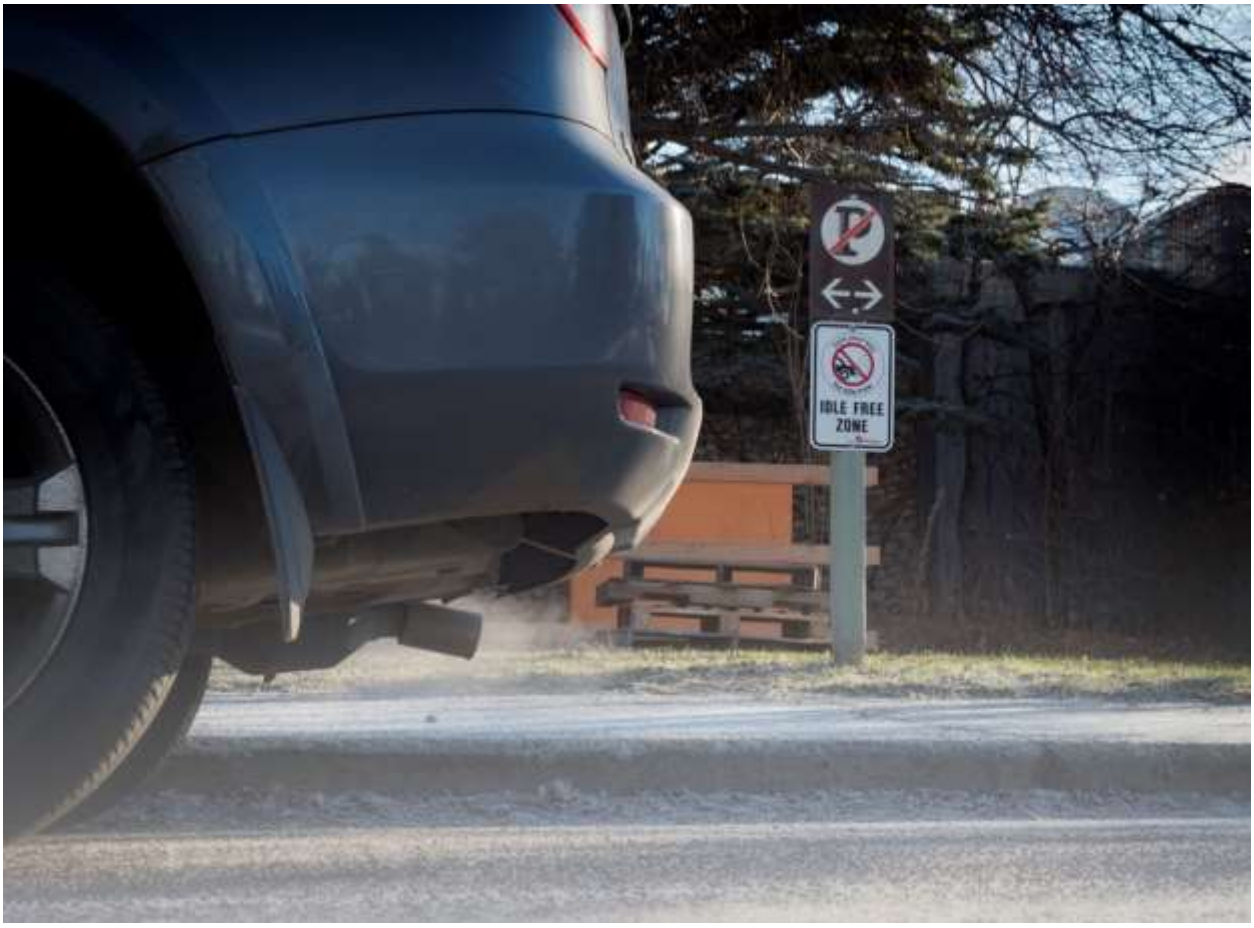
THE CITY OF Red Deer

The Idle Free Schools Resource Manual

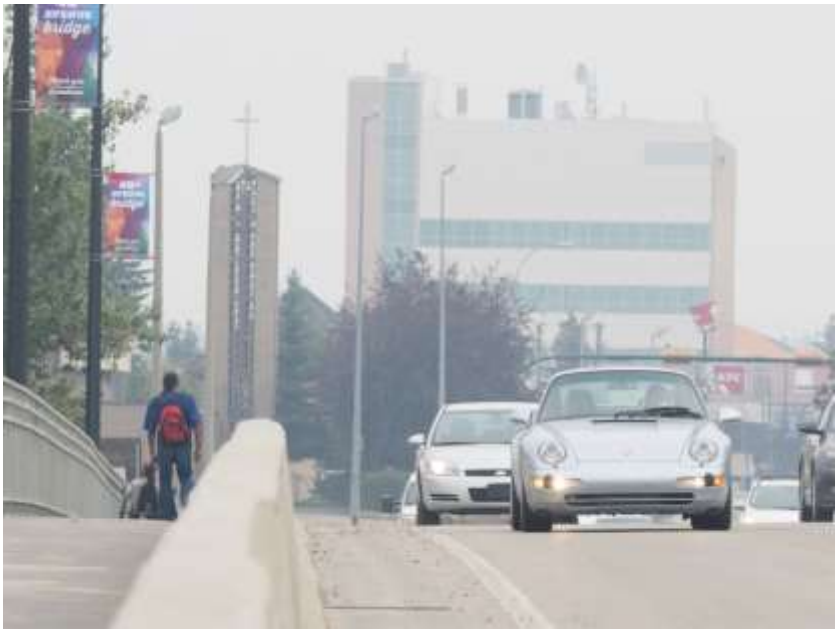


Introduction to the Idle Free Resource Manual

The City of Red Deer is pleased to be a part of your Idle Free School Campaign. The resources contained in this manual will assist in establishing your property as an **Idle Free School Zone**. The materials provide valuable instruction for students and will assist in heightening driver's awareness of the harm created by vehicle emissions. The manual was created with assistance from a variety of sources, including Natural Resources Canada and results from the "Turn It Off" Campaign, developed by McKenzie-Mohr and Associates.

Student involvement is encouraged in the development of an Idle Free campaign. It is important for students to understand aspects of their environment, especially air quality. Through information and activities contained in this manual and the "Kick-Off" presentation offered by The City of Red Deer, children develop a deeper connection to the world and a greater understanding of how human action can affect air quality. Through this acquired knowledge, students can learn to make better lifestyle choices and be in a position to positively influence the behaviors of drivers.

If you have questions concerning this resource manual please contact environmental.initiatives@reddeer.ca for assistance.



