

The Effect of Secondhand Smoke on Worker Health

The need for smoke-free laws



More than 40 years after former U.S. Surgeon General Jesse Steinfeld first exposed the potential health risks of secondhand smoke (SHS) in 1971,ⁱ and nearly 30 years after a subsequent Surgeon General's report stated that SHS causes lung cancer and other diseases,ⁱⁱ all U.S. workers still do not have the right to breathe smoke-free air. In the late 1980s, 91.7 percent of Americans had an indicator of SHS exposure in their bloodstreamⁱⁱⁱ and, at that time, only 3 percent of workers nationally reported a “no smoking” policy at their place of employment.^{iv} Soon thereafter, laws prohibiting smoking in workplaces and other public venues began to be enacted at the local, state, and national levels to minimize the impact of SHS. In 2006 and again in 2010, two Surgeon Generals concluded unequivocally that there is no safe level of exposure to SHS.^{v vi}

All U.S. workers still do not have the right to breathe smoke-free air.

Today, smoke-free policies have effectively reduced the number of people exposed to SHS in the workplace.^{vii,viii,ix,x} The proportion of nonsmokers with detectable levels of a SHS indicator has dropped to 40 percent.^{xi} This level of exposure is still too high, and unfortunately, not all workers have the same level of protections. Currently, over 73 percent of the U.S. population is covered by 100 percent smoke-free state or local smoke-free workplace laws, 77 percent is covered by 100 percent smoke-free restaurant laws, and 66 percent is covered by 100 percent smoke-free bar laws.^{xii} However, only 58 percent of the population is covered by 100 percent smoke-free laws covering all three of these types of venues.^{xiii}

Hospitality Workers are at Higher Risk for SHS Exposure

The workplace is a major source of SHS exposure for adults, and SHS exposure in the workplace has been linked to an increased risk of heart disease and lung cancer among nonsmoking adults. Blue collar and service workers are more likely than white collar workers to be exposed to SHS at the workplace^{xiv} and are less likely to be covered by smoke-free policies.^{xv,xvi}

- According to one study, prior to the implementation of a smoke-free law, employees working full-time in restaurants or bars that allowed indoor smoking were exposed to levels of air pollution 4.4 times higher than safe annual levels established by the U.S. Environmental Protection Agency (EPA) because of their occupational exposure to tobacco smoke pollution.^{xvii}

Bartenders, servers, and casino workers are particularly unlikely to be protected by smoke-free policies and more likely to breathe SHS even when smoke-free policies are in effect for other types of workplaces.^{xviii,xix} Without smoke-free laws, bars and lounges have among the highest concentrations of SHS of all public spaces – exposing bartenders to even greater levels of SHS than restaurant workers.^{xx}

- When there are not smoke-free policies in effect, levels of SHS in bars are 3.9 to 6.1 times higher than levels measured at office worksites and up to 4.5 times higher than levels in homes with one or more smokers.^{xxi}
- Bartenders are more likely than many other workers to report eye, nose, or throat irritation or symptoms.^{xxii}
- A study examining the effects of SHS exposure in San Francisco, CA, restaurants and bars before the state's smoke-free law took effect found that 74 percent of bartenders surveyed had respiratory symptoms (e.g., wheezing, cough, etc.), and 77 percent had sensory irritation symptoms (e.g. red, teary, or irritated eyes, runny nose, sneezing, sore or scratchy throat, etc.).^{xxiii}

Casino workers are exposed to high levels of SHS in the workplace and are at higher risk for developing SHS-related illnesses.

- The National Institute for Occupational Safety and Health (NIOSH) conducted a health hazard evaluation at a casino in Atlantic City, NJ and found that workers had exceptionally high levels of a SHS exposure indicator in their bloodstreams.^{xxiv} In particular, the study found generalized exposure to SHS throughout the entire gaming area. Casino workers who staffed nonsmoking tables did not have lower levels of SHS exposure than casino workers who staffed smoking tables.^{xxv}
- A study of nonsmokers' exposure to SHS in Pennsylvania casinos found that smoke particles were 4 to 6 times greater inside casinos than outside, even with ventilation and few people smoking at the time.^{xxvi} Additionally, the extent of SHS in the casinos was not confined only to the smoking areas.^{xxvii}

