ACTIVITY #4: Choosing to Act – A Fork in the Road

TIME

Part A: 25 minutes

Part B: 40 minutes

REQUIRED RESOURCES

Part A

- "Choosing to Act – A Fork in the Road Scenarios" for Part A, one scenario per student
- "Choosing to Act – A Fork in the Road Chart," on whiteboard, overhead projector, or SMART Board

Part B

- "Choosing to Act – A Fork in the Road Case Studies" for Part B, one case study for each pair of students
- "Choosing to Act – A Fork in the Road Student Worksheet"
- Paper and pens/marker

Extension

- "Choosing to Act – A Fork in the Road Making it Real Timeline," six copies

Objectives

1. To encourage students to consider responsibility for air pollution and other health impacts (asthma and allergies) from a broad perspective.
2. To support students' reflections on shared responsibility and the areas where different players can have the most impact (e.g., individual, businesses, local government, national government).
3. To encourage students' exploration of short success stories in air pollution reduction from around the world.

Curriculum Connections

This activity is designed for Grades 6 to 9 Social Studies and Geography. It also covers some Science topics. Curriculum connections are listed by province, grade and subject on the Air Aware website,

http://www.cleanairchampions.ca/programs/air_aware/teacher_zone/curriculum_connections.php

Activity

Part A: Whodunnit

1. To ensure each student receives one scenario each, make two to five photocopies of the "Choosing to Act – A Fork in the Road Scenarios" (depending on class size) and then cut into individual scenarios.

2. Explain to students that when it comes to air pollution, people have many ideas about who is responsible for fixing the problem and that there are many examples of cities, regions and individuals who are creating solutions around the world. Students will read a short scenario and decide who they feel is most responsible for acting in the situation and why. Distribute the "Choosing to Act — A Fork in the Road Scenarios" to students.

3. Write the following questions in a prominent place:

   Whose responsibility do you feel it is to reduce air pollution in this scenario? Business? Government? An individual?

   Explain your thinking.

4. Give students 5 to 10 minutes to think through their scenario and to write their ideas on the back of their scenario along with their name.

5. When most students are finishing up, signal to the class for students to find a partner with the same scenario and share their ideas about it for several minutes. Add the following questions:

   Is your thinking about your whodunnit similar or different? What are some things that you agree upon?

   What do you think might be some reasons for the differences in your thinking?

6. Bring students together and ask them to volunteer to share their scenario and how their thinking was similar or different. Copy student ideas into the "Choosing to Act — A Fork in the Road Chart," placed on whiteboard, overhead projector, or SMART Board. You can expand students' thinking with these questions:

   Have personal experiences helped shape your thinking?

   Have you heard stories or read about examples that helped form your opinion?

   Do you think that different backgrounds or family experiences can affect how you think about these scenarios?

7. Explain to students that these scenarios are examples of situations that happen every day around the world. Thinking about who is responsible also helps us think about the kinds of leadership qualities or characteristics that will help individuals, businesses, and governments to lead the way in reducing in air pollution.

8. Ask students to reflect for a minute about the kinds of leadership or personality qualities and characteristics they saw or thought about as they: read their scenario, discussed it with their partners, and then heard from the class. Such characteristics may include *courage, will power, determination, being organized, thinking ahead, acting on your beliefs, helping others, encouraging others, having a vision for the future, including/welcoming others, planning ahead, demonstrating by example, seeking help from leaders, being prepared, understanding challenges (economic, environmental and societal)*.

9. After a minute, ask students to share their ideas. When you have a list of five or more qualities, ask students to consider which characteristics are most important and why they think so.

10. Ask students to consider whether different scenarios call for different qualities and which qualities apply more to individuals than business or government, or vice versa.

Part B: Case Studies in Choosing to Act

1. To ensure that each student receives one scenario each, make two to five photocopies of the "Choosing to Act — A Fork in the Road Case Studies" (depending on class size) and then cut into individual case studies.
2. Explain to students that they will be exploring a case study in more detail to better understand what goes into good decision making. Ask students to think about how their case relates to reducing air pollution and asthma prevention in different parts of Canada and the world.
3. Provide each student with one of the case studies. Note that the #2 Scenario and #2 Case Study, tell a story about the same individual making different choices. You may wish to match the same students up for these, or point out the difference later during discussion. Ask students to review their case study and to consider the characteristics or qualities of the people or organization in their case study. Have them consider what helped them to be successful.
4. Distribute the "Choosing to Act — A Fork in the Road Student Worksheet." Ask students to complete the questions on the worksheet for their case study.
5. Have students write a message and provide an image or picture for what the decision in their case study would mean to them as a member in the community, company, or country that is described in the story. Use the following questions to guide their work:

