



SECONDHAND SMOKE, KIDS AND CARS

“You can protect yourself and your loved ones by making your home and car smoke-free.”

– U.S. Surgeon General¹ [emphasis added]

Recent action by several states and territories to prohibit smoking in privately owned vehicles while children are present has brought significant attention to the issue of the risks to children associated with exposure to secondhand smoke, particularly in vehicles. While the research specific to children, secondhand smoke, and vehicles is limited, there is overwhelming evidence of the harms associated with exposure to secondhand smoke that is specific to children and specific to enclosed environments.

Harvard School of Public Health Study of Smoking in Cars with Kids

A 2006 study by researchers at the Harvard School of Public Health found “alarming” levels of secondhand smoke were generated in just five minutes in vehicles under various driving, ventilation, and smoking conditions.² That study also made the following findings:

- The average levels of respirable particulate matter (the pollution inhaled from secondhand smoke) in the vehicles was actually higher than that found in similar studies of smoking in bars in several towns in eastern Massachusetts. In addition, the levels of particulate matter found in the vehicles exceeded those levels described by the U.S. Environmental Protection Agency as “unhealthy for sensitive groups” such as children and the elderly.
- The researchers found that the pollution levels detected “highlight the potentially serious threat to children’s health presented by secondhand smoke in private cars under normal driving conditions.”
- In addition to “alarming” increases of respirable particulate matter, the researchers also found a “significant increase” in levels of carbon monoxide. The researchers point out that carbon monoxide “is a poisonous gas, which may cause coma and death in large amounts, but among infants is known to induce lethargy and loss of alertness even in small quantities.”

Based on their analysis, the researchers concluded that “smoking in cars under typical driver and traffic conditions provides potentially unsafe secondhand smoke exposure.”

Other Studies Addressing Secondhand Smoke Levels in Cars

- A 2008 study examining tobacco smoke pollution in cars found that secondhand smoke reached unhealthy levels even under varying ventilation conditions. Smoking just one cigarette in a vehicle far exceeded fine particle exposure limits set by the Environmental Protection Agency (EPA) and raised secondhand smoke levels several times higher than levels found in smoky bars and restaurants.³
- In 2006, researchers presented a study in which they found secondhand smoke in cars under all conditions tested reached unhealthy levels, even with ventilation. Extremely high levels of particulate matter were recorded in cars with tobacco smoke, putting all riders, particularly children, at an increased health risk.⁴
- A study published by *The New Zealand Medical Journal* found that smoking in a car with the window open produced air quality five times worse than even on the poorest air quality days in Auckland. Furthermore, it found that air quality was up to 100 times worse with all car

windows closed. The study suggests adopting laws to make cars smoke-free in order to protect children and non-smokers from air pollution resulting from smoking in cars.⁵

- A study published in 2008 examined residual smoke pollution in used cars. The authors found significantly higher levels of nicotine in the air, dust, and surfaces of used cars that had been owned by smokers than in cars previously owned by nonsmokers who prohibited smoking in their vehicle.⁶
- Researchers conducting a study in rural southwestern Georgia interviewed low income families on the establishment and enforcement of smoking rules in family cars. The researchers found a widespread inaccurate belief that secondhand smoke was not hazardous as long as the car windows were down.⁷

In [this video](#) created by the California Tobacco Program, researchers at Stanford University show that smoking just half a cigarette in a car resulted in pollutant levels reaching ten times the hazardous limit designated by the EPA in both the front and back seats of a vehicle. Pollutant levels were found to be similarly hazardous when the windows were closed or open and when the car was parked or moving -- and especially dangerous for child passengers.⁸

American Academy of Pediatrics Findings & Recommendations

The American Academy of Pediatrics has previously made the following conclusions regarding harms to children from exposure to secondhand smoke:

- “Results of epidemiologic studies provide evidence that exposure of children to environmental tobacco smoke is associated with increased rates of lower respiratory illness and increased rates of middle ear effusion, asthma, and sudden infant death syndrome.”
- “Exposure during childhood to environmental tobacco smoke may also be associated with development of cancer during adulthood.”⁹

