CAPHE PHAP-RM

7.5 MOBILE SOURCE CONTROLS: IDLING

2016

This work is made possible by National Institute of Health and Environmental Sciences, RO1ES022616, and the Fred A. and Barbara M. Erb Family Foundation. Additional support was provided by the Michigan Center on Lifestage Environmental Exposures and Disease (M-LEEaD), #P30ES017885.

Table of Contents

Figures

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7.5 Mobile Source Controls: Idling

7.5.1 What are idling controls?

Idling controls reduce the pollutant emissions from cars, trucks, buses, and construction equipment when engines are running but vehicles are not in motion. Idling controls restrict the amount of time that vehicles can idle, by using anti-idling technology, laws or regulations. These restrictions often target commercial trucks and buses, but emissions can also be reduced when anti-idling controls are used on other sources.

Idling also occurs on congested roads when vehicles are stuck in traffic. Measures that reduce such congestion, including public transit, carpooling, walking and cycling, and other transportation controls that reduce peak use of roads, can also reduce congestion and emissions. This fact sheet, however, focuses on idling controls for buses and commercial vehicles.

7.5.2 What can be done to reduce idling?

Several options exist to reduce idling. A cost-effective approach is to establish and enforce anti-idling laws, ordinances and regulations that require trucks, buses and other vehicles to turn off the engine when not in use.

Figure 7.5 - 1. Anti-idling signage.

Idling reduction technologies are also effective strategies for reducing pollution related to idling. These technologies include automatic engine shut down/start up systems, auxiliary power units, battery-operated heaters, and electrification systems that allow drivers to run some vehicle systems (e.g., heater and air conditioner) without operating the engine. Developing "shore power" outlet, infrastructure that allows trucks to plug in to electrical outlines at truck stops, is another common anti-idling method used to reduce idling at truck stops.

Other approaches to reducing idling include the use of signage, economic incentives, and anti-idling education and outreach to encourage people to turn off engines when vehicles are not in motion.

7.5.3 Why is this important?

Idling burns fuel unnecessarily, increases fuel costs, and produces emissions that are harmful to human health and the environment.[1] Diesel truck engines burn roughly a gallon of fuel per hour when idling and the EPA estimates that over one billion gallons of fuel are wasted each year due to this practice.[2]

[1] EPA (U.S. Environmental Protection Agency). 2010. Idle Reduction: A Glance at Clean Freight Strategies. Available: http://www3.epa.gov/smartway/forpartners/documents/trucks/techsheets-truck/420f09038.pdf. [accessed 9 February 2016].

[2] IDEM (Indiana Department of Environmental Management). 2016. Idle Reduction Alternatives. Available: http://www.in.gov/idem/airquality/2568.htm. [accessed 9 February 2016].

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Idling can also reduce the life of diesel engines by increasing wear on internal parts. Reducing idling minimizes these impacts and can reduce maintenance costs significantly.

Idling contributes to air pollution. Annually, truck engines that idle for long durations have been estimated to release 11 million tons of carbon dioxide (CO_2), 200,000 tons of oxides of nitrogen (NO_x), and 5,000 tons of particulate matter ($PM_{2.5}$) into the air.[3] CO_2 emissions contribute to climate change.[4] NO_x and $PM_{2.5}$ emissions directly affect the health of drivers, passengers, and nearby community members, and NO_x emissions also cause ozone pollution, another widespread air pollutant.[5] Idling vehicles also emit other pollutants, including carbon monoxide and black carbon.

Idling also causes noise pollution. In addition to being a nuisance, noise increases stress, discomfort, and can interfere with sleep.

Idling is a significant issue in Southwest Detroit. A 2013 survey indicated that truck pollution was one of the top concerns of residents living in City Council District 6 (which includes Southwest Detroit).[6] In 2015, about 2.5 million trucks crossed the Ambassador Bridge, equivalent to about 6900 trucks each day.[7] The international bridge, tunnel, and terminal areas are locations where a large number of large trucks idle while waiting to enter or leave the USA; idling emissions at these areas can be substantial.[8]

7.5.4 Which pollutants are affected by idle reduction strategies?

Idling controls reduce emissions of several hazardous pollutants, including particulate matter ($PM_{2.5}$), nitrogen oxide (NO_X), carbon dioxide (CO_2), carbon monoxide (CO), diesel exhaust, and volatile organic compounds (VOCs).

7.5.5 What health effects can be mitigated?

Reduced air pollution emissions from idling restrictions would contribute to improvements over time in respiratory diseases (such as asthma) and cardiovascular disease (such as hypertension). Pollutants emitted by idling vehicles, especially $PM_{2.5}$ and diesel exhaust, have been associated with other adverse health effects, including adverse birth outcomes, reproductive effects, premature death, cancer, nausea, vomiting, visual

[3] NRDC (Natural Resources Defense Council). 2012. Smarten Up and Stop Idling. Available: http://www.nrdc.org/living/gettingabout/smarten-up-stop-idling.asp. [accessed 9 February 2016].

