

# SMOKE-FREE ENVIRONMENTS

## Health Harms of Secondhand Smoke

### The facts about secondhand smoke

- Secondhand smoke is the combination of the smoke given off by a burning tobacco product and the smoke exhaled by a smoker.<sup>1</sup>
- Secondhand smoke is a complex mixture of more than 7,000 chemicals, including at least 69 known carcinogens.<sup>2</sup>
- The World Health Organization International Agency for Research on Cancer classifies secondhand smoke as a carcinogen.<sup>3</sup>
- There is no safe level of exposure to secondhand smoke.<sup>4</sup>
- Secondhand smoke causes premature death and disease in children and in adults who do not smoke.<sup>1</sup>
- Globally, an estimated 33% of non-smoking males, 35% of non-smoking females, and 40% of children are exposed to secondhand smoke indoors.<sup>5</sup>

### Secondhand smoke causes death, disease and disability

Secondhand smoke is a known cause of lung cancer, heart disease, and chronic lung ailments such as bronchitis, as well as other health problems.

- Every year, exposure to secondhand smoke causes over 600,000 premature deaths worldwide.<sup>5</sup>
- Exposure to secondhand smoke has an immediate negative impact on the cardiovascular system, damaging blood vessels, making blood more likely to clot and increasing risks for heart attack and stroke.<sup>2</sup>
- Exposure to secondhand smoke increases the risk of coronary heart disease by 25–30%<sup>6</sup>, the risk of an acute coronary heart disease event by 25–35%<sup>3</sup>, and the risk of developing lung cancer by 20–30%.<sup>1</sup>
- Secondhand smoke causes numerous chronic and respiratory symptoms in non-smokers such as cough, phlegm, wheezing, and shortness of breath.<sup>1</sup>
- Exposure to secondhand smoke is strongly associated with tuberculous infection and tuberculosis disease.<sup>7</sup>

### Workers are exposed to high levels of secondhand smoke

Adults working in establishments that allow smoking have prolonged exposure to secondhand smoke. These workers are involuntarily exposed to smoke and do not have a choice about avoiding smoke if they want to keep their jobs.

- Many workers are exposed to secondhand smoke in countries without strong smoke-free laws. The level of exposure varies by country.

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| Adult workers exposed to secondhand smoke at the workplace | <b>Bangladesh</b> | 63% <sup>8</sup>  |
|  | <b>China</b>      | 63% <sup>9</sup>  |
|  | <b>Egypt</b>      | 61% <sup>10</sup> |
|  | <b>Russia</b>     | 35% <sup>11</sup> |

- In Ghana, a study found that levels of hair nicotine concentrations (an indicator of exposure to tobacco smoke) were approximately 16 times higher in non-smoking employees working in smoking venues compared to non-smoking employees working in smoke-free venues.<sup>12</sup>

### Exposure to secondhand smoke in the workplace increases the risk of death and illness in workers

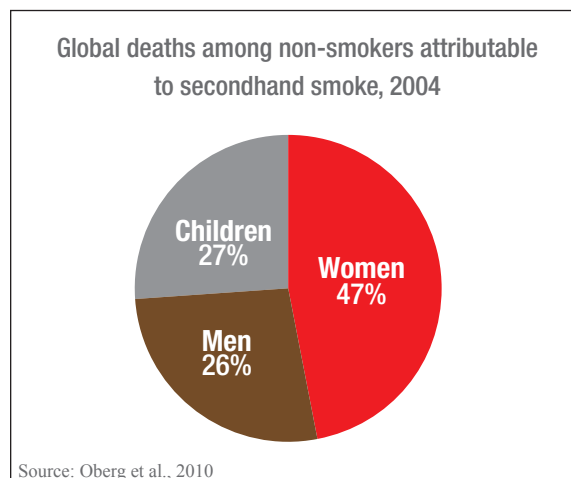
- A meta-analysis of 22 studies found that workers exposed to secondhand smoke in the workplace have a 24% increased risk of lung cancer and workers who are highly exposed have a 101% increased risk of lung cancer compared to workers who are not exposed.<sup>13</sup>
- In Hong Kong, non-smokers exposed to secondhand smoke in the workplace were 37% more likely to visit a doctor for a cold, flu, or fever than those not exposed.<sup>14</sup>
- A 2008 survey of restaurant employees in Shanghai found that 66% of workers exposed to secondhand smoke experienced at least one respiratory symptom, such as difficulty breathing, increased phlegm, and sore throat.<sup>15</sup>

### Secondhand smoke disproportionately harms women and children

Because the prevalence of smoking is much higher among men than women, women and children are disproportionately exposed to and harmed by secondhand smoke.

- Of all deaths attributable to secondhand smoke, approximately 47% occur among non-smoking women and 27% occur among non-smoking children.<sup>5</sup>
- Never-smoking women exposed to spousal secondhand smoke have an approximately 28% increased risk of lung cancer compared to never-smoking women not exposed to spousal secondhand smoke.<sup>16</sup>

- Among newborns exposed to secondhand smoke either in utero or after birth, there is an increased risk of premature birth, low birth weight, and a doubling of the risk for Sudden Infant Death Syndrome (SIDS).<sup>17</sup>
- Among children exposed to secondhand tobacco smoke, there is a 50–100% higher risk of acute respiratory illness, higher incidence of ear infections and an increased likelihood of developmental disabilities and behavioral problems.<sup>17</sup>
  - Globally, over 165,000 children die every year from lower respiratory infections, middle ear infections, and asthma caused by secondhand smoke.<sup>5</sup>
- Exposure to secondhand smoke in adolescence is associated with increases in heart disease risk factors, such as higher levels of arterial wall thickening and future blood vessel hardening.<sup>18</sup>



### Smoke-free laws improve public health

Smoke-free laws reduce exposure to secondhand smoke and improve the public's overall health.

