



## SECONDHAND SMOKE, KIDS AND CARS

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

– U.S. Surgeon General<sup>1</sup>

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.

### **Smoking in Cars with Children Legislation by State**

Ten states, Guam, the Northern Mariana Islands, and Puerto Rico have passed laws prohibiting smoking in personal vehicles when children or adolescents are present.<sup>2</sup>

State/Territory/ Commonwealth	Year of Implementation	Applicable Age
Alabama	2023	Under age 14
Arkansas	2006; Revised 2011 and 2015	Under age 14 (eff. 2011)
California	2008	Under age 18
Illinois	2020	Under age 18
Louisiana	2006	Under age 13
Maine	2008	Under age 16
Oregon	2014; Revised 2015	Under age 18
Utah	2014	Under age 16
Vermont	2014	Under age 9
Virginia	2016	Under age 8
Guam	2011; Revised 2016	Under age 18
Northern Mariana Islands	2017	Under age 18
Puerto Rico	2007; Revised 2017	Under age 18

### **American Academy of Pediatrics Findings on Health Harms to Kids from SHS Exposure**

The American Academy of Pediatrics (AAP) has 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.”<sup>3</sup>

AAP’s 2023 policy statement, “Protecting Children and Adolescents From Tobacco and Nicotine,” recommends enhanced implementation of comprehensive smoke-free laws where children and adolescents live, learn, play, work, and visit, noting that “[s]moke-free policies for cars can also reduce SHS exposure and should be promoted in an equitable manner.”<sup>4</sup> 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.”<sup>5</sup>

### **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.<sup>6</sup> 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.”

### **Studies Addressing Secondhand Smoke in Cars**

- A 2021 systematic review and meta-analysis published in *Lancet Public Health* found that smoke-free car policies were associated with significant reductions in reported child tobacco smoke exposure in cars.<sup>7</sup>
- In 2020, a CDC analysis reported a significant decline in SHS exposure in a vehicle in the last 7 days among US middle and high school students between 2011 (30.2%) and 2018 (19.8%), yet still in 2019 approximately 6 million (23.3%) students still reported SHS exposure in a vehicle in the last 7 days.<sup>8</sup>
- A 2008 study examining secondhand smoke exposure in cars found that it 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.<sup>9</sup>
- 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.<sup>10</sup>

- 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.<sup>11</sup>
- 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.<sup>12</sup>

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.<sup>13</sup>

### **Public Support for Legislation Prohibiting Smoking in Cars with Children Present**

A survey released in July 2013 found that 82% of US adults favor prohibiting smoking in vehicles when children under age 13 are present. The survey found broad-based support for the policy, including support from a majority of current smokers (60%), former smokers (84%) and never smokers (87%).<sup>14</sup>

### ***Campaign for Tobacco-Free Kids, January 17, 2024, Marela Minosa***

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: <https://no-smoke.org/at-risk-places/cars/>.

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<sup>1</sup> 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>.

<sup>2</sup> Source for U.S. Smokefree Car Laws: American Nonsmokers' Rights Foundation, <https://no-smoke.org/at-risk-places/cars/>. Accessed October 26, 2023.; For Alabama, <https://www.alabamapublichealth.gov/blog/2023/08/nr-07.html>; For Guam, <https://www.publichealthlawcenter.org/sites/default/files/resources/%202020-US-Prohibitions-Smoking-Cars-With-Children.pdf>. Accessed January 17, 2024. For the Northern Mariana Islands, [https://www.cnmilaw.org/pdf/public\\_laws/19/pl19-82.pdf](https://www.cnmilaw.org/pdf/public_laws/19/pl19-82.pdf); <https://www.cdc.gov/statesystem/factsheets/vehicles/Vehicles.html> Accessed January 17, 2024.

<sup>3</sup> American Academy of Pediatrics, Committee on Environmental Health, "Environmental Tobacco Smoke: A Hazard to Children," *Pediatrics* 99(4), April 1997, <http://pediatrics.aappublications.org/content/pediatrics/99/4/639.full.pdf>. 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/facts\\_issues/fact\\_sheets/toll/products/secondhand\\_smoke/](http://www.tobaccofreekids.org/facts_issues/fact_sheets/toll/products/secondhand_smoke/).

<sup>4</sup> Jenssen BP, et al, Protecting children and adolescents from tobacco and nicotine. *Pediatrics*. 2023 May 1;151(5):e2023061806. <https://publications.aap.org/pediatrics/article/151/5/e2023061804/191066/Protecting-Children-and-Adolescents-From-Tobacco?autologincheck=redirected>.

<sup>5</sup> American Academy of Pediatrics, Resolution on Secondhand Smoke Exposure of Children in Vehicles (Resolution # LR2, (06) – 2006/2007 Annual Leadership Forum), January 21, 2007.

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<sup>6</sup> 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.

<sup>7</sup> Radó MK, et al. Effect of smoke-free policies in outdoor areas and private places on children's tobacco smoke exposure and respiratory health: a systematic review and meta-analysis. *Lancet Public Health*. 2021;6(8):e566–e578

<sup>8</sup> Walton K, Gentzke AS, Murphy-Hoefer R, Kenemer B, Neff LJ. Exposure to Secondhand Smoke in Homes and Vehicles Among US Youths, United States, 2011–2019. *Prev Chronic Dis* 2020;17:200107. DOI: <http://dx.doi.org/10.5888/pcd17.200107>

<sup>9</sup> Sendzik, T, et al., "An experimental investigation of tobacco smoke pollution in cars," *Toronto, ON: Ontario Tobacco Research Unit*, March 2008.

<sup>10</sup> 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, Washington DC July 2006, <http://www.arts.uwaterloo.ca/~gfong/smokefree/Sendzik-Car-WCTOH-2006.pdf>.

<sup>11</sup> 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/>.

<sup>12</sup> 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.

<sup>13</sup> California Tobacco Control Program, "Smoke-Free Cars with Kids: A Scientific Demonstration of Secondhand Smoke Exposure," August 11, 2008, <http://vimeo.com/1513382>.

<sup>14</sup> C.S. Mott Children's Hospital, National Poll on Children's Health, "Broad public support for banning smoking in vehicles with kids present," July 22, 2013. <http://mottnpch.org/reports-surveys/broad-public-support-banning-smoking-vehicles-kids-present>