



Occupational Health
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What's that new-car smell?

If you bought yourself a car, would you expect to have a problem with it the moment you stepped in? It's no secret that the new car smell is a cultural symbol and source of pride for new vehicle owners, but lurking within that smell are airborne chemicals. Recent studies have shown that levels of airborne chemicals in new vehicles are much higher than what is normally allowed in terms of indoor air quality. This danger never fully goes away; although the new car smell fades and the chemical levels drop, heat buildup in the summertime can cause levels to rise again. New vehicles have been found to have nine times more airborne chemicals than used vehicles do under warm conditions, and poorly-maintained vehicles increase risk because emissions from exhaust can seep into the cabin.

Many materials are used to make cars, including fire retardants, glues, and upholstery. The car cabin is a confined space, and studies have shown that most of the compounds floating around have sources from the interior of the car on top of chemicals that enter from outside. Sealants, carpets, vinyl, leather, plastics and foam cushions are examples of sources of chemicals from the inside of the vehicle, while outside sources include emissions from incompletely-burnt fuel and roadway air penetrating into the cabin. Outside sources are related to traffic density; the more cars on the road, the higher the outside concentrations of airborne chemicals there will be, and the higher the levels will become in your vehicle. These chemicals particularly endanger children, the elderly, and people with asthma or other respiratory conditions. Researchers have also been able to link exposure in traffic to heart attacks that occur within an hour of driving. So what chemicals are causing the problem? There are many, but the ones that contribute most are volatile organic compounds (VOCs), benzene, carbon monoxide (CO), and ozone. VOCs are carbon based chemicals that evaporate quickly into the air, and include formaldehyde, flame retardants, and chemical plastic softeners. Benzene is a natural part of crude oil that evaporates quickly at room temperature. Combustion, industrial processes, gas station vapours and cigarette smoke are all sources of benzene. Carbon monoxide (CO) is a lethal gas with no smell, taste or colour. CO attaches to red blood cells instead of oxygen, and can make it so that the cells can no longer carry oxygen at all. Moderate exposure may produce flu-like symptoms such as headaches, dizziness, and weakness in healthy people, and severe cases result in death. Ozone is a three oxygen atom molecule that normally exists beneficially in the upper atmosphere. At ground-level, however, it creates smog by reacting with VOCs and the sun. It is a product of combustion, and is extremely harmful to health with levels generally highest in the summer time. This short list of chemicals can cause skin, eye, nose and throat irritation, cough, headache, and flu-like illnesses. Some can cause blood and bone disorders, cancers, and birth defects with long periods of exposure.

For these chemicals, exposure is the sum total of all of the exposures a person has had over their lifetime to that chemical. Investigators from the Ecology Centre in the United

States found a 90 minute drive is equal to the chemical exposure of 8 hours in a typical work environment. Manufacturers are starting to catch on to the idea of selling healthier cars: Japanese manufacturers became the first to set an industry-wide goal of reducing VOCs in passenger compartments, and Toyota, Nissan, Honda, Mistubishi, and Mazda already have cars on the market with lower VOC levels as a key selling point.

There are other actions that individuals can take to protect themselves. Naturally, the simplest solution is to drive as little as possible. Take the bus, ride a bike, walk, or carpool to reduce emissions by reducing the number of vehicles on the road. If you must drive, avoid congested roads and try not to drive behind high-polluting vehicles such as older-model cars, SUVs, diesel vehicles, and out-of-tune vehicles with visible exhaust. Since levels of in-car pollutants increase in the summer due to higher temperatures, it makes sense to take action. Buy a reflective windshield sunshade, and use it. You may also consider buying window “vent visors.” These are wind and rain deflectors installed at the top of your driver and passenger windows, so you can leave your windows slightly open. This effectively reduces the overall temperature in your vehicle without having to worry about the weather. Before getting in to your car, air the vehicle out by opening windows and/or turning on the air conditioning to blow out all the stale, hot air. You can also reduce chemical levels inside by driving with the driver’s window rolled down half way on uncongested roads. Buying cars that are older (such as imports or previous-year models) can reduce the initial chemical levels, because the time delay allows the chemicals to disperse; the best advice is to make sure the car interior is well ventilated during the first six months of ownership, including bringing fresh air in to circulate, or driving with the windows down. It is also very important to keep your vehicle well-maintained.

Of course, there are also actions that can be taken on the national and global levels. Manufacturers need to be more careful when selecting materials, and more precautions need be taken when processing those materials. Consumers need to begin insisting that car manufacturers take necessary steps to reduce or eliminate these chemicals where possible. Governments can assist by creating policies and legislation for safe vehicle manufacture, and by providing incentives to companies producing zero-emission vehicles. Increased government spending on public transit, rather than on road construction and widening, would also help the global picture. Bigger roads only bring more cars; by riding transit, emissions are reduced in terms of numbers of vehicles on the road, and fewer vehicles also means fewer repairs to existing roads due to wear. Finally, governments must take action through green incentives, both for businesses and the public. They can increase tax breaks for those taking public transportation and reduce the number of tax incentives for driving, such as tax credits for parking. Working together, we can create a greener, safer way of traveling for everyone.

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