   What is the most important result or outcome from the leadership decisions made in the case study?
   Why would you support the decision or choices made in the case study?
   How do you feel about the decision and actions taken?
   How do you think those decisions or actions could be expanded upon or taken further?
6. Invite students to share their responses and images.
7. Post the information on a school or classroom bulletin board for other students and parents to see.
8. Submit a summary of what students learned about air quality, asthma, and allergies and engaging in creating change to Air Aware's National Program Coordinator, Angela Melhuish, at angela@cleanairchampions.ca. Provide a simple summary and if possible include photos of the students' work from Step 5. All classes that submit information on the impact of the program will be entered in a draw to win a Giant Bike! To enter the draw, please go the website below.

   http://www.cleanairchampions.ca/programs/air_aware/enter_our_giant_contest.php

Extension — Making it Relevant

- Share a local community example of success in reducing air pollution. Discuss whether students were aware of the story and how their awareness could impact their perspective on what is happening locally. Discuss where and how students might find this kind of information.

- Print six copies of the "Choosing to Act — A Fork in the Road Timeline." Divide the students into six groups and provide each group with a copy of the worksheet. If you wish, you can remove the dates from the timelines and have the students complete research to identify the year. Ask the students to cut out the squares and create a timeline of the information. Ask the groups to identify the timeline fact that was most surprising to them.
- Share the Me to We Campaign as a powerful example of youth leading and helping to shape change. While not everyone can contribute in the way that the Keilburgers have, Me to We is a powerful example and speaks to the abilities and potential of young people to create positive change.

  At the age of 12, Craig Keilburger decided to take action to reduce the amount of child labour in the world. He started his own organization. Craig and his brother Marc now run Me to We, an international organization helping children to go to school instead of having to work. The two brothers travel all over the world, motivating other youth to be leaders in their communities and creating new opportunities for young people with few or no opportunities in countries with many difficulties. (Source: http://metowe.com)

Extension — Being Active

- To illustrate how hard it is to make changes to the way we do things, divide the students into two groups and have them complete a number of tasks in two different rotation orders in the gymnasium, outdoors or in another large space. Have each group complete the rotation below at least once (you may wish to have them complete it more than once). Change the order of the tasks, and have each group complete the new rotation at least once. Ask students to identify how many turns it took for each group to get the new rotation correct. How does this compare to our efforts to make change to routines in our daily lives? Discuss the challenges involved in implementing change on a larger scale.

  Task rotation: shoot a small ball into a container, bounce a ball three times, juggle two bean bags, run around the room once, do five sit-ups, and do five jumping jacks.
- To play Cross the Line, you will need an open area with two ropes. One rope is placed in the middle of the open space; the second rope is placed on one side of the space behind which the students stand. Remind students that they will need to be quiet and respectful to participate. When they are ready, they step over the rope right in front of them. When all the students have crossed the first rope, read the following statements. Students cross the middle line if they identify with a statement. If they are uncomfortable with crossing the line, they don't have to. After each statement is read and students have decided whether to cross the line, state "Notice how it feels to cross the line, look who is with you, look who is not with you, and cross back over." The first statement serves as an example:
    - *Cross the line if you are under the age of 20.*
    - *Cross the line if you have ever had an allergic reaction.*
    - *Cross the line if you enjoy team sports.*
    - *Cross the line if you enjoy individual sports/activities.*
    - *Cross the line if you enjoy reading.*
    - *Cross the line if you know someone with asthma or have asthma.*
    - *Cross the line if you would like to have a pet but are allergic to them.*

- *Cross the line if you've ever tried to change something students do at school.*
- *Cross the line if you or anyone in your family has done something to help others.*

End the activity by asking the following questions: What did you learn about yourself? About others?

