

## Lesson Plan

### Barriers to Change: The Myths about Vehicle Idling



#### In a Nutshell:

In this activity students will have the opportunity to confront some of the most common misconceptions that surround vehicle idling, and employ the concept of social marketing to initiate change.



#### Goal:

To give students an appreciation of the impact of vehicle idling on individuals, the environment and climate change, and tools to encourage measurable changes in individual and community behaviour.



#### Background Learning:

**Teachers and high school students** should be familiar with the basic science of climate change as reviewed in:

- High School Backgrounder #2: The Greenhouse Effect
- High School Backgrounder #3: Greenhouse Gases (GHGs)
- Intermediate Backgrounder #2: Impacts: A Changing World

**Intermediate level students** should be familiar with the basic science of climate change as reviewed in:

- Intermediate Backgrounder #1: Basics of Climate Change: What's the Big Deal?
- Intermediate Backgrounder #2: Impacts of Climate Change: A Changing World?

**Grade Level:** 7–12

**Subjects:** Social Studies, Sciences, Northern Studies, English Language Arts, Visual Arts

**Enrichment:** Visual Arts, English

**Time:** Two to three hours

**Setting:** Classroom, school, school parking lots

**Materials:** Chart paper and markers for each group, Student Handouts, art supplies (optional)

**Skills:** Group cooperation, analyzing, presenting, reading

**Key Vocabulary:** Vehicle emissions, anti-idling, carbon dioxide, greenhouse gases



## Learning Outcomes:

Visit the website and click on the icon for your territory to review the learning outcomes that are addressed by this lesson.



Nunavut



NWT



Yukon



## Introduction to Lesson Plan:

In this lesson, students will learn the common misconceptions about vehicle idling, the effects of idling on climate change, and the logic of social marketing (marketing toward behavior change with information and positive reinforcement). When the students understand that misconceptions about idling are contributing to climate change, they'll realize that they are in a position to initiate change. The main activity requires students to create an action plan to reduce idling in their school's parking lots and student drop-off zones.

If the students have not done any activities about climate change, greenhouse gases, or energy consumption, review the basics with them, as outlined in the backgrounders recommended for your students' level. You may choose to make copies of the backgrounders for the students to read themselves. (For ideas on creative interaction with the information in the backgrounders, see the lesson entitled *Getting Into the Backgrounders*.)



Once students have a basic understanding of the causes of climate change (particularly vehicle emissions), you might ask them to brainstorm what things may be affected by climate change and why this is of concern to us. If students need some guidance, you might put some key words on the board such as ice, permafrost, water, land, animals, and plants. Lead students to a general understanding of the effects, and to the conclusion that we can help the environment by making responsible choices.

If you require more information about the potential impacts of climate change than you find in Intermediate Backgrounder #2, have a look through High School Backgrounders #6–12, which go over the impacts in more detail.



Prior to the activity, you may want to check school policies regarding the posting of signs and acceptable parking lot activities.

Download and make copies of the Climate Change backgrounders, the additional *Teacher's handout – Introduction to Social Marketing* (optional), and student handouts.



### Activity:

1. Put students into groups of five or six and ask them to write down their thoughts on idling vehicles. They should brainstorm the “positives” and “negatives” of idling as well as the reasons that people leave their vehicles running or why they turn them off. Students can try to come to a consensus on whether idling is necessary or not.
2. At the end of this short brainstorming session have each group contribute a positive and a negative to a list on the board, until their ideas have been exhausted. You might ask groups to explain their position on idling.
3. Distribute the student handouts: *Letter from Ford Motor Company* and *The Truth about Vehicle Exhaust*. Have students read the handouts individually or in groups, making notes about the following points:

#### Issues:

- Health
- Safety
- Production of Carbon Dioxide

#### Arguments for idling:

- Idling to clear frost from the windshield
- Idling to keep your car warm while you run in somewhere
- Warming up the engine in cold weather
- Harm to the engine
- Starter wear
- Fuel



4. Lead a class discussion to review the points made in the handouts and ask students to share their opinions. Has the information changed their opinions about vehicle idling? Are there any arguments that haven't been addressed? If



so, ask a group to volunteer to find out if the facts support that argument. There are a number of websites listed in the “More Information” section of this lesson.

