



City of Richmond

Report to Committee

To: Public Works and Transportation Committee *To Public Works! Transportation - MAR 17, 2* Date: February 26, 2004
From: Gordon Chan, P. Eng. File: *6455-01*
Director, Transportation
Re: **PROPOSED EDUCATION STRATEGIES TO DETER UNNECESSARY IDLING OF VEHICLES IN SCHOOL ZONES**

Staff Recommendation

1. That the proposed education strategies to raise community awareness of the negative impacts of idling vehicles and deter unnecessary idling, as presented in the attached report, be approved.
2. That this report be forwarded to the Richmond School District for information and that staff be directed to work with the Richmond School District to develop strategies to educate parents and schoolchildren of the negative impacts of unnecessary vehicle idling.

Gordon Chan, P. Eng.
Director, Transportation
(4021)

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ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Emergency & Environmental Programs ... Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		

Staff Report

Origin

During discussion of the Traffic Safety Advisory Committee annual report at the regular Council meeting held January 26, 2003, Council directed staff to “investigate the amount of emissions resulting from idling motor vehicles while parents waited to pick their children up from school.” This report summarizes the findings of an investigation of this issue and proposes a number of education strategies for the public to raise awareness of the negative impacts of idling vehicles and deter motorists from unnecessarily idling their vehicles, particularly in school zones.

Analysis

1. Vehicle Pollutants

Vehicles and engine emissions are major contributors to air pollution. Air emissions from the transportation sector contribute 40% of the nitrogen oxide (NO_x) emissions that cause smog and 25% of the carbon dioxide (CO₂) emissions that contribute to climate change. Other pollutants that motor vehicles also emit include carbon monoxide (CO, a highly poisonous gas), volatile organic compounds (VOCs, known as hydrocarbons, react with nitrogen oxides to produce ground level ozone, a principle component of smog), sulphur dioxide (SO₂, which contributes to smog and produces acid rain), and particulate matter (PM, which includes particles of soot, ash, and dirt that are released from car exhaust and combine with ground level ozone to produce smog). The adjacent table provides the approximate annual emissions of these pollutants from the average Canadian light-duty vehicle as estimated by Pollution Probe, a Canadian non-profit environmental organization.

Estimated Annual Emissions from Average Canadian Light-Duty Vehicle	
Pollutant	Kilograms
Carbon Dioxide (CO ₂)	4,480
Carbon Monoxide (CO)	200
Volatile Organic Compounds (VOCs)	20
Nitrogen Oxides (NO _x)	22
Sulphur Dioxide (SO ₂)	0.89
Particulate Matter (PM _x)	0.27
Note: light-duty vehicles include cars, pick-up trucks, sport utility vehicles, and minivans.	
Source: Smog Primer, Pollution Probe (based on data from 2000).	

2. Impacts of Idling Vehicles

The unnecessary idling of vehicles has multiple negative impacts:

- Poor Air Quality – recent studies by Health Canada and other agencies have shown a direct link between contaminants in vehicle emissions and significant respiratory health effects. These studies have concluded that poor air quality and smog – caused in part by vehicle exhaust – are resulting in increased hospital admissions, respiratory illnesses and premature deaths, particularly in urban areas. A vehicle idling for five minutes produces an average of 30 grams of CO, 2 grams of VOCs and 0.5 grams of NO_x.
- Climate Change – the potential impacts of global climate change include sea level rise and increased flooding risk to coastal and low-lying areas, which in turn could result in significant environmental, economic and social impacts to the City of Richmond and its residents. A vehicle idling for five minutes produces 0.27 kilograms of the greenhouse gases that are destabilizing the planet’s climate patterns. If every driver in Canada avoided idling for five minutes a day, 1.6 million tonnes of carbon dioxide (the principle greenhouse gas

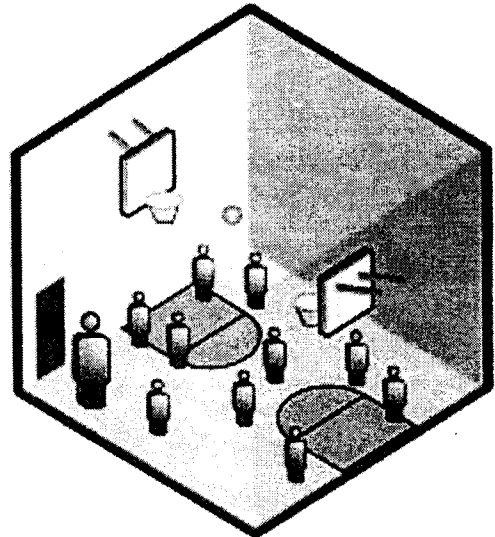
contributing to climate change) would be prevented from entering the atmosphere, which is the equivalent of taking 280,000 cars off the road.

