

Tobacco users are not the only ones who breathe its deadly smoke—all the people around them are forced to inhale it too. Secondhand smoke causes more than 42,000 deaths, including more than 7,000 lung cancer deaths among nonsmoking adults each year.<sup>1,2</sup> The total annual costs of secondhand smoke exposure are estimated to be at least \$5.6 billion in direct medical costs and at least \$6 billion in indirect costs.<sup>3,4</sup> To protect nonsmokers and to reduce the costs associated with treating tobacco-related disease, the American Cancer Society Cancer Action Network (ACS CAN) supports smoke-free air policies that provide 100 percent smoke-free environments.

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## **Health Effects of Secondhand Smoke**

Secondhand smoke is the combination of smoke emitted from the burning ends of a tobacco product (sidestream smoke) and the smoke exhaled from the lungs of tobacco users (exhaled mainstream smoke).<sup>5</sup> Tobacco smoke contains over 7,000 substances, more than 69 of which are known or suspected to cause cancer.<sup>6</sup> The U.S. Environmental Protection Agency (EPA) has classified secondhand smoke as a Group A carcinogen, a substance known to cause human cancer.<sup>7</sup> Some of the deadly substances in secondhand smoke and the cancers they cause are:

- Arsenic, benzo(a)pyrene, cadmium, chromium, nickel, and NNK → lung cancer
- Nitrosamines → cancers of the lung, respiratory system, and other organs
- Aromatic amines → bladder and breast cancers
- Formaldehyde and nickel → nasal cancer
- Benzene → leukemia
- Vinyl chloride → liver and brain cancer
- 2-naphthylamine and 4-aminobiphenyl → bladder cancer
- Lead → liver cancer

Three of the carcinogens -- arsenic, benzene, and vinyl chloride -- are regulated in the United States as hazardous air pollutants. Two of the bladder carcinogens -- 2-naphthylamine and 4-aminobiphenyl -- are banned for use in dye manufacturing.<sup>8</sup> Before New York City implemented its smoke-free ordinance, an air quality survey conducted by the New York State Department of Health found that air pollution levels in bars permitting smoking were as much as 50 times greater than pollution levels at the Holland Tunnel entrance during rush hour.<sup>9</sup>

Exposure to secondhand smoke causes many of the same tobacco-related diseases and premature death as active smoking, including heart disease, stroke, and cancer.<sup>10</sup> In addition, secondhand smoke increases the risk for sudden infant death syndrome (SIDS), acute respiratory infections, ear problems, and more severe asthma.<sup>11</sup> Multiple Surgeon General's reports have confirmed that the scientific evidence indicates there is no risk-free level of exposure to secondhand smoke.<sup>12,13</sup>

## **Exposure to Secondhand Smoke**

Thanks in large part to the passage of comprehensive smoke-free laws in many parts of the country, public exposure to secondhand smoke has declined dramatically since the 1980s. Specifically, the proportion of nonsmokers with detectable levels of a secondhand smoke indicator in their bloodstream dropped from 84 percent in 1988-1994 to 46 percent in 1999-2004.<sup>14</sup> However, progress in further reducing exposure to secondhand smoke has stalled. In 2007-2008, the most recent years for which data is available, 40 percent of nonsmokers had a biomarker for secondhand

smoke exposure.<sup>15</sup> While 65 percent of the U.S. population is covered by smoke-free workplace laws, 77 percent are covered by smoke-free restaurant laws, and 65 percent are covered by smoke-free bar laws, less than half of the population (49%) is covered by smoke-free laws in all three venues.<sup>16</sup>

Secondhand smoke affects certain populations more harshly than others. It is an occupational hazard for many workers, including casino, restaurant, bar, and hotel employees. According to a CDC analysis of secondhand smoke exposure in 11 states, the proportion of nonsmoking adults who reported exposure to secondhand smoke in an indoor workplace ranged from 6.0 to 15.8 percent.<sup>17</sup> Blue collar and service employees are more likely to be exposed to secondhand smoke at work and less likely than white collar workers to be covered by smoke-free policies.<sup>18</sup> African-Americans, Hispanics, and Native Americans, in particular, are less likely to be protected under smoke-free workplace policies since they are more likely to work in occupation sectors that enjoy the least amount of protection from smoking in the workplace -- service, hospitality, and labor industries.<sup>19, 20</sup>

