

**Climate is an
Environmental Justice Issue
Monthly Planning Guide
for LINKS Chapters**

January 2023



Overview

Monthly Theme	Environmental Awareness Days	Cultural and Identity Awareness Days
Environmental Health: Air Pollution	National Mentoring Month George Washington Carver Day	George Washington Carver Day (5) Martin Luther King Day (17)
Elementary	1. Activity 1: Understanding Air Pollution 2. Community Activity: Neighborhood Air Quality Survey	
Middle and High School	1. Activity 1: Understanding Air Pollution 2. Community Activity: Neighborhood Air Quality Survey	

Mentoring Moment Suggestions

seek out passionate volunteers, activists, elders, and Indigenous members of the community, consider accessing the expertise of earth scientists, air quality engineers, public health professionals, or community health researchers and data analysts.

Environmental Health: Air Pollution

ELEMENTARY ACTIVITIES

SUMMARY

Youth will learn about air quality and air pollution and will examine the relationships air quality, environmental health, and human health. During a neighborhood air quality survey, they will observe and collect data about sources of air pollution in their community.

MATERIALS

- Internet connection and computer or tablets
- Reading: [Air Pollution Sources](#)
- Video: [Air Pollution 101](#)
- Video: [Air Quality in the Bronx Pt. 1](#)
- Video: [Air Quality Monitoring in the Bronx](#)
- Video: [Climate Justice and Air Pollution in Illinois](#)
- Worksheet: [How Clean is the Air Today?](#) (attached)
- Worksheet Neighborhood Air Quality Survey (attached)

BACKGROUND¹

Most of the time, we hardly notice the air around us; usually, we cannot see it or taste it. Air does not generally smell, but it carries substances that we do smell. However, we can feel air when it moves, and we can see the effects of air on our surroundings. When air moves, it has great power (for example, to push sailboats, drive windmills and move clouds) and when it is compressed (that is, squashed into a small space), it has great strength (for example, air in a tire supports a vehicle and helps a helicopter to rise into the air).

Clean air contains only the gases and water vapor needed to keep the Earth's environment healthy. *Pollutants* are substances, or even energy, that harm living — and some non-living — things. A high concentration of pollutants in the air is called **air pollution**.

Air pollution can destroy our environment and can cause humans and other living things to become sick. Sometimes, air pollution can cause rashes, eye/nose irritation, headaches, sleepiness, coughing, sneezing and dizziness. If you breathe in too much air pollution, of a very high concentration, it can cause severe illnesses, such as cancer, asthma, kidney failure, liver damage and even birth defects. Air pollution affects the plants and animals in our environment as well as destroying buildings.

What causes air pollution? Many things. Specific outdoor sources of pollution include car exhaust, residential fireplaces, power plants, and factories. Indoor sources of pollution include cleaning supplies, cigarette smoke, furnaces and outdoor pollutants brought inside.

Human-Made Sources of Air Pollution

The burning of *fossil fuels* is one of the main causes of air pollution. Smoke and fumes containing *carbon dioxide* and *sulfur dioxide* from power stations and factories are the worst offenders. Car exhaust is another large source of air pollution. It contains both invisible

¹ https://www.teachengineering.org/lessons/view/cub_environ_lesson07

gases (carbon dioxide, carbon monoxide, hydrocarbons, and nitrogen oxides) and particles. Many consumer products (hair spray, paint and cleaners) release high levels of *volatile organic compounds* (VOCs) into the atmosphere. Other important sources include gas stations, industry (many types), agriculture and forestry.

WHAT TO DO

Activity 1: Understanding Air Pollution [~45minutes]

PART 1: What is Air Pollution? Begin the activity by asking students what they know about air pollution and its causes. Brainstorm a list of causes or sources of air pollution. Use the following resources to help students understand the causes and impact of air pollution.

