

2 Traffic Jam

- flood of xxxxx ~の洪水・殺到・充満 多数・多量の～
green 《商品などが》環境にやさしい、《政策などが》環境保護の=concerned with the protection of the environment
carbon footprint ①生活・活動の中で排出される温室効果ガスの出所を調べて把握すること ②企業が①を自社製品に表示する制度=a measure of the amount of carbon dioxide produced by a person, organization or state in a given time
congestion (人・物の)密集、過剰(交通、場所などの)混雑;過度の負担=the state of being crowded and full of traffic

public transportation

subsidize ~に補助金・助成金を与える、~を援助・助成する=to give money to somebody or an organization to help pay for something

residential

commercial

industrial

urban planning

social engineering 社会工学=the attempt to change society and to deal with social problems according to particular political beliefs, for example by changing the law

hybrid vehicles

fuel consumption

ethanol

permit U:許可、認可、免許 C:許可証、認可書、免許証

- What do you think of Singapore's solution to their traffic problem?
Too stressful for drivers, so effective for protecting environment
But, should take those must drive cars for work into consideration
- What are the advantages and disadvantages?
A:effective D:stressful
- Would this solution work in Osaka or Tokyo? Why or why not?
Maybe no. People would protest against the policy because they already use cars

in their daily life.

- Are you planning to own a car? Why or why not?

No. Afraid of accident.

- Do we have the “right” to own and drive our own cars?

Yes. License gives you the right.

- Do you think the automobile era is over? What is the future for automobiles and privately owned vehicles?

No, many people are still driving cars.

The era of environment-friendly cars will come.

- Would this be a better world if there were no cars?

In terms of protecting the environment, yes.

In terms of economy, no because it means there were no car industry.

- What are the current cutting edge technologies to reduce automobile fuel consumption and pollution?

Hybrid car and electronic car

- Other experiences, stories, research...

My Opinion about This Topic

I think these solutions are effective for protecting the environment, but taking drivers into account, we need some other systems which are kind to drivers. For example, less or no tax, or some subsidy on environment-friendly cars. Among them are electric cars, fuel-cell powered vehicles, or hybrid cars, which exhaust no or less harmful gas. They won't cause air pollution. So, in order to reduce air pollution, we should set strict rules for drivers of ordinary cars and give good treatment to drivers of environment-friendly cars. But in order to reduce traffic accidents and noise pollution as well, we need strict rules for whole drivers to some degree.

My Research

How Does Car Pollution Affect the Environment & Ozone Layer?

by Jennifer King, Demand

<http://greenliving.nationalgeographic.com/car-pollution-affect-environment-ozone-layer-20133.html>

More likely than not, getting a vehicle from point "A" to point "B" involves **combustion** of a fossil fuel, a process that emits gasses and affects the environment. In December 1970, the U.S. Department of Transportation reported over 89.9 billion vehicle miles traveled, or VMT. (See Reference 4) That number nearly tripled to over 246.3 trillion VMT in December 2011. (See Reference 3) Such a sharp incline in traffic volume begs the question: how does car pollution affect the environment and the ozone layer? According to the U.S. Environmental Protection Agency, more than half of the air pollution in the nation is caused by mobile sources, primarily automobiles. (See Reference 6) Further contributing to the pollution potential of cars is the fact that they are filled with numerous fluids, which can harm the environment in the cases of leakage or improper disposal.

Vehicle Emissions and Air Quality

When a car's engine is running, several different types of gasses and **particles** are emitted that can have **detrimental** effects on the environment. Of particular concern to the environment are carbon dioxide, a greenhouse gas; **hydrocarbons** -- any of more than a dozen **volatile** organic compounds, some of which are known carcinogens; nitrogen oxides; **sulfur** oxides; and **particulate** matter, tiny particles of solids, such as metal and **soot**. Other emissions that affect human health and create smog include ozone and carbon **monoxide**. (See Reference 1) The good news is that despite the increase of vehicles on the road, air quality today is actually better than it was in the 1970s, thanks to the 1970 Clean Air Act. In fact, lead emissions from cars have been almost completely **eradicated** because of the phasing out of leaded gasoline. (See Reference 2, page 2)

