alang sa kalusugan ang, pero hindi nalilimitahan ang mga ito sa, hika at iba pang sakit sa baga, sakit sa puso, diyabetes, at impeksiyon sa respiratory system (halimbawa, RSV at pulmonya).

Washington State Department of HEALTH

DOH 334-332 August 2026 Tagalog

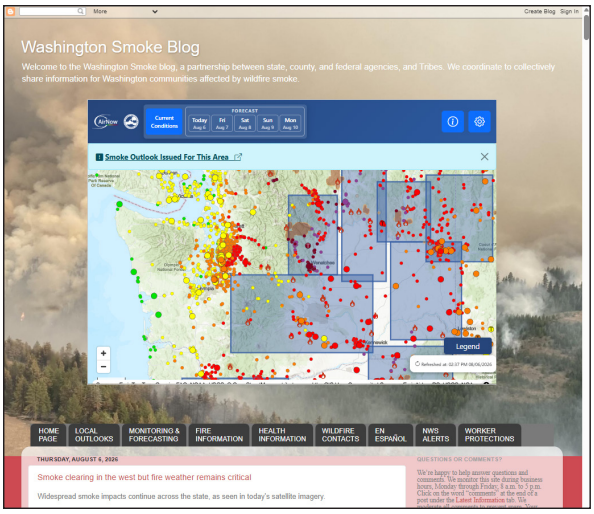
Upang hilingin ang dokumentong ito sa ibang format, tumawag sa 1-800-525-0127. Para sa mga customer na bingi o nahihirapang makarinig, mangyaring tumawag sa 711 (Washington Relay) o mag-email sa doh.information@doh.wa.gov.