- Video: [Air Pollution 101](#)
- Video: [Air Quality in the Bronx Pt. 1](#)
- Video: [Air Quality Monitoring in the Bronx](#)
- Reading: [Air Pollution Sources](#)

PART 2: How Clean is the Air Today?² (adapted from Teach Engineering; What Color is the Air Today?)

1. Introduce the Air Quality Index. Explain that sometimes the air is clean. At other times it is not. Scientists and engineers measure how clean the air is and call it the Air Quality Index (AQI). An index with numbers can be a quick way to tell people how good or bad something is.

The AQI focuses on the health effects that can happen within a few hours or days after breathing polluted air. It uses colors, numbers (from 0 to 500) and words to describe the air. The numbers are used to decide the AQI color.

2. Show students the Air Quality Index table or pass out copies of it. Find a printable version of the table [HERE](#).

² https://www.teachengineering.org/activities/view/cub_air_lesson01_activity3

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Figure 1: The Air Quality Index.

3. Obtain copies of the weather section of the newspaper (one per pair of students) or access local info on-line at <https://www.airnow.gov/> (weather apps on smartphones also typically list air quality information).

4. Ask the students to find any information that relates to air. Ask them to share their discoveries. (Possible information: Wind direction/speed, air quality, air temperature, humidity, etc.

5. Ask students to look more closely at the Air Quality Index (AQI). What kind of information is provided there? (Answers: Written, numerical, colored-coded descriptions of air quality.)

6. Ask students to describe in their own words, what the Air Quality Index tells them. What would it be used for? Why/how can it be helpful?

7. Students can complete the ***How Clean is the Air Today?*** worksheet.

8. Discuss the findings as a class.

9. Engineering Recommendation/Solutions: If the students were engineers for your town, would they need to implement pollution prevention measures (i.e., are the majority of the AQI values higher than 100)? If your students were in a city that often had AQI values higher than 100, what type of programs might they implement to decrease air pollution on high pollution days? (Possible answers: Increasing use of public transportation, more carpooling, developing air cleaning technologies, decreasing factory hours on high pollution days, etc.)

--Have the students write a letter to the city mayor from the Clean Air Engineering Firm that explains the air pollution quality trends in the city and makes recommendations for prevention measures.

Community Activity: Conduct a Neighborhood Air Quality Survey

During this community-based activity, students will observe and record sources of air pollution during a neighborhood walk. They will be looking for traffic and idling vehicles and tallying the number of street trees.

MATERIALS

- Neighborhood Air Quality Survey worksheets
- Stopwatch or timer
- Pencils/pens
- Camera (optional)

WHAT TO DO

Before the activity:

1. Plan a route to take with the group. If you know of nearby locations with possible sources of pollution (idling vehicles, heavy traffic, truck route, etc.), be sure to stop by them during the walk.
2. Explain to students that we will be taking a walk in the neighborhood to look for sources of air pollution. Students can work in pairs or groups. Depending on the time allotted for the neighborhood walk, groups could complete the whole worksheet together or they could be assigned one section of it.
3. Check the weather and the Air Quality Index (AQI). Review this information with students and complete the top part of the worksheet.
4. Take a walk. Stop at several spots during the walk to make observations and record data on the worksheets.
5. One or more students can be designated **photographers** if cameras are available. The photographers can take photos of each location or observation.
6. After the walk, discuss your findings.
 - a. Does our neighborhood have many sources of air pollution?
 - b. What surprised you about our observations?
 - c. Could there be other sources of air pollution that we did not observe today?
 - d. Who is affected by poor air quality in our neighborhood?

7. **Brainstorm ideas and solutions** for improving neighborhood air quality. (Some possible ideas: encourage people to reduce car usage and use public transportation, car pool, or bike instead).