Smoke-free Policies Improve Workers' Health

Smoke-free policies reduce exposure to SHS in office and non-office worksites and nicotine concentration levels in the bloodstream of the adults who work there.^{xxviii} Although SHS exposure declined among all worker groups between 1988 and 2002, the decline was greatest among blue collar and service workers, who experienced a 76 percent decline in a SHS indicator during that 14-year time period.^{xxix} Also during that time, the number of local 100 percent smoke-free ordinances in effect increased from 0 to 47 nationwide.^{xxx} We expect these declines in SHS exposure to be continuing with more laws in effect since then. As of October 2018, there were 1,497 localities and 36 states, D.C., American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands requiring 100 percent smoke-free workplaces, restaurants, or bars, of which 1,010 localities and 25 states, D.C., Puerto Rico, and the U.S. Virgin Island laws cover all three of these types of venues.^{xxxi}

The evidence shows that implementing smoke-free policies has immediate benefits for restaurant and bar workers' health. The Surgeon General reports that in high-risk settings such as bars, smoke-free policies can lead to reductions of 80-90 percent of SHS exposure.^{xxxii} Additional studies examining the impact of specific smoke-free laws have similar findings:

- In Wisconsin, three to six months after the implementation of the statewide smoke-free law, nonsmoking bar workers experienced a significant improvement in respiratory health.^{xxxiii}
- The percentage of hospitality workers exposed to SHS declined from 91 percent to 14 percent in just a single year after New York's smoke-free law went into effect. The amount of time that hospitality workers were exposed to SHS on the job decreased by 98 percent—from 12.1 hours to 0.2 hours.^{xxxiv} Reports of one or more sensory symptoms—affecting the eyes, nose, or throat—declined from 88 percent to 38 percent just one year after the smoke-free law took effect.^{xxxv}
- Nonsmoking bar and restaurant employees in Oregon communities without smoke-free laws had higher levels of a tobacco-specific lung carcinogen than similar workers in communities with a smoke-free law in effect. Workers in communities without smoke-free laws also had higher levels of the carcinogen after their work shift than they did previously.^{xxxvi}
- A study of Minnesota hospitality workers showed that after implementation of a smoke-free law, concentrations of a SHS indicator in the bloodstream decreased by more than 50 percent in a majority of workers.^{xxxvii}

Smoke-free laws also prompt many smokers to quit.

- During the three months following the passage of Nebraska's smoke-free law, 16 percent of callers to the state's Quitline said that they were influenced to call as a result of the smoke-free law.^{xxxviii}
- A recent study found that Kentucky counties with smoke-free laws had higher quitline call rates and lower smoking rates than counties without smoke-free laws. In fact, individuals in communities with smoke-free laws were 18% less likely to smoke.^{xxxix}
- The Community Preventive Services Task Force attributed a 2.7 reduction in overall tobacco use in the US between 2009 and 2011 to smoke-free laws.^{xl}

Smoke-free policies reduce long-term risk of lung cancer and cardiovascular disease among workers and patrons alike.

- Passage of a comprehensive smoke-free law is associated with lower rates of hospitalizations and death from heart attacks, heart disease, strokes, and respiratory diseases.^{xlii} A 2014 study of hospitality workplaces found that smoke-free policies significantly lowered two cardiovascular risk factors in non-smoking employees.^{xliii}
- Smoke-free laws that cover a broader range of venues, including all workplaces, restaurants, and bars, further reduce the risk of disease and death.^{xliiii}
- Following implementation of Massachusetts's statewide smoke-free law, heart attack deaths declined in cities and towns that previously did not have local smoke-free laws in place. There was no significant change in heart attack deaths in jurisdictions that previously had a local law, suggesting that the decline in heart attack deaths was due to the smoke-free law.^{xliv}
- One year after New York State implemented a comprehensive smoke-free law, heart attack hospital admissions decreased by over 3,800, an 8 percent decline statewide.^{xlv}
- A 2011 ACS CAN report found that if all states that lacked comprehensive smoke-free laws at that time passed one, more than a million adults would quit smoking and about 400,000 youth would never start, preventing 624,000 deaths.^{xlvi} About 70,000 of these preventable deaths would occur in non-smokers.^{xlvii}

ACS CAN on Secondhand Smoke and Worker Health

Exposure to SHS is an occupational hazard for many U.S. workers, including casino, restaurant, bar, and hotel employees, and a preventable cause of disease and death. ACS CAN believes that all people should have the right to breathe smoke-free air. No one should have to choose between their livelihood and their health.

ACS CAN strongly supports legislative and regulatory measures that limit smoking in hospitality venues, work environments, and other public places. Furthermore, ACS CAN opposes preemptive state and federal legislation that restricts local authorities from regulating smoke-free air and urges policymakers and community leaders to support smoke-free efforts, which reduce and prevent disease, suffering, and death from tobacco.