Mga Pinag-mumulan ng PM2.5	Karaniwang ang mga pangunahing pinagmumulan ng $PM_{2.5}$ ay usok mula sa wildfire sa mas maiinit na buwan at usok mula sa sistema ng pagpapainit ng bahay sa malalamig na buwan, bagaman maaari itong mag-iba-iba depende sa lokasyon. Kasama sa iba pang pinagmumulan ang tambutso ng mga sasakyan, emisyon mula sa mga industriya, at pinagagawang pagsusunog.
Kalusugan at Mas Malaking Panganib sa mga Bata	Ang mga bata at kabataan ay mas sensitibo sa mga epekto sa kalusugan mula sa paglanghap ng $PM_{2.5}$ dahil nakalalanghap sila ng mas maraming hangin kaysa sa mga nasa hustong gulang para sa timbang ng kanilang katawan. Pinatataas nito ang kanilang kabuoang dosis ng polusyon sa hangin. Nade-develop din ang respiratory system hanggang sa humigit-kumulang edad 21. Ang mga bata at kabataan na may kondisyon sa kalusugan (kabilang na rito ang hika at iba pang sakit sa baga, sakit sa puso, at diyabetes) ay may mas malaking panganib na bumisita sa kagawaran ng emergency at magpaospital kumpara sa mga batang walang kondisyon sa kalusugan. Ang mga bata at kabataan ay maaari ding nanganganib na magkaroon ng kahinaan sa pag-aaral, problema sa pag-develop ng utak, at matagalang kondisyon hanggang sa pagtuntong nila sa hustong gulang. Dapat sundin ng mga batang may hika ang kanilang **Plano ng Pagkilos para sa Hika (Asthma Action Plan)**.
Mga Sintomas	Kasama sa mga sintomas ng pagkakalantad sa $PM_{2.5}$ ang mahahapding mata, pag-ubo, iritasyon sa lalamunan at ulong, pagkapagod, sakit ng ulo, paghingasing, at pagkapos ng hininga. Subaybayan kung magkakaroon ng mga sintomas. Kung lumala ang mga sintomas, magpatingin sa doktor. Puwedeng magpatuloy o lumabas ang mga sintomas pagkatapos malantad sa $PM_{2.5}$.
Pisikal na Aktibidad	**Inirerekomenda ng Centers for Disease Control and Prevention (CDC, Mga Sentro para sa Pagkontrol at Pag-iwas sa Sakit)** na mag-ehersisyo ang mga bata at kabataan na 6-17 taong gulang nang isang oras o higit pa araw-araw bilang mahalagang bahagi ng kalusugan. Ayon sa Washington Administrative Code (WAC, Kodigong Administratibo ng Washington) 110-300-0360(2)(c), kinakailangan ng minimum na aktibidad/aktibong paglalaro sa labas para sa mga programa ng pangangalaga ng bata maliban na lang kung matindi ang lagay ng panahon. Nangangailangan ng pag-iingat para sa ligtas na paglalaro sa labas kapag mataas ang antas ng $PM_{2.5}$, lalo na sa loob ng maraming araw o linggo. Humihinga nang malalim at nakalalanghap ng mas maraming hangin ang mga tao sa kanilang mga baga kapag nag-eehersisyo, kaya nakalalanghap sila ng mas maraming polusyon sa hangin. Kung ihahambing sa sitwasyong wala silang ginagawa, ang antas ng paghinga ng mga bata at kabataan ay tumataas nang 2 beses kapag may ginagawang pisikal na aktibidad na hindi gaanong matindi, nang 4 na beses kapag may ginagawang aktibidad na may katamtamang tindi, at nang 8 beses kapag may ginagawang aktibidad na napakatindi kumpara sa kung wala silang ginagawa. Ang antas ng tindi ay may kinalaman sa pagsisikap na gawin ang isang bagay at nag-iiba-iba ito depende sa indibidwal, pero bilang mga halimbawa: » Mga Aktibidad na Hindi Gaanong Matindi: paglalaro ng board game, pagpapasahan ng bola, at pagpapatong-patong ng mga block » Mga Aktibidad na may Katamtamang Tindi: pag-akyat sa palaruan, dodgeball, four-square, golf, gymnastics, piko, hindi matinding paggamit ng tricycle/pagbibisikleta, marching band, katamtaman o matuling paglalakad, pagtira ng basketball, softball/baseball, table tennis, volleyball, weight training, at yoga » Matitinding Aktibidad: aerobic dance, basketball, cheer, competitive swimming, football, jogging, jumping jacks, jump rope, karate, karerahan sa paglalakad, pagtakbo, soccer, paglangoy, tennis, at matinding pagbibisikleta Para sa mas detalyadong listahan, tingnan ang **Gabay ng Centers for Disease Control and Prevention (CDC, Mga Sentro para sa Pagkontrol at Pag-iwas sa Sakit), "Paano Sukatin ang Tindi ng Pisikal na Aktibidad"**