8. **Share the observations and proposed solutions with members of your community.** Invite elected leaders, public health professionals, and community organizers to the class and discuss your air quality observations. *How can groups and individuals in our community work together on solutions?*

EXTENSION IDEAS

- **Launch a No Idling campaign.** Create posters, signs, bumper stickers, fliers, social media posts or other types of outreach to raise awareness of the harmful effects of vehicle emissions and remind drivers to turn off their engines when they are parked. See photos of signs created by youth during a No Idling campaign below.
- Write a **blog post** or letter to the editor to raise awareness about air quality in the community.
- Plant a tree! Trees and urban forests help [absorb pollutants while](#) providing many other benefits for people and ecosystems. Host a tree planting or giveaway event. Check out NWF's [Trees for Wildlife](#) program which may be able to provide free tree seedlings for an event.



Environmental Health: Air Pollution

MIDDLE AND HIGH SCHOOL ACTIVITIES

SUMMARY

Youth will learn about air quality and air pollution and will examine the relationships air quality, environmental health, and human health. During a neighborhood air quality survey, they will observe and collect data about sources of air pollution in their community.

MATERIALS

- Internet connection and computer or tablets
- Reading: [Air Pollution Sources](#)
- Video: [Air Pollution 101](#)
- Video: [Air Quality in the Bronx Pt. 1](#)
- Video: [Air Quality Monitoring in the Bronx](#)
- Worksheet: [Daily AQI Data Collection Sheet](#)
- Reading: [24 Hours of Edgar's Air Pollution](#)
- Video: [Climate Justice and Air Pollution in Illinois](#)
- Film/Video: [Talking Trash, Throwing Out the Big Apple \(22 minutes\)](#).
- Interactive: [See How the World's Most Polluted Air Compares with Your City's \[NYTimes\]](#)
- Worksheet: Neighborhood Air Quality Survey (attached)

BACKGROUND³

Most of the time, we hardly notice the air around us; usually, we cannot see it or taste it. Air does not generally smell, but it carries substances that we do smell. However, we can feel air when it moves, and we can see the effects of air on our surroundings. When air moves, it has great power (for example, to push sailboats, drive windmills and move clouds) and when it is compressed (that is, squashed into a small space), it has great strength (for example, air in a tire supports a vehicle and helps a helicopter to rise into the air).

Clean air contains only the gases and water vapor needed to keep the Earth's environment healthy. *Pollutants* are substances, or even energy, that harm living — and some non-living — things. A high concentration of pollutants in the air is called *air pollution*.

Air pollution can destroy our environment and can cause humans and other living things to become sick. Sometimes, air pollution can cause rashes, eye/nose irritation, headaches, sleepiness, coughing, sneezing and dizziness. If you breathe in too much air pollution, of a very high concentration, it can cause severe illnesses, such as cancer, asthma, kidney failure, liver damage and even birth defects. Air pollution affects the plants and animals in our environment as well as destroying buildings.

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What causes air pollution? Many things. Specific outdoor sources of pollution include car exhaust, residential fireplaces, power plants, and factories. Indoor sources of pollution include cleaning supplies, cigarette smoke, furnaces and outdoor pollutants brought inside.

Human-Made Outdoor Sources of Air Pollution

The burning of *fossil fuels* is one of the main causes of air pollution. Smoke and fumes containing *carbon dioxide* and *sulfur dioxide* from power stations and factories are the worst offenders. Car exhaust is another large source of air pollution. It contains both invisible gases (carbon dioxide, carbon monoxide, hydrocarbons, and nitrogen oxides) and particles. Many consumer products (hair spray, paint and cleaners) release high levels of *volatile organic compounds* (VOCs) into the atmosphere. Other important sources include gas stations, industry (many types), agriculture and forestry.

WHAT TO DO

Activity 1: Understanding Air Pollution [60~90 minutes, can be spread over 2 sessions]

PART 1: What is Air Pollution?: Begin the activity by asking students what they know about air pollution and its causes. Brainstorm a list of causes or sources of air pollution. Ask students how air pollution may disproportionately affect low-income communities or communities of color? Use the following resources to help students understand the causes and impact of air pollution.