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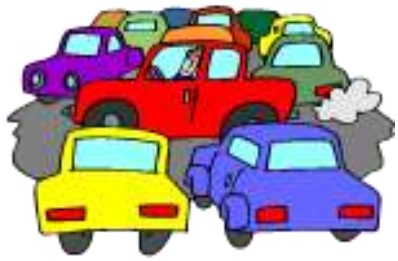
Program Overview

Implementing an Idle Free School Zone for your school community does not need to be time consuming or difficult. Below are tips to assist you in developing a successful campaign.

1. Start small and keep it simple. Changing driving behavior takes time. Your patience and persistence will eventually bring about positive results. A successful campaign would see a 30-40% reduction in the number of idling vehicles. Some individuals will respond to change faster than others.

2. Optional Activity: If your school wishes to measure the impact of your Idle Free School Campaign it is important to complete a baseline measure before the campaign begins. After the Idle Free Campaign has been launched periodically check results against this baseline measure. The details for carrying out this activity are described on page 8, The Monitoring Process.

3. The easiest approach to implementing an Idle Free School Zone is by informing parents about the project, distributing fact sheets and installing permanent signage on school property. Through education and awareness about the concerns of idling, you can provide compelling reasons for drivers to turn their engines off.



In 2010 the Idle Free Schools program was launched, with great success, in Red Deer.