ACTIVITY #4: CHOOSING TO ACT — A FORK IN THE ROAD

SCENARIOS

Part A: Whodunnit

1. The town of Wainwright, Alberta has a population of 5,900 people. In the winter months of November through March, many residents rely on wood-burning stoves to heat their homes. Many homes have older stoves, which burn much less efficiently and create a lot of air pollution in the form of particulate matter (PM). Homeowners are being encouraged to purchase more efficient burning stoves that release less particulate matter (EPA certified wood stoves). Purchasing any type of new stove is expensive (approximate cost $2000). In addition, some owners burn wood that has not fully dried or burn garbage that contributes further to air pollution. People in the town are upset with the thick haze in the air on winter mornings. They want to see a change right away. Woodstove owners complain that a new stove that burns more efficiently is too expensive for them. Steve Nesbitt is one of those homeowners.

Whodunnit? Who do you think is responsible here? Steve? Local government? The stove manufacturer? The federal government?

2. Savinder drives her car every day to work. Her work is a twenty-minute drive from home. Although her family's new sedan is comfortable, roomy and has an mp3 player with great sound, it is not very fuel-efficient. Savinder's long workday does not give her time to do some of the things she enjoys, like reading, especially when traffic is heavy and she gets home late from work. She knows she could take the bus, but she has not found the time to research the routes, and she finds it more convenient to drive her car. Newspaper articles have reminded her that drivers should drive less or carpool to help reduce air pollution, but she does not feel very motivated to change and wishes instead that government would do something about the problem.

Whodunnit? Who do you think is responsible here? Government? The car manufacturer? Savinder?

3. The European Commission gave the United Kingdom (UK) a final written warning in June 2010 telling the UK to improve air quality in London or be fined up to £300 million ($474 million). The UK asked for London to be allowed to continue with its current pollution levels until 2011, but the European Commission felt that it would be unfair to the countries that are following the rules and that London was not doing enough to lower air pollution. The UK said that London was taking steps to reduce air pollution by making plans to remove old inefficient taxis, to convert the city's bus fleet to hybrid, and to invest in cycling and electric vehicles. Despite those plans, London's Mayor has removed congestion charge zones (CCZs) in Western London (CCZs are traffic areas that motorists are charged a fee for driving through on weekdays as a way to discourage people from taking their cars), does not plan to fine the most polluting vans in London until 2012, has proposed more river crossings for vehicles, and has supported a 50% increase in flights from the city airport. The European Commission warned that other nations who do not meet air quality rules might face similar legal action. They said that air pollution is a serious problem that shortens lives.

Whodunnit? Is the European Union being fair? Is the Mayor doing enough? Who do you think is responsible here? The UK Government? The individual car and truck drivers? The Mayor?

4. Kelly owns a gravel company near Ottawa. His family started the company in the 1950s. He is a proud business owner and works hard at his job. In the town where his company is based, some community members are unhappy about the diesel emissions from the many older gravel trucks that travel through town to and from work sites, new developments and a local quarry (where the gravel comes from). Kelly says the gravel trucks are being driven carefully and at the speed limit. He says it would be too expensive to change all the trucks at once. But a local group of concerned citizens feels that these aging trucks are belching out too much air pollution as they drive through town. Samantha and her daughter live next to one of the main traffic routes for the trucks. Her daughter Brittany has asthma, and sometimes on heavy traffic days Brittany struggles with her breathing. The town receives a large tax benefit from the company. The town does not want to be unfair in giving too large a penalty, and it fears it could scare the business away, which would hurt the town's economy.

Whodunnit? Should Samantha move away from the road to solve the problem? Is the town being responsible in not taxing the gravel company? What responsibility does Kelly and his company have?

5. In an important ruling in July 2009 from the European Court of Justice (ECJ), Dieter Janecek, a resident of Munich, demanded that the city improve air quality. Dieter took the case to court because he wanted to make sure that a 1996 rule on air quality be met. Dieter took action because he felt the city's local government was not doing enough to keep the air clean, and he wanted to make sure it took responsible action on air quality. The judges for the ECJ ruled in Dieter's favor. They stated that European citizens are entitled to demand air quality action plans when they feel that their local government is not doing enough.

Whodunnit? Do you agree that a citizen should take their local government to court? Did the Judge rule fairly here? Should a city or town be responsible themselves for air pollution or can citizens report their concerns if they are not acting?

6. In spring 2010, Hong Kong air pollution rose above all past limits for several days in a row, more than doubling the record for bad pollution set in 2008. Outdoor activities and school sports were cancelled due to the air pollution. Hong Kong's air pollution is usually three times worse than New York City's and twice as bad as London's. Many business people worry that Hong Kong will hurt its reputation as a leading Asian city by not managing its pollution. Many business leaders in Hong Kong feel the city needs to make air pollution a top priority. Hong Kong businesses already have to pay higher wages to attract skilled staff. Local traffic and power stations create about half of Hong Kong's air pollution while the rest blows in from nearby mainland China. Much of the air pollution from China is from its manufacturing industries and shipping lanes that move cargo through what is one of the world's busiest shipping areas to all over the world.