**5.** Discuss with your students the basic concept of social marketing:

Behavior change can be initiated in a community once the barriers to the desired behavior have been identified and addressed. In the case of vehicle idling, the barriers to the desired behavior (turning off vehicles) are the misconceptions (better for my engine, etc). The emphasis of social marketing is direct contact with community members and removing barriers.

**6.** Ask your students to come up with a plan to apply the concept of social marketing to the issue of vehicle idling. This will require them to create an anti-idling campaign, which involves educating people about the facts of vehicle idling (knocking down the barriers) and having direct contact with the community.

Inform your students that their goal is to reduce idling in the school’s parking lots and student drop-off zones.

**Tips for Brainstorming Campaign Ideas:**

When brainstorming campaign ideas there are a few staple ideas that can be personalized or elaborated on by the students:

- Posters
- Information Pamphlets
- Presentations to council, school officials, Elders or other youth
- Letters to editors of local newspapers
- Articles in school newspapers

Consider having your students brainstorm a number of actions and assign one to each group. Give the students a time limit for completion.

When designing their campaigns, older students should be able to answer the question: “How will you measure whether or not your campaign is successful?” Answers to this question must be quantifiable. Students will have to monitor the school’s parking lot(s) or student drop off zones before the campaign is implemented to establish baseline data on vehicle idling. Students should also develop performance measures prior to the start of the campaign so they can measure their successes and set backs easily and consistently.

The best times to measure the number of vehicles idling are before and after school, when parents drop off and pick up their children.



If the same locations are monitored throughout the campaign, students will be able to keep track of when their efforts start affecting behavior.

7. Before students print final copies and make presentations, have the groups share their action plans with the rest of the class. Students can show off drafts of posters, read drafts of letters and try out presentations (pretending that they are in front of the local education, community, or band council). For the latter, recommend that presentations be kept short and encourage the other students to play the role of the council receiving the presentation and ask questions about how this program could be implemented at their school and what its benefits would be.

Encourage students to give positive and constructive feedback to the other groups.

8. Set any necessary dates for: implementation of student plans, monitoring and measuring results, and completion of the project.
9. For follow up: discuss the results, responses, etc. What worked? What didn't? Why or why not?



### Handouts:

Visit the website and click on the icon for the complete set of handouts that support this lesson:

- Teacher Handout: Introduction to Social Marketing
- Student Handout #1: The Truth About Vehicle Exhaust
- Student Handout #2: Letter from Ford Motor Company



### Student Web-Exchange:

Your students could post a record of the actions they took to educate others in their community to the Student Web-Exchange. Students could challenge other classes to reduce idling in school parking lots, and compete for the least number of cars idling each day/week/month. In this case, the students should agree to a standard method for measuring parking lot activity.

Visit the website and click on the icon for information on how to post material.



## Evaluation:

Evaluate students on their action plans for reducing idling and on their commitment and ability to carry it out. You can evaluate both oral presentations (Activity Step 7) as well as written assignments.

If students are able to give a good presentation to the fictional council (Step 7) and answer all of the questions, then they not only understand the truth about idling, but also have the basic skills to run a successful campaign for social change.



## Enrichment Ideas:

### Art

**Idling Poster or Mural:** Have students design and paint a poster or mural on the impacts of idling and why we should stop it. Put it up in a community building such as a library.



## About the Author:

Hi, my name is Jennifer Sanders, Coordinator of the Arctic Energy Alliance's NWT Climate Change Centre in Yellowknife, NWT. I moved to Yellowknife from London Ontario in 1999 to work as a news anchor and reporter, and fell in love with the open spaces and friendly faces that surround a person living in Canada's North. So when my tenure ended at the radio station, I began looking for another opportunity that would allow me to stay in Yellowknife and work on one of my favourite topics... the environment.

As the Coordinator of the NWT Climate Change Centre I have been lucky enough to visit a number of NWT Communities and give presentations to schools and local community councils. My favourite part of this job is getting to meet and make friends from all over the North.



### More Information:

Anti-Idling campaigns:  
[www.oee.nrcan.gc.ca/idling](http://www.oee.nrcan.gc.ca/idling)

[www.nwtclimatechangecentre.ca](http://www.nwtclimatechangecentre.ca)

Indoor air quality:  
[www.lung.ca/cando/indoor.html](http://www.lung.ca/cando/indoor.html)

Social marketing:  
[www.toolsofchange.com/English/firstsplit.asp](http://www.toolsofchange.com/English/firstsplit.asp)



I hope that you find this lesson plan both fun and informative and I would be very interested to know how your local anti-idling campaigns have worked. If you have any questions... – or results you would like to share – please feel free to email me at [info@nwtclimatechangecentre.ca](mailto:info@nwtclimatechangecentre.ca).