References

ⁱ U.S. Department of Health, Education, and Welfare. *The Health Consequences of Smoking: A Report of the Surgeon General: 1971*. Available at <http://profiles.nlm.nih.gov/ps/access/NNBDCF.pdf>.

ⁱⁱ U.S. Department of Health and Human Services (HHS). *The Health Consequences of Involuntary Smoking: A Report of the Surgeon General*. 1986. Available at <http://profiles.nlm.nih.gov/NN/B/C/P/M/>.

ⁱⁱⁱ Pirkle JL, Flegal KM, Bernert JT, et al. Exposure of the U.S. Population to Environmental Tobacco Smoke: The Third National Health and Nutrition Examination Survey, 1988 to 1991. *JAMA* 1996;275(16): 1233-1240.

^{iv} Gerlach KK, Shopland DR, Hartman AM, et al. Workplace Smoking Policies in the United States: Results from a National Survey of more than 100,000 Workers. *Tobacco Control* 1997; 6: 199-206.

^v HHS. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006. Available online at <http://www.surgeongeneral.gov/library/secondhandsmoke/report/>.

^{vi} HHS. *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2010.

^{vii} Wortley PM, Caraballo RS, Pederson LL, et al. Exposure to Secondhand Smoke in the Workplace: Serum Cotinine by Occupation. *Journal of Occupational and Environmental Medicine* 2002; 44(6): 503-509.

^{viii} Lawhorn NA, Lirette DK, Klink JL, et al. Workplace exposure to secondhand smoke among non-smoking hospitality employees. *Nicotine Tob Res* 2013; 15(2):413-8.

^{ix} Bohac DL, Hewett MJ, Kappahn KI, et al. Change in Indoor Particle Levels After a Smoking Ban in Minnesota Bars and Restaurants. *Am J Prev Med* 2010; 39(6 Suppl 1):S3-9.

^x Marin HA and Diaz-Toro EC. Reduced Exposure to Secondhand Smoke at Casinos in Puerto Rico After the Implementation of a Workplace Smoking Ban in 2007: A Pre-Post Design. *Puerto Rico Health Science Journal* 2011; 30(4):182-7.

^{xi} HHS. *The Health Consequences of Smoking—50 Years of Progress: A report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Center for Diseases Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