- The Centers for Disease Control and Prevention (CDC) has found higher levels of secondhand smoke exposure among African-Americans than for any other race or ethnic subgroup.<sup>21</sup>
- People with incomes below the poverty level are more likely to be exposed to secondhand smoke.<sup>22</sup>
- Black male workers, construction/manufacturing sector workers, and blue-collar and service workers have the highest levels of secondhand smoke exposure.<sup>23</sup>

Children are particularly vulnerable to the effects of secondhand smoke and are more likely than adults to be involuntarily exposed. More than one half of US children (54%) between ages 3-11 are exposed to secondhand smoke, with the heaviest exposure at home.<sup>24</sup>

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### **ACS CAN on Smoke-Free Policies**

ACS CAN supports local, state, and federal initiatives to eliminate public exposure to secondhand smoke, including 100 percent smoke-free laws, which are a key way to protect nonsmokers, children and workers from the deadly effects of secondhand smoke. Public concern about the harmful effects of secondhand smoke and the need for smoke-free policies is high. Studies have found that there is strong public support for smoke-free laws among both smokers and nonsmokers.<sup>25 26</sup> This public support -- along with an increasing body of evidence about the detrimental effects of secondhand smoke -- has led many jurisdictions to successfully pass smoke-free laws and ordinances.

Smoke-free laws have produced important improvements that lead to better health. A 2006 nationwide study examining the relationship between smoke-free laws and secondhand smoke exposure found that 12.5 percent of nonsmoking adults living in counties with a smoke-free law covering all workplaces, restaurants, or bars in the county were exposed to secondhand smoke, compared with 45.9 percent of nonsmoking adults in counties with no smoke-free law.<sup>27</sup> This finding was reinforced in an International Agency for Research on Cancer (IARC) review, which revealed that smoke-free laws in high-risk environments (bars, restaurants, and hospitality industry) could lead to as high as 80-90% reduction in secondhand smoke.<sup>28</sup> An ACS CAN study conducted in 2011 found that if the 27 states that lacked comprehensive smoke-free laws were to implement them, over 69,500 premature deaths of non-smokers could be prevented.<sup>29</sup>

Despite tobacco industry claims that ventilation technologies are a good alternative to smoke-free laws, the evidence shows that ventilation is ineffective and costly for businesses to implement. Further, ACS CAN opposes preemptive state legislation that restricts local authorities from enacting stronger local smoke-free laws.

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<sup>3</sup> Behan, D.F., Eriksen, M.P., and Lin, Y (2005). *Economic Effect of Environmental Tobacco Smoke*. Society of Actuaries: Washington, DC. Available online at <http://www.soa.org/ccm/content/areas-of-practice/life-insurance/research/economic-effects-of-environmental-tobacco-smoke-SOA/>.

<sup>4</sup> HHS (2014).

<sup>5</sup> U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control (CDC) (1986). *The Health Consequences of Involuntary Smoking: A Report of the Surgeon General*. Washington DC: Government Printing Office (GPO).

<sup>6</sup> HHS (2014).

<sup>7</sup> EPA (1992).

<sup>8</sup> Repace, J, I. Kawachi and S. Glantz (1999). *Fact Sheet on Secondhand Smoke*. Available online at <http://repace.com/SHSFactsheet.pdf>.

<sup>9</sup> New York City Department of Finance, New York City Department of Health and Mental Hygiene, New York City Department of Small Business Services, and New York City Economic Development Corporation (2004). *The State of Smoke-Free New York City: A One Year Review*.

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<sup>12</sup> HHS (2006).

<sup>13</sup> U.S. Department of Health and Human Services (HHS) (2010). *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease*. 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.

<sup>14</sup> CDC (2008). Disparities in Secondhand Smoke Exposure—United States, 1988–1994 and 1999–2004. *Morbidity and Mortality Weekly Report* 57(27): 744–747.

<sup>15</sup> CDC (2010). Vital Signs: Nonsmokers' Exposure to Secondhand Smoke – United States, 1999–2008. *Morbidity and Mortality Weekly Report*; 59(35):1141–1146.

<sup>16</sup> American Nonsmokers' Rights Foundation (2014). Percent of U.S. State Populations Covered by 100% Smokefree Air Laws. July 3, 2014. Available online at <http://www.no-smoke.org/pdf/percentstatepops.pdf>.

<sup>17</sup> CDC (2009). State-Specific Secondhand Smoke Exposure and Current Cigarette Smoking Among Adults – United States, 2008. *Morbidity and Mortality Weekly Report*; 58(44):1232–1235.

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