

## Emission Testing

Vehicles are a significant contributor to greenhouse gas emissions (Carbon Dioxide - CO<sub>2</sub>) as well as having a major impact on the release of Carbon Monoxide (CO), Nitrous Oxides (NO<sub>x</sub>) and Particulate Matter (PM) that impact local air quality and human health.

For several decades auto manufacturers have rolled out emission control technologies that have resulted in a very substantial reduction in tailpipe emissions. (see: History Of Hybrids). Leading edge vehicles like hybrids have been built to meet the most stringent emission standards such as those set out by the California Resources Board (CARB).

While hybrids have been certified to these very stringent standards the question for consumers is whether these vehicles continue to meet these standards after they leave the factory and how hybrids compare to equivalent models as well as older technology.

### missions Test Data For 126 Hybrids

In the Metro Vancouver area the AirCare emissions testing program conducts tailpipe tests on about one million vehicles operating in the region. Up to June 2004 AirCare had tested 126 2001 model Toyota Prius vehicles and they all passed the emission test.

Note: The AirCare test procedure (IM240) is not the same as the test procedure used to certify vehicles to the various LEV standards. As a consequence results will differ. At the same time it is useful to compare the data to determine whether the Prius is within its operational emissions "ballpark";.

The average readings for the 126 Toyota Prius vehicles were 0.82 g/km for Carbon Monoxide, 0.038 g/km for Hydrocarbon and 0.0125 g/km for NO<sub>x</sub>. According to AirCare officials the variation in the numbers are a result of variable operating conditions and the results are within the normal operating range for this vehicle.

Very Important Note: Both the LEV standard and the AirCare test procedure measure emissions performance when the engine is operating. For hybrids the most significant advantage is that during portions of their daily drive cycle the actual emissions are zero since the engine is off. So while a new gasoline only vehicle may meet the same LEV emission standard as a comparable hybrid the actual total of all emissions from the hybrid will be less.

In addition to its strong performance with tailpipe emissions, hybrids will emit less CO<sub>2</sub> than a conventional vehicle as a direct function of fuel performance differences. Burning gasoline creates Carbon Dioxide. Environment Canada states that burning one litre of gasoline will create 2.36 kg of Carbon Dioxide. One year of driving a hybrid could significantly reduce the CO<sub>2</sub> emissions from a vehicle. Use the Hybrid Savings Calculator to estimate the difference in CO<sub>2</sub> emissions between a hybrid and non-hybrid vehicle.