

Busy Roads Are Damaging Brains

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August 13, 2024

STORY AT-A-GLANCE

- › The closer you live to major roads, the higher your risk of developing dementia: a 4% higher risk for people living 328 feet away, and a 2% higher risk among people living 656 feet away
- › Air pollution in China kills 1 million people per year; India and Russia have the second- and third-highest air pollution levels
- › Magnetite particles in air pollution breathed in help produce reactive oxygen species (free radicals) in the human brain, which are associated with neurodegenerative diseases, dementia, heart disease, stroke and lung cancer
- › Maybe you can't change your address, but you can curb the toxins in your world by ensuring your food, clothing, toiletries and cookware are organic, all natural or otherwise free of substances that can make you sick

Editor's Note: This article is a reprint. It was originally published January 18, 2017.

There are several reasons why some people choose to live in the country or in less-congested areas rather than along a busy highway or in the thick of things in the city. There's not as much noise, less pollution in the air and generally better scenery.

But there's another reason, and probably a more important one – A study¹ published in The Lancet says living close to a major roadway may increase your risk of developing dementia.

"Develop" is the operative word, as it denotes something that accrues over time, and in this case, that's accurate. Researchers who put together the study defined a road as "major" depending on traffic volume, such as an interstate highway in the U.S. The closer you live to major thoroughfares, the higher the dementia risk.

Co-study author Dr. Ray Copes, formerly chief of environmental and occupational health at Public Health Ontario (PHO), said, "There is a gradient of increased risk as you get closer to major roadways. By the time you're 200 meters away, the risk is essentially down to baseline."² According to CNN, this basically means:

"The level of risk decreases proportionally, they say, with a 4% higher risk among people living 50 to 100 meters (328 feet) away and a 2% higher risk among people living 101 to 200 meters (656 feet, or about a 10th of a mile) away."³

While the researchers also examined the effects of highway proximity in relation to Parkinson's disease and multiple sclerosis, only **dementia** showed up as having an increased risk.

Dementia – Causes, Risk Factors and the Environment

The World Health Organization (WHO) reports that around 55 million people around the world suffer from dementia, and 10 million new cases emerge every year.⁴ The threat is definitely growing, and there have to be reasons for it; nearly anyone might argue it has something to do with the environment.

As a disclaimer of sorts, Copes and his fellow researchers stress that it's only a link (observed between proximity to highways and dementia risk), with no proof of a definitive cause. Nevertheless, Copes said, "The link continues to exist."⁵

Additionally, people living similar distances from highways still have varying levels of dementia risk for various reasons. Factors like socioeconomic status, education level and whether or not study subjects smoked, exercised or were **overweight** were taken into account in the study.

Copes stressed, "There is no single cause for dementia ... but our study shows that one of the factors now appears to be exposure to traffic pollution."⁶

Hong Chen, Ph.D., study co-author and associate professor in occupational and environmental health at the University of Toronto, said the team's next project includes figuring out which pollutants are most accountable for causing dementia, those factors' potential impact and how effective the [interventions for dementia](#) are that are currently in place.

When air pollution affects children, something must be done, because researchers visited 39 schools in Barcelona, Spain, and determined that air pollution related to traffic is at the bottom of impaired cognitive development in school children.⁷

How Bad Is the World's Worst Air Pollution? Can You Say 'Airmageddon?'

How deadly is air pollution? WHO reports that it kills 7 million people every year, worldwide.⁸ Poor air quality is not just scientists' and environmentalists' concern, but conclusively is one of the greatest environmental health risks.

If there were a contest, China would easily win the "deadliest" country in regard to air pollution, as there it kills 1 million people per year.⁹

Bloomberg reported that a whopping one-third of China's cities, where choking air pollution necessitates that people wear face masks, have issued red alerts, the highest level that necessitates government action. Residents are referring to the air pollution crisis as "airmageddon" and "airpocalypse."¹⁰

Chen Jining, China's minister of environmental protection, said the agency has cracked down on 20 cities with the poorest air quality, including the capital, Beijing. Companies out of compliance are required to cut production; vehicles responsible for toxic emissions are banned from the roads.