[4] NRC (Natural Resources Canada). 2015. Emission impacts resulting from vehicle idling. Available: http://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/cars-light-trucks/idling/4415. [accessed 9 February 2016].

[5] DEEP (Diesel Education & Emissions Project). 2012. Anti-Idling Toolkit For California Communities How to reduce diesel pollution and protect the health of your community. Greenaction for Health & Environmental Justice. Available: http://greenaction.org/wp-content/uploads/2013/01/DEEP-v1.pdf. [accessed 9 February 2016] and EDP (Environmental Defense Fund). 2009. Idling Gets you Nowhere: The Health, Environmental and Economic Impacts of Engine Idling in New York City. Available: https://www.edf.org/sites/default/files/9236_Idling_Nowhere_2009.pdf. [accessed 9 February 2016].

[6] DEA (The Detroit Environmental Agenda). 2013. Available: http://www.dwej.org/wp-content/uploads/2015/12/ElectionDraftAnnalieseEdits-nohyperlinks.pdf [accessed 2-10-16])

[7] PBOA (Public Border Operations Association). 2016. Available: http://publicborderoperators.org/index.php/traffic [accessed 2-10-16].

[8]PBOA (Public Border Operations Association). 2016. Available: http://publicborderoperators.org/index.php/traffic [accessed 2-10-16].

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impairments, cognitive decrements, kidney damage, fever, headaches, dizziness and other nervous system effects.[9] While there are many other sources of $PM_{2.5}$ and other pollutants, idling restrictions can help to reduce emissions and improve air quality in high traffic and congested areas.

7.5.6 What is happening in Detroit?

City of Detroit Anti-Idling Ordinance. The City of Detroit passed an anti-idling ordinance in 2010, which is enforced by the Detroit Police Department (Traffic Enforcement Division).[10] The anti-idling regulations include: a five minute consecutive idling limit in any 60-minute period, a written warning for a first offence, and a fine of $150 for the operator and $500 to the owner for a second offense. There are several exemptions to this rule, which include: when traffic conditions do not allow, when a truck is motionless for more than 2 hours and temperatures are below 25 degrees F, when trucks are undergoing state inspections, and during hybrid vehicle recharging. Also, idling restrictions do not apply to power auxiliary equipment, emergency vehicles, and electric, hydrogen or natural gas powered vehicles.[11]

Anti-Idling Workgroup. The Detroit-based Anti-Idling Workgroup worked with the City Council's Green Task Force, Detroit Police Department (DPD), local businesses, community members and other organizations to raise awareness about the Detroit ordinance, and to support and encourage enforcement.[12]

The 2013 Detroit Environmental Agenda notes several challenges to enforcing Detroit's anti-idling ordinance: 1) targeting of commercial delivery trucks rather than unnecessary idling near residential areas (the intent of the regulation); 2) no specific number or "hot-line" for residents to call to report a violation; 3) need for an efficient system to identify idling violation hot spots; and 4) a lack of awareness about the ordinance.[13]

Several other policies are related to idling and relevant to Detroit, and can help to assess and reduce impacts from truck traffic. These include designating, publicizing and enforcing truck routes in the city[14] , and using community truck surveys (often by partnering between NGOs, stakeholders, and volunteers) to identify the routes and numbers of trucks on them. These surveys raise awareness within communities and can be used to advocate for changes in truck routes.[15]

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[9] (Community Action to Promote Healthy Environments, Health Effects of Air Pollutants Chart.)

[10] SDEV (Southwest Detroit Environmental Vision). Anti-Idling. Available: http://www.sdevweb.org/issues/anti-idling/. [accessed 12-17-15].

[11] ATRI (American Transportation Research Institute). 2015. Compendium of Idling Regulations. Available: http://www.atri-online.org/research/idling/ATRI_Idling_Compendium.pdf. [accessed 12-17-15].

[12] SDEV (Southwest Detroit Environmental Vision). Anti-Idling. Available: http://www.sdevweb.org/issues/anti-idling/. [accessed 2-11-15].

[13] DEA (The Detroit Environmental Agenda). 2013. Available: http://www.dwej.org/wp-content/uploads/2015/12/ElectionDraftAnnalieseEdits-nohyperlinks.pdf [accessed 2-11-16])

[14] DEA (The Detroit Environmental Agenda). 2013. Available pg. 50: http://www.dwej.org/wp-content/uploads/2015/12/ElectionDraftAnnalieseEdits-nohyperlinks.pdf [accessed 2-10-16]

[15] SDEV (Southwest Detroit Community Benefits Coalition. Progress. Available: http://www.swdetroitcbc.org/projects-and-progress [accessed 2-11-16].)

