

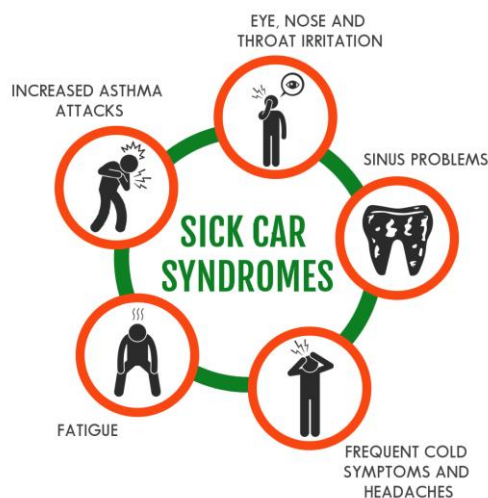
Is your Car Making you Sick? Signs and Symptoms of Sick Car Syndrome

Sick car syndrome is being used to describe the possible health effects of toxic materials used in the interiors of automobiles.

Since people who live in industrialized countries spend more than one hour each day in vehicles. Toxic exposures from car interiors can really add up and have an effect on health.

Sick car syndrome could be even more dangerous than sick building syndrome because drivers and passengers are sitting in a very small enclosed space with little ventilation. Such conditions can raise the concentration of chemicals to levels that could be harmful to human occupants.

Sign of Sick Car Syndrome



Source Indoor Car Toxic chemicals

A) Toxic Interior Materials

From the dashboard and interior panels to seat filling and coverings and flooring materials, the majority of automotive interior components are comprised of materials that can emit toxic gasses.

Studies have found that concentrations of potentially toxic chemicals in car interiors may be as much as three times greater than in other indoor environments, depending on the age of the vehicle and other factors.

Studies have measured from 30 to more than 250 separate volatile organic chemicals (VOCs) in a single vehicle, in total concentrations as high as 14,000 micrograms per cubic meter.

B) Exhaust from Other Vehicles

The International Center for Technology Assessment studied the concentration of automobile exhaust pollution that collects on the inside of cars often be much higher for automobile drivers and passengers. They even exceed the significant exposures experienced by bicyclists, pedestrians, and public transit riders.

c) Mold and Bacteria

It's a malfunction of the air conditioner that continues for the life of the car. Apparently this is a common problem.

d) Volatile Organic Chemicals (VOC)

The primary pollutants from interior materials and car exhaust that are found in the air inside cars are:

- VOCs, including benzene, styrene, and formaldehyde
- brominated flame retardants
- polyvinyl chloride (PVC) and plasticizers
- lead and other heavy metals.
- Particulate matter
- Carbon Monoxide
- Nitrogen Oxide


Hidden Poisons In New Cars

HAVING a headache, or feeling lethargic and spaced out after driving your new car? Don't blame the sun. The culprit could be hidden pollutants that lurk in your car from outgassing of materials used to construct the car. Each time you inhale that new car smell as you drive, you are actually breathing in toxic chemical emissions, some of which may cause cancer!

THAT distinctive smell in a new car actually comes from the same form of pollution that causes "sick building syndrome". Similar to chemical compounds that seep from the walls, carpets and fixtures of new buildings that pollute indoor air, many air toxics are also present in new cars from chemicals that leach from glues, paints, vinyls and plastics in the car.

These emissions, known as volatile organic compounds (VOCs), include hazardous substances, like:

- **Benzene** — a known human carcinogen
- **Acetone** — a mucosal irritant
- **Cyclohexanone** — a possible human carcinogen
- **Ethylbenzene** — a systemic toxic agent
- **MBK** — a systemic toxic agent
- **n-Hexane** — a neurotoxic agent
- **Styrene** — a probable human carcinogen; can also damage the human brain, nervous system and liver
- **Toluene** — a central nervous system dysfunction agent
- **Xylene isomers** — a



Interior of new cars emit many toxic chemical pollutants, some of which can cause cancer.

The EPA said: "Most vinyl chloride (PVC) plastic and vinyl products. Acute (short-term) exposure to high levels of vinyl chloride in air has resulted in central nervous system effects (CNS), such as dizziness, drowsiness, and headaches in humans. Chronic (long-term) exposure to vinyl chloride through inhalation and oral exposure in humans has resulted in liver damage."

"Cancer is a major concern from exposure to vinyl chloride via inhalation, as vinyl chloride exposure has been shown to increase the risk of a rare form of liver cancer in humans. EPA has classified vinyl chloride as a Group A human carcinogen."

The smell of a new car could contain up to 35 times the health limit set for volatile organic chemicals in cars in Japan, making its enjoyment akin to glue-sniffing, according to a 2003 Japanese study.