In 2016 100% of Red Deer schools were Idle Free.

The program has encouraged many drivers to turn the key.

4. Asking for a driver's commitment to the Idle Free Campaign can prove to be extremely successful. The commitment approach:
    - Inform parents about the school campaign. Request drivers to turn off their engines at school and ask them to be prepared to make a personal commitment. Identify dates you have selected and inform

drivers that volunteers will be approaching them to ask for their commitment to be Idle Free.

- Organize volunteers and over the course of one week distribute information cards and static window stickers (provided by The City of Red Deer) to drivers waiting at the school in their vehicles.
- Ask drivers if they would agree to display the sticker in their car window (see sample script in the Additional Resources section). The window sticker acts as a reminder to the driver to remain idle free, while encouraging others to join in the campaign.
- Record the number of drivers who take the stickers on the commitment sheet (see Additional Resources section). Make sure to include in your parent communication the number of drivers (parents, bus drivers and service vehicles) who have agreed to become idle free.

5. Encourage student involvement in this project. Large banners or signs can be created in art class that can be displayed on the fences around the school where drivers congregate. Student's art acts as a reminder to parents to turn off their engines and causes students to feel connected to the positive behavior changes resulting from the program.

6. Many other ideas can be incorporated to help promote that you are an Idle Free School. You may wish to consider adding a message onto your school's phone system or website reminding callers and website visitors of your campaign. The more ways the message is heard and understood, the more drivers recognize that being idle free is the expected behavior or norm.

Safety:

It is imperative schools take all necessary precautions to ensure participants safety when implementing the Idle Free School Program.

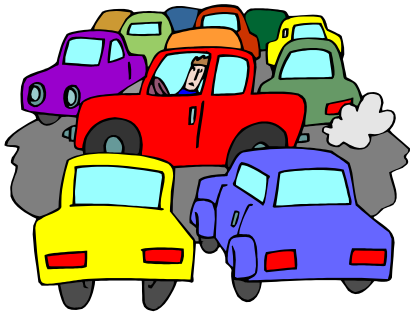
If participating in the monitoring process, students must follow all safety rules outlined by their school. Monitoring of idling behavior should always occur from a location that ensures participants' safety.

The distribution of commitment forms and static window stickers should never compromise a volunteer's safety. Whenever possible, adult volunteers are recommended for these activities. All volunteers should wear a safety vest to ensure their visibility.

Please refer to your school division's safety policies, Red Deer city bylaws and always demonstrate due diligence to ensure all participants are safe from any possible risk of injury.

Creating an Idle Free School Zone

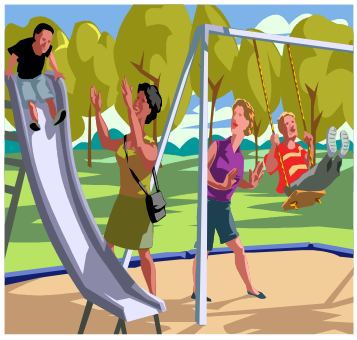
1. Observe and Record Idling Behavior



4. Record Reduced Idling Behavior. And Celebrate!!

Steps to Creating an Idle Free School Zone

2. Inform Through Newsletters and Instruction



3. Post Signage and Distribute Reminders to Drivers

The Monitoring Process

Step One: Initial Observation and Data Collection

1. **Preparation**
   Identify a target idling area around the outside of the school and determine the number of working groups required to cover the area as well as the number of volunteers/students needed in each working group. Ensure one teacher/supervisor is with each group. Gather the materials required to carry out the observation such as charts, pencils and stop watches. Sample forms are available in the Additional Resources section.

2. **Carrying out the Observation**
   Selected groups of students/volunteers will make discreet observations of vehicles driving onto school property. Have each group responsible for only one area. This can be done several times over the period of one week to obtain a reasonably accurate reading of how many parents idle their vehicles at the school. The best time to do this is when idling is most likely to occur, usually at the beginning or end of the school day. After several weeks you can re-do your initial observations to determine if the number of idling vehicles has decreased.