Whodunnit? Is the Hong Kong government doing its job? Should local factories be fined for polluting the air? Is China the problem? What about the many countries that are large trading partners with China? What about the many individuals in Canada and around the world who end up purchasing goods that are traded there? Are they responsible for contributing to the air pollution in Hong Kong too? Who is responsible here?

7. At a high school in Kamloops, British Columbia a number of students have learned about allergies and asthma. They also have a number of friends with allergies and asthma. They have researched asthma triggers and identified possible asthma triggers in their school. Because many of the triggers are allergic, they would also affect students with allergies. The students feel that their school could do more to reduce the asthma triggers and allergens in their school. The students have completed research on other school board policies and presented this information to the high school parents and staff. The Principal arranged for the students to present the information to the School Board. The School Board already has a policy for students with severe allergies. The School Board has agreed to review the policies that would be affected by reducing asthma triggers and make changes if it is possible and economically feasible to do so.

Whodunnit? Should school boards have policies for every type of illness/disease? Should students be leading initiatives to change policies? Whose responsibility is it to reduce asthma triggers — staff, students or the School Board?

ACTIVITY #4: CHOOSING TO ACT — A FORK IN THE ROAD CHART

Part A: Whodunnit

After reading Scenarios Part A: Whodunnit, copy a chart like the following on an overhead or whiteboard and complete the chart as a class.

Scenarios	Whose responsibility is it to reduce pollution?	Why?
1		
2		
3		
4		
5		
6		
7		

ACTIVITY #4: CHOOSING TO ACT — A FORK IN THE ROAD

CASE STUDIES

Part B: Case Studies in Choosing to Act

These cases reveal a variety of actual and fictional examples of leadership around reducing air pollution and its impact on people with asthma. Be prepared to assist students in making conceptual links between these stories and the challenges of living with asthma.

1. **Gibsons' Bicycle Bylaw**. The town of Gibsons, British Columbia recently passed a new rule (a bylaw) that requires new businesses and condominiums to have covered and lit bicycle parking in the town. This bylaw gives people in town a safe place to park their bicycles and also encourages condominium owners to use a bike for at least some of their local trips. Some council members were concerned about the extra costs for builders. However, the Coast Builders Association was very positive about the bylaw. The town council's leadership decision includes showing off one new development each year to showcase solutions for increasing bicycle use in Gibsons. Bicycle enthusiasts are very excited and positive about the change. A small passionate group of local residents (the Sustainable Transportation Task Force) provided information, suggested approaches, and supported the municipal council in making this choice for the past two years.

2. **Savinder's Rideshare**. Savinder leaves her car at home twice a week and takes the subway to work instead. While she does not get her ride in the family car that she really enjoys, Savinder saves $100 on gasoline each month and has time to read a book she really likes while on the subway. Her work colleague Sandra gets inspired and asks if she can join Savinder so they can share time together on the walk from the subway to the office. On the other three days, Savinder and her colleague agree to carpool so Savinder is now only driving one or two days per week. Savinder is happy to learn from a website that she has reduced her driving emissions by 63% (saving 5.6 tonnes of CO_2 each year). By driving less, she is also reducing her NO_x emissions that contribute to smog and acid rain. On their walk from the subway one day, Savinder and Sandra figure out an easy way to carpool to the gym once per week as well.

3. **Biogas-Powered Transportation in Sweden**. Trollhättan, Sweden, a town of 53,000, runs twelve local buses and two garbage trucks on biogas created from a mixture of sewage (human refuse) and fish guts from a local fish plant. Made up of 95% methane, the biogas is sent through a three kilometre long pipe to the bus station in the town centre. When full, the buses' rooftop biogas tanks power the buses for 300 km, a full-day's drive. Compared to diesel, a more usual bus fuel, biogas creates under half of the NOx emissions and few particulates and other pollutants. This improves air quality and reduces asthma risks. The municipality, the national energy company, the local bus company, and a communications committee support the project. At first, residents were concerned about the smell the buses might make, but the biogas is almost entirely odourless. A local biogas station has now opened in the town, and some local cars have been converted to run on biogas too. The town plans to double the project size. The 3.5 million euro ($4.55 million) project cost was shared between the community and the Swedish federal government. Human sewage and fish guts now help power vehicles in Trollhättan year round!