Pagbawas sa Pagkakalantad	Habang tumaatas ang polusyon ng $PM_{2.5}$, lalong mahalaga ang bawat aksiyon upang maprotektahan ang kalusugan: limitahan ang tagal at tindi ng pisikal na aktibidad sa labas (halimbawa, dagdagan ang panahon ng pahinga), manatili sa loob ng gusali hangga't maaari at panatilihing malinis ang hangin sa loob ng gusali. Isaalang-alang ang kabuoang pagkakalantad ng bata sa buong araw at gabi, kabilang na ang oras na ginugol sa paaralan, bahay, at sa pagbiyahe. Ang paglalakad, pagbibisikleta, o pagsakay sa bus nang nakabukas ang mga bintana ay maituturing na oras na ginugol sa labas. Maaaring hindi mas malinis ang hangin sa bahay ng ilang bata.
Mga Mask at Respirator	Puwedeng opsiyon ang N95 na aprobado ng National Institute for Occupational Safety & Health (NIOSH, Pambansang Institusyon para sa Kaligtasan at Kalusugan sa Trabaho) o iba pang particulate respirator kapag wala na kayong ibang paraan upang makaiwas sa usok ng wildfire. Ang mga respirator na aprobado ng NIOSH ay walang akmang sukat para sa mga lubos na maliliit na bata at hindi nasuri para sa mas malawak na paggamit ng mga bata. Upang magamit ito nang mabisa, kinakailangang wasto itong mapili, masukat at mailapat. Tingnan ang **patnubay para sa Western States PEHSU (PDF)** tungkol sa paggamit ng respirator ng mga bata. Marami pang **impormasyon tungkol sa NIOSH** dito.
Pagsubaybay sa Kalidad ng Hangin at mga Murang Sensor	**Pagsubaybay sa Hangin sa Labas:** Gamitin ang mga pagtataya ng polusyon sa hangin at mga pansubaybay ng ahensiya ng pamahalaan na nasa **AirNow.gov** para sa polusyon sa usok na hindi mula sa wildfire. Gamitin ang **Washington Smoke Blog** para sa usok mula sa wildfire. Kasama sa Smoke Blog ang mga murang sensor at mayroon ito ng mga pinakabagong pagtataya sa lagay ng usok mula sa wildfire sa Washington sa panahon ng wildfire. Tingnan ang Apendiks A. **Pagsubaybay sa Hangin sa Loob ng Gusali:** Puwedeng gamitin para sa mga aktibidad sa loob ng gusali ang mga murang sensor para sa loob ng gusali. Huwag ihambing ang mga di-wastong datos ng sensor sa AQI. Paghambingin ang mga datos ng sensor sa mga lokasyon sa buong pasilidad at sa loob ng gusali kumpara sa labas ng gusali. Tingnan ang Apendiks B.
Kalidad ng Hangin sa Loob ng Gusali	Kapag mataas ang antas ng $PM_{2.5}$ o matagal nang hindi maganda ang kalidad ng hangin, ang pagsasagawa ng mga hakbang upang mapabuti ang kalidad ng hangin sa loob ng gusali ay lalo nang mahalaga dahil papasok ang $PM_{2.5}$ sa loob ng mga gusali. Kung hindi kayo sigurado kung mas mababa ang antas ng $PM_{2.5}$ sa loob ng gusali kaysa sa labas, ipagpalagay na magkatulad ang antas at dagdagan ang mga hakbang upang mabawasan ang pagkakalantad. Ang pagsala ng hangin sa loob ng gusali (mga sistema ng HVAC na may pansala ng particle na MERV 13 pataas, o mga portable na panlinis ng hangin na HEPA) ay makababawas sa antas ng $PM_{2.5}$ sa loob ng gusali. Huwag gumamit ng mga panlinis ng hangin na nakagagawa ng ozone o may additive na teknolohiya, gaya ng ionization at plasma. Tingnan ang **Mga Portable na Panlinis ng Hangin**. Tingnan ang Apendiks C.
Mga Kawani at Boluntaryo na Nasa Hustong Gulang	Ang mga kawani at boluntaryo na nasa hustong gulang ay puwedeng maapektuhan ng polusyon sa hangin, tingnan ang **Gabay sa Kalidad ng Hangin para sa Polusyon ng Particle sa WA**. Para sa mga patakaran sa mga manggagawang nasa labas kapag may usok mula sa wildfire, tingnan ang **webpage tungkol sa Kaligtasan at Kalusugan sa Pinagtatrabahuhang Lugar Laban sa Usok mula sa Wildfire ng Washington Department of Labor and Industries (WA L&I, Kagawaran ng Paggawa at mga Industriya ng Washington)**.
Pagsasara ng mga Paaralan	Pag-isipang isara ang paaralan at pasilidad kung hindi ninyo mapananatiling mababa sa 125.5 µg/m3 (AQI value na 201) ang $PM_{2.5}$ sa loob ng gusali. Tingnan ang **Buod na Patnubay sa Usok mula sa Wildfire para sa Pagsasara ng mga Paaralan (PDF)**, na kinabibilangan ng mga salik na dapat isaalang-alang.
Mga Ma-pagkukunan ng Tulong	**Mga Website:** **Usok mula sa mga Sunog at Kalusugan** ng Washington Department of Health (WA DOH, Kagawaran ng Kalusugan ng Washington), **Kalidad ng Hangin sa Loob ng Gusali** ng WA DOH, at **Air Quality Flag Program (Programa ng mga Bandera para sa Kalidad ng Hangin)** ng Environmental Protection Agency (EPA, Ahensiyang Tagaprotekta ng Kapaligiran). Para sa tulong teknikal: **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