In 2007, the American Academy of Pediatrics adopted a resolution encouraging all its member state and local societies and chapters to “support and advocate for changes in existing state and local laws and policies that protect children from secondhand smoke exposure by prohibiting smoking in any vehicle while a legal minor (under 18 years of age) is in the vehicle.”¹⁰

Public Support for Legislation Prohibiting Smoking in Cars with Children Present

In late 2008, researchers reviewed fifteen studies in North America, the United Kingdom, and Australasia dating back to 1988 relating to public attitudes towards prohibiting smoking in cars with kids. The review found high levels of public support for smoke-free car laws, including five studies since 2005 that found support levels at 77 percent or higher among smokers.¹¹ Similarly, a July 2010 study found that 60 percent of smokers in the United States support laws banning smoking in cars with children.¹²

Campaign for Tobacco-Free Kids, August 6, 2010 / Jessica Kuehne & Jessica Guilfoyle

For more on this topic, including information on existing state and local laws addressing smoking in vehicles with children present, please visit the Americans for Nonsmokers' Rights webpage on smoke-free cars: <http://www.no-smoke.org/learnmore.php?id=616>.

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- ¹ Office of the Surgeon General, Factsheet 3, *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, U.S. Department of Health and Human Services*, <http://www.surgeongeneral.gov/library/secondhandsmoke/factsheets/factsheet3.html>.
- ² Rees VW, Connolly GN, "Measuring Air Quality to Protect Children from Secondhand Smoke in Cars," *American Journal of Preventive Medicine* 31(5):363-8, October 2006.
- ³ Sendzik, T, et al., "An experimental investigation of tobacco smoke pollution in cars," *Toronto, ON: Ontario Tobacco Research Unit*, March 2008.
- ⁴ Sendzik T, Fong G, Travers M, Hyland A, "The hazard of tobacco smoke pollution in cars: evidence from an air quality monitoring study," 13th World Conference on Tobacco or Health; 2006 July 12th–15th; Washington DC - <http://www.arts.uwaterloo.ca/~gfong/smokefree/Senzik-Car-WCTOH-2006.pdf>.
- ⁵ Edwards R, et al., "Highly hazardous air quality associated with smoking in cars: New Zealand pilot study," *The New Zealand Medical Journal* 119(1244), October, 2006, <http://www.nzma.org.nz/journal/119-1244/2294/>.
- ⁶ Matt, GE, et al., "Residual tobacco smoke pollution in used cars for sale: air, dust, and surfaces," *Nicotine and Tobacco Research* 10(9):1467-1475, September, 2008.
- ⁷ Kegler, MC, et al., "A qualitative study on establishing and enforcing smoking rules in family cars," *Nicotine and Tobacco Research* 10(3):493-7, March 2008.
- ⁸ California Tobacco Control Program, "Smoke-Free Cars with Kids: A Scientific Demonstration of Secondhand Smoke Exposure," August 11, 2008, <http://vimeo.com/1513382>, accessed August 9, 2010.
- ⁹ American Academy of Pediatrics, Committee on Environmental Health, "Environmental Tobacco Smoke: A Hazard to Children", *Pediatrics* 99(4), April 1997. See, also, Office of the Surgeon General, Factsheet 2, *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, U.S. Department of Health and Human Services* ["Because their bodies are developing, infants and young children are especially vulnerable to the poisons in secondhand smoke"], <http://www.surgeongeneral.gov/library/secondhandsmoke/factsheets/factsheet2.html>. For more on secondhand smoke harms to kids (and adults), see the Campaign for Tobacco-Free Kids factsheets at <http://www.tobaccofreekids.org/research/factsheets/index.php?CategoryID=19>.
- ¹⁰ American Academy of Pediatrics, Resolution on Secondhand Smoke Exposure of Children in Vehicles (Resolution # LR2, (06) – 2006/2007 Annual Leadership Forum), January 21, 2007.
- ¹¹ Thomson, G, & Wilson, N, "Attitudes to, and knowledge of, secondhand smoke in New Zealand homes and cars," *New Zealand Medical Journal*, 118(1213), April, 2005.
- ¹² Hitchman, Sara C. et al, "Support and correlates of support for banning smoking in cars with children: findings from the ITC Four Country Survey," *European Journal of Public Health*, 10(1093), July, 2010.