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**What is tertiary or third-hand smoke?
Is it hazardous to your children and
grandchildren?**

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You Stink

“You don’t remember me, do you?” The lady in whose home the carpenter was working continued, “I worked here almost twenty years ago. When I walked into your home, your husband said, ‘You stink,’ because I smelled of tobacco smoke.” The lady said, “I am so sorry, he does that because he hates tobacco smoke so much.” The workman said, “Oh, don’t apologize, I quit smoking that day and have not smoked since.”

I saw what I was doing to my child

Almost twenty years ago, a mother brought her five-year son to SETMA’s pediatrician. As part of the examination, the doctor completed SETMA’s **LESS Initiative** which included documentation of the danger to her son of second hand (environmental or passive) cigarette smoke. When she returned home, she inadvertently left the **LESS** document in the family truck.

Shortly, the father left the house to buy a pack of cigarettes. When he got into his truck, he saw the document. His attention was drawn to it because it had his son’s name on it. Even though he smoked in his house, he loved his son. As he read the document, he saw what he had been doing to his child with his smoking. He began to weep and sat there for thirty minutes or longer.

Finally, he went back into his house. His wife saw his face and realized he had been weeping. She asked what was wrong, as her husband gathered up all of his smoking paraphernalia. He said, “I have just found out what I have been doing to my child; I’ll never smoke again.”

May I speak to your wife?

“May I speak to your wife?” The husband answered the telemarketer, “She is not available; may I take a message.” The lady on the telephone said, “No, I’ll call back.” “Why are you calling,” she was asked. “I am calling for the NRA,” the lady said. “Wow, do you think she’s planning on shooting someone,” the husband said humorously. The caller laughed and said, “No.” The husband then said to the telemarketer, “How much do you smoke?”

The telemarketer said, “About a half a pack a day.” The husband said, “Don’t you think you should stop?” He then added, “Do you want to know how I knew you smoke? I can hear it in your voice. Tobacco use damages your eyes, your vocal cords, your lungs, your heart,

almost every part of your body,” and he finished with the statement, “Aren’t you glad you called today; why don’t you just stop smoking.”

Tertiary Tobacco Smoking

We have known for years that smoking cigarettes hurts you and those who are around you are around you while you smoke. That’s called Primary and Secondary smoking, but ten years ago, we have learned that when you smell tobacco on another person’s skin or clothing, you are inhaling particles of tobacco and that those particles are harmful to your health as well. They also cause cancer. To avoid the harm of tobacco smoke, it is not enough to avoid smoking, or to avoid being around people who are smoking, you must also avoid being around people who smell of tobacco.

Tertiary or Third-hand smoke is generally considered to be residual nicotine and other chemicals left on a variety of indoor surfaces by tobacco smoke. This residue is thought to react with common indoor pollutants to create a toxic mix. This toxic mix of third-hand smoke contains cancer-causing substances, posing a potential health hazard to nonsmokers who are exposed to it, especially children.

Studies show that third-hand smoke clings to hair, skin, clothes, furniture, drapes, walls, bedding, carpets, dust, vehicles and other surfaces, even long after smoking has stopped. Infants, children and nonsmoking adults may be at risk of tobacco-related health problems when they inhale, ingest or touch substances containing third-hand smoke.

Efforts Which Do Not Eliminate the Danger of Third-Hand Smoke

Third-hand smoke residue builds up on surfaces over time and resists normal cleaning. Third-hand smoke can’t be eliminated by airing out rooms, opening windows, using fans or air conditioners, or confining smoking to only certain areas of a home. Third-hand smoke remains long after smoking has stopped. In contrast, secondhand smoke is the smoke and other airborne products that come from being close to burning tobacco products, such as cigarettes.

The only way to protect nonsmokers from third-hand smoke is to create a smoke-free environment, whether that’s your private home or vehicle, or in public places, such as hotels and restaurants.