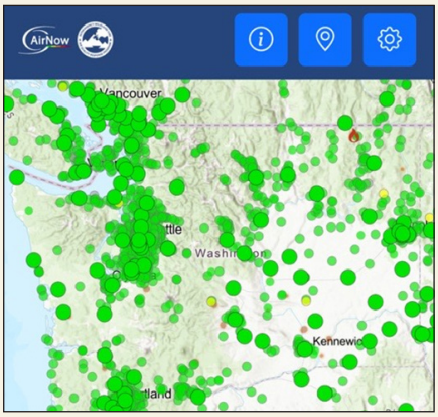
better information for your location than a monitor/sensor that is on the other side of a ridge or at a different elevation, like in a valley. You might find that you need a sensor at your specific location. As of 2025, outdoor Purple Air and Clarity sensors are displayed on the EPA Fire and Smoke map.

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

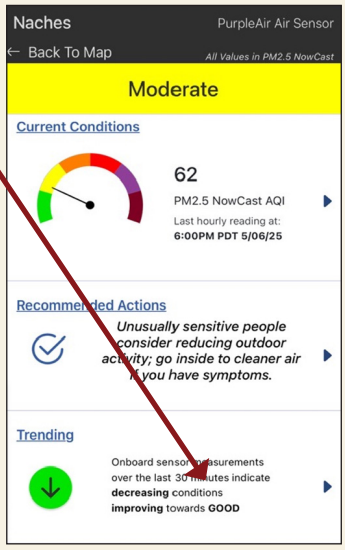
Recent trend *(click or tap here for more information on the trend)*

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.

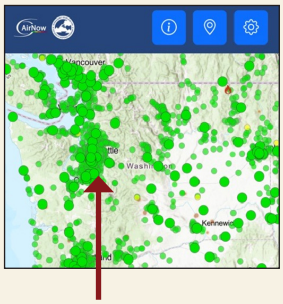
When indoor $PM_{2.5}$ concentrations are higher than outdoor, opening windows can help clear out indoor $PM_{2.5}$. When outdoor $PM_{2.5}$ concentrations are higher than indoor, closing windows can help keep $PM_{2.5}$ out. At the same time, pay attention to the indoor and outdoor temperatures when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

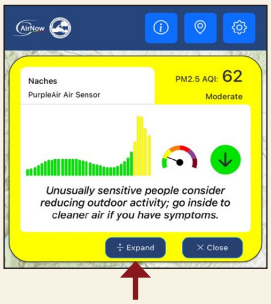
- Include measurements in rooms used by children and youth that are expected to have worse ventilation or indoor air quality (like no air filtration), rooms where physical activity is usually more vigorous (like the gym), rooms with external doors opened frequently, any external buildings (like portables),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



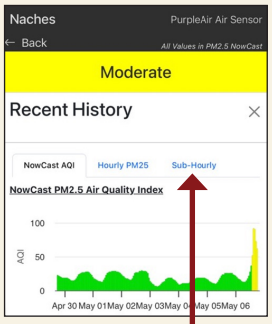
1. Click or tap on the monitor (larger circle) or low-cost sensor (smaller circle) closest to you

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

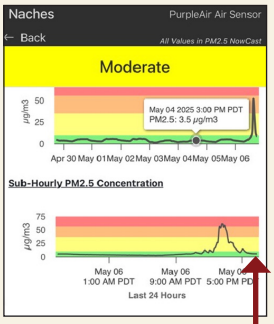


2. A window like this should pop up. Click or tap on "Expand."

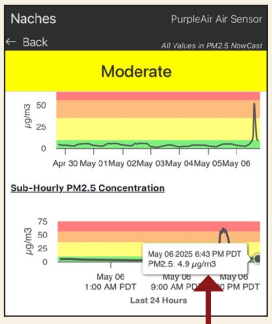
   Scroll down within the pop-up window to get to "Recent History". Click or tap on "Recent History."



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.

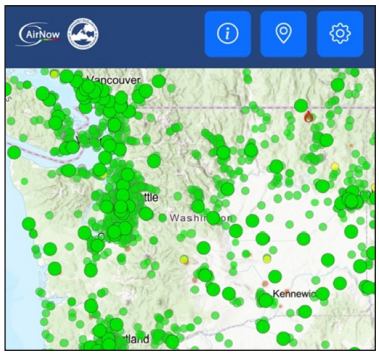
When someone is exposed to both extreme heat and poor air quality at the same time, the health impacts can be more severe than they would be separately. It is important to track conditions and forecasts of both air quality and heat.

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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