   Within each group:
   a. One or two members will record total car numbers – all cars in your area. Work together using one observation sheet and the assigned tasks of one "total car observer" and one "total car recorder".
   b. One person "idling recorder" will record idling car information like amount of time spent idling – vehicles arrival time and departure time.
   c. Remainder of group will be "idling observers" (taking their own notes if necessary) and working together to pass along information to the "idling recorder".

Note: This is a fast moving activity. Have patience. Wait until the "idling recorder" has taken down previous observation information, before telling them your observation.

Step Two: Review Collected Data

1. **Compile Data**
   Collect all data sheets from initial observation activity.

2. Review of idling observations

Calculate the total number of vehicle observations:

a. Total number of cars
b. Total number of vehicles idling
c. Total amount of idling time

Discuss what this amount of idling means:

d. Amounts of pollutants
e. Amount of fuel expended
f. Cost of wasted gas
g. Impacts on health and the environment

3. Idling facts

Review with recorders the situations when engine idling is necessary. These situations would include:

a. Defrosting what cannot be manually scraped from windows during winter months.
b. When in traffic or stopped at traffic lights.
c. When individuals are waiting in the vehicle on really hot or really cold days.

While there are exceptions that should be considered it is important to educate drivers that:

a. No more than two to three minutes of idling is needed to warm up your car even in very cold weather. If you are going to be stopped from more than 60 seconds, turn the engine off. (source: *Natural Resources Canada*)
b. Contrary to popular belief, idling is not an effective way to warm up your vehicle. The best way to warm the vehicle is to drive it.
c. Since the advent of electronically controlled engines, excessive idling can actually damage your engine. (source: *Natural Resources Canada*)
d. Unnecessary engine idling causes environmental damage by:
    i. Releasing unnecessary exhaust emissions into the atmosphere.
    ii. Producing pollutants that impact our health.
e. Unnecessary engine idling is expensive as it:
    i. Wastes fuel that you've already paid for – if you idle your vehicle for more than 10 seconds, you use more fuel than it would take to restart your engine.
    ii. Increases your maintenance costs.

Step Three: Intervene with Drivers

1. **Preparation**
   Identify a target idling area (around the outside of the school) and determine the number of working groups required to cover the area as well as the number of volunteers/students needed in each working group. Ensure one teacher/supervisor is with each group.

2. **Practicing the message**
   It is important that campaign volunteers have practiced delivering the Idle Free message to one another before approaching drivers. As Red Deer does not have an idling bylaw, it is important that volunteers recognize their efforts are centered on awareness and education and not enforcement. If a driver does not wish to comply, a volunteer is advised to focus on another driver who may be more receptive to the goal of the program.

   Provide volunteers with the sample script, found in the Additional Resources section.

3. **Getting the message out**
   Distribute the static window stickers to the volunteers. Have each group responsible for only one area. Two or three volunteers can work together. They will safely approach parked drivers using the sample script (see Additional Resources) or a similar message to inform the driver of the Idle Free Program being implemented by the school.

4. **Follow-up data collection**
   Following your intervention, you may wish to carry out additional monitoring to determine the effectiveness of your campaign. As before, carry out these measurements in a safe, unobtrusive manner.

Note: *Please email your pre and post-results to environmental.initiatives@reddeer.ca to share the effectiveness of your Idle Free campaign.*

About Vehicle Idling

Drivers idle their vehicles for a number of reasons. The facts provided in this section of the Resource Manual offer valuable information you can share in assemblies, classroom presentations or in school newsletters. Hopefully, this information will be useful in assisting to bring about positive change on the behavior of idling.

By sharing this information with your school community you can help drivers become more aware of the harm idling poses, not only to your physical health, but also to our environment. While you are establishing your idle free campaign you may encounter some individuals who are reluctant to participate in the program. Their reluctance to alter their driving behaviors may be based on idling myths. It is important to have research data available to assist you in your goal to educate drivers on the facts concerning idling.

