

Greener Vehicles Can Improve Air Quality and our Health

- PROBLEM:** - Air pollution has been named the #1 health threat to Americans by the American Lung Association.
 - Nearly 100 U.S. cities fail to meet federally established air quality standards.
 - Transportation is responsible for 60-90% of urban air pollution and 55% overall in the northeast.
- SOLUTION:** *Use greener vehicles that reduce air pollution and climate change emissions.*

Improve Air Quality and Health by Reducing Air Pollution from Transportation

Today's vehicles emit 90% less air pollution than in the past. But more can be done by choosing different fuels to power our vehicles. The following table shows the reduction or increase of criteria air pollutant emissions per mile compared to a 27 mpg gasoline vehicle, today's CAFE standard for light duty vehicles. Note: The emissions from electricity and hydrogen vehicles varies greatly depending on the source. (Minus is good-it's a reduction; plus is bad-it's an increase.) Source: GREET

% Change in Emissions					Technology or fuel
VOC	CO	NOx	PM	SOx	
-42	-50	0	-30	-100	B100 (100% biodiesel)
-51	-10	0	-6	-100	B20 (20% biodiesel +diesel)
-80	-20	+30	+19	-34	CNG (compressed natural gas)
-92	-98	+17	+17	+480	Electric car (US grid)
-100	-100	-100	-61	-100	Electric car (renewables)
0	-25	-30	-30	-100	Ethanol (90% from corn)
-42	-25	-18	-50	-50	Propane (from natural gas)
-96	-98	-29	+30	+17	Hydrogen from CNG (in FCV)
-82	-94	+330	+900	+1632	Hydrogen from US elec. (in FCV)
-100	-100	-100	-67	-100	Hydrogen from renewables (in FCV)

Criteria Air Pollutants

Nitrous oxides (NOx) and volatile organic compounds (VOCs) react with heat and sunlight to create ground-level ozone, also known as "smog". **Carbon monoxide (CO)** inhibits flow of oxygen to the brain and can be especially harmful for people with heart disease. **Hydrocarbons (HC)** are a broad class of pollutants--compounds containing hydrogen and carbon. **Particulate matter (PM)** consists of small, airborne particles that contribute to respiratory diseases. **Sulfur dioxide (SOx)** becomes sulfuric acid, a major source of acid rain.

Helping Consumers Make Wise Choices: Green Vehicle Labeling

In the USA, the Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) are the only entities that are allowed to create emission standards. Several years ago, CARB developed a labeling program to help consumers understand how clean their vehicles are. The EPA recently launched a national green vehicle labeling program and an excellent web site, www.epa.gov/greenvehicles, where consumers can look at information on all cars, SUVs, etc. The best vehicles are labeled "EPA SmartWay" or "SmartWay Elite," data is given on fuel economy, and scores are given for air pollution and climate change emissions. This site is informational, NOT standards. Additionally, the basis of the scoring system is not clear.

Note that all emissions standards that form the basis for all labeling programs presently quantifies criteria air pollutant emissions (which does not include climate change emissions) at the tail pipe. It does not take into account any emissions created in the extraction, production and transport of the fuel. While California's standards are stricter than EPA standards, its labeling system can be misleading and confusing to consumers. For example, sedans are compared to the standard for passenger vehicles, whereas vans, pick-ups, and sport utility vehicles (SUVs) are compared to the standard that allows greater air pollution emissions. The result is that a ULEV (ultra-low-emission) SUV, for example, emits more pollutants than a ULEV sedan. (see climate change fact sheet for CO2 emissions.)

CARB's standards are aggressive, and the labeling system is based on the percent reductions from EPA's Tier 1 Standard.

% Reduction from EPA Tier 1 Standard			Name of the standard	
HC	CO	NOx		
0	0	0	Tier 1	Prevailing Federal (EPA Standard)
-50	0	0	TLEV	Transitional Low-Emission Vehicle
-70	-0	-50	LEV	Low-Emission Vehicle
-85	-50	-50	ULEV	Ultra-Low-Emission Vehicle
-96	-70	-95	SULEV	Super-Ultra-Low-Emission Vehicle
varies from vehicle to vehicle			PZEV	Partial ZEV (Regulates evaporative emissions from the fuel tank)