Effects on the Environment

Vehicle emissions can affect the environment in several ways. Cars emit greenhouse gasses, such as carbon dioxide, which contribute to **global warming**. (See Reference 2, page 13) Some air pollutants and particulate matter from cars can be deposited on soil and surface waters where they enter the food chain;

these substances can affect the reproductive, **respiratory**, immune and neurological systems of animals. (See Reference 5) Nitrogen oxides and sulfur oxides are major contributors to acid rain, which changes the pH of waterways and soils and can harm the organisms that rely on these resources. (See Reference 9)

Effects on the Ozone Layer

The ozone layer helps to protect life on earth from the sun's ultraviolet rays, but human activities have contributed to the accelerated **depletion** of this protective shield. (See Reference 7) Substances that contribute to ozone depletion usually have high concentrations of **chlorine** or **bromine** atoms and include chlorofluorocarbons, or CFCs, **halons**, **methyl** bromide, carbon **tetrachloride** and methyl **chloroform**. Vehicle emissions contain few chlorine- or bromine-heavy substances, and therefore have little effect on ozone depletion. Even though they are not good for human health, hydrocarbons are recognized by the EPA as having no ozone depletion potential. (See Reference 8)

Vehicle Fluids

Vehicles contain many different fluids, including motor oil, **antifreeze**, gasoline, air-conditioning **refrigerants**, and brake, **transmission**, **hydraulic** and windshield-wiper fluids. In most cases, these fluids are toxic to humans and animals, and can pollute waterways if they leak from a vehicle or are disposed of incorrectly. Many vehicle fluids are exposed to heat and oxygen while an engine is running, and undergo chemical changes. These fluids also pick up heavy metals from engine wear and tear, making them even more toxic to the environment. (See Reference 10) Most vehicles manufactured before 1994 use CFC-12 as a **coolant**; CFC-12 is no longer produced in the U.S. because of its detrimental effect on the ozone layer. Alternative refrigerants are available, but some still have an impact on the ozone layer if they escape your car's air-conditioning system. (See Reference 8)

References

1. [Yale National Initiative: The Effect of Vehicular Emissions on Human Health](#)
2. [DOT: Transportation Air Quality Facts and Figures January 2006](#)
3. [DOT: Travel Trends \(December 2011\)](#)
4. [DOT: Historical Monthly VMT Report](#)
5. [EPA: About Air Toxics](#)
6. [EPA: Sources of Pollutants in the Ambient Air -- Mobile Sources](#)
7. [EPA: Ozone Science -- The Facts Behind the Phaseout](#)
8. [EPA: Ozone Layer Protection Glossary](#)

9. [EPA: What is Acid Rain?](#)

10. [EPA: Common Wastes & Materials -- Used Oil and Antifreeze](#)

Controversy of Cars

<http://www.personal.psu.edu/users/j/g/jgg5037/HistoryTata.html>

Air Pollution

The automobile was known as the main form of transportation in America where it plays a very important role. In the beginning of the century the automobile entered the transportation market as a toy for the rich. However, it became increasingly popular among the general population because it gave travelers the freedom to travel when they wanted to and where they wanted. Cars have been a mode of transportation since the 1700s. The controversy issues the economy face since the 1700s until today are different. Today the economy faces three major factors: air pollution, noise pollution and car accidents. Whereas in the 1700s there were less car accidents and cars were powered by horses until in the late 1700s.

In today's society the automobile has change tremendously. Automobiles are leading to America's air pollution problems. Even though today's ozone is stable, ultraviolet rays are under control, and the air people breathe in is still healthy. Cars have still affected the air by releasing toxic emission from the combustion system that damages our environment with chemicals that are in the air, known as air pollution. Cars are hurting our environment by adding to the greenhouse effect, damaging air quality, and decreasing the ozone. Not to mention the growing smog problems, disasters done with **landfill** and the effects done to our water supply. Which all are connected with the greenhouse effect, ozone depletion, and air quality. The greenhouse effect is the process where infrared rays from the sun come into the Earth's atmosphere. Toxic gases make the atmosphere weak allowing infrared rays to enter. Carbon dioxide and carbon monoxide are two greenhouse gases that damage our earth's atmosphere, reducing the amount of greenhouse gases that will help greatly with reducing these effects against the earth's atmosphere.