CCTV.com said the ministry handed out punishments when more than 500 construction sites, enterprises and 10,000 vehicles given pollution-response plans "breached" them. In the first week of 2017, 10 inspection teams found many of those manufacturers up and running again, still ignoring [emission-reduction measures](#).¹¹

Pollution Breaches in China, India and London

A disturbing time-lapse video¹² went viral years ago, revealing just how toxic the air pollution is in China's largest cities. The video compressed 20 minutes into 12 seconds, showing thick smog rolling into Beijing on January 2, 2017.

The New York Times said, "Hundreds of flights were canceled and highways were shut down because of low visibility."¹³

Videographer Chas Pope, a British expatriate, said the Air Quality Index (AQI), an official air quality rating system ranging from the lowest at 0 to 500, estimated the air in the video to be in the 400-plus range. The U.S. rates readings of 301 to 500 as "hazardous."¹⁴

Chinese officials reported that the air quality in Beijing had improved overall, but Time said data provided to Chinese media by the Beijing Municipal Bureau of Environmental Protection noted that while that may be true, it's still 109% over the national standard.¹⁵

India comes in second in the who-has-more-pollution contest, as the death toll has reached upward of 600,000, with Russia racking up more than 140,000 deaths in 2012.¹⁶

The Guardian listed the deadliest countries in the world for [air pollution](#), and noted that nitrogen dioxide (NO₂) pollution, mostly from diesel vehicles, causes 5,900 early deaths every year in London.

"At 25th out of 184 countries with data, the U.K. ranks worse than France, with 16,355 deaths in 2012 versus 10,954, but not as poorly as Germany at 26,160, which has more industry and 16 million more people. Australia had 94 deaths and 38,043 died in the US that year from particulate pollution."¹⁷

Countries considered "low-income" have it the worst, but even the most developed countries can have this problem – although not to the degree of China and India. However, in the first five days of 2017, London's air quality breached its annual air pollution limits. The Guardian reported:

"The mayor of London, Sadiq Khan, has pledged new measures and to double funding to 875 million pounds over five years to tackle the problem. But the U.K. government's national plans have twice been ruled illegal in the past two years and it has been sent back to the drawing board to develop a third strategy."¹⁸

Toxic Particles in Air Pollution Can Enter Not Only Your Lungs, but Your Brain

Pollutants like sulfites, nitrites and black carbon can penetrate your lungs, increasing your risk of heart disease, stroke, lung cancer and other serious diseases.

Researchers have already revealed that pollution from the air and **traffic noise can increase nerve degeneration in your brain**. In fact, tiny particles often found in air pollution can be breathed in, lodge in peoples' brains and possibly cause Alzheimer's, according to a study from Lancaster University.¹⁹ In fact:

"... [A]bundant magnetite nanoparticles [were found] in the brain tissue from 37 individuals aged [3] to 92-years-old who lived in Mexico City and Manchester.

This strongly magnetic mineral is toxic and has been implicated in the production of reactive oxygen species (free radicals) in the human brain, which are associated with neurodegenerative diseases ..."²⁰

Angular magnetite particles are thought to form naturally in the brain, but most detected by spectroscopic analysis were spherical and measuring as large as 150 nanometers (nm) in diameter, and some had fused surfaces, all typical of particles formed via high temperature, as from vehicle engines, particularly diesel, or open fires, the study said.²¹

Other particles such as nickel, cobalt and platinum are also found in the spherical particles, but magnetite is **toxic to the human brain**, explained Barbara Maher, professor of environmental science at the University of Lancaster, who submitted the study with colleagues from Oxford, Mexico City, Manchester and Glasgow.²²

But an even more disturbing detail that ties in with Copes' study is this — Maher said the particles found were "strikingly similar" to the magnetite nanospheres abundant in airborne pollution in urban settings, such as near busy roads, formed by combustion or frictional heating from vehicle engines or brakes.

Anything smaller than 200 nm is small enough to be breathed in through the nose and absorbed into the brain through the olfactory nerve. The same concoction of air particles can also be found in residue from open fires or poorly sealed stoves.