1. Why do Canadians idle?

Warming up or cooling down a vehicle are the most common reasons given for idling. Surveys show that Canadians also idle their vehicles for many other reasons including:

- Waiting for passengers
- Stopping at railway crossings
- Running quick errands
- Sitting in drive-through lanes
- Waiting to refuel or to have the vehicle washed
- Stopping to talk to an acquaintance or friend
- Preparing to leave the house

If stopped for more than 60 seconds – except in traffic – turn the engine off. Unnecessary idling wastes money, fuel and produces greenhouse gases (GHGs) that contribute to climate change. (source: Natural Resources Canada)

2. What is the problem with idling?

Impacts on air quality:

- Vehicle emissions include a variety of pollutants which impact our air quality and poor air quality impacts all living things. Pollutants of particular concern are particulate matter (PM) and carbon dioxide (CO_2).

Impacts on climate change:

- The transportation sector is responsible for 27 percent of greenhouse gas (GHG) emissions in Canada. Light-duty vehicles – cars, vans and light-duty trucks – are responsible for almost half of that total. While automakers have been successful in reducing criteria air contaminant (CAC) emissions from cars and light trucks, fuel usage and CO_2 emissions have grown steadily over the past two decades. That's because CO_2, the principle GHG linked to climate change, is an unavoidable by-product of burning fossil fuels.
- One easy way to cut fuel consumption, save money and reduce GHGs is to avoid unnecessary idling. Reducing unnecessary idling is a key component of national climate change programs.

Impacts on the wallet – Waste of gas and money:

- Believe it or not, an idling engine burns about 3.5 litres of fuel an hour and if you idle your vehicle for more than 10 seconds, you use more fuel than it would take to restart your engine.

3. Some solutions to idling include:

- Reduce your time idling – don't arrive at school early for drop-off and pick-up, don't go through drive-thru's, turn the engine off when waiting at railway crossings, the car wash and gas station.
- Turn vehicles off and go inside.

When you are dropping off or picking up your children at school, please stop in a safe, legal parking space and turn off your engine. Then safely walk your children to and from the school.

Help make your school an idle-free zone.

We'll all breathe a little easier.

4. Idling Facts:

- With today's computer-controlled engines, even on cold winter days, two to three minutes of idling is enough warm-up time for the average vehicle before driving. Please consult the owner's manual or contact your vehicle service advisor if you would like a recommendation specific to your vehicle or climatic conditions.
- Cars warm faster and operate more efficiently when being driven. Warming up the vehicle means more than warming the engine. The tires, transmission, wheel bearings, steering and suspension are best warmed up by driving the vehicle. Warm up your vehicle by driving it at a moderate speed.
- Idling for more than 10 seconds uses more fuel than it takes to restart you vehicle. If you think you are going to be stopped for more than 60 seconds, except while in traffic, turn off you engine. The break-even point to offset any incremental maintenance costs is under 60 seconds.
- Do no overuse your remote starter. Remote starters are often used to start the vehicle long before the driver is ready to drive. Remote starters can easily lead to needless idling time and wasted fuel. If you use a remote starter, start your vehicle shortly before you are ready to drive away.

5. Idling and your health:

- Vehicle emissions contribute to the creation of ground level ozone. Ozone is a respiratory irritant. Walk or bike whenever you can to reduce vehicle use.
- Many people believe they are protected from air pollution if they remain inside their vehicle. However, exposure to most auto pollutants, including volatile organic compounds (VOCs) and carbon monoxide (CO), is higher inside the vehicle than outside.
- Children are particularly vulnerable to air pollution because they breathe faster than adults and inhale more air per pound of body weight. Smog levels tend to be worse in the late afternoon, precisely when driving parents accumulate around the schoolyard. This glut of idling engines contributes to the bubble of smog that surrounds the school and into which rush excited and active children.