- Video: [Air Pollution 101](#)
- Video: [Air Quality in the Bronx Pt. 1](#)
- Video: [Air Quality Monitoring in the Bronx](#)
- Video: [Climate Justice and Air Pollution in Illinois](#)

PART 2: How Clean is the Air Today?: The Air Quality Index⁴ (adapted from Teach Engineering; What Color is the Air Today?)

1. Introduce the Air Quality Index. Explain that sometimes the air is clean. At other times it is not. Scientists and engineers measure how clean the air is and call it the Air Quality Index (AQI). An index with numbers can be a quick way to tell people how good or bad something is.

The AQI focuses on the health effects that can happen within a few hours or days after breathing polluted air. It uses colors, numbers (from 0 to 500) and words to describe the air. The numbers are used to decide the AQI color.

2. Show students the Air Quality Index table or pass out copies of it. Find a printable version of the table [HERE](#).

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Figure 1: The Air Quality Index.

3. Obtain copies of the weather section of the newspaper (one per pair of students) or access local info on-line at <https://www.airnow.gov/> (weather apps on smartphones also typically list air quality information).

4. Ask the students to find any information that relates to air. Ask them to share their discoveries. (Possible information: Wind direction/speed, air quality, air temperature, humidity, etc.)

5. Ask students to look more closely at the Air Quality Index (AQI). *What kind of information is provided there?* (Answers: Written, numerical, colored-coded descriptions of air quality.)

6. Ask students to describe in their own words, what the Air Quality Index tells them. *What would it be used for? Why/how can it be helpful?*

7. Students can Collect AQI data (for a designated time frame) and complete the [Daily AQI Data Collection Sheet](#).

8. Discuss the findings as a class.

9. Engineering Recommendations/Solutions: If the students were engineers for your town, would they need to implement pollution prevention measures (i.e., are the majority of the AQI values higher than 100)? If your students were in a city that often had AQI values higher than 100, what type of programs might they implement to decrease air pollution on high pollution days? (Possible answers: Increasing use of public transportation, more carpooling, developing air cleaning technologies, decreasing factory hours on high pollution days, etc.)

—Have the students write a letter to the city mayor from the Clean Air Engineering Firm that explains the air pollution quality trends in the city and makes recommendations for prevention measures.

PART 3: One Day of Air Pollution Pass out the story [24 Hours of Edgar's Air Pollution](#) and tell students that they are going to walk through a typical day in the life of a person to see the cumulative impact of all air pollution he adds to the atmosphere. Students can read by themselves or take turns reading the text out loud.

3. Use [Air Pollution Sources](#) worksheet to help supplement the reading and help students understand causes of air pollution and its effects on people's health.

4. Reflect on the story with students:

- a. Were you surprised by how much air pollution Edgar was exposed to all day?
- b. Have you noticed any of these sources of pollution in your neighborhood or during your daily activities?
- c. How does air pollution affect people's health?
- d. What are some solutions to air pollution? How can we reduce it?

Extension Ideas

- Have students write their own versions of their day or write an alternate version of Edgar's activities that would cause less air pollution or reduce his exposure to it.
 - Watch the student-made short film, [Talking Trash, Throwing Out the Big Apple \(22 minutes\)](#). Discuss the relationships between waste (trash) and air quality. How are low-income communities disproportionately affected by these systems?
 - Check out the interactive [See How the World's Most Polluted Air Compares with Your City's \[NYTimes\]](#). How does the air quality in your town/city compare to others in the U.S. or across the globe?
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Community Activity: Conduct a Neighborhood Air Quality Survey

During this community-based activity, students will observe and record sources of air pollution during a neighborhood walk. They will be looking for traffic and idling vehicles and tallying the number of street trees.