Arctic Energy Alliance: 867-920-3333  
[www.nwtclimatechangecentre.ca](http://www.nwtclimatechangecentre.ca)





# Teacher Handout

## Introduction to Community-Based Social Marketing

A healthy sustainable community is, in large part, the result of community members taking an active role in the community. When members of a community adopt healthy habits – by getting more exercise, for example – the community becomes a healthier one. When the members use resources wisely – by recycling, for example – the community moves towards sustainability. When community members pollute less, the community becomes both healthier and more sustainable. To promote a healthier, more sustainable future, it is essential to know how to encourage individuals to adopt corresponding lifestyles. Increasingly, those who develop and deliver programs to promote health and sustainability are turning to community-based social marketing for assistance.

Community-based social marketing emphasizes direct contact with community members and the removal of structural barriers, since research suggests that such approaches are often most likely to bring about behavior change. Community-based social marketing also uses a set of “tools” which have been identified as being particularly effective in fostering such change. While each of these tools on its own is capable of promoting healthy and/or sustainable behavior under the right conditions, the tools are most effective when used together.

Community-based social marketing is practical. It involves:

- identifying the barriers to a behavior
- developing and piloting a program to overcome these barriers
- implementing the program across a community
- evaluating the effectiveness of the program

To promote healthy, sustainable lifestyles effectively, the barriers to healthy, sustainable activities must first be identified. Community-based social marketers begin by conducting the research that will help them identify these barriers. It is not unusual for this research to uncover multiple barriers quite specific to the activity being promoted.





Once the barriers have been identified, community-based social marketers develop a program that addresses each of them. Personal contact, the removal of structural barriers, and the use of proven tools of change are emphasized in the program. To ensure that the program will be successful, it is piloted in a small segment of the community. This means that the program is tested in a small portion of the community and modified until you are getting your desired results. The program is then implemented throughout the community and procedures are put in place to monitor its effectiveness on an ongoing basis.

The steps comprising community-based social marketing are simple and effective.

When barriers are identified and appropriate programs are designed to address these barriers and encourage the desired behavior, the frequent result is that individuals adopt healthier and/or more sustainable lifestyles. These are the corner stone of healthier, more sustainable communities.

*Doug McKenzie-Mobr,  
St. Thomas University*



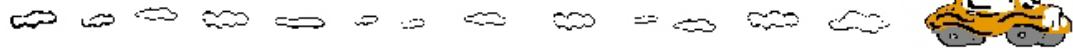
# Student Handout

## Student Handout #1

### The Truth About Vehicle Exhaust

Idling your car, truck or snowmobile does a lot more harm than good.

Could it even be dangerous? You decide...



Did you know that vehicle exhaust has been proven to inflame lung diseases such as lung cancer and childhood asthma? ...Or that children breathe faster and inhale more air per pound of body weight and are therefore at a greater risk of developing lung problems from exposure to these fumes? Children are more prone to a variety of lung diseases because their lungs aren't fully developed.

A short list of the common pollutants in vehicle exhaust that are known to cause diseases:



- Carbon monoxide
- Nitrogen dioxide
- Nitrogen monoxide
- Sulphur dioxide
- Benzene\*\*
- Formaldehyde
- Polycyclic hydrocarbons

\*\*Scientists have discovered that there is no safe exposure level to Benzene.

What about safety? Have you ever considered that cold weather idling in busy areas like school drop off zones might be a danger to the safety of the children? As we all know it gets really cold during winter in the arctic and when the temperature dips below minus 20, as it often does, vehicle exhaust poses a new threat to people. This is the temperature when water vapours from the vehicle exhaust freeze after leaving the tail pipe. This is what produces that opaque cloud of fumes that hangs behind the



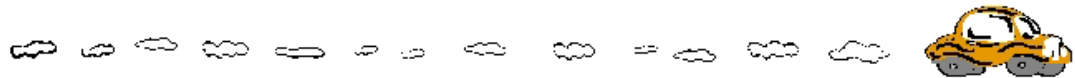
vehicle when it isn't moving. When a number of vehicles are all idling in the same area, such as a student drop off zone, this can cause a real hazard. The clouds of exhaust make it hard to see who is running in front of or behind vehicles. This situation is an accident waiting to happen. Turn vehicles off when waiting in areas like student drop off zones to make these busy areas much safer for everyone.

