

## Social Studies 6

# Choosing to Act – A Fork in the Road

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## Abstract

Students review various scenarios regarding air pollution and look at the various levels of responsibility when it comes to dealing with air pollution issues. Using success stories, students review leadership at different levels.

## Logistics

Time required:

- Prep Time: 20 minutes
- Class Time: One class to complete Parts A & B. Extensions would take additional time.

## Materials

- 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.
- 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/markers

## Classroom requirements

- Whiteboard, overhead projector or SMART Board.

## Learning Objectives

- Encourage students to consider responsibility for air pollution and other health impacts from a broad perspective.
- Support students' reflections on shared responsibility and the areas where different players can have the most impact.
- Encourage students' exploration of short success stories on air pollution reduction from around the world.

## Prescribed Learning Outcomes B.C. Curriculum:

- Apply critical thinking skills – including comparing, classifying, inferring, imagining, verifying, identifying relationships, summarizing, and drawing conclusions – to a range of problems and issues.
- Interpret graphs, tables, aerial photos and various types of maps.
- Evaluate the credibility and reliability of selected sources.
- Deliver a formal presentation.
- Implement a plan of action to address a selected local or global problem or issue.
- Assess equality and fairness in Canada with reference to the Canadian Chart of Rights and Freedoms.
- Compare individual and collective rights and responsibilities in Canada with those in other countries.
- Evaluate effects of technology on lifestyle and environments.
- Compare Canada’s economy, technology and quality of life with those in one or more selected countries.
- Assess the relationship between cultures and their environments.

## Preparation

1. To ensure each student receives one scenario, make two to five photocopies of the **Choosing to Act – A Fork in the Road Scenarios** for part A (depending on class size) and then cut into individual scenarios.
2. To ensure that each student receives one case study, make two to five photocopies of the **Choosing to Act – A Fork in the Road Case Studies** for part B (depending on class size) and then cut into individual case studies.

# Classroom Implementation


## Part A: Who is responsible?

Students consider who is responsible for reducing air pollution.

- 1) Explain to students that when it comes to air pollution, people have many ideas about who is responsible for the problem and that there are many examples of cities, regions and individuals leading the implementation of solutions to these issues around the world.
- 2) 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**.

Write the following two 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.
- 3) 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.
  - 4) 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 who is responsible similar or different?
    - What are some things on which you agree?
    - What might be some of the reasons for your differing viewpoints?
  - 5) Bring students together and ask them to volunteer to share their scenario and how their thinking was similar or different. Copy student ideas onto the **Choosing to Act – A Fork in the Road Chart**, placed on whiteboard, overhead projector or SMART Board. Expand student thinking on question 4 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 or influences can affect how you think about these scenarios?
  - 6) Explain to students that these scenarios are examples of situations that happen every



day around the world. Thinking about who is responsible helps us consider what kinds of leadership qualities or characteristics help individuals, businesses and governments to lead the way in reducing in air pollution.

- 7) 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 own scenario, discussed with their partners, and heard from the class. Such characteristics may include *courage, will power, service, determination, being organized, thinking ahead, acting on one's beliefs, helping, encouraging or mentoring others, being visionary, including and welcoming others, demonstrating by example, seeking help from leaders, being prepared.*
- 8) 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.
- 9) Ask students to consider whether different scenarios call on different qualities and which qualities apply more to individuals than business or government, and vice versa.

# Choosing to Act – A Fork in the Road Scenarios

## Part A: Who is responsible?

1. The town of Wainwright, Alberta has a population of 5,900 people. In the winter months, November through March, many residents rely on wood-burning stoves to heat their homes. While wood can be burned very efficiently and cleanly in new, more expensive wood-burning stoves, many homes have older stoves. Older stoves burn much less efficiently and create a lot of air pollution in the form of particulate matter (PM). In addition, some owners burn wood that has not fully dried or seasoned, which contributes further to air pollution. People in 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 \$2,000 stove that burns more efficiently is too expensive for them. Steve Nesbitt is one of those homeowners.

*Who is responsible? Who do you think has responsibility here? Steve? Local government? The stove manufacturer? Federal government?*



2. Savinder drives her car every day to work. She lives a 20-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 feels her long work day 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 to help reduce air pollution, but she does not feel very motivated to do so and wishes instead that government would do something about the problem.