The chemicals found in the study included ethyl benzene, xylene, formaldehyde and toluene used in paints and adhesives.

Toshiaki Yoshida, the chief

researcher at the Osaka Institute of Public Health in Japan, analyzed the air inside a new minivan every week for the first 2 months and every month after that. The van was driven 3,500 miles a year.

On the day after delivery, the van was found to contain 113 kinds of VOCs, mostly hydrocarbons. It took 4 months to fall below the safe limit set by the state but shot above it again in the hot summer months even after 2 years.

Japanese Auto Industry Acts

To reduce exposure by new-car owners, Japan's automakers are working to cut down on the new-car smell. According to an AP report (26/9/05), earlier this year, Japan's auto makers agreed to cut cabin levels of 13 of the compounds, including possible cancer-causing agents styrene and formaldehyde, by 2007 to match Japanese Health Ministry guidelines for air quality in homes.

The Japan Automobile Manufacturers Association initiated the drive after tests found some models made by 3 of the nation's top carmakers failed to meet government recommendations.

The report says that most of Japan's top 5 car makers — Toyota, Nissan, Honda, Mitsubishi and Mazda — are already rolling out cars in compliance with government guidelines.

(Safety Tip: Wind down the windows while you drive in your new car, at least for the first 6 months.)

Australian Findings

A 2-year study by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), an Australian government research organization, found high levels of air-toxic emissions like the above, in new motor vehicles for up to 6 months and longer after they leave the showroom.

In fact, just sitting in a new car can subject riders to toxic emissions several times the limits deemed safe for homes or offices by some health authorities in Australia, the study found.

Measurements made during the 2001 study found total VOC concentrations were initially very high (up to 64,000 micrograms per cubic meter). (Controlled exposures of human subjects by other researchers to a 22-compound mixture at concentrations of less than half this amount have produced effects within minutes, such as discomfort, drowsiness, fatigue, eye/nose/throat irritation, and headaches.)

The study looked at VOCs in 3 new 1998 vehicles by gas chromatography/mass spectrometry analysis of air samples taken from the cars after they had been sealed for several hours. The cars were resampled at various intervals for up to 2 years.

The researchers detected 30-40 VOCs in the cars, the most prevalent being toluene, acetone, xylenes, styrene, 1,2,4-trimethylbenzene, various C₆ to C₈ alkanes, ethylbenzene, and ethylene glycol butyl ether.

In Australia, several anecdotal reports of adverse effects have also surfaced.

- A lawyer reported being ill with headaches, lung irritation and swellings for several days after collecting a new car and driving it for only 10 minutes. When he swapped his new car for an 18-month-old car he no longer felt ill.
- A public servant felt ill when driving a new government car for the first 6 months.
- A chemically sensitized person felt "spaced out" when driving any new car.
- A salesman who regularly updated his car became lethargic on long trips.

American Findings

- In a paper presented in 1995 at a scientific symposium in New Jersey, company officials from Scientific Instrument Services, a commercial enterprise in the US, identified over 100 VOCs inside a brand new car they tested. SIS also found that the chemical levels rose when the temperature increased.
- In a 1992 Hazard Summary report, the US Environmental Protection Agency (EPA) warned that air inside new cars may contain vinyl chloride at higher levels than detected in ambient air because vinyl chloride may outgas into the air from the new plastic parts.

Hazardous VOC in new car

Toxic	Effect
Benzene <i>is the main toxin in the hydrocarbon fraction of exhaust.</i>	The Department of Health and Human Services (DHHS) has determined that benzene causes cancer in humans. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs (CDC).
Toulene	A central nervous system dysfunction agent
MIBK	A systematic Toxic Agent
Xyelene isomers	A fatal development toxic agent
Ethylbenzene	A systematic toxic agent
Stryrene	A probable human carcinogenic

Little research that matters.

- According to Japanese finding, the smell of a new car contain 35 times the health limit set for VOC.
- A 2 Year study by (CSIRO), Commonwealth Scientific and Industrial Research Organization found that the high level of air toxic emission in new motor up to 6 months.

Incident (Australia)

A lawyer reported being ill with headache, lung irritation and swelling for several days after collecting a new car and driving for 10 minutes.

A public servant felt ill when driving a new government car for first 6 months.

Carbon Monoxide (CO) health effects (Source EPA)

At low concentrations: Fatigue in healthy people and chest pains in people with heart disease.

At moderate concentrations: Angina, impaired vision, and reduced brain function may result. At higher concentrations, CO exposure can be fatal

At higher concentrations: Impaired vision and coordination; headaches; dizziness; confusion; nausea. Fatal at very high concentrations. Acute effects are due to the formation of carboxyhemoglobin in the blood, which inhibits oxygen intake.