- ***Higher Fuel Usage & Costs*** – one vehicle idling for 5 minutes burns just over one-tenth of a litre or between 2½ and 4 litres of fuel per hour, depending on the size of the engine, the idle speed, accessory loads and power take-offs. Idling a vehicle for 5 minutes a day uses an average of 50 litres of gas per year. If gas costs \$0.80 per litre, motorists can save \$40 each year and avoid wasting a non-renewable resource simply by turning off their engine.
- ***Increased Engine Wear & Tear*** – contrary to popular belief, idling is not an effective way to warm up a vehicle, even in cold weather. Modern engines need no more than 30 seconds of idling on winter days before driving can begin and excessive idling can actually damage engine components including the vehicle's cylinders, spark plugs and exhaust system.

3. Sample Emissions and Gas Usage of Idling Vehicles in Richmond

The CO₂ Calculator is an interactive calculator developed by the federal Office of Energy Efficiency, a department of Natural Resources Canada, that shows the potential CO₂, fuel and dollar savings that communities across Canada can achieve by reducing unnecessary vehicle idling. The calculated results for Richmond reveal that:

- if every driver of a light-duty vehicle in Richmond avoided idling for 5 minutes a day, the city could prevent 25.37 tonnes of carbon dioxide from entering the atmosphere each day or 9,261 tonnes per year; and
- by avoiding idling for five minutes a day, motorists in Richmond could collectively avoid wasting 10,751 litres of fuel each day, worth \$8,601. This translates into annual savings of 3,924,115 litres worth \$3,139,292 (based on \$0.80 per litre).



9,261 tonnes of CO₂ per year is enough to fill **1,575** gymnasiums
Source: CO₂ Calculator, OEE.

4. Estimated Emissions and Gas Usage of Idling Vehicles at School Sites in Richmond

With respect to idling vehicles specifically at Richmond elementary and high school sites during student drop off and pick up times, staff estimate that these vehicles together:

- spend 2,500 hours per day idling (based on 50 sites with 100 cars per site and each car idling for 15 minutes each in the morning and afternoon) or 475,000 hours annually (based on 190 school days per year);
- release 8.13 tonnes of greenhouse gases daily into the air or 1,544 tonnes annually; and
- waste 7,500 litres of fuel each day, worth \$6,000 (based on an idling car using 3 litres per hour and a fuel cost of \$0.80 per litre) or 1,425,000 litres worth \$1,140,000 annually.

5. Proposed Education Strategies

A number of potential media could be used to raise awareness in the community of not only the harmful environmental and health effects of unnecessary vehicle idling but also the extra financial costs to motorists. Possible avenues for education initiatives include:

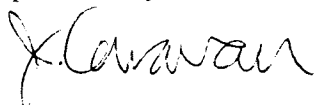
- City Notices – placement of anti-idling messages and information on the City’s web site and in an edition of the City Page of the Richmond Review.
- Brochures and Information Cards – creation of a brochure and/or information card for distribution to City facilities (e.g., libraries and community centres) and display at City-sponsored events (e.g., Environment Fair, City Centre Celebrations, Salmon Fest) that informs the reader of the consequences of unnecessary idling. The federal Office of Energy Efficiency has a comprehensive web site outlining how-to programs for establishing anti-idling initiatives. The site has information on school-based, work-based and community-based campaigns, and a tool kit that includes free ready-to-use graphic images and materials that can be used as is or adapted to a customized anti-idling campaign. Attachment 1 provides a sample of these materials.
- Partnerships – the GVRD currently delivers anti-idling and other greenhouse gas emission reduction messages as part of several integrated initiatives, such as the “Home Pages™” section of the White Directory telephone book. In 2003, GVRD staff investigated developing an expanded public outreach campaign to deliver integrated messaging on anti-idling to targeted audiences with the potential support of federal funding from Natural Resources Canada. Staff would approach GVRD staff to determine if there is an opportunity for the City to work with the GVRD to deliver such a campaign. Staff could also work with the Richmond School District to develop anti-idling messages targeted at parents. For example, the information cards and brochures discussed above could be provided to the School District for distribution to parents through school newsletters or even handed out to parents as they pick up and drop off their children at school sites. Staff would also work with the City’s Advisory Committee on the Environment on strategic educational opportunities.