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

3. The European Commission gave the United Kingdom a final written warning in June 2010 telling the U.K. to improve air quality in London or be fined up to £300 million (\$474M). The U.K. asked for London to be allowed to continue with its pollution levels until 2011, but the European Commission felt that it would be unfair to countries following the rules, and that London was not doing enough to lower air pollution. The U.K. said London was taking steps to reduce air pollution by making plans to remove old, inefficient taxis, convert the city's bus fleet to hybrid vehicles, and invest in cycling and electric vehicles. But London's mayor also removed congestion charge zones (CCZs) in Western London (CCZs are traffic areas where 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 supported a 50% increase in flights from the city airport. The European Commission warned other nations that don't meet air quality rules might face similar legal action. They said air pollution is a serious problem that shortens lives.

*Who is responsible? 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. Some town members are unhappy about diesel emissions from the many older gravel trucks that travel through town to work sites, new developments and a local quarry, where the gravel is mined. 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 concerned citizens feel the 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 truck traffic routes. Her daughter Brittany has asthma, and sometimes on heavy traffic days she struggles with her breathing. The town, however, receives a large tax benefit from the company. The town council doesn't want to unfairly impose a large penalty, and fears that could scare Kelly's business away and so hurt the town's economy.

*Who is responsible? Should Samantha move away from the road to solve the problem? Is the town being responsible in not taxing the gravel company? What responsibilities do Kelly and his company have to the community?*


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 they took responsible action on air quality. The judges for the ECJ ruled in Dieter's favour. They ruled that European citizens are entitled to demand air quality action plans when they feel local government isn't doing enough.

*Who is responsible? Do you agree that a citizen should take their local government to court? Did the ECJ rule fairly? Should a city or town council be responsible for air pollution, and should citizens report their concerns if the town is not?*



6. In the spring of 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. They feel Hong Kong 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 one of the world's busiest shipping areas to markets all over the world, including to Vancouver.

*Who is responsible? Is the Hong Kong government doing its job? Should local factories be fined for polluting the air? Is China the problem? What about countries that are large trading partners with China? What about Canadians and others around the world who purchase goods from China and Hong Kong? Are they responsible for contributing to the air pollution, too? What responsibility do we share?*

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7. Joanne lives near Abbotsford, B.C. Recently air pollution has become an increasing concern for her and her boyfriend Tom. Joanne’s father who lives nearby loves to go for long walks, but he suffers from asthma and cannot leave his home some days because local air pollution bothers his breathing. Joanne and Tom have decided to replace their gas-powered lawn mower with a manual push mower. While it means a bit more effort for them to cut their lawn, Joanne and Tom feel it’s a good way to stay active and reduce the air pollution contributed by their household. But they are frustrated because much of the air pollution in Abbotsford comes from the Metro Vancouver area. It is carried by winds further into the valley, raising air pollution levels there.

*Who is responsible? Is this the City of Abbotsford’s problem? Should Joanne’s dad find a different place to live? Should Metro Vancouver reduce its pollution levels? Who is responsible here?*





# Choosing to Act – A Fork in the Road Chart

## Part A: Who is responsible?

After reading the **Scenarios Part: A Who is responsible?**, 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		

# Classroom Implementation

## Part B: Case Studies

Students will explore case studies of air pollution reduction.

1. 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.
2. 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. Have them consider what helped them to be successful.
3. 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.
4. Have students write a message and provide an image or picture for what the decision in their case study would affect them as a community member, company or country described in story. Use the following questions to guide their work:
  - a. What is the most important result or outcome from the leadership decisions made in the case study?
  - b. Why would you support or not support the decision or choices made in the case study?
  - c. How do you feel about the decision and actions taken?
  - d. How do you think those decisions or actions could be expanded upon or taken further?
5. Invite students to share their responses and images.
6. Post the information on a school or classroom bulletin board for other students and parents to see.

# Choosing to Act – A Fork in the Road Case Studies

## Part B


These cases reveal a variety of actual and fictional examples of leadership around reducing air pollution and its impacts 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, B.C., 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 own and 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 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 to drive the family car that she really enjoys, Savinder saves \$100 on gasoline each month and has time to read a new 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% (keeping 5.6 tonnes of carbon dioxide, CO<sub>2</sub>, that contribute to climate change out of the atmosphere each year). By driving less, she also reduces her nitrogen oxides, NO<sub>x</sub>, emissions that contribute to smog and acid rain. Walking instead of driving also contributes to her health and wellbeing. 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 people, runs 12 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-kilometer long pipe to the bus station in the town centre. When full, the buses' rooftop biogas tanks power the buses for 300 kilometers, or a full day's drive. Compared to diesel, usually used in buses, biogas creates less than half of the nitrogen oxides (NOx) emissions and fewer 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 communities around the world are ready to join. 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 and others.




