

## How Indoor Air Pollution Happens

We can also reduce the amount of dust in the home. Here's how:

- Take off shoes in the home.
- Use a front door mat.
- Reduce extra clutter around the house.

## How Indoor Air Pollution Happens

Kids use their sense of smell to detect “pollution” in this interactive indoor air quality activity.

### Materials

- 1 electric fan
- 1 onion cut up in a tightly sealed plastic bag
- Timer

### Initial Discussion with Kids

Sometimes we can't see or smell air pollution, but sometimes we can. In a busy city with lots of cars and buses, the air may have smog or even look a little dirty. If there's a wildfire, the air can look smokey. These are examples of seeing air pollution. We can use our sense of smell to sometimes identify pollutants too. We can smell smoke from wildfires. We can also sometimes smell what is causing poor air quality—like mold, chemicals (like air fresheners, cleaning products), tobacco smoke or e-cigarette vapor.

That smoggy or smokey air that we see, and those sources of pollutants (mold, chemicals, smoke) that we can smell can have microscopic specks of particulate matter (mixture of solids and liquids) and other harmful things (like Volatile Organic Compounds) that we breathe in and can travel deep into our lungs. The more and longer we breathe these things in, the more likely we are to start feeling not well. For people with breathing problems like asthma, even breathing in polluted air for a short while can cause problems.

## How Indoor Air Pollution Happens

### Activity

1. Space individual children evenly around the room. They will be indoor air pollution monitoring instruments.
2. Place a fan in the front of the room and turn it on. Show the children the onion in the closed bag.
3. Ask the “monitoring instruments” to close their eyes tightly and use only their sense of smell for this activity.
4. Tell the children to raise their hands as soon as they detect onion smell “pollution” and to leave their hands up as long as they continue to smell it.
5. In front of the fan, open the bag with the cut onion.
6. Use a stopwatch or watch with a second hand to time how long it takes for all of the “monitoring instruments” to detect the “pollution.”
7. Record how long it took for indoor air pollution to spread through the room. (Allow the fan to continue to run.)
8. Close and seal the bag as soon as each child has detected the “pollution”. Place the bag in a drawer or outside.
9. If possible, open a window and place the fan so that it is blowing in fresh air from outside. If available, run a portable HEPA air cleaner on high.
10. Restart the stopwatch.
11. Ask the “monitoring instruments” to lower their hands when they can no longer smell the onion “pollution”.
12. Record how long it takes for fresh air to sweep the “pollution” from the room.
13. Have the children open their eyes.

## How Indoor Air Pollution Happens

### Discussion Questions

- Which took longer: spreading indoor air pollution or replacing it with fresh air?
- Why do you think it worked that way?
- What does that tell them about indoor air pollution?
- Do we have to see pollution for it to exist? Give an example to explain your answer.
- What did you notice about indoor air pollution during this activity?
- Why does it matter if the air is polluted?
- How could the air pollution in the room be reduced?
- Are certain people more sensitive than others to pollution? Why?
- If we lower air pollution outside, will there be less pollution inside? Why do you think so?

### Discussion Points

The onion is an example of a pollutant (aka, “source”). As demonstrated in this activity, when dealing with an indoor air quality problem, there are three general strategies:

- **Source Control:** Closing up the bag is an example of source control—this is usually the best way to address air quality problems. If there are sources or pollutants in the home or classroom, it’s best to eliminate them. If not possible, minimize use.
- **Improve Ventilation:** Indoor air is 3-4 times more polluted than outdoor air. Opening up a door or window to draw in fresh, outdoor air will reduce indoor air pollutants. Increase ventilation when the source can not be completely eliminated.
- **Clean the Air:** Using a portable air cleaner or upgrading the air filter in your furnace or central heating, ventilation and air-conditioning (HVAC) system can help to improve air quality. Portable HEPA air cleaners are a great way to reduce pollutants from a specific room.

While we were able to smell the pollutant in this exercise, there are many pollutants we cannot smell nor see. We can improve our indoor air quality by being mindful about potential sources of air pollutants, but also proactively ventilating and cleaning the air.