By making the choice not to idle, you also help to fight climate change, the gradual warming of the Earth caused by the release of greenhouse gases such as carbon dioxide, methane and nitrous oxide. Every litre of gasoline produces 2.4 kilograms of carbon dioxide as it burns. If every person in Canada idled their vehicle for five minutes less a day than they do now, together we would cut our production of carbon dioxide by 1.6 million tonnes.

By reducing the amount of time we take to warm up our vehicles and turning them off when we go into the bank or grocery store, all of us can have a positive impact on the health and environment of our communities.

## Idle Arguments

Many of the reasons you have for idling your car may be based on misconceptions. Lets clear a couple of those up shall we... ?



## Idling is the only way to clear frost from the inside of your windshield.

Frost on the inside of windows and windshields is caused by excess moisture inside your vehicle that sticks to those surfaces when the air inside cools. To help prevent this from happening, **leave one or both of your rear windows down just a little bit.** These cracks will allow the moisture to escape outside your car.

If you experience this problem a lot, have your car's ventilation system checked by a mechanic. If this is only an occasional problem for your vehicle, **keep a small ice scraper in your car.**



### I'm just going in for a minute!

If you are just going in for a minute, your car won't cool off that quickly. And, if you are going to be in the bank or store for longer than a minute your car should be turned off so that you're not polluting the air everyone breathes or wasting expensive gasoline.

### My car needs time to warm up.

While it is true that no car should be started and immediately driven away in -25°C weather, **modern vehicles don't require more than a few minutes of run time** before they can be driven. The amount of heat generated by an idling engine will barely affect the temperature of your interior. However, driving forces all of the vehicle's moving parts to warm up together and this will generate more heat sooner.

There is no optimal warm up time for every car. It is a matter of common sense; on an ordinary winter day a driver may only need to warm up their vehicle for as long as it takes to brush the snow or ice off the outside of the car. However extreme cold is another story. On these days we understand that vehicles need more time to warm up before driving. We are just asking that people use their vehicles responsibly.

Lots of times it's the driver – not the car – that can't tolerate the cold. **Just because you're driving doesn't mean you shouldn't dress for the weather.** Even just putting on a hat will make the first few minutes of your drive more comfortable.

### Frequently turning your vehicle on and off in cold weather harms the engine.

This used to be true, but developments in technology have corrected this problem. **Fuel-injected cars don't need to be left on when parked.** Ford Motor Company of Canada has even stated that unnecessary idling wastes fuel and harms your engine.

## Climate Change. Are you doing your bit?





# Student Handout

## Student Handout #2

### Letter from Ford Motor Company

# Attention Northerners



Ford Motor Company of Canada, Limited  
Ford du Canada Limitée

Cold weather idling is largely a waste of fuel. It is also a source of unwanted air pollution. Except in the most extreme conditions, once an engine has been started and the warning lights or indicator gauges show "normal", a vehicle can be driven away – gently. There are other considerations besides engine function in extreme cold weather – axle, transmission, steering and brake fluids are also very viscous.

Extended idling is of very little benefit. Modern engines do not produce significant heat at idle and do not need significant internal heat to operate properly. Diesel engines in particular are prone to cooling off to the point where the injectors no longer contain the fuel properly and "slobbering" takes place. This puts excessive amounts of raw fuel in the combustion chamber and can lead to damage. We urge people to use thermostatically controlled block heaters overnight or when a vehicle is parked for lengthy periods. Timed block heaters are also an option. Remote or automatic starting is not a route we recommend.

Many people are concerned about starter wear. Tests have shown that this is not an issue. Starter life will not be seriously jeopardized by the few extra turns needed or the small increase in the number of times it will be put to use. Tests done by a European automaker (albeit at room temperature) showed that an automobile could be turned off and restarted 30 times per minute and still return better fuel economy than when left idling for the whole minute.

Technically speaking, extended idling is not necessary. Interior comfort is another issue, (as) "relative warmth" is certainly a consideration for the passengers.

Sincerely,

Wayne Pattee,  
Mgr. Vehicle Emissions and Fuels