MATERIALS

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- Camera (optional)

WHAT TO DO

Before the activity:

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EXTENSION IDEAS

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- Write a **blog post** or letter to the editor to raise awareness about air quality in the community.
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Neighborhood Air Quality Survey

Names (s): _____

Date: _____ Temperature: _____ Air Quality Index (AQI): _____

Weather (circle all that apply): Sunny Partly Cloudy Cloudy Rainy Snowy Foggy Windy

Counting Cars and Traffic

During your walk, stop at 2 or more locations. Use a timer and count traffic for 5 minutes. Record your observations in the table below.

❖ **Location 1:** _____

Description (check all that apply):

- | | |
|-----------------------------------------------------|------------------------------------------------|
| <input type="checkbox"/> Busy intersection | <input type="checkbox"/> Lots of pedestrians |
| <input type="checkbox"/> Quiet street | <input type="checkbox"/> Some pedestrians |
| <input type="checkbox"/> Traffic light or stop sign | <input type="checkbox"/> Few or no pedestrians |
| <input type="checkbox"/> Highway | |

Location	Time of Day	Cars w/ 1 person	Cars w/ more than 1 person	Trucks	Buses

❖ **Location 2:** _____

Description (check all that apply):

- | | |
|-----------------------------------------------------|------------------------------------------------|
| <input type="checkbox"/> Busy intersection | <input type="checkbox"/> Lots of pedestrians |
| <input type="checkbox"/> Quiet street | <input type="checkbox"/> Some pedestrians |
| <input type="checkbox"/> Traffic light or stop sign | <input type="checkbox"/> Few or no pedestrians |
| <input type="checkbox"/> Highway | |

Location	Time of Day	Cars w/ 1 person	Cars w/ more than 1 person	Trucks	Buses

Idling Vehicles Observations

When cars are stopped but leave their engines on, it is known as idling. The emissions produced by idling cars and buses pollutes the air. This unnecessary pollution can have negative effects on children.

Look for idling vehicles on your walk. If you spot one, use the timer or watch to record how long it idled and record the information in the table below.

Location/Street Name	Type of Vehicle (car, truck, bus, etc.)	How long was it idling?

Trees/Air Cleaners

Trees can help reduce pollution in the air. How many trees are planted along the streets? Take a count and record your observations in the table below.

Name of Street	Tree Count	Condition of trees (healthy - unhealthy)

Your Proposed Solutions

What are some ways our community can reduce air pollution? Write your recommendations and proposed solutions below.

Solution	How would this improve air quality?

Name:

Date:

Class:

Air Pollution Sources

Major Man-Made Air Pollutants

Pollutant	Description	Sources	Signs/Effects
Carbon monoxide (CO)	<ul style="list-style-type: none">colorless, odorless gas	<ul style="list-style-type: none">vehicles burning gasolineindoor sources, including kerosene, wood-burning, natural gas, coal, or wood-burning stoves and heaters	<ul style="list-style-type: none">headaches, reduced mental alertness, deathheart damage
Lead (Pb)	<ul style="list-style-type: none">metallic element	<ul style="list-style-type: none">vehicles burning leaded gasolinemetal refinerieslead paint	<ul style="list-style-type: none">brain and kidney damagecontaminated crops and livestock
Nitrogen oxides (NO _x)	<ul style="list-style-type: none">gaseous compounds made up of nitrogen and oxygen	<ul style="list-style-type: none">vehiclespower plants burning fossil fuelscoal-burning stoves	<ul style="list-style-type: none">lung damagereact in atmosphere to form acid raindeteriorate buildings and statuesdamage forestsform ozone & other pollutants (smog)
Ozone (O ₃)	<ul style="list-style-type: none">gaseous pollutant	<ul style="list-style-type: none">vehicle exhaust and certain other fumesformed from other air pollutants in the presence of sunlight	<ul style="list-style-type: none">lung damageeye irritationrespiratory tract problemsdamages vegetationsmog
Particulate matter	<ul style="list-style-type: none">very small particles of soot, dust, or other matter, including tiny droplets of liquid	<ul style="list-style-type: none">diesel enginespower plantsindustrieswindblown dustwood stoves	<ul style="list-style-type: none">lung damageeye irritationdamages cropsreduces visibilitydiscolors buildings and statues
Sulphur dioxide (SO ₂)	<ul style="list-style-type: none">gaseous compound made up of sulphur and oxygen	<ul style="list-style-type: none">coal-burning power plants and industriescoal-burning stovesrefineries	<ul style="list-style-type: none">eye irritationlung damagekills aquatic lifereacts in atmosphere to form acid raindamages forestsdeteriorates buildings and statues