4. **Peterborough's Transition Town**. A group of community members in Peterborough, Ontario has taken on the task of making Peterborough a Transition Town. Transition Towns (TTs) began in Totnes in the United Kingdom in 2005 as a response to the challenges of climate change. TTs aim is to educate citizens, connect groups, and take on projects that make communities stronger, more vibrant, and better able to use local resources while reducing harmful emissions. Up to 15% of communities in 321 TTs around the world participate in the projects. There are nearly 30 in Canada, and another 200 world communities are ready to join soon. In these communities, groups meet with local government, businesses, and other community organizations to inform themselves on how to reduce energy use, rethink transportation, improve health, and better grow food locally, while supporting local jobs and economies. In Peterborough, the all-volunteer, non-profit organization has begun projects including Bicycling for Life, Wind and Solar Power, Permaculture, Communication and New Skills Workshops.

5. **Peace River Wind Power**. The largest wind farm in Canada — a 102 megawatt (MW) farm — was set up near Peace River in Northwestern British Columbia. The wind farm has 34 turbines placed in a windy spot on Bear Mountain, a high ridge outside of town. The Peace Energy Cooperative (PEC) and Peace River town mayor played important roles in starting this project in 2004. Community information sessions were held early and often to let the 13,000 local residents learn about and participate in the project. The wind farm project showed leadership by including local people early in the planning process and by helping to introduce alternative energy sources in a place with a lot of industry in fossil fuels. Although people could see the benefits of renewable energy, some raised concerns about noise pollution and birds hitting the wind turbines. As part of its environmental assessment certificate, the wind farm must abide by provincial regulatory policies specifically on wind turbine generator sound policy. It must also implement a raptor, migratory bird, and bat monitoring program to limit turbine collision and mortality. The wind farm reduces SO_2, NO_x, particulates, mercury, and other emissions from burning coal. It would produce about 270,000 MW hours of energy each year*, while saving about 230,000 tonnes of CO_2 annually, if compared to the same amount of power generated from burning coal. Wind power around the globe could provide nearly three times the total electricity the world needs. The Canadian Wind Energy Association (CanWEA) aims to have 100,000 MW of wind power installed by 2011 — about 5% of Canada's electricity demand. Denmark currently meets 20% of its power demand with wind. Canada could do this too if it chose to.

   * Based on 30% operating power and an estimated 8,760 hours of actual operation time.

6. **Alberta's Clean Air Strategic Alliance**. Clean Air Strategic Alliance (CASA) is an Alberta group made up of people from industry, government, and non-profit organizations. It started in 1994 and uses a consensus model to reach its goal of clean air in the province. The consensus model means participants work on trust and goodwill to search for common ground to build new understanding together. In the early 2000s, the Alberta government asked CASA to create a new way to support coal-based electricity production and also to produce fewer emissions. In eighteen months, CASA successfully built a government-approved process that limited future plants, reduced the harmful impact of burning coal, and allowed industry to produce electricity while staying in business. CASA's set of rules helps reduce air pollution in new plants, allows existing plants enough time to change their ways, and rewards industry that reduces pollution quickly. By bringing people from very different groups together, CASA helps keep them better informed about each other's needs and limits and about how to communicate with the public. CASA has saved the people of Alberta money and lengthy lawsuits. CASA has its challenges too — it has not yet come up with a way to reduce CO_2 emissions in Alberta. But CASA has reduced emissions from *flaring* (the burning of waste or mixed gases created by the oil and gas industry) and sulphur and mercury emissions. CASA has won many awards for its consensus model. Other groups now use CASA as a successful model in working to protect the environment.

7. **Canada's Air Quality Health Index (AQHI)**. The AQHI provides daily information online to inform people and help them make healthy decisions about local air quality and exercise. AQHI measures the amount of air pollutants in the air and uses a ten-point scale to inform people about how harmful they may be to their health. Higher numbers mean higher health risks from air pollution. The index also includes health messages that inform Canadians about what the AQHI values mean and makes suggestions on what people can do to change their outdoor activity levels to avoid the harmful effects of pollution. For people with asthma and other illnesses, the warning is stronger because they are at greater risk. This national approach makes it easier for individuals to make lifestyle choices that promote better health. If all provinces adopt it, the information provided would be more widely available. The AQHI is gradually being implemented across the country with information for 56 communities.