Financial Impact

There is no financial impact associated with the implementation of any of the proposed educational initiatives. Placement of anti-idling messages on the City’s web site or as a City Page notice could be accommodated within existing departmental budgets. The production of brochures and/or information cards could be funded from the Transportation Department’s 2004 Minor Capital Program, which is subject to Council approval. The potential costs of participating in an anti-idling campaign with the GVRD are unknown at this time and would vary with the scope of the campaign and the availability of funding from other sources (e.g., Natural Resources Canada). Should such an opportunity materialize and have budget implications, staff would seek Council approval at that time to participate in the campaign.

Conclusion

The pollutants in vehicle emissions contribute to climate change and poor air quality, which in turn can result in adverse health impacts, particularly in urban areas. Reducing unnecessary vehicle idling can mitigate these impacts and save motorists money by decreasing fuel usage and prolonging engine life. Staff propose several education strategies to raise awareness of the negative impacts of vehicle idling and deter motorists from unnecessarily idling their vehicles, particularly in school zones.



Joan Caravan
Transportation Planner (4035)

Sample Anti-Idling Images and Material

Ready to do your part?
Here's a simple, five-step process to change your idling habits:

STEP 1: Reduce warm-up idling. Start driving after no more than 30 seconds of idling, assuming your vehicle's windows are clear.

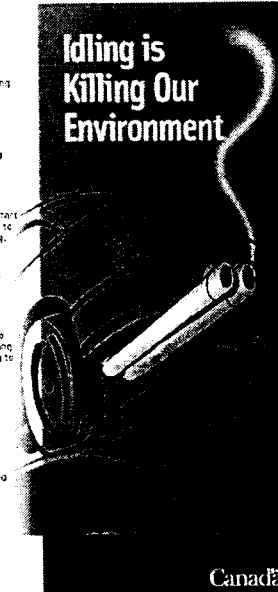
STEP 2: If you are going to be stopped for more than 10 seconds, except in traffic, turn off your engine. Idling your vehicle for longer than 10 seconds uses more fuel than it would take to restart the vehicle.

STEP 3: Avoid using a remote car starter. These devices encourage you to start your vehicle before you are ready to leave, which means wasteful idling.

STEP 4: In temperatures below 0°C, use a block heater to warm the engine before you start your vehicle. This will improve fuel efficiency and reduce exhaust emissions.

STEP 5: Talk to your family, friends and neighbours about the benefits of reduced idling. Encourage them to join you in saving money, protecting the environment and contributing to a healthier community.

For More Information
For more information, visit the Office of Energy Efficiency of Natural Resources Canada's www.see.nrc.ca website or call 1-800-387-2000 for a free information kit.



Idling is Killing Our Environment

Canada

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IF YOU THINK IDLING IS HARMLESS... Think Again.


Canada

Brochures

ready to do your part?


Here are 5 simple steps you can take to reduce needless idling.

- 1 Reduce warm-up idling – start driving after no more than 30 seconds of idling, assuming your vehicle's windows are clear. Excessive idling is not good for your engine.
- 2 Turn it off after 10 seconds – turn your engine off if you are going to be stopped for more than 10 seconds, except in traffic.
- 3 Minimise use of remote car starters – these devices encourage you to start your vehicle before you are ready to leave, which means wasteful idling.
- 4 Use a block heater – in temperatures below 0° C, use this device to warm up the engine before starting your vehicle. This will improve fuel efficiency and reduce exhaust emissions.
- 5 Spread the word – talk to your family, friends and neighbours about the benefits of reduced idling. Encourage them to join you in saving money, protecting the environment and contributing to a healthier community.



all it takes is the turn of a key

turn it off!



You can use energy more wisely by turning off your engine when your vehicle is parked.

- **Save money** – because idling your vehicle for 10 minutes a day uses up more than 100 litres of gasoline in a year.
- **Breathe easier** – you won't have to breathe in exhaust fumes from a vehicle that is going nowhere.
- **Spare the air** – to combat problems like smog and climate change, we all need to use energy more wisely.

Idling for over 10 seconds uses more fuel than restarting your engine.


idling gets you nowhere

Canada

Information Cards

Windshield Decals

I turn my engine off when parked



idling gets you nowhere

SECRETARY Canada

Windshield Decals