6. Tips to reduce your vehicle's impact on the environment:

- A block heater can help reduce the impact of cold starts. A cold engine is at its worst for fuel consumption, engine wear and exhaust emissions. Block heaters help improve winter fuel economy by pre-warming the engine, coolant and oil. Use an automatic block heater timer to turn on the block heater approximately two hours before you plan to drive.

- An idling engine is not operating at its peak temperature, which means fuel combustion is incomplete. This leaves fuel residues that contaminate engine oil and damage engine parts. For example, fuel residues tend to deposit on spark plugs and as the amount of engine idling increases the plugs' average temperature decreases and they get dirty more quickly. This causes a four to five percent increase in fuel consumption.
- Follow the manufacturer's recommended maintenance schedule. A poorly maintained vehicle can cost the equivalent of up to 15 cents more per litre on fuel.
- Measure your tire pressure at least once a month. Inflate cold tires to the recommended pressure. Properly inflated tires will last longer, make your vehicle safer to drive and save on fuel costs.
- Increasing your highway speed from 100 km/h to 120 km/h can increase your fuel consumption by up to 20 percent.
- Under normal driving conditions, cruise control saves fuel on the highway by keeping your speed constant and avoiding inadvertent speeding. Check your owner's manual regarding the safe operation of your vehicle's cruise control system.
- Use your air conditioning sparingly. Air conditioning can increase fuel consumption by up to 20 percent due to the extra load on the engine.
- Remove unnecessary weight. If you add weight to your vehicle for extra traction in the winter months, remember to remove it when the snow melts. Unnecessary weight can result in wasted fuel and needless CO2 emissions.
- Take off the roof rack. A loaded or empty roof rack increases fuel consumption through aerodynamic drag. A removable roof rack, installed only when needed, is your best option.
- Adopt fuel-efficient driving habits. Accelerate smoothly as abrupt starts and stops waste fuel.
- Take one long trip instead of several short trips. Plan to combine your trips as numerous separate short trips will burn more fuel, regardless of the season because the engine and drive train do not reach their most efficient operating temperatures. Try combining errands or trip chaining to reduce your impact.
- Leave the vehicle at home, or park partway to your destination. Walk, cycle, carpool or take public transit whenever you can.

Getting the Message Out

This section includes sample newsletters that may be used in part or in their entirety. This information may be inserted into the school newsletter or used on the school website to remind drivers to be Idle-Free throughout the year. A school may also paraphrase the information contained in these documents to make them conform to your newsletter.

It is important during the campaign to regularly include information on idling to your school community. If your campaign begins in the fall, you may observe compliance with the program while the weather is mild. However, once cold weather sets in you may observe vehicle idling to reoccur. For this reason, it is important to frequently provide drivers with information so they can be better informed about the issues surrounding idling. Through this educational process it is hoped drivers will become committed to permanently altering their driving behavior.

The information contained in this section can also be used in other ways to advertise your school's initiative to be idle free.

- Modify and place on your school's website, informing all readers of your idle free status.
- Update your school's telephone messaging system - add a tag line or an information message to be heard by callers while they are on hold.
- Program information onto the school television monitors used to share activities occurring at a school.

Invite students to write a newsletter entry for a school contest, with the winner's entry being placed into your regular newsletter. This will reinforce student learning while promoting writing skills. By keeping your school community informed on the hazards of idling, you can create a new norm for all drivers entering onto school property.

Idle-free Schools

What does "Idle-free" mean?

"Idle-free" means we turn off our vehicles when not in motion and when it is safe to do so. For example, turn off the engine rather than idling while waiting for passengers, waiting in drive-thru line ups, "warming-up" vehicles for more than 5 minutes, or running "quick" errands. On extremely cold days, idling may be necessary; however, together Canadians idle for a daily total of 75 million minutes in wintertime. That's equal to one car idling for 144 years!

Why should we turn the engine off?

Idling affects the environment by decreasing air quality. Components in vehicle exhaust may also affect human health. Carbon dioxide, a chemical compound in vehicle exhaust contributes to climate change.

How can idling potentially affect human health?