Although carbon dioxide releases from the **tailpipe** of a car and can do much damage to human respiratory system. About 30 percent of carbon dioxide releases in the earth's air every time an automobile burns a gallon of gasoline. As for carbon monoxide, it also

damages greenhouse gas because cars are accounted for releasing 76 percent of carbon monoxide in the air. Automobiles also release nitrogen oxide, contributing 30 percent of it in the earth's atmosphere, adding to the problem of acid rain, which can damage health by increasing coughing, **asthma**, and **stinging** eye. Volatile organic compounds also released by car emissions combine with nitrogen oxides creating smog. Smog contaminates city air and cause respiration problems to humans and harms vegetation. Volatile organic compounds have also been linked to the vague 'Sick Building Syndrome' a **cancerous** disease that has unknown effects on the humans body.

Car's air conditionings release these CFC's, and appropriate **precautions** are not being taking to deplete the amount of CFC's in America's society today. CFC is a chemical used in the cooling process, or refrigeration process of manmade objects. The disposal and production of car hurts the environment in two ways, adding CFC's to the atmosphere and creating landfills for tires. In the production of cars, CFC's are entered into the car system. Releasing small amounts of CFC's into the atmosphere, but it only takes a small amount of CFC's to do a good amount of damage. CFC's are also released during the life of the car, and released once again in the destruction of cars. Tires also damage the environment because tires are not **biodegradable** and usually discarded in a tire dump. Most tires are sent to dumps or landfills were they must be monitored, in case of a fire breaking out. No one is really sure of the damages done from a tire fire, but they can never be put out.

Research shows that tires can burn for decades, by releasing smoke and **haze** into our environment. To deal with a burning fire they must be buried, this does not extinguish the fire; it just covers it up. From that point the tire burns within. These landfills also create problems because of the amount of disease spread from the large amount of insect populations growing in these tires. These tire dumps are not a very nice setting and cause much of a threat to humans. Cars have the long-term effect to destroy the environment by ruining its natural resources. Global warming, air pollution, and ozone depletion a scare that must be dealt with before the consequences set in. There are some solutions to fix this problem, Americans can support mass **transit**, electric sources of transportation, or choose other forms of transportation that do not harm the environment.

Noise Pollution

Not only do cars have problems with air pollution and harmful chemicals affecting the environment, but cars also have noise pollution issues that affect the environment as well. According to Merriam-Webster dictionary; noise pollution is known as an annoying or harmful sound in the environment, a type of energy pollution in which it is distracting, irritating or damaging sounds are freely audible. Other forms of energy pollution, such as heat and light pollution, noise pollution contaminants are not physical particles, but rather waves that interfere with naturally-occurring waves of a similar type in the same environment. The main source of reproducing noise pollution is from transportation. In urban areas automobile, motorcycle, and even entertainment noise can cause sleep disruption in humans and animals, hearing loss, heart disease as a result of stress, and in severe cases even mental instability. A notable exception to the rule is the electric, or hybrid-electric, automobile. Hybrid vehicles are so quiet, in fact, that legislation is **pending** to actually make them louder. This is in response to numerous injuries in which pedestrians, unaware of a hybrid vehicle's presence, have been struck by such vehicles in parking lots and pedestrian crosswalks.

Although most developed nations have government agencies responsible for the protection of the environment, no nation has a single body that regulates noise pollution. In the United States, regulation of noise pollution was **stripped** from the federal Environmental Protection Agency, (EPA) and passed on the individual states in the early 1980's. Although two noise-control bills passed by the EPA are still in effect, the agency can no longer form relevant legislation. In the United States, Canada, Europe, and most other developed parts of the world, different types of noise are managed by agencies responsible for the source of the noise. Transportation noise is usually regulated by the relevant transportation ministry, health-related work noise is often regulated by health ministries and worker's unions, and entertainment noise such as loud music is a criminal offense in many areas. As the bodies responsible for noise pollution reduction usually view noise as an annoyance rather than a problem, and reducing that noise often hurts the industry financially, little is currently being done to reduce noise pollution in developed countries.

