OBSERVING THE AIR

Purpose:
Students get experience using a real-life monitor and compare their own observations to external data sources, such as AirNow.gov.

This activity is written for use with Dylos monitors, which measure PM levels, but it could easily be adapted for use with other outdoor or indoor monitors. Reach out to GASP if you'd like to discuss how to adapt it for the type of monitor you have access to in your school or program. If you don't have access to a monitor, GASP may be able to lend out a Dylos monitor - email info@gasp-pgh.org.

Supplies:
- Dylos monitor and charging cord
- Observations chart

Pre-Activity Discussion:
Do a quick refresher or introduction on Particulate Matter (PM). Ask students what they remember about this pollutant and then fill in any missing info.
- PM is any liquid or solid suspended in the air, including mold, soot, dust, and pollen.
- When we breathe, larger particles get stuck in our nose hairs and mucus, and we sneeze or cough them out.
- Smaller particles can travel deeper into our lungs and even enter our bloodstream.
- PM is linked to negative health effects such as asthma, heart attack, stroke, and certain cancers.

Set up the Dylos Monitor:
Plug it in and power it on. Numbers should appear on the screen. The Dylos is using a laser to count the number of particles in the air. There is a graph on the back of the monitor that shows how these numbers equate to the quality of the air. This is for the small particles, which is the higher number displayed. For a short, but very informative video on how the Dylos works, visit the link below, also found on the flash drive. https://www.youtube.com/watch?v=sYTNklHcWbo
- Have fun learning how the Dylos works. Plug it in and let it settle for a minute. Show the students the number displayed so that they can get a reading of the air quality in the room.
- Try to kick up some dust and see how it changes the numbers. Blow out a candle nearby, or shake a jacket or pillow behind the monitor to see the impact it makes. Students could volunteer to try and make it go as high as they can.

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Directions:
The Dylos will be stationed with the teacher who can show the readings to the students or task one or more students to take readings. Have the Dylos plugged in and turned on. You can leave it on throughout the entire study.

Each day, students will observe the reading of the Dylos monitor and compare it to the particle count of the EPA monitoring website AirNow.gov. If possible, students should do this twice a day, once in the morning and once in the afternoon.

You can run the study for as long as you want, but we recommend 5 days.

- The Dylos readings fluctuate, but are relatively stable as long as dust isn't being stirred up around them. Each day spend a minute before the regular class period checking the reading on the monitor.
- After students have the reading, check with the chart on the back to see the air quality implications and fill in the chart.
- Next, have a student look up the particle count for your zip code on AirNow.gov. Record the AQI value and its associated health impacts on the chart.
- Write down any observations that may be impacting the air quality in the room. This could be if the windows are open or closed or that someone just swept and there is dust in the air making the levels higher on the Dylos monitor. It could also be that the air conditioner is on, which might filter some of the particles from the air causing the Dylos numbers to be lower.
- You may also want to check the monitors readings against other air monitoring resources, like PurpleAir.com or the Allegheny County Health Department dashboard.

Post-Activity Discussion:
Discuss some of the following questions:

- How similar were the monitor and the AirNow readings?
- Did they trend together more in the morning or afternoon?
- Were there any interesting patterns that you saw emerge?
- Was your monitor affected by other things going on nearby that may have caused the count to be higher or lower than expected?

Take Action:
AirNow offers a free widget that can be added to a website - would your school or program be interested in adding it to their website to promote air quality awareness? Students could prepare a proposal for the principal or school administration.

Monitor & AirNow Week-Long Observation Chart

	Day 1 _____	Day 2 _____	Day 3 _____	Day 4 _____	Day 5 _____
Example: Dylos Morning Time: 9:45 am	Dylos reading was 285 which is good on the scale on the back	Reading was 892 Rated fair	Reading was 2265 which is poor	Reading was 2951 poor	Dylos was 178 which is good
AirNow Current AQI	77 - unhealthy	81 - unhealthy	50 - good	92 - unhealthy	80 - unhealthy
Observations	Air in classroom was cleaner than AQI, windows closed	Window was open, students had just been moving around a lot	They were mowing grass outside; we'd just been using the chalkboard	Windows open, dry and hot outside today	Windows closed
Dylos Morning Time: _____					
AirNow Current AQI					
Observations					
Dylos Afternoon Time: _____					
AirNow Current AQI					
Observations					