



## Strengthen the Evidence Base for Maternal and Child Health Programs

NPM  
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# Smoking in the Household Evidence Review Online Resource

## History

With widespread documentation of the adverse health effects of active smoking in the 1960s, attention turned to the exposure of nonsmokers and the possibility of serious health effects (USDHHS, 2006). In 1972, the United States (US) Surgeon General first addressed the topic of “passive smoking” or “involuntary smoking” and its health consequences (USDHEW, 1972). According to the 1972 report, nonsmokers inhale the mixture of sidestream smoke given off by a smoldering cigarette and the mainstream smoke exhaled by a smoker, a mixture referred to as secondhand smoke (SHS) or environmental tobacco smoke (ETS) (USDHHS, 2006). Research demonstrated that smoking in enclosed spaces could lead to high levels of cigarette smoke components in the air with carbon monoxide levels, in particular, exceeding permitted levels indoors (USDHHS, 2006). These studies supported a conclusion that *“an atmosphere contaminated with tobacco smoke can contribute to the discomfort of many individuals”* (USDHEW, 1972, p. 7) thereby calling attention to the likely health effects of SHS exposure (SHSe) for children and adults. In tandem, in 1974, the medical literature first discussed parental smoking, ETS, and the effects of ETS on children (Harlap, 1974).

*“Secondhand smoke (also known as environmental tobacco smoke) is the smoke a smoker breathes out and that comes from the tip of burning cigarettes, pipes, and cigars. It contains about 4,000 chemicals. Many of these chemicals are dangerous and anytime children breathe in secondhand smoke they are exposed to these chemicals.”*

— AMERICAN ACADEMY OF PEDIATRICS (AAP)<sup>1</sup>

In follow-up, the 1975 Surgeon General’s report, *The Health Consequences of Smoking*, described involuntary smoking when nonsmokers inhale both sidestream and exhaled mainstream smoke with *“the exposure occurring as an unavoidable consequence of breathing in a smoke-filled environment”* (USDHEW, 1975, p. 87). Then the 1979 Surgeon General’s report, *Smoking and Health: A Report of the Surgeon General*, stated that *“attention to involuntary smoking is a recent vintage, and only limited information regarding the health effects of such exposure upon the nonsmoker is available”* and thereby recommended epidemiologic and clinical studies (USDHEW, 1979, p. 11-35). With the 1982 Surgeon General’s report, smoking and cancer were specifically addressed and with three published studies on involuntary smoking and lung cancer, the report concluded that *“although the currently available evidence is not sufficient to conclude that passive or involuntary smoking causes lung cancer in nonsmokers, the evidence does raise concern about the possible serious public health problem”* (USDHHS, 1982, p. 251).

Then with the 1984 report, there was a focus on chronic obstructive pulmonary disease and smoking with a comprehensive review of the mounting information on smoking by parents and the effects of respiratory health on their children, data on irritation of the eye, and the more limited evidence on pulmonary effects of involuntary smoking on adults (USDHHS, 1984; USDHHS, 2006). The report also reviewed new evidence on exposures of nonsmokers using biomarkers with substantial

<sup>1</sup> <https://www.healthychildren.org/English/health-issues/conditions/tobacco/Pages/Dangers-of-Secondhand-Smoke.aspx>

information on levels of cotinine,<sup>2</sup> a major nicotine metabolite. Involuntary smoking was the focus of the 1986 report, *Health Consequences of Involuntary Smoking*, concluding that involuntary smoking caused lung cancer in lifetime nonsmoking adults and was associated with adverse effects on respiratory health in children (USDHHS, 1986). “*The children of parents who smoked compared with the children of nonsmoking parents have an increased frequency of respiratory infections, increased respiratory symptoms, and slightly smaller rates of increase in lung function as the lung matures*” (USDHHS, 1986, p. 7). The report further highlighted that simply separating smokers and nonsmokers within the same airspace reduced but did not eliminate exposure to SHS (USDHHS, 1986).