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7.5.7 What best practices have been used elsewhere?

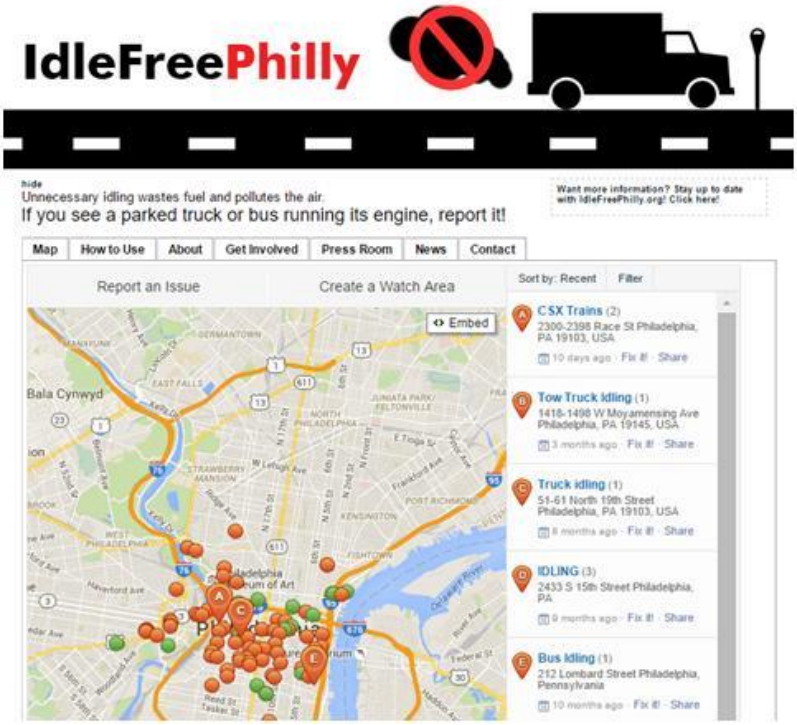

Figure 7.5 - 2. IdleFreePhilly web-based tool.

Combine an anti-idling hotline with a web-based tool. Philadelphia, Pennsylvania implemented anti-idling laws in 2008. The city's air pollution control agency, Air Management Services, is responsible for monitoring air pollutants and enforcing air quality standards. Residents can report idling violations in their neighborhood using a telephone hotline or a web-based mapping tool called IdleFreePhilly.org (http://www.idlefreephilly.org/) and clicking on the map where the idling issue is occurring.[16] This information is reported to Air Management Services, and the city's Clean Air Agency can issue a ticket if enough information is provided. In addition, the collected data allows the city to identify and address idling hot spots (see Figure 7.5 - 2).[17]

Write idling enforcement into local and state air quality rules. Connecticut, Massachusetts and Rhode Island's anti-idling regulations are incorporated into their State Implementation Plans (SIP), which is used to assure compliance with the National Ambient Air Quality Standards. The US Environmental Protection Agency has taken enforcement actions against trucking fleets in these states for alleged violations of the anti-idling regulations.[18]

Enable enforcement by multiple agencies. Chicago's 2009 anti-idling ordinance is enforceable by Department of Public Health (CDPH) inspectors, traffic control aides, parking enforcement aides, and police officers. Enabling multiple agencies to enforce anti-idling ordinances can help to alleviate enforcement issues faced by cities like Detroit.[19]

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[16] The Philadelphia Parking Authority. Available: http://www.philapark.org/2011/11/anti-idling-law/ [accessed 2-11-16].
[17] IdleFreePhilly. Available: http://www.idlefreephilly.org/ [accessed 2-11-16].
[18] EPA (Environmental Protection Agency). Idling. Available: http://www3.epa.gov/region1/eco/diesel/idling.html [accessed 2-11-16]
[19] City of Chicago. Available: http://www.cityofchicago.org/city/en/depts/cdot/supp_info/doing_our_share_forcleanerairidlingreduction.html/ [accessed 2-11-16].

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Encourage EPA's SmartWay Transport Partnerships. These voluntary collaborations between the US Environmental Protection Agency and the freight industry aim to conserve fuel, reduce emissions, and improve transportation supply chain efficiency. For example, these partnerships establish individualized goals and approaches for companies to save fuel.[20] One such partner is Gemini Transport of Dearborn.