**5. Peace River Wind Power.** In northeastern British Columbia, the largest wind farm in Canada – a 102 Megawatt (MW) farm – was set up near Peace River. 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 mayor played important roles in starting this project in 2004. Public information sessions were held early and often to let the 13,000 local residents learn about and participate in this project. The wind farm project showed leadership by including local people early in the planning process and helped introduce alternative energy sources in a place of high fossil fuel industry activity. The wind farm reduces sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), particulates, mercury and other emissions from burning coal. It would produce about 270,000 MW hours of energy each year\*, while preventing the generation of about 230,000 tonnes of carbon dioxide (CO<sub>2</sub>) annually, compared to the same amount of power generated from burning coal. Wind power around the globe could provide nearly three times the total electricity needed. The Canadian Wind Energy Association (CanWEA) reports it has 23 projects installed in 2013. Wind power in Canada now has 8,517 MW of total installed capacity, supplying about three per cent of Canada’s electricity demand with enough power to meet the needs of more than million Canadian homes. (See <http://canwea.ca>). Denmark currently meets 20% of its power demand with wind. Canada, too, could reach that mark.

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



**6. Canada’s Air Quality Health Index (AQHI).** Environment Canada’s 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 10-point scale to inform people about how harmful they may be to their health. Higher numbers mean higher air pollution levels, which means 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. The 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.


Find the AQHI at [www.bcairquality.ca/readings/aqhi.xml](http://www.bcairquality.ca/readings/aqhi.xml)



**7. Alberta's Clean Air Strategic Alliance.** The Clean Air Strategic Alliance (CASA) ([www.casahome.org](http://www.casahome.org)) is comprised of people from industry, government and non-profit organizations. Started in 1994, it uses a consensus model to reach its goal of clean air in Alberta. 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 create fewer emissions. In 18 months, CASA successfully built a government-approved process that limited future plants, softened the impacts of burning coal, and allowed industry to produce electricity while staying in business. CASA's set of rules helps reduce new plant air pollution, 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 keeps them 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: with so many different people from different organizations it has not yet come up with a way to reduce CO<sub>2</sub> 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 awards for its consensus model. Other groups are using CASA as a successful model to achieve similar results while protecting water and other environment.



**8. Renewable Biogas Project.** Toronto, Ontario, soon hopes to build a biogas plant using gas from sewage. Methane that was burned off as waste gas for many years (known 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 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. In 2013, Toronto also began generating electricity using methane from its Green Lane Landfill in London for a greenhouse facility. Excess heat from electricity generation is used to heat the greenhouse. There are 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 a U.S. Power Company.** In the late 1990s, American power company Sumas Energy wanted to build a new power plant, Sumas Energy 2 (SE2), in Sumas, Washington near the Canada-U.S. border close to Abbotsford. It would have created 800 tonnes of pollution each year and affected 250,000 Fraser Valley residents. Hundreds of locals on both sides of the border fought for more than five years to defeat Sumas Energy's plan, holding rallies, attending meetings and National Energy Board (NEB) hearings. In 2005, the NEB, which regulates energy projects in Canada, denied the company's bid to build the 660-megawatt project. The Federal Court of Appeal upheld the NEB ruling. Abbotsford construction contractor and local environment champion John Vissers, then a 48-year-old father of two, helped lead the fight against SE2. He felt the NEB ruling was a victory for regional residents. "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," Vissers said. In 2005, City of Abbotsford Councilor 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." There are many stories online, such as this one:

[http://www.canada.com/story\\_print.html?id=0c512fd7-39d0-48c1-81b8-7ad65a30d9e2&sponsor](http://www.canada.com/story_print.html?id=0c512fd7-39d0-48c1-81b8-7ad65a30d9e2&sponsor)



**10. Germany's Technology Exchange.** The German Appropriate Technology Exchange (GATE) helps developing countries with technology. The 2,200 government staff members at GATE work to help improve social and economic conditions in other countries. GATE helps other countries to use resources with less waste and to make 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 provided energy in rural communities, supported healthy agriculture and allowed people to rely less on burning wood for energy. As a result, the project helped save very important nearby forests. These forests help support healthier ecosystems for wildlife and plant life and keep green space for future generations.



# Choosing to Act – Fork in the Road Worksheet

## Part B

After reading your case study, think about how it reveals how the effects and/or risks of asthma and air pollution are addressed as you answer the following questions.

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?



## Extensions

### Option 1: Local Relevance

Share a local community example of success in reducing air pollution. Ask students if they were aware of the story. How could their awareness impact their perspective on what is happening locally? Ask students they would find such information. For example, the **Fraser Valley Regional District** works with several agencies to develop and implement a strategy to reduce harmful ground-level ozone. See the *Regional Ground-Level Ozone Strategy for the Canadian Lower Fraser Valley Region 2014* at: [www.fvrd.ca/airquality](http://www.fvrd.ca/airquality), and search under publications.