8. **Renewable Biogas Project**. Toronto, Ontario will soon be turning gas from sewage into usable biogas. Methane that was burned off as waste gas for many years (know as *flaring)* will now provide Dufferin Transfer Station and a new Transfer Station at Disco with biogas to replace natural gas from fossil fuels. There is enough biogas available to run all of Toronto's 282 waste-hauling trucks. Switching to biogas will reduce the city's greenhouse gas emissions by 13,000 tonnes per year, which is about the same as taking 4,000 cars off the road. Toronto will also generate electricity using methane from its Green Lane Landfill in London and will pipe the methane to a greenhouse facility. In 2013, the methane from Green Lane Landfill will be used to produce electricity at the greenhouse. Excess heat from electricity generation will be used to heat the greenhouse. There are also plans to put another methane electricity plant on the site from the landfill methane. The two plants will save 19,000 tonnes of greenhouse gas emissions, which is about the same as taking 5,750 cars off the road.

9. **Fraser Valley and the US Power Company**. A power company in the United States, Sumas Energy 2 (SE2), wanted to build a new power plant in Sumas, Washington near the Canadian-US border. The plant would have created 800 tonnes of pollution each year and affected 250,000 Canadians in the Fraser Valley. Thousands of residents fought for more than five years to defeat Sumas Energy's plan. In 2005, three federal court of appeal judges overturned all of the company's arguments and denied the company's appeal to go ahead with the 660 megawatt project. If the company wants to try to apply for a permit to build the plant, it will have to spend a lot of money on legal expenses and several years to take the case to the Supreme Court of Canada.

   Construction worker John Vissers, a 48-year-old father of two, helped lead the fight against SE2. He felt that this was a victory for residents in the community. John said "All of the leadership came from the community, and I think that's what gave it life…that's what made it last…it was truly a community-driven concern." In 2005, Abbotsford Deputy Mayor Patricia Ross said, "People never gave up and this is a huge victory to the average citizen who spoke up about what was important to them. This isn't just a victory for the Fraser Valley, it's also for all of Canada when it comes to cross-border pollution issues. This is an inspiring story for others out there who think it's not worth it to try and stand up against large polluting corporations."

10. **Germany's Technology Exchange**. The German Appropriate Technology Exchange (GATE) helps developing countries with technology. The 2,200 government staff at GATE work to help improve social and economic conditions in other countries. GATE aims to help other countries use resources with less waste and also with as little impact on the environment as possible. GATE gives developing countries information, equipment and expert knowledge, which help them improve their technology. For example, in Tanzania, more than 200 biogas units were set up over a three-year period. This project provides energy in rural communities, supports healthy agriculture, and allows people to rely less on burning wood for energy. As a result, the project helps save very important nearby forests. These forests help support healthier ecosystems for wildlife and plant life and preserve green space for future generations.

ACTIVITY #4: CHOOSING TO ACT — A FORK IN THE ROAD STUDENT WORKSHEET

Part B

After reading your case study, answer the following questions. For each question, think about how the effects and/or risks of asthma and air pollution are addressed.

1. Who took action in this case study? How?

2. What is the case about? How do you think it relates to preventing asthma?

3. What made the solution possible? What made it work?

4. What were the characteristics of the individuals, organization or towns that supported them in taking positive action?

5. How did these qualities create success in this situation?

6. What other leadership characteristics or choices might be important but not mentioned here?

7. How do you think this success could be greater in this situation or in other situations to reduce air pollution and asthma?

