

## Health Risks of Secondhand Smoke

### What is secondhand smoke?

Secondhand smoke (SHS) is also called *environmental tobacco smoke* (ETS). It's a mixture of 2 forms of smoke that come from burning tobacco:

- **Mainstream smoke:** The smoke exhaled by a smoker.
- **Sidestream smoke:** Smoke from the lighted end of a cigarette, pipe, or cigar, or tobacco burning in a hookah. This type of smoke has higher concentrations of cancer-causing agents (carcinogens) and is more toxic than mainstream smoke. It also has smaller particles than mainstream smoke. These smaller particles make their way into the lungs and the body's cells more easily.

When non-smokers are exposed to SHS it's called *involuntary smoking* or *passive smoking*. Non-smokers who breathe in SHS take in nicotine and toxic chemicals the same way smokers do. The more SHS you breathe, the higher the levels of these harmful chemicals in your body.

### Why is secondhand smoke a problem?

Secondhand smoke (SHS) has the same harmful chemicals that smokers inhale. There's no safe level of exposure for secondhand smoke (SHS).

### Secondhand smoke causes cancer

Secondhand smoke is known to cause cancer. It has more than 7,000 chemicals, including at least 70 that can cause cancer.

SHS causes lung cancer – even in people who have never smoked. There's also some evidence suggesting it might be linked in adults to cancers of the:

- Larynx (voice box)
- Pharynx (throat)
- Nasal sinuses
- Brain
- Bladder
- Rectum
- Stomach
- Breast

It's possibly linked in children to:

- Lymphoma
- Leukemia
- Liver cancer
- Brain tumor

## **Secondhand smoke causes other diseases and death**

Secondhand smoke can be harmful in many ways. For instance, it affects the heart and blood vessels, increasing the risk of heart attack and stroke in non-smokers. Some studies have linked SHS to mental and emotional changes, too. For instance, some studies have shown that exposure to SHS is linked to symptoms of depression. More research is needed to better understand the link between SHS and mental health.

## **Secondhand smoke and your children's health**

Young children are most affected by SHS and least able to avoid it. Most of their exposure to SHS comes from adults (parents or others) smoking at home. Studies show that children whose parents smoke:

- Get sick more often
- Have more lung infections (like bronchitis and pneumonia)
- Are more likely to cough, wheeze, and have shortness of breath
- Get more ear infections

Secondhand smoke can also trigger asthma attacks, make asthma symptoms worse, and even cause new cases of asthma in kids who didn't have symptoms before.

Some of these problems might seem small, but they can add up quickly. Think of the expenses, doctor visits, medicines, lost school time, and often lost work time for the parent who must stay home with a sick child. And this doesn't include the discomforts that the child goes through.

In very young children, SHS also increases the risk for more serious problems, including sudden infant death syndrome (SIDS).

## **Where is secondhand smoke a problem?**

You should be especially concerned about exposure to secondhand smoke (SHS) in these places:

### **At work**

The workplace is a major source of SHS exposure for many adults.

The Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH), federal agencies responsible for health and safety in the workplace, recognize there are no known safe levels of SHS and recommend that exposures be reduced to the lowest possible levels.

The Surgeon General has said that smoke-free workplace policies are the only way to prevent SHS exposure at work. Separating smokers from non-smokers, cleaning the air, and ventilating the building cannot prevent exposure if people still smoke inside the building. An extra bonus

of workplace smoking restrictions, other than protecting non-smokers, is that they may also encourage smokers to smoke less, or even quit.

### **In public places**

Everyone can be exposed to SHS in public places where smoking is allowed, such as some restaurants, shopping centers, public transportation, parks, and schools. The Surgeon General has suggested people choose smoke-free restaurants and businesses, and let owners of businesses that are not smoke-free know that SHS is harmful to your family's health.

Public places where children go are a special area of concern. Make sure that your children's daycare centers and schools are smoke-free.

Some businesses might be afraid to ban smoking, but there's no strong evidence that going smoke-free is bad for business.

### **At home**

Making your home smoke-free may be one of the most important things you can do for the health of your family. Any family member can develop health problems related to SHS. Children's growing bodies are especially sensitive to the toxins in SHS. And think about it: we spend more time at home than anywhere else. A smoke-free home protects your family, your guests, and even your pets.

Multi-unit housing where smoking is allowed is a special concern and a subject of research. Tobacco smoke can move through air ducts, wall and floor cracks, elevator shafts, and along crawl spaces to contaminate units on other floors, even those that are far from the smoke. SHS cannot be controlled with ventilation, air cleaning, or by separating smokers from non-smokers.

### **In the car**

Americans spend a great deal of time in cars, and if someone smokes there, the toxins can build up quickly – even when the windows are open or the air-conditioner is on. Again, this can be especially harmful to children.

In response to this fact, many medical expert groups have been working to encourage people to make their cars, as well as their homes, smoke-free. Some states and cities even have laws that ban smoking in the car if carrying passengers under a certain age or weight. And many facilities such as city buildings, malls, schools, colleges, and hospitals ban smoking on their grounds, including their parking lots.

**There is no safe level of exposure to secondhand smoke (SHS). Any exposure is harmful.**

**The only way to fully protect non-smokers from exposure to SHS indoors is to prohibit all smoking in that indoor space or building.** Separating smokers from non-smokers, cleaning the air, and ventilating buildings cannot keep non-smokers from being exposed to SHS.

### **What about lingering smoking odors?**

There's no research in the medical literature as of yet showing that lingering tobacco smoke odors or residuals from it cause cancer in people. Research does show that particles from secondhand tobacco smoke can settle in dust and on surfaces and remain there long after the smoke is gone. Some studies suggest the particles can last for months. Even though it's no longer in the form of smoke, researchers often call this *thirdhand smoke* (THS) or *residual tobacco smoke*.

Particles that settle out from tobacco smoke have been shown to combine with gases in the air to form cancer-causing compounds that settle onto surfaces. For instance, NNK and PAHs (polycyclic aromatic hydrocarbons), carcinogens that are known to cause lung cancer, have been found in dust samples taken from the homes of smokers. Research has also shown that thirdhand smoke can damage human DNA in cell cultures and impact blood clotting in lab animals.

Though it's not yet clear if such smoke residue can cause cancer, any effects would probably be small compared with direct exposure to SHS. Still, the compounds may be stirred up and inhaled with other house dust, and may also be accidentally taken in through the mouth. Because of this, any risk the compounds pose is probably greater for babies and children who play on the floor and often put things in their mouths.

No actual cancer risk has been measured at this time, but the health risks of THS are an active area of research.

### **What can be done about secondhand smoke?**

Many US local and state governments, and even federal governments in some other countries, have decided that protecting the health of employees and others in public places is of the utmost importance. Many have passed clean indoor air laws. Although the laws vary from place to place, they are becoming more common. Detailed information on smoking restrictions in each state is available from the American Lung Association.

You don't have to wait for the government to act. Even if you smoke, you can decide to make your home and car smoke-free. This is the safest thing to do for your children, other family members, pets, and guests.