In a 2009 *Scientific American* article, Coco Ballantyne summarized what researchers warn about cigarette smoking’s dangers being more far-reaching than we thought (see http://www.scientificamerican.com/media/inline/what-is-third-hand-smoke_1.jpg) The article stated, “BEWARE OF THIRD-HAND SMOKE Tobacco toxins linger in the environment long after a cigarette is extinguished. Ever take a whiff of a smoker’s hair and feel faint from the pungent scent of cigarette smoke? Or perhaps you have stepped into an elevator and wondered why it smells like someone has lit up when there is not a smoker in sight. Welcome to the world of third-hand smoke.”

Third-hand smoke was defined as "tobacco smoke contamination that remains after the cigarette has been extinguished," says Jonathan Winickoff, a pediatrician at the Dana Farber/Harvard Cancer Center in Boston and author of a study on the new phenomenon published in *Pediatrics*... According to the study, a large number of people, particularly smokers, have no idea that third-hand smoke-the cocktail of toxins that linger in carpets, sofas, clothes and other materials hours or even days after a cigarette is put out-is a health hazard for infants and children.

Of the 1,500 smokers and nonsmokers Winickoff surveyed, the vast majority agreed that second-hand smoke is dangerous. But when asked whether they agreed with the statement, "Breathing air in a room today where people smoked yesterday can harm the health of infants and children," only 65 percent of nonsmokers and 43 percent of smokers answered "yes."

How exactly do you distinguish between second- and third-hand smoke?

Third-hand smoke refers to the tobacco toxins that build up over time-one cigarette will coat the surface of a certain room [a second cigarette will add another coat, and so on]. The third-hand smoke is the stuff that remains [after visible or "second-hand smoke" has dissipated from the air]... You can't really quantify it, because it depends on the space... In a tiny space like a car the deposition is really heavy... Smokers [may] smoke in another room or turn on a fan. They don't see the smoke going into a child's nose; they think that if they cannot see it, it's not affecting [their children]. Smokers themselves are also contaminated€|smokers actually emit toxins [from clothing and hair].

Why is third-hand smoke dangerous?

The 2006 Surgeon General's report says there is no risk-free level of tobacco exposure... There are 250 poisonous toxins found in cigarette smoke. One such substance is lead. Very good studies show that tiny levels of exposure are associated with diminished IQ..

What do you consider the most dangerous compound in cigarette smoke?

I would say cyanide, which is used in chemical weapons. It actually interferes with the release of oxygen to tissues. It competitively binds to hemoglobin [meaning it competes with oxygen for binding sites on the blood's oxygen-carrying molecule, hemoglobin]. Basically people with cyanide poison turn blue... [And] arsenic that is a poison used to kill mammals. We [used to] use it to kill rats. And there it is in cigarette smoke.

Why are the risks associated with exposure to third-hand smoke different for children and adults?

The developing brain is uniquely susceptible to extremely low levels of toxins. Remember how we talked about the layers of toxin deposits on surfaces? Who gets exposure to those surfaces?

Babies and children are closer to [surfaces such as floors]. They tend to touch or even mouth [put their mouths to] the contaminated surfaces. Imagine a teething infant.

Children ingest twice the amount of dust that grown-ups do. Let's say a grown-up weighs 150 pounds [68 kilograms]. Let's say a baby weighs 15 pounds [seven kilograms]. The infant ingests twice the dust [due to faster respiration and proximity to dusty surfaces]. Effectively, they'll get 20 times the exposure.

Studies in rats suggest that tobacco toxin exposure is the leading cause of sudden infant death syndrome (SIDS). We think it is [caused by] respiratory suppression.

Smoke, Grandparents and Unkindness

Would a parent be unkind in not allowing their infant child to be held by a grandparent who smells of tobacco? The grandparent would probably think so, but when you realize the danger of the odor of tobacco, it would be no less unkind that not to let your child be held by someone who is holding a poisonous snake.