ACTIVITY #4: CHOOSING TO ACT — A FORK IN THE ROAD

MAKING IT REAL TIMELINE

2003 The city of New York bans smoking in all workplaces, including bars and restaurants.	**1990** San Luis Obispo, California becomes the world's first city to prohibit smoking in public buildings including bars and restaurants.
1948 In Donora, Pennsylvania, 7,000 people become ill and 20 die after severe air pollution from local manufacturing plants. The plants produce deadly smog.	**1989** The oil tanker Exxon Valdez spills 11 million gallons of crude oil into the sea off Alaska's Prince William Sound.
2000 The Canadian federal government creates the Environmental Protection Act to prevent pollution and protect human health and the environment.	**1906** Clemens von Pirquet first used the word "allergy" to describe the strange, non-disease-related symptoms that patients exhibited when receiving a second smallpox vaccine (horse serum). The word allergy comes from the Greek word *allos* meaning "other" and *ergon* meaning "reaction."
2005 A major winter smog affects many Quebec and Ontario cities. The event lasts for ten days in the Montreal area. Wood smoke and road salt were major contributors to this event.	**1969** Chemical waste released into Ohio's Cuyahoga River bursts into flames. The event becomes a symbol of how industrial pollution is destroying natural resources.
1985 The Lodgepole, Alberta sour-gas well blowout killed two people and spewed lethal sour gas for 67 days before it was brought under control.	**2008** Canada launches the Air Quality and Health Index (AQHI) in many regions, replacing the Air Quality Index.

1970 The Canadian federal government creates the Clean Air Act.	**1952** In London, at least 4,000 people die over several days from air pollution.
1970 The first Earth Day is celebrated in the United States.	**1963** The United States Congress passes the Clean Air Act. This legislation focuses on air pollution controls.
1936 Milwaukee becomes the first American city to ban smoking on all public transportation.	**2004** Toronto introduces its smoking ban for restaurants and bars (the workplace smoking ban was introduced in 1999).
2010 In June, major forest fires in northern Quebec affect the air quality of southern Quebec and into Ontario. For some cities in this region, the AQHI rating is 10+, the highest rating on the AQHI scale.	**1892** In London, 1000 people die from "smog" that is produced mainly from burning coal. The fog led to the death of people with pre-existing medical problems, but it also contributed to the death of healthy individuals.
1984 In Bhopal, India, 20,000 people die and 120,000 more are injured following a deadly chemical leak from a Union Carbide pesticide plant.	**1955** The United States Congress passes the Air Pollution Control Act, the first federal law dealing with air pollution. It mandated federal research programs to determine the health and welfare effects of air pollution.
1911-1914 Leonard Noon and John Freeman help establish the basis for immunotherapy, or allergy shots. Immunotherapy involves injecting the allergy sufferer with small, gradually increasing amounts of the substance that is causing the reaction.	**1962** Rachel Carson publishes *Silent Spring*, a book that highlights the dangers of insecticides and other chemicals and helps influence the growth of the environmental movement in the United States.

ACKNOWLEDGEMENTS AND SOURCES

SCENARIOS — WHODUNNIT

These websites provide more information for the Scenarios:

3 – European Union Issues London with Final Warning over Air Quality,
http://www.businessgreen.com/business-green/news/2264135/eu-issues-london-final-warning
5 – Description of Air Pollution, http://en.wikipedia.org/wiki/Air_pollution#Canada
6 – Call for Hong Kong to Clean the Air, http://www.nytimes.com/2010/04/01/business/energy-environment/01pollute.html?scp=3&sq=hong%20kong%20new%20york%20city%20air%20pollution&st=cse

CASE STUDIES

These websites provide more information for the Case Studies:

3 – Sewage and Fish Waste Keep Buses on the Road,
http://newconnexion.net/articles/index.cfm/2001/05/theroad.html
4 – Introduction of Transition Towns,
http://www.ted.com/talks/lang/eng/rob_hopkins_transition_to_a_world_without_oil.html
Peterborough Transition Town,
http://transitiontownpeterborough.ning.com/page/transition-initiative-groups
5 – Calculations for Wind Energy Statistics, http://www.bwea.com/edu/calcs.html
Fact Sheet: Wind Power Realities, http://re.pembina.org/sources/wind
6 – The Clean Air Strategic Alliance – Multistakeholder Collaboration for Clean Airsheds,
http://pubs.pembina.org/reports/CASA-Final.pdf
7 – Air Quality and Health Index, http://www.ec.gc.ca/cas-aqhi/default.asp?Lang=En
8 – Finally a Plan to use Toronto's biogas,
http://www.thestar.com/business/cleanbreak/article/799428--hamilton-finally-a-plan-to-use-toronto-s-biogas
9 – Sumas Power Plant Appeal Rejected Extinguished,
http://www.canada.com/vancouver/vancouversun/news/westcoastnews/story.html?id=24c7f415-4062-4ee0-a795-fa3eb1267a7d

TIMELINE

These websites provide more information for the Timeline:

http://www.history.com/topics/water-and-air-pollution#a1
http://forces.si.edu/Atmosphere/02_00_00.html