### Option 2: Timeline

Print six copies of the **Choosing to Act – A Fork in the Road Timeline**. Assign students to six groups and provide each group with a copy of the worksheet. If you wish, remove the dates from the timelines and have students complete research to identify the year. Ask 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.

### Option 3: Me to We challenges

Share the **Me to We Campaign** as a powerful example of youth leadership helping to shape change. While not everyone can contribute the way the Keilburgers have, **Me to We** encourages young people tap their potential and skills 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 go to school instead of having to work. The two brothers travel all over the world, motivating other young people to be leaders in their communities, and creating new opportunities for young people with few or no opportunities in countries that have many difficulties. See: [metowe.com](http://metowe.com)*

### Option 4: Getting active, actively

To illustrate how hard it is to make changes in habits and behaviours, divide students into two groups. Have them complete a number of tasks in two different rotation orders. This can be done in the gym, outdoors or in a large space. Have each group complete the rotation at least once. Change the task order, and have groups complete new rotations at least once again. Ask students to identify how many times 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 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.

## Choosing to Act – A Fork in the Road Timeline

<b>2003</b>  The city of New York bans smoking in all workplaces, including bars and restaurants.	<b>1990</b>  San Luis Obispo, California becomes the world's first city to prohibit smoking in public buildings including bars and restaurants.
<b>1948</b>  In Donora, Pennsylvania, 7,000 people become ill and 20 die after severe air pollution from local manufacturing plants. The plants produce a deadly smog.	<b>1989</b>  The oil tanker Exxon Valdez spills 11 million gallons of crude oil into the sea off Alaska's Prince William Sound, just above the British Columbia coastline.
<b>2000</b>  The Canadian federal government creates the Environmental Protection Act to prevent pollution and protect human health and the environment.	<b>1962</b>  Rachel Carson publishes <i>Silent Spring</i> , a book that highlights the dangers of insecticides and other chemicals. It sparks the growth of the environmental movement in the United States.
<b>2005</b>  The international Kyoto Protocol comes into effect. It calls for participating nations to reduce their greenhouse gas emissions that contribute to climate change. Canada did not sign then, and has not as of 2015.	<b>1969</b>  Chemical waste released into Ohio's Cuyahoga River bursts into flames. The event becomes a symbol of how industrial pollution is destroying natural resources.

<p><b>1970</b></p> <p>The Canadian federal government creates the <i>Clean Air Act</i>.</p>	<p><b>1952</b></p> <p>In London, at least 4,000 people die over several days from air pollution.</p>
<p><b>1994</b></p> <p>The Clean Air Strategic Alliance is established in Alberta. It brings together many groups to develop and apply an air quality management system.</p>	<p><b>1963</b></p> <p>The United States Congress passes the <i>Clean Air Act</i>. This legislation focuses on air pollution controls.</p>
<p><b>1936</b></p> <p>Milwaukee becomes the first American city to ban smoking on all public transportation.</p>	<p><b>2004</b></p> <p>Toronto introduces its smoking ban for restaurants and bars (a workplace smoking ban was introduced in 1999).</p>
<p><b>1970</b></p> <p>The first Earth Day is celebrated in the United States.</p>	<p><b>1892</b></p> <p>In London, 1000 people die from “smog” that is produced mainly from burning coal.</p>
<p><b>1984</b></p> <p>In Bhopal, India, 20,000 people die and 120,000 more are injured following a deadly chemical leak from a Union Carbide pesticide plant.</p>	<p><b>1955</b></p> <p>The United States Congress passes the Air Pollution Control Act, the first federal law dealing with air pollution.</p>

## ACKNOWLEDGEMENTS & SOURCES

### SCENARIOS – WHO IS RESPONSIBLE?

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](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?pagewanted=all&\\_r=0](http://www.nytimes.com/2010/04/01/business/energy-environment/01pollute.html?pagewanted=all&_r=0)

### 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](http://www.ted.com/talks/lang/eng/rob_hopkins_transition_to_a_world_without_oil.html)  
**Peterborough Transition Town,**  
<http://www.transitiontownpeterborough.ca/index.php/projects>

**5 – Calculations for Wind Energy Statistics,** <http://www.bwea.com/edu/calcs.html>  
<http://www.renewableuk.com>

**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&n=CB0ADB16-1>

**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/story.html?id=24c7f415-4062-4ee0-a795-fa3eb1267a7d>



## TIMELINE

<http://www.history.com/topics/water-and-air-pollution - a1>

<http://forces.si.edu.atmosphere/swf/timeline.html>

For additional lessons and to complete an evaluation survey, visit: [www.fvrd.ca/airquality](http://www.fvrd.ca/airquality)

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