Name:

Date:

Class:

How Clean Is the Air Today? Worksheet

Sometimes, the air is clean. At other times, it is not. Engineers and scientists measure how clean the air is and rate it using the Air Quality Index (AQI) or the Pollution Standards Index. (The names may be different, but they mean the same thing.) The Air Quality Index focuses on the health effects that can happen within a few hours or days after breathing polluted air. A low number means the air is clean. A high number means it is very polluted and unhealthy.

A number less than 50 means clean air.











A number from 50 to 100 means smog is in the air.



A number of 100 or more means the air is very polluted.



In the table below, mark the box that tells what the AQI number means.

If...		The air is clean.	The air has some pollution in it.	The air is very polluted.
The Air Quality Index is 30.				
The Air Quality Index is 150.				
The Air Quality Index is 70.				
The Air Quality Index is 36.				
The Air Quality Index is 200.				
The Air Quality Index is 60.				
The Air Quality Index is 41.				
The Air Quality Index is 205.				

Source, formerly available at: <http://www.tnrc.state.tx.us/exec/sbea/education/terrell/worksheets/Grade4HowCleanIsTheAirTodayAndAnswerKeyEarthsNaturalResources-Air.doc>

Name:

Date:

Class:

Now you have a better understanding of the Air Quality Index. How does this help you?
A number that is less than 50 means that the air is fine. You can do whatever you want when you are outside.



A number from 50 to 100 means the air is becoming polluted. You should avoid playing or working outside around noon. It is best to go out early or later in the day. Do you know why? Polluted air can harm you. When you work or play you breathe in more air.



A number of 100 or greater means the air is dangerous. You should stay inside. Try to use an air conditioner or fan to keep the air moving. Rest, if at all possible, so you breathe less air and fewer pollutants enter your body.



In the table below, mark the box that tells what you should do for each AQI number.

If...		Play outside.	Don't play outside around noon.	Stay inside.
The Air Quality Index is 45.				
The Air Quality Index is 15.				
The Air Quality Index is 180.				
The Air Quality Index is 236.				
The Air Quality Index is 91.				
The Air Quality Index is 25.				
The Air Quality Index is 69.				
The Air Quality Index is 122.				

Name:

Date:

Class:

Daily AQI Data Collection Sheet

Date	AQI Number	AQI Color	AQI Description	High Temperature

Name:

Date:

Class:

Daily AQI Graph

Daily Temperature vs. Air Quality Index

Daily AQI Index Number

Daily High Temperature



24 Hours of Edgar's Air Pollution

Whirling, Swirling Air Pollution

How this story works: You'll learn what Edgar does during his day and how his actions contribute to air pollution. For each hour of the day there is a part of the story (on the right), the time, and the source of air pollutants (on the left).

6:00 am

Air pollutants from:

- Burning natural gas
- Products that release chemicals

Edgar takes a really long shower trying to wake up. The water is hot thanks to a water heater that burns natural gas releasing Nitrogen oxides and carbon dioxide into the air. Then it doesn't completely burn, natural gas also releases methane. The soap, shampoo, and shaving cream Edgar uses release Volatile Organic Compounds (VOCs) into the air. Edgar can make a lot of air pollution as he showers.