One main source of noise comes from the engine and the friction of the wheels over the road surface. Further, travel speed and the intensity of traffic are directly linked with its intensity of noise. For instance, one truck moving at 90 km/hr makes as much noise as 28 cars moving at the same speed. In addition to all the noise generated by cars, trucks and buses create a permanent **ambient** noise (ranging from 45 to 65 db) that

impairs the quality of life in urban areas and thus the property values of residences. Nearby road arterials, ambient noise is replaced by direct noise and vibrations. The acoustics created by the surrounding environment hills, buildings, trees, open space, etc. improve or worsen local conditions. Another one of the three major factors of controversy for cars is that besides the fact that cars are harmful to the environment and damages the air and makes noise. Cars also cause the society today numerous of accidents.

Car Accidents

Through facts and research it has been proven that cars has cause many deaths along with deathly diseases. Cars have played a major role in the percentage of death throughout the nation. Fatal car crashes yearly, in the United States occur where statistic show car crashes ranging from the year 1997 to 2005. In the years 2001 and 2005 there were between 38,000 and 39,000 fatal car crashes. There are many countries in the United States that cars have been crashed for several of reasons based on what they do with cars. For instances, incidents stem from drunk driving, wreck-less driving, and careless driving.

New Words and Phrases

combustion 燃焼、酸化、騒動
particle 微粒子、小片、微量、[a~of] 少しの～
detrimental 有害な
detriment 損失、損害、不利
hydrocarbon 炭化水素
volatile 揮発性の、爆発しやすい、不安定な、激しやすい
sulfur 硫黄
particulate 微粒子／微粒子の、微粒子からなる
soot すす／ [be~ed] すすだらけになる、すすで汚れる
monoxide 一酸化物、一酸化～
eradicate ～を根絶する、根こそぎにする、～をとる、消す
respiratory 呼吸の、呼吸に関する
depletion 減少、枯渇、消耗
chlorine 塩素
bromine 臭素

halon a gas that is made up of carbon and one or more halogens, used especially stop fires

methyl メチル

tetrachloride 四塩化物、四塩化～

chloroform クロロホルム

antifreeze 不凍剤、不凍液 (の)

refrigerant (形) 冷却する、解熱用の (名) 冷却剤、解熱剤

transmission 変速機、伝動装置、伝達、通信

hydraulic 水力の、水圧の、水中で硬くなる

coolant 冷却液、冷却水、潤滑剤

landfill 埋め立て (地)、ゴミ処理 (場)

tailpipe 排気管、吸い込み管

asthma ぜんそく

sting (名) 針、とげ、刺すこと、苦痛 (他) ～を針・とげで刺す、～を苦しませる
(自) 刺す、ひりひりする、言葉などが心を苦しめる

cancerous 癌の、癌にかかった

precaution 警戒、用心、予防策

biodegradable 生分解性の

biodegradation 生分解

haze もや、かすみ、朦朧とした状態／かすむ、ぼんやりする

transit 通過、通行、運送、輸送

pending 未解決の、未定の、係争中の、(事が) 起ころうとしている／(前) ～まで

strip ～を裸にする、～を C にする、
SVO1of O2/SVO2 from O1 O1 から O2 を剥ぎ取る、取り除く

ambient 周囲の、全体の

impair ～を減じる、弱める、悪くする、害する

arterial 動脈の、幹線の／幹線道路

acoustic 聴覚の、聴音に関する、防音の

Summary

The amount of traffic is sharply increasing and that is causing many problems. Vehicles emit several different types of gasses and particles, which affect the environment and the human body. These substances contribute to the greenhouse effect, depletion of the ozone layer, and air pollution, which affects human respiratory system. Also, vehicles cause many deaths, and noise pollution, which impairs the quality of life

in urban areas.

My Thought

It is convenient to use vehicles to move around, but we should think about many problems they cause. First, as you know, they affect the environment. For example, global warming, depletion of the ozone layer, and acid rain are famous environmental problems. These influence human lives. New diseases, climate changes, and so on. Second, it also causes noise pollution. If you live near highway, you suffer from the noise as well as the polluted air. If the noise prevents you from sleeping, you will lose your health. These two problems may be solved by using new technologies. Environment-friendly cars, such as hybrid cars and electric cars, can reduce the air pollution, and recently, some companies produce cars which are really quiet. However, traffic accidents happen as long as people drive cars. And unlike the first two problems, traffic accidents directly affect human lives. So, if we think about vehicle problems, especially about accidents, we need strict rules about driving cars.