

## **SECONDHAND SMOKE: THE SCIENCE**

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- The United States Centers for Disease Control and Prevention has determined that the risk of acute myocardial infarction and coronary heart disease associated with exposure to tobacco smoke is non-linear at low doses, increasing rapidly with relatively small doses such as those received from secondhand smoke (SHS) or actively smoking one or two cigarettes a day, and has warned that all patients at increased risk of coronary heart disease or with known coronary artery disease should avoid all indoor environments that permit smoking.<sup>1</sup>
- A study of hospital admissions for acute myocardial infarction in Helena, Montana before, during, and after a local law eliminating smoking in workplaces and public places was in effect, has determined that laws to enforce smokefree workplaces and public places may be associated with a reduction in morbidity from heart disease.<sup>2</sup>
- A June 2004 study published in the *British Medical Journal* reaffirmed that there are virtually no health disparities between active and passive smoking. The risks of heart disease associated with secondhand smoke are twice what were previously thought and are virtually indistinguishable from those associated with active smoking.<sup>3</sup>
- There is a link between secondhand smoke to an increased risk of stroke. Regular exposure to secondhand smoke, such as in restaurants, heightens one's chance of stroke by 50 percent.<sup>4</sup>
- The 1999 National Cancer Institute Monograph 10, based on the 1997 Cal-EPA (Environmental Protection Agency) review of population-based studies, confirmed that SHS is fatal and has numerous non-fatal health effects. SHS chemicals include irritants and systemic toxicants, mutagens, and carcinogens, and reproductive and developmental toxicants. More than 50 compounds in tobacco smoke are known carcinogens. SHS exposure causes lung and nasal sinus cancer, heart disease, and Sudden Infant Death Syndrome. Serious impacts of SHS on children include asthma induction and exacerbation, bronchitis and pneumonia, middle ear infection, chronic respiratory symptoms, and low birth weight.<sup>5,6</sup>
- SHS is the third leading cause of preventable death in this country, killing 53,000 nonsmokers in the U.S. each year. For every eight smokers the tobacco industry kills, it takes one nonsmoker with them.<sup>7,8</sup>
- SHS is a major source of PM [particulate matter] pollution – a risk factor for pulmonary disease, asthma, and lung cancer – and that three cigarettes smouldering in a room emits up to 10-fold more PM pollution than an ecodiesel engine. The study concluded that high levels of PM exposure from SHS may account for frequent episodes of short term respiratory damage in nonsmokers.<sup>9</sup>
- Secondhand smoke exposure during childhood has been associated with an increased risk of spinal pain, such as neck pain and back pain in adult life. Researchers suggest this may be due to the negative effects of smoke exposure during childhood on the developing spine.<sup>10</sup>

- Secondhand smoke exposure impairs a child's ability to learn. It is neurotoxic even at extremely low levels. More than 21.9 million children are estimated to be at risk of reading deficits because of secondhand smoke. Higher levels of exposure to secondhand smoke are also associated with greater deficits in math and visuospatial reasoning.<sup>11</sup>
- The excess risk of coronary heart disease (CHD) associated with passive smoking is 50-60%, twice what was previously thought by researchers, and the risks of CHD for passive smoking are virtually indistinguishable from active smoking. A study published in the July 2004 edition of the *British Medical Journal* found higher risks of CHD because, rather than using marriage to a smoker or working in a smoky environment as their measure of exposure, the study's authors used plasma cotinine (metabolized nicotine), a direct biochemical measure of total SHS) exposure. By doing so, they captured SHS's entire exposure effect.<sup>12</sup>
- Even a half hour of secondhand smoke exposure causes heart damage similar to that of habitual smokers. Nonsmokers' heart arteries showed a reduced ability to dilate, diminishing the ability of the heart to get life-giving blood. In addition, the same half hour of secondhand smoke exposure activates blood platelets, which can initiate the process of atherosclerosis (blockage of the heart's arteries) that leads to heart attacks. These effects explain other research showing that nonsmokers regularly exposed to SHS suffer death or morbidity rates 30% higher than those of unexposed nonsmokers.<sup>13,14</sup>
- The 1986 *Report of the Surgeon General*; the 1986 National Research Council report, *Environmental Tobacco Smoke: Measuring Exposures and Assessing Health Effects*; and the 1992 U.S. Environmental Protection Agency report, *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders*, established that SHS exposure causes lung cancer.<sup>15,16</sup>
- The 2002 Environmental Health Information Service's 10<sup>th</sup> *Report on Carcinogens* classifies SHS as a Group A (Human) Carcinogen — a substance known to cause cancer in humans. There is no safe level of exposure for Group A toxins. In addition, the 2002 World Health Organization International Agency's (IARC) *Monograph on Tobacco Smoking, both Active and Passive* concluded that nonsmokers are exposed to the same carcinogens as active smokers.<sup>17,18</sup>
- In 1991, data showed that nearly 90 percent of the U.S. population had measurable levels of serum cotinine in their blood. In 2002, the Centers for Disease Control and Prevention's National Report on Human Exposure to Environmental Chemicals found more than a 75 percent decrease in median cotinine levels for nonsmokers in the U.S. since 1991— an indication that smoke-free environments significantly reduce exposure to SHS.<sup>19,20</sup>

## REFERENCES

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