7:00 am

Air pollutants from:

- Burning coal

Edgar enjoys eating eggs, toast, and coffee for breakfast. To make the eggs he uses a stove that uses electricity. His coffeemaker and toaster use electricity too. The electricity comes from a power plant where coal is burned releasing air pollution such as carbon dioxide, sulfur dioxide, nitrogen oxides, particulate matter, and mercury. Some coal-fired power plants release lead, carbon monoxide and VOCs too. The technology that scrubs air pollution from a power plant's smokestacks is much better than it used to be, but pollution is still released into the air.

8:00 am

Air pollutants from:

- Burning gasoline

Edgar gets in his old van and goes to work, speeding all the way except when he is slamming on the breaks. Edgar doesn't know that speeding and breaking release more pollution into the air than driving a steady speed. The burning gasoline releases carbon monoxide, carbon dioxide, nitrogen oxides, particulate matter, and VOCs.

For more information, visit: <https://scied.ucar.edu/activity/whirling-swirling-air-pollution>



24 Hours of Edgar's Air Pollution

Whirling, Swirling Air Pollution

9:00 am

Air pollutants from:

- Burning gasoline

Because he was speeding all the way, Edgar gets to the house he is painting early. Edgar and his crew are giving it a fresh coat of blue paint. He lets his van idle as he checks his email, waiting for the rest of his crew to arrive with the blue paint. Idling the van burns gas, releasing carbon monoxide, carbon dioxide, nitrogen oxides, and VOCs into the air.

10:00 am

Air pollutants from:

- Products that release chemicals

Edgar and his painting crew use the cheapest paint they can find. This is how they can charge low prices for house painting. Their customers like low prices, but would they like to know that the cheap paints release VOCs into the air?

11:00 am

Air pollutants from:

- Burning gasoline

There's a tree in the way of the house they are painting so they cut it down with a chainsaw. The homeowner will eventually come home and yell at the painters for killing his pretty tree. It was pretty but it was also helpful. Trees take some pollutants out of the air. Without this tree, more air pollution will stay in the air. The chainsaw they used to cut the tree down burns gasoline and adds carbon monoxide, carbon dioxide, nitrogen oxides and VOCs into the air.

12:00 pm

Air pollutants from:

- Burning gasoline
- Products that release chemicals

It's lunchtime. Edgar is excited to take a break. He drives to get fast food and eats it in his van with the engine running so that the air conditioning is on. Burning gas on the drive and idling in the parking lot releases carbon monoxide, carbon dioxide, nitrogen oxides, particulate matter, and VOCs into the air. The container that his burger came in is made of Styrofoam, also known as polystyrene foam, which releases VOCs into the air.



24 Hours of Edgar's Air Pollution

Whirling, Swirling Air Pollution

1:00 pm

Air pollutants from:

- Burning coal
- Particulate matter from printing

Edgar leaves the crew painting the house to get flyers printed about their business so that they can advertise to the neighborhood. Printing releases particulate matter into the air and the energy that is used by the printers comes from the local coal-fired power plant which releases pollution too.

2:00 pm

Air pollutants from:

- Burning gasoline

Edgar delivers the flyers to all the neighbors. He drives to each house and then lets his van idle while he walks to the front door and tapes a flyer to the doorknob. The houses are close together, but Edgar is tired and decides to drive.

3:00 pm

Air pollutants from:

- Burning gasoline
- Gasoline vapors

After all that driving from house to house, Edgar's van is low on gas. He fills up his gas tank at the hottest point in the day, and notices that his tires look a little low. He decides to fill them later, not realizing that he will use less gasoline if they are inflated properly. Burning more gas releases more air pollution into the air. At the gas station, gasoline vapors are released into the air (which is why gas stations smell like gasoline). At the hottest point in the day, those gasoline vapors are very likely to become the building blocks of ozone, part of smog.

4:00 pm

Air pollutants from:

- Products that release chemicals
- Burning gasoline

Edgar checks in on the house painting crew. They shout from their ladders that they are behind schedule. Edgar needs to get back to painting.