Solutions to Dementia May Include Environmental Clean-Up

Dr. Maria Neira, director of public health and the environment department for WHO, said: "Countries are confronted with the reality of better data. Now we have the figures of how many citizens are dying from air pollution. What we are learning is, this is very bad. Now there are no excuses for not taking action."²³

Several people involved in or connected to Copes' study believe more attention must be paid to the environments in which too many people are forced to live. Whatever the cause, people should at least agree that the air in the cities where people live and work must be cleaned up. CNN noted several of Copes' ideas to help alleviate the problem, including:

"... [P]olicies to reduce emissions in cities, better city planning that keeps residential areas away from major roadways and designing buildings and ventilation systems to act as barriers to pollution are a few ways to alleviate the problem."²⁴

In many cases, people aren't able to change where they live, even if they live near a major highway. However, the aforementioned contributing factors to dementia and most

other serious diseases are exacerbated by a number of factors that you can control, such as the use of common (and toxic) household cleaners and **personal care products**.

Other ways to drastically curb the toxins that enter your world, as well as your family's, is to use as many natural products as possible. **Natural fibers** for your clothing and furniture, such as 100% cotton, linen, flax or wool; wood and natural-fabric toys for your children rather than plastic (especially painted); glass and ceramic **cookware** and dinnerware; drinking **pure water** rather than soda or other harmful "fake" products; and eating **organic foods** free of pesticides and hormones.

In addition, since it is impossible to eliminate all air contaminants, one of the best things you can do is incorporate a high-quality air purifier in your home and office. Depending on where you live, your **indoor air** may be two to five times more polluted than outdoor air, so filtering your indoor air is an important step.²⁵

A Possible Solution – Get in the Sauna

Scientists in Finland did an extensive study to determine how long-term (over 15 years) traffic-related air pollution might be responsible for at least contributing to dementia in one of its most prominent cities. The result (although not tested on women) – "We observed associations between dementia incidence and local traffic pollution that remained after adjusting for known risk factors."²⁶ The above study was influenced and cited by a 2013 study reported in *Neuropathy*, which asserted:

"Dementia takes a heavy toll on the patient, the patient's close relatives and society as a whole. Within the next 40 years, the prevalence of Alzheimer's disease (AD) is expected to triple unless preventive measures are developed.

The number of studies suggesting an association between traffic pollution and cognitive function in adults is increasing. In a cross-sectional study of 399 elderly women in Germany, the exposure to traffic-related particles was estimated by the distance to the closest busy road, and consistent associations

*between traffic-related particle exposure and mild cognitive impairment were found."*²⁷

Alzheimer's Disease International (ADI) says about 46.8 million people in the world live with dementia, and unless new prevention and treatment strategies are found, this number is expected to reach 131.5 million by 2050.²⁸

Interestingly, researchers in Finland found a link between **regular sauna use** and a decreased risk of Alzheimer's disease and other types of dementia in men.²⁹ Factors such as age, alcohol intake, smoking status, body mass index (BMI), previous heart attack incidence and whether or not they had Type 2 diabetes were all noted.

*"Compared with men who used a sauna once a week, men who used a sauna four to seven times weekly were found to be at 66% lower risk of any dementia and had a 65% lower risk of developing Alzheimer's disease. The researchers speculate that sauna use increases heart rate in a way that is comparable to exercise, which benefits heart health. This same mechanism could also be beneficial for memory, the team suggest."*³⁰

Sources and References

- ¹ [The Lancet January 4, 2017](#)
- ^{2, 3, 5, 6, 24} [CNN January 4, 2017](#)
- ⁴ [WHO, Dementia](#)
- ⁷ [PLoS March 3, 2015](#)
- ⁸ [WHO, Air pollution](#)
- ⁹ [WHO, Air pollution in China](#)
- ¹⁰ [Bloomberg January 3, 2017](#)
- ¹¹ [CCTV January 7, 2017 \(Archived\)](#)
- ¹² [PetaPixel January 3, 2017](#)
- ^{13, 14} [The New York Times January 3, 2017](#)
- ¹⁵ [Time January 4, 2017](#)
- ^{16, 17, 23} [The Guardian September 27, 2016](#)
- ¹⁸ [The Guardian January 6, 2017](#)
- ^{19, 20, 21} [Lancaster University September 5, 2016](#)
- ²² [CNN September 6, 2016](#)
- ²⁵ [U.S. EPA May 31, 2016](#)

- ²⁶ Environmental Health Perspectives March 2016
- ²⁷ Neurology 2013 May 7;80(19):1778-1783
- ²⁸ Alzheimer's Disease International
- ²⁹ Oxford Journals January 27, 2016
- ³⁰ Medical News Today January 1, 2016