Chemical compounds found in vehicle exhaust, such as nitrogen oxides, sulphur dioxide, particulate matter and benzene can:

- Affect respiratory systems, possibly exacerbating an asthma attack.
- Affect nose, throat and eyes, possibly causing irritation.
- Cause some cancers with long-term exposure.

How does idling affect the environment?

Air quality can be reduced by a vehicle's exhaust. Nitrogen oxides, sulphur dioxide, particulate matter and benzene can:

- Reduce visibility by contributing to the production of smog.
- Reduce water quality and potentially result in aquatic plant and/or animal deaths.
- Decay the exteriors of buildings by contributing to the production of acid rain.
- Increase ground level ozone, which can damage crops and irritate respiratory systems.

What about idling when it is cold outside?

Many people believe vehicles need to warm up before we drive them. This is a myth. In most cases, the engine warms up best if the vehicle is driven. In very cold weather idle for a maximum of 5 minutes to get the heater working and the windows clear. In warmer weather, a minute or less is best!

Benzene: An organic chemical compound occurring naturally in crude oil; can be formed during refining processes and found in vehicle fuel. Long-term exposure can lead to health effects like some cancers. Short-term exposure can cause respiratory problems, dizziness or headaches. Motor vehicle emissions are the main source of benzene in Alberta.

Carbon dioxide: Is a gas at standard temperature and pressure and exists in Earth's atmosphere in this state. It is a chemical compound found in vehicle exhaust.

Nitrogen Oxides (NOx): Chemical compounds (including nitric oxide and nitrogen dioxide) that can contribute to ground-level ozone and acid rain. Nitrogen dioxide is a respiratory irritant for short-term exposures. Approximately 40% of emissions are from the urban transportation sector in Alberta.

Ozone (O3): A gas naturally found in the upper atmosphere; also exits near the ground as a pollutant. A component of smog that may cause respiratory issues. It is produced from chemical reactions of other pollutants in the atmosphere (for example NOx).

Fine particulate matter (PM2.5): A wide variety of tiny particles small enough to remain in the air for long periods of time. Can enter the lungs when inhaled. Sources include motor vehicles, industry and wood burning.

Smog: a combination of pollutants including ground-level ozone, sulfur dioxide, nitrogen oxides and particulate matter. These pollutants come from vehicle emissions, industry, wood burning and other sources.

Sulphur oxides (SOx): Chemical compounds that can contribute to acid rain. Sulphur dioxide can irritate the lungs and eyes with short-term exposure. These pollutants are produced by burning fossil fuels.

Idle-Free Schools - Bus Information

What does "Idle-free" mean?

"Idle-free" means we turn off our vehicles when they are not in motion, and when it is safe to do so. For example, we idle when we wait for passengers, wait in drive-thru line-ups, "warm-up" our cars, or run "quick" errands. In the winter, many Canadians idle their vehicles for about 8 minutes per day.

How can idling potentially affect human health?

Idling can potentially affect human health in negative ways. Chemical compounds, such as nitrogen dioxide, sulphur dioxide, particulate matter and benzene are produced when idling and can potentially:

- Affect respiratory systems, possibly exacerbating an asthma attack.
- Affect nose, throat and eyes, possibly causing irritation.
- Cause some cancers with long-term exposure.

How can idling affect the environment?

Air quality can be reduced by a vehicle's exhaust. Nitrogen oxides, sulphur dioxide, particulate matter and benzene can:

- Reduce visibility by contributing to the production of smog.
- Reduce water quality and potentially result in aquatic plant and/or animal deaths.
- Decay the exteriors of buildings by contributing to the production of acid rain.
- Increase ground level ozone, which can damage crops and irritate respiratory systems.

Why are buses included in the Idle-Free Schools program?

Buses are critical to safely transporting students to and from school each day. With their pick-up and drop-off locations in front of most schools, or in and around school playgrounds, they are on display for staff, students, parents and the community. Buses can chose to take on a leadership role in the Idle-Free Schools program by turning the key and minimizing their emissions.