Create an anti-idling campaign. Dallas, Texas created an anti-idling campaign as part of its *Green Dallas* program. This included a sign program (requesting companies and organizations to post anti-idling signs), an educational component (featuring a website where people could learn more about the ordinance), and outreach to trucking companies, including distributing brochures at truck stops and trucking businesses.[21]

Utilize and/or require idling reduction technology. This technology can be on-board the trucks themselves, or on-site at truck stops. On-board options include automatic shut-down devices, auxiliary power units (generators), integrated battery or alternative powered devices, fuel operated heaters, and thermal storage systems. Onsite options include electrified truck stops where power is provided to trucks using the infrastructure available at the truck stop ("shore power").[22]

Create drivers lounges. Areas where drivers can relax while their trucks are being loaded or unloaded reduces their need to idle vehicles. Lounges can offer amenities like internet, cable TV, food and beverages, etc., to encourage their use.[23]

Create trainings for drivers. Anti-idling trainings could raise awareness in the trucking community. Community organizations could host training sessions to inform drivers and community members about fuel consumption, emissions and potential health risks associated with idling emissions.[24] For more information about the health concerns associated with excessive idling, see: http://www.nctcog.org/trans/air/vehicles/health.asp.

Use driver incentives. Idling can be minimized by rewarding drivers with the best fuel economy on a monthly or quarterly basis. Drivers could also compete to win a prize for the least idling time.[25]

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[20] EPA (Environmental Protection Agency). Idling. Available: http://www3.epa.gov/region1/eco/diesel/idling.html [accessed 2-11-16]
and EPA (Environmental Protection Agency). SmartWay. Available: http://www3.epa.gov/smartway/ [accessed 2-11-16].

[21] Green Dallas. Air Quality. Available: http://www.cleanairinfo.com/sustainableskylines/documents/Presentations/Track%202/08_Advancing%20Alternatives%20to%20Idling/08%20eric.pdf [accessed 2-11-16] and The Gateway Cities Air Quality Action Plan: Early Action Plan Final Report. 2012. Available: http://www.gatewaycog.org/media/userfiles/subsite_128/files/rl/AQAP-reports/EarlyActionPlanFinalReportMay2012.pdf [accessed 2-10-16].

[22] North Central Texas Council of Governments. Ways to Reduce Idling. Available: http://www.nctcog.org/trans/air/vehicles/waystoreduce.asp [accessed 2-11-16].

[23] North Central Texas Council of Governments. Ways to Reduce Idling. Available: http://www.nctcog.org/trans/air/vehicles/waystoreduce.asp [accessed 2-11-16].

[24] North Central Texas Council of Governments. Ways to Reduce Idling. Available: http://www.nctcog.org/trans/air/vehicles/waystoreduce.asp [accessed 2-11-16]

[25] North Central Texas Council of Governments. Ways to Reduce Idling. Available: http://www.nctcog.org/trans/air/vehicles/waystoreduce.asp [accessed 2-11-16]

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7.5.8 How many people would be affected in Detroit?

The number of people affected by idling depends on the number of people living near sites with high levels of trucks that idle.

Sites in Detroit where people could be affected include:

- Ambassador Bridge and the future site of the Gordie Howe Bridge
- The new Industrial Park and Logistic Center in Eastside
- Truck and rail transfer stations, for example, the Container Port on West Fort Street
- Schools where buses and cars are queuing
- Bus terminals
- People living or working near construction sites and other locations where diesel vehicles or diesel engines operate.
- Neighborhoods where trucks park
- Construction sites

Truck drivers are especially vulnerable to experiencing negative health effects from idling, due to the amount of time they are exposed, and how close they are to the emissions. Thus, they are particularly likely to benefit from reductions in idling.

7.5.9 Applicable strategies for Detroit and/or Michigan

Use an anti-idling hotline and a web-based tool[26] similar to the IdleFreePhilly intervention above.

Enable multi-agency enforcement of Detroit's 2010 Anti-Idling Ordinance. Empowering a greater range of people to enforce the anti-idling ordinance could enhance enforcement.

Create state-level anti-idling restrictions. Creating state-level idling restrictions could enable MDEQ and potentially federal agencies to enforce Detroit's anti-idling law.

Encourage or require idling reduction technology and driver lounges. Advocate for the use of idling reduction technologies and lounges for the customs plaza at the Gordie Howe Bridge.

Create incentives for drivers to reduce idling. This could include creating lounges at truck stops or loading stations, building awareness about the health risks of diesel emissions and idling, and creating reward programs that encourage less idling.

Build awareness through city-wide anti-idling campaign and signage, with particular focus near "hotspots" such as the Gordie Howe Bridge or intermodal facilities.

Encourage EPA's Smartway Partnerships.

[26] This corresponds with recommendations from the 2013 Detroit Environmental Agenda report, see: (The Detroit Environmental Agenda. 2013. Available pg. 50: http://www.dwej.org/wp-content/uploads/2015/12/ElectionDraftAnnalieseEdits-nohyperlinks.pdf [accessed 2-10-16].

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