
January 1993



Respiratory Health Effects of Passive Smoking

Fact Sheet

Summary

The U.S. Environmental Protection Agency (EPA) has published a major assessment of the respiratory health risks of passive smoking (*Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders; EPA/600/6-90/006F*). The report concludes that exposure to environmental tobacco smoke (ETS) -- commonly known as secondhand smoke -- is responsible for approximately 3,000 lung cancer deaths each year in nonsmoking adults and impairs the respiratory health of hundreds of thousands of children.

Background

EPA studies of human exposure to air pollutants indicate that indoor levels of many pollutants often are significantly higher than outdoor levels. These levels of indoor air pollutants are of particular concern because it is estimated that most people spend approximately 90 percent of their time indoors.

In recent years, comparative risk studies performed by EPA and its Science Advisory Board have consistently ranked indoor air pollution among the top five environmental risks to public health. EPA, in close cooperation with other federal agencies and the private sector, has begun a concerted effort to better understand indoor air pollution and to reduce peoples' exposure to air pollutants in offices, homes, schools and other indoor environments where people live, work and play.

Tobacco smoking has long been recognized as a major cause of death and disease, responsible for an estimated 434,000 deaths per year in the United States. Tobacco use is known to cause lung cancer in humans, and is a major risk factor for heart disease.

In recent years, there has been concern that non-smokers may also be at risk for some of these health effects as a result of their exposure ("passive smoking") to the smoke exhaled by smokers and smoke given off by the burning end of cigarettes.

As part of its effort to address all types of indoor air pollution, in 1988, EPA's Indoor Air Division requested that EPA's Office of Research and Development (ORD) undertake an assessment of the respiratory health effects of passive smoking. The report was prepared by ORD's Office of Health and Environmental Assessment.

The document has been prepared under the authority of Title IV of Superfund (The Radon Gas and Indoor Air Quality Research Act of 1986), which directs EPA to conduct research and disseminate information on all aspects of indoor air quality.

Public and Scientific Reviews

A draft of this assessment was released for public review in June 1990. In December 1990, EPA's Science Advisory Board, a committee of independent scientists, conducted a review of the draft report and submitted its comments to the EPA Administrator in April 1991. In its comments, the SAB's Indoor Air Quality/Total Human Exposure Committee concurred with the primary findings of the report, but made a number of recommendations for strengthening it.

Incorporating these recommendations, the Agency again transmitted a new draft to the SAB in May of 1992 for a second review. Following a July 1992 meeting, the SAB panel endorsed the major conclusions of the report, including its unanimous endorsement of the classification of environmental tobacco smoke (ETS) as a Group A (known human) carcinogen.

EPA also received and reviewed more than 100 comments from the public, and integrated appropriate revisions into the final risk assessment.

Major Conclusions

Based on the weight of the available scientific evidence, EPA has concluded that the widespread exposure to environmental tobacco smoke in the U.S. presents a serious and substantial public health risk.

In adults:

- ETS is a human lung carcinogen, responsible for approximately 3,000 lung cancer deaths annually in U.S. nonsmokers. ETS has been classified as a Group A carcinogen under EPA's carcinogen assessment guidelines. This classification is reserved for those compounds or mixtures which have been shown to cause cancer in humans, based on studies in human populations.

In children:

- ETS exposure increases the risk of lower respiratory tract infections such as bronchitis and pneumonia. EPA estimates that between 150,000 and 300,000 of these cases annually in infants and young children up to 18 months of age are attributable to exposure to ETS. Of these, between 7,500 and 15,000 will result in hospitalization.
- ETS exposure increases the prevalence of fluid in the middle ear, a sign of chronic middle ear disease.
- ETS exposure in children irritates the upper respiratory tract and is associated with a small but significant reduction in lung function.
- ETS exposure increases the frequency of episodes and severity of symptoms in asthmatic children. The report estimates

that 200,000 to 1,000,000 asthmatic children have their condition worsened by exposure to environmental tobacco smoke.

- ETS exposure is a risk factor for new cases of asthma in children who have not previously displayed symptoms.

Scope of the Report

In 1986, the National Research Council (NRC) and the U.S. Surgeon General independently assessed the health effects of exposure to ETS. Both of these reports concluded that ETS can cause lung cancer in adult non-smokers and that children of parents who smoke have increased frequency of respiratory symptoms and lower respiratory tract infections. The EPA scientific assessment builds on these reports and is based on a thorough review of all of the studies in the available literature.

Since 1986, the number of studies which examine these issues in human populations has more than doubled, resulting in a larger database with which to conduct a comprehensive assessment of the potential effects which passive smoking may have on the respiratory health of adults as well as children.

Because only a very small number of studies on the possible association between exposure to secondhand smoke and heart disease and other cancers existed in the scientific literature at the time this assessment was first undertaken, EPA has not conducted an assessment of the possible association of heart disease and passive smoking. EPA is considering whether such an assessment should be undertaken in the future, but has no plans to do so at this time.

Scientific Approach

EPA reached its conclusions concerning the potential for ETS to act as a human carcinogen based on an analysis of all of the available data, including more than 30 epidemiologic (human) studies looking specifically at passive smoking as well as information on active or direct smoking. In addition, EPA considered animal data, biological measurements of human uptake of tobacco smoke components and other available data. The conclusions were based on what is commonly known as the total "weight-of-evidence" rather than on any one study or type of study.

The finding that ETS should be classified as a Group A carcinogen is based on the conclusive evidence of the dose-related lung carcinogenicity of mainstream smoke in active smokers and the similarities of mainstream and sidestream smoke given off by the burning end of the cigarette. The finding is bolstered by the statistically significant exposure-related increase in lung cancer in nonsmoking spouses of smokers which is found in an analysis of more than 30 epidemiology studies that examined the association between secondhand smoke and lung cancer.

The weight-of-evidence analysis for the noncancer respiratory effects in children is based primarily on a review of more than 100 studies, including 50 recent epidemiology studies of children whose parents smoke.

Beyond the Risk Assessment

Although EPA does not have any regulatory authority for controlling ETS, the

Agency expects this report to be of value to other health professionals and policymakers in taking appropriate steps to minimize peoples' exposure to tobacco smoke in indoor environments.

In cooperation with other government agencies, EPA will carry out an education and outreach program over the next two years to inform the public and policy makers on what to do to reduce the health risks of ETS as well as other indoor air pollutants.

For Further Information

A limited number of copies of the complete report can be obtained free of charge from:

Center for Environmental Research
Information (CERI)
U.S. EPA
26 W. Martin Luther King Drive
Cincinnati, OH 45268
Telephone: 513-569-7562
Fax: 513-569-7566

Ordering Number: EPA/600/6-90/006F

or

U.S. Environmental Protection Agency
Indoor Air Quality Information
Clearinghouse (IAQ INFO)
P.O. Box 37133
Washington D.C. 20013-7133
Telephone: 1-800-438-4318
Fax: 301-588-3408

A number of government agencies can provide additional information addressing the health risks of environmental tobacco smoke. These include:

Office on Smoking and Health/Centers for
Disease Control
Center for Chronic Disease Prevention and
Health Promotion
Mail Stop K-50, 4770 Buford Highway
Atlanta, GA 30341

National Cancer Institute
Building 31, Room 10A24
Bethesda, MD 20892
1-800-4-CANCER

The National Heart, Lung, and Blood
Institute
Information Center
4733 Bethesda Avenue, Suite 530
Bethesda, MD 20814

National Institute for Occupational Safety
and Health
4676 Columbia Parkway
Cincinnati, Ohio 45226-1998
1-800-35-NIOSH