"Get to work!" Shouts a painter from the top of her ladder.

Edgar grumbles and picks up a paint sprayer filled with the blue paint that releases VOCs. He lets his van idle because he thinks he'll be leaving soon.



24 Hours of Edgar's Air Pollution

Whirling, Swirling Air Pollution

5:00 pm

Air pollutants from:

- Products that release chemicals
- Burning gasoline

Edgar drives home from work. On the way he remembers that he has to pick up his suit from the dry cleaner. When he went to a fancy party last weekend, he spilled fancy mustard on his jacket. He hopes that the dry cleaner got the stain out. Dry cleaners use products to clean stains that release VOCs and other contaminants into the air.

6:00 pm

Air pollutants from:

- Particulate matter
- Burning gasoline
- Gasoline vapors

As he pulls into his driveway, Edgar notices that his lawn is a bit messy. There are leaves everywhere. The grass and dandelions are knee high. Edgar rakes the leaves and then burns them, releasing particulate matter into the air.

Edgar's old lawnmower is out of gasoline. He finds the gasoline container and spills a little as he pours it into the mower. Vapors get into the air each time he spills.

7:00 pm

Air pollutants from:

- Burning gasoline
- Burning coal

Edgar hears his stomach rumbling. It is time to make dinner. He pulls a lasagna from his freezer. It was made at a factory where materials (like tomato paste and noodles) are brought in and then energy is used to put them together and package them. The energy used at the lasagna factory came from coal. The ingredients came from all over the world and had to be transported to the factory by trucks and ships burning fossil fuels. Then a frozen foods truck transported the lasagna to a store burning more gasoline. Edgar heats up the lasagna in his electric oven, which gets its power from the coal-fired power plant.

8:00 pm

Air pollutants from:

- Burning gasoline
- Burning coal

Edgar watches TV and orders a new pair of shoes online that will ship from India tomorrow. (He got fancy mustard all over his fancy shoes during the party last weekend so he threw them away.) Running the television and the computer requires power from the coal-fired power plant. Shipping a package from India will burn fossil fuel and release air pollution. And in India, the factory making his shoes will be making air pollution too.



24 Hours of Edgar's Air Pollution

Whirling, Swirling Air Pollution

9:00 pm

Air pollutants from:

- Particulate matter

It's chilly in Edgar's house. Edgar starts a fire in the wood-burning fireplace. Burning wood releases particulate matter into the air.

10:00 pm

Air pollutants from:

- Products that release chemicals
- Burning coal

After cleaning the kitchen with products that release chemicals into the air, Edgar reads in bed, falling asleep with the light on, using electricity that comes from coal. Edgar is even making air pollution while he sleeps.

11:00 pm

Air pollutants from:

- Burning coal

Edgar is still asleep but he continues to make air pollution because his lights are still on.

12:00 am

Air pollutants from:

- Burning coal

Edgar is still asleep but he continues to make air pollution because his lights are still on..



24 Hours of Edgar's Air Pollution

Whirling, Swirling Air Pollution

1:00 am

Air pollutants from:

- Burning coal

Edgar is still asleep but he continues to make air pollution because his lights are still on..

2:00 am

Air pollutants from:

- Burning coal

Edgar heads to the kitchen for a snack. He is hungry but he is also sleepy and he dozes off while standing at the door of the refrigerator considering what to eat.

3:00 am

Air pollutants from:

- Burning coal

Edgar wakes up confused. Why am I so cold? He wonders. Edgar realizes that the cold is coming from the refrigerator, which has been open as he napped. He no longer wants a snack. He just wants to get back into his warm bed. Edgar turns off the lights, turns on his electric blanket, and drifts off the sleep.

4:00 am

Air pollutants from:

- Burning coal

Edgar is asleep but he continues to make air pollution because his electric blanket is on.

5:00 am

Air pollutants from:

- Burning coal

Edgar is asleep but he continues to make air pollution because his electric blanket is on.