- xii Americans for Nonsmokers' Rights (ANR). Summary of 100% Smokefree State Laws and Population Protected by 100% U.S. Smokefree Laws. October 1, 2018. Available at <http://www.no-smoke.org/pdf/SummaryUSPopList.pdf>. Accessed October 22, 2018.
- xiii ANR, 2017.
- xiv Clark JD, Wilkinson JD, LeBlanc WG et al. Inflammatory markers and secondhand tobacco smoke exposure among U.S. workers. *Am J Ind Med* 2008; 51(8): 626-632.
- xv Arheart KL, Lee DJ, Dietz NA, et al. Declining Trends in Serum Cotinine Levels in U.S. Worker Groups: The Power of Policy. *JOEM* 2008; 50(1):57-53.
- xvi HHS, 2014.
- xvii Travers MJ and Vogl L. *Air Quality Effect of the Kansas Indoor Clean Air Law*. Roswell Park Cancer Institute. January 2011. Available at <http://www.tobaccofreekansas.org/site06/pdf/Kansas%20Air%20Quality%20Testing%20Report%202011.pdf>. Accessed June 6, 2011.
- xviii Shopland DR, Anderson CM, Burns DM, and Gerlach KK. Disparities in Smoke-Free Workplaces Among Food Service Workers. *JOEM* 2004; 46(4):347-356.
- xix Trout D, Decker J, Mueller C, et al. Exposure of Casino Employees to Environmental Tobacco Smoke. *JOEM* 1998; 40(3): 270-276.
- xx HHS, 2006.
- xxi Siegel M. Involuntary smoking in the restaurant workplace. A review of employee exposure and health effects. *JAMA* 1993;270:490-493.
- xxii Palmersheim KA, et al. *Madison Bartenders Baseline Survey: Preliminary Findings - Brief Report*. Tobacco Surveillance & Evaluation Program, University of Wisconsin, Comprehensive Cancer Center, September 2005.
- xxiii Eisner MD, Smith AK, and Blanc PD. Bartenders' Respiratory Health After Establishment of Smoke-Free Bars and Taverns. *JAMA* 1998; 280(22): 1909-1914.
- xxiv Trout et al, 1998.
- xxv Trout et al, 1998.
- xxvi Repace JL, 2009. Secondhand Smoke in Pennsylvania Casinos: A Study of Nonsmokers' Exposure, Dose, and Risk. *Am J Pub Heal* 99(8); 1478-1485.
- xxvii Repace, 2009.
- xxviii HHS, 2014.
- xxix Arheart, KL, Lee DJ, Dietz NA, et al. Declining Trends in Serum Cotinine Levels in U.S. Worker Groups: The Power of Policy. *JOEM* 2008; 50(1):57-53.
- xxx ANR. Local 100% Smokefree Laws in All Workplaces, Restaurants, and Bars: Effective by Year. October 1, 2014. Available online at http://www.no-smoke.org/pdf/current_smokefree_ordinances_by_year.pdf. Accessed November 25, 2014.
- xxxi Americans for Nonsmokers Rights. Overview List – How many Smokefree Laws? October 1, 2018. Available online at <http://www.no-smoke.org/pdf/mediaordlist.pdf>. Accessed October 22, 2018
- xxxii HHS, 2014.
- xxxiii Palmersheim K A, Pfister KP, and Glysch RL. *The Impact of Wisconsin's Statewide Smoke-free Law on Bartender Health and Attitudes*. University of Wisconsin: Milwaukee, Center for Urban Initiatives and Research. 2010. Available at <http://www.governor.wa.gov/news/news-view.asp?pressRelease=345&newsType=1>. Accessed June 6, 2011.
- xxxiv Farrelly MC, Nonnemaker JM, Chou R, et al. Changes in Hospitality Workers' Exposure to Secondhand Smoke Following the Implementation of New York's Smoke-Free Law. *Tobacco Control* 2005; 14: 236-241.
- xxxv Farrelly et al, 2005.
- xxxvi Stark MJ, Rohde K, Maher JE, et al. The Impact of Clean Indoor Air Exemptions and Preemption Policies on the Prevalence of a Tobacco-Specific Lung Carcinogen Among Nonsmoking Bar and Restaurant Workers. *American Journal of Public Health* 2007; 97; 1457-1463.
- xxxvii Jensen JA, Schillo BA, Moilanen MM, et al. Tobacco Smoke Exposure in Non-smoking Hospitality Workers Before and After a State Smoking Ban. *Cancer Epidemiol Biomarkers Prev* 2010; 19(4): 1016-1021.
- xxxviii Nebraska Department of Health and Human Services. Six Months of Smoke-Free Air: The Nebraska Clean Indoor Air Act. 2010. Available at http://smokefree.ne.gov/SixMonthReport_SFAirLaw.pdf. Accessed June 6, 2011.
- xxxix Fernander AF, Rayens MK, Adkins S, and Hahn EJ. Local Smoke-free Public Policies, Quitline Call Rate, and Smoking Status in Kentucky. *Am J Health Promot* 2014; 29(2): 123-6.
- xl Community Preventative Services Task Force. Reducing Tobacco Use and Secondhand Smoke Exposure: Smoke-Free Policies. November 2012. Available online at <http://www.thecommunityguide.org/tobacco/smokefreepolicies.html>.
- xli Tan CE and Glantz SA. Association Between Smoke-free Legislation and Hospitalization for Cardiac, Cerebrovascular, and Respiratory Diseases. *Circulation* 2012; 126: 2177-2183.
- xlii Rajkumar, S.; Schmidt-Trucksass, A.; Wellenius, G.A.; Bauer, G.F.; Huynh, C.K.; Moeller, A.; Roosli, M., "The effect of workplace smoking bans on heart rate variability and pulse wave velocity of non-smoking hospitality workers," *International Journal of Public Health* 59(4): 577-585, August 2014.
- xliii Ibid.
- xliv Dove MD, Dockery M, Mittleman J. The Impact of Massachusetts' Smoke-Free Workplace Laws on Acute Myocardial Infarction Deaths. *Am J Pub Heal* 2010; 100(11).
- xliv Juster HR, Loomis BR, Hinman TM, et al. Declines in Hospital Admissions for Acute Myocardial Infarction in New York State After Implementation of a Comprehensive Smoking Ban. *Am J Pub Heal* 2007;97(11):2035-39
- xlvi American Cancer Society Cancer Action Network. Saving Lives, saving money: A state-by-state report on the health and economic impact of comprehensive smoke-free laws. July 2011. Available online at: <http://www.acscan.org/pdf/tobacco/reports/acscan-smoke-free-laws-report.pdf>.
- xlvi Ibid.