

What's in the Exhaust?

When cars idle, they emit many types of pollutants into the atmosphere, including the three described below. It is important to understand exactly how they are created and how they affect our health and well-being. Do you know other pollutants that cars emit?

1 VOC

Volatile Organic Compounds

VOCs are the by-product of the incomplete combustion of gasoline in an idling vehicle. They contribute to smog and cause various health risks, including eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment.

2 CO

Carbon Monoxide

Carbon Monoxide is a deadly gas known for its tasteless and colorless characteristics. It has the ability to reduce the flow of oxygen in the bloodstream, causing severe mental and visual impairment.

3 NOx

Nitrogen Oxide(s)

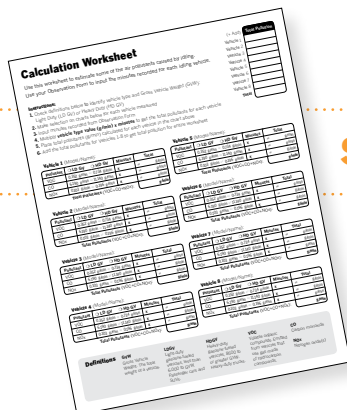
NOx forms when fuel burns at high temperatures, like in motor vehicles. It is a major ingredient in smog and causes respiratory difficulties.

Now you know the facts! You are ready to calculate the total pollution from idling vehicles observed around your school!

Calculate the Pollutants

Using the calculation tables provided on the back of this sheet, you will be able to determine the amount of each pollutant emitted in grams per minute and the “total pollution” put into the atmosphere. The pollutants you calculate using this worksheet are some of the pollutants you are helping to prevent being emitted by asking drivers to take the anti-idling pledge. Wait one to two months after the initial observations, then re-measure idling behavior around your school and see if there is a decrease in vehicle pollution.

With every pledge you get, you become closer to your goal of creating a healthier environment and school community!



See Calculation worksheet on the back!



Want to know more?

Visit our website for more information and additional resources on the effects of idling: www.oconline.org.

Calculation Worksheet

Use this worksheet to estimate the amount of some air pollutants emitted when idling.
Use your Observation Form to input the minutes recorded for each idling vehicle.

Instructions:

1. Check definitions below to identify Gross Vehicle Weight (GVW):
Light Duty (LDGV) or Heavy Duty (HDGV).
2. Choose the appropriate column (LDGV or HDGV) for calculating pollutants for each vehicle.
3. Input minutes recorded from Observation Form.
4. Multiple each vehicle type value (g/min) x minutes to get the amount of each pollutant emitted.
5. Add your calculations for VOC, CO and NOx to get the total pollutants (g/min) for each vehicle.
6. Place total pollutants (g/min) calculated for each vehicle in the chart above.
7. Add the total pollutants for Vehicles 1-8 to get total pollution for entire worksheet.

(+ Add)

Vehicle 1
Vehicle 2
Vehicle 3
Vehicle 4
Vehicle 5
Vehicle 6
Vehicle 7
Vehicle 8

Total

| Total Pollution | |
|-----------------|--|
| | |
| | |
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| | |

Vehicle 1 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 2 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 3 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 4 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 5 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 6 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 7 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Vehicle 8 (Model/Name):

| Pollutant | <input type="radio"/> LDGV | <input type="radio"/> HDGV | Minutes | Total |
|---------------------------------------|----------------------------|----------------------------|---------|----------|
| VOC | 0.352 g/min or | 0.734 g/min | x = | g |
| CO | 6.190 g/min or | 11.140 g/min | x = | g |
| NOx | 0.103 g/min or | 0.196 g/min | x = | g |
| Total Pollutants (VOC+CO+NOx): | | | | g |

Definitions

GVW

Gross Vehicle Weight. The total weight of a vehicle.

LDGV

Light-duty gasoline-fueled vehicles, less than 6,000 lb GVW. Passenger cars and SUVs.

HDGV

Heavy-duty gasoline-fueled vehicles, 8500 lb or greater GVW. Heavy-duty trucks.

VOC

Volatile organic compounds. Emitted from vehicles that use gas made of hydrocarbon compounds.

CO

Carbon monoxide

NOx

Nitrogen oxide(s)