*“The right of smokers to smoke ends where their behavior affects the health and well-being of others; furthermore, it is the smokers’ responsibility to ensure that they do not expose nonsmokers to the potential harmful effects of tobacco smoke.”*

— DR. C. EVERETT KOOP, FORMER SURGEON GENERAL (USDHHS, 1986, P. XII)

Since 1986, the conclusions regarding both the carcinogenicity of SHS and the adverse effects of parental smoking on the health of children have been echoed and expanded with the proliferation of epidemiologic evidence on exposure to tobacco smoke in the many environments where people work, play, and most importantly live (USDHHS, 1986; USDHHS, 2006). Notably, the 2006 Surgeon General’s report revisited the topic of involuntary smoking given the persistence of the public health problem and underscored the substantial and unequivocal evidence on the health effects of exposure to SHS (USDHHS, 2006). The report stated that children are more heavily exposed to SHS than adults with the home being the major setting where children are exposed. Citing supporting evidence, the major conclusions, which still stand, regarding exposure of nonsmokers to tobacco smoke include:

1. SHS causes premature death and disease in children and adults who do not smoke.
2. Children exposed to SHS are at an increased risk for sudden infant death syndrome (SIDS), acute respiratory infections, ear problems, and more severe asthma. Smoking by parents causes respiratory symptoms and slows lung growth in their children.
3. Exposure of adults to SHS has immediate adverse effects on the cardiovascular system and causes coronary heart disease and lung cancer.
4. The scientific evidence indicates that there is no risk-free level of exposure to SHS.
5. Many millions of Americans, both children and adults, are still exposed to SHS in their homes and workplaces despite substantial progress in tobacco control.
6. Eliminating smoking in indoor spaces fully protects nonsmokers from exposure to SHS. Separating smokers from nonsmokers, cleaning the air, and ventilating buildings cannot eliminate exposures of nonsmokers to SHS (USDHHS, 2006).<sup>3</sup>

In 2007, the World Health Organization (WHO) published a report titled, *Protection from Exposure to Secondhand Tobacco Smoke – Policy Recommendations*, stating that “*Scientific evidence has firmly established that there is no safe level of exposure to SHS, a pollutant that causes serious illness in adults and children. There is also indisputable evidence that implementing 100% smoke-free environments is the only effective way to protect the population from the harmful effects of exposure to SHS*” (p. 2). Then in 2010, the Institute of Medicine (IOM) released the report, *Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of Evidence*, concluding that smoke-free laws reduced the number of heart attacks and saves lives. It also confirmed that there is conclusive evidence that SHS causes heart disease (IOM, 2010). In the Centers for Disease Control and Prevention (CDC) publication, *Vital Signs: Nonsmokers’ Exposure to Secondhand Smoke—United*

<sup>2</sup> Most investigations of exposure to SHS have involved assays of cotinine in blood, urine, or saliva, or of nicotine or cotinine in the hair. One of the primary limitations of blood, urine, or saliva cotinine as a biomarker of exposure is the short exposure period that is represented (USDHHS, 2006).

<sup>3</sup> For more specific chapter by chapter conclusions, please refer to the full 2006 Surgeon General’s report at [https://www.ncbi.nlm.nih.gov/books/NBK44324/pdf/Bookshelf\\_NBK44324.pdf](https://www.ncbi.nlm.nih.gov/books/NBK44324/pdf/Bookshelf_NBK44324.pdf)

*States, 1999-2008*, published in 2010, it was reported that although SHSe has declined, 88 million nonsmokers older than 3 years of age are still exposed, progress to reduce exposure has slowed, and disparities in exposure exist, with children being among the most exposed. The report underscored the need to fully eliminate smoking in indoor spaces.

The 2014 report, *The Health Consequences of Smoking—50 Years of Progress*, marked 50 years since the release of the first Surgeon General’s report cautioning about the health hazards of smoking and expanded the list of diseases and other adverse health effects caused by smoking and exposure of nonsmokers to tobacco smoke (USDHHS, 2014). Approaches have also evolved from single measures, such as small text-only pack warnings, to the implementation of comprehensive control programs, including indoor smoking bans, support for cessation, restrictions on advertising and promotion, media campaigns, and tax hikes to raise prices (USDHHS, 2014). Although progress has been made, it is not sufficient or fast enough to stem the tide of smoking attributable disease and premature deaths due to smoking and exposure to tobacco smoke.

*“For the United States, the epidemic of smoking caused disease in the twentieth century ranks among the greatest public health catastrophes of the century, while the decline of smoking consequent to tobacco control is surely one of public health’s greatest successes.”*

— USDHHS, 2014, p. 33

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