So what can buses do?

Expectations for bus idling is different from passenger vehicles. By adhering to the following practices, buses can help reduce unnecessary idling and contribute to a healthier environment.

- Buses could turn off their engine if idle time exceeds 3 minutes, weather permitting.
- Buses could turn off when students are loading and unloading at schools.
- Buses may choose to idle for heat to assist in clearing the driver's windows of frost, ice or snow.
- Buses may choose to idle to support passenger/operator comfort when outside temperatures exceed -10˚C.
- If bus drivers arrive early at school in colder weather, they could be welcomed by the school to wait inside until the students are ready to depart.

Why should we turn off our engines?

Idling our vehicles when it is not necessary can affect the environment, and potentially human health, by decreasing air quality.

What are students and teachers doing about idling?

The Idle-Free Schools program aims to provide information and education about vehicle emissions and chemical pollutants, and how these can affect the environment and potentially human health. Students will be periodically surveying vehicle idling throughout the year to track how we are doing.

Will I save money if I turn off my vehicle?

Yes! For a mini-van or small SUV, You waste about a cup, or 250 mL of fuel for every 10 minutes of idling. The average Canadian who reduces idling by more than 10 minutes per day can actually save nearly $100 per year!

Note:
Idling a diesel engine actually lowers the coolant temperature faster than shutting off the engine. In other words, turning off the engine if the bus is simply waiting for passengers can actually help keep the engine warmer, longer. Additionally, using a block heater in very cold temperatures can assist in keeping the engine in better working condition, reducing the need for idling time.

It is recommended buses post their policies inside the bus when possible, to ensure both students and general public understand transportation services are doing their part to help improve the environment. Bus operators and carrier supervisors should be involved in the Idle-Free Schools programs to assist in conveying their policies and actions to the school, parents and community.

Additional Resources

Idle-Free Monitoring Form

DATE:	**SCHOOL:**	**TIME:** **to**

OBSERVER:	**TEMPERATURE:**	**WEATHER:**

Make notes on all vehicles arriving and leaving.

Vehicle	**Less Than 30 Seconds of Idling (Yes or No)**	**If Idling…**		
		Start Time	**Stop Time**	**Total Idling Time**
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

BE IDLE FREE AT SCHOOL

Reducing Car Engine Idling: Commitment Intervention

Monitor(s): _____

Location: _____

Monitoring Time: _____

Date: _____

	Vehicle Idling more than 30 seconds? Y/N	Sticker Accepted? Y/N	Sticker Placed? Y/N	Notes
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

Sample Script

Hello, my name is _____ and I am working with the school on a project to reduce vehicle engine idling. Many citizens already work to protect the environment by participating in community programs, such as recycling. Would you have just 30 seconds for me to share some information on the benefits of reducing engine idling, another way to help the environment?

If NO, thank and discontinue

If YES, continue…

[Proceed through the script while holding the information card in your hand - - this gives you a reminder of the issues to talk about - - saving money, breathing easier, the environment - - and makes it easier to offer them an information card and window sticker when you're done.]

When you don't idle your engine, you reduce the amount of gas you use. This means you'll save money on fuel! In addition, engine exhaust, as you know is unhealthy to breathe. By turning your engine off, you and others around you won't have to breathe in fumes from a vehicle that is going nowhere.

Exhaust also affects air quality and contributes to climate change. Therefore, not idling your engine also means that you'll contribute to reducing problems like smog and climate change. We have these information cards that explain how turning off your engine can save you money, help you breathe easier and spare the air. Would you like one?

We're also asking people to make a commitment to turn off their engines when they're parked and waiting in their vehicles by placing this static window sticker in their window. The sticker is a reminder to you to turn your engine off, and also tells others of your commitment to reduce engine idling. This sticker, has been designed so that it can be easily removed from your window at a later time.

Many people have already made this commitment. Would you be willing to make a similar commitment?

May I place this sticker on your rear window?

Thank you and have a nice day.