- A meta-analysis conducted by the United States Institute of Medicine concluded that smoke-free laws decrease acute coronary events, such as heart attacks.<sup>6</sup>
- During the year following implementation of Arizona's statewide smoke-free law in 2007, hospital admissions decreased for acute heart attacks by 13%, for unstable angina by 33%, for stroke by 14%, and for asthma by 22%.<sup>19</sup>
- A study comparing the average hospital admissions for asthma 6 years before and 3 years after Scotland's 2006 smoke-free legislation found that hospital admissions for asthma dropped 15% among children (age <15).<sup>20</sup>
- Within 3 months after implementing a 100% smoke-free law in Neuquén, Argentina, a survey among workers in 88 bars found a reduction in respiratory symptoms (pre-ban 57%, post-ban 29%) and a reduction in irritated eyes, nose or throat (pre-ban 86%, post-ban 37%).<sup>21</sup>

### Key messages

- **There is no safe level of secondhand smoke exposure. Exposure to secondhand smoke causes death, disease, and disability among non-smoking adults and children.**
- **Adults exposed to secondhand smoke in the workplace are at greater risk for developing tobacco-related health problems than adults who work in smoke-free environments.**
- **Women and children are disproportionately harmed by secondhand smoke due to their increased exposure from male smokers.**
- **Smoke-free laws save lives, protect workers' health and immediately improve public health.**

(1) U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta, 2006. (2) U.S. Department of Health and Human Services, Public Health Service, Office of Surgeon General, 2010. (3) World Health Organization International Agency for Research on Cancer. Tobacco Smoke and Involuntary Smoking. IARC Monographs on the Evaluation of Carcinogenic Risk to Humans. Lyon: WHO IARC, 2004. (4) World Health Organization International Agency for Research on Cancer. Evaluating the Effectiveness of Smoke-free Policies. IARC Handbook of Cancer Prevention. Lyon: WHO IARC, 2009. (5) Oberg M, Jaakkola MS, Woodward A, Peruga A, Pruss-Ustun A. Worldwide burden of disease from exposure to second-hand smoke: a retrospective analysis of data from 192 countries. *Lancet* 2010. (6) U.S. Institute of Medicine. Secondhand smoke exposure and cardiovascular effects: Making sense of the evidence. Washington, DC: Institute of Medicine, 2009. (7) World Health Organization, The International Union against Tuberculosis and Lung Disease (The Union). A WHO/The Union Monograph on TB and Tobacco Control. Geneva: WHO, The Union, 2007. (8) Ministry of Health and Family Welfare Bangladesh, World Health Organization Country Office of Bangladesh. Global Adult Tobacco Survey: Bangladesh Report 2009: World Health Organization, 2009. (9) Centers for Disease Control and Prevention (CDC). Global Adult Tobacco Survey—China. Atlanta: CDC, 2010. (10) Centers for Disease Control and Prevention. Global Adult Tobacco Survey Fact Sheet: Russian Federation: CDC, WHO, 2009. (11) Centers for Disease Control and Prevention. Global Adult Tobacco Survey Fact Sheet: Egypt: CDC, WHO, 2009. (12) Agbenyikey W, Wellington E, Gyapong J, Travers MJ, Breyse PN, McCarty KM, et al. Secondhand tobacco smoke exposure in selected public places (PM2.5 and air nicotine) and non-smoking employees (hair nicotine) in Ghana. *Tob Control* 2010. (13) Stayner L, Bena J, Sasco AJ, Smith R, Steenland K, Kreuzer M, et al. Lung cancer risk and workplace exposure to environmental tobacco smoke. *Am J Public Health* 2007;97(3):545-51. (14) McGhee SM, Hedley AJ, Ho LM. Passive smoking and its impact on employers and employees in Hong Kong. *Occup Environ Med* 2002;59(12):842-6. (15) Zheng P, Fu H, Li G. Smoke-free restaurants in Shanghai: should it be mandatory and is it acceptable? *Health Policy* 2009;89(2):216-24. (16) Taylor R, Najafi F, Dobson A. Meta-analysis of studies of passive smoking and lung cancer: effects of study type and continent. *Int J Epidemiol* 2007;36(5):1048-59. (17) World Health Organization. WHO Report on the Global Tobacco Epidemic: Implementing smoke-free environments. Geneva: World Health Organization, 2009. (18) Kallio K, Jokinen E, Saarinen M, Hamalainen M, Volanen I, Kaitsaari T, et al. Arterial intima-media thickness, endothelial function, and apolipoproteins in adolescents frequently exposed to tobacco smoke. *Circ Cardiovasc Qual Outcomes* 2010;3(2):196-203. (19) Herman PM, Walsh ME. Hospital Admissions for Acute Myocardial Infarction, Angina, Stroke, and Asthma After Implementation of Arizona's Comprehensive Statewide Smoking Ban. *Am J Public Health* 2010. (20) Mackay D, Haw S, Ayres JG, Fischbacher C, Pell JP. Smoke-free legislation and hospitalizations for childhood asthma. *N Engl J Med* 2010;363(12):1139-45. (21) Schoj V, Alderete M, Ruiz E, Hasdeu S, Linetzky B, Ferrante D. The impact of a 100% smoke-free law on the health of hospitality workers from the city of Neuquén, Argentina. *Tob Control* 2010;19(2):134-7.