



*Background*

## Second Hand Smoke & Children's Health

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### Health Impacts

Second-hand smoke (which is sometimes called environmental tobacco smoke or ETS) contains toxic substances, over 40 of which cause cancer. Some of these substances are in stronger concentrations in second-hand smoke than they are in the smoke that goes directly into smokers' lungs.

ETS is causally linked with a number of adverse health effects in children (under 18), including:

- lower respiratory tract infections (i.e. croup and pneumonia)
- increased fluid in the middle ear
- upper respiratory tract irritation
- reduced lung function
- additional episodes of asthma
- increased severity of asthmatic symptoms in children
- reduced oxygen flow to tissues, comparable to children with anemia, cyanotic heart disease or chronic lung disease †

ETS is also associated with:

- Sudden Infant Death Syndrome (SIDS)
- acute middle ear infections (otitis media)
- tonsillectomy
- meningococcal infections
- cancers and leukemias in childhood
- slower growth
- adverse neurobehavioural effects
- upper respiratory tract infections (colds and sore throats)
- unfavorable cholesterol levels and initiation of atherosclerosis (heart disease) †

A U.S. analysis of over 100 reports on pediatric diseases concluded that children's exposure to tobacco smoke is responsible for up to:

- 13% of ear infections  
(approximately 220,000 ear infections in Canadian children)\*,
- 24% of tonsillectomies and adenoidectomies  
(approx. 2,100 Canadian operations)
- 26% of tympanostomy tube insertions  
(approx. 16,500 in Canada)

- 13% of asthma cases  
(approx. 52,200 cases in Canada)
- 16% of physician visits for cough  
(approx. 200,000 visits in Canada)
- 20% of all lung infections in children under 5  
(approx. 19,000 cases of pneumonia in Canada)
- 136-212 childhood deaths from lower respiratory infection  
(approx. 13-20 in Canada)
- 148 childhood deaths from fires started by tobacco products  
(approx. 15 in Canada)
- 1868-2708 SIDS deaths<sup>†</sup>  
(approx. 180-270 in Canada)

*\* the number of Canadian cases is extrapolated from U.S. estimates provided by Joseph diFranza and Robert Lew, in "Morbidity and Mortality in Children Associated with the Use of Tobacco Products by Other People," Paediatrics, 1996, 97:560-568.*

*† [Samet, JM. Synthesis: The Health Effects of Tobacco Smoke Exposure on Children. January 7, 1999]*

*‡ [California EPA. Final Report: Health Effects of Exposure to Environmental Tobacco Smoke, Sept. 1997]*

## Adult knowledge about impact on kids' health

Canadians overwhelmingly believe that cigarette smoke is harmful to the non-smoker. Only 9% think there is no danger to the non-smoker.

Canadians are most likely to identify lung cancer and bronchitis and other respiratory problems as diseases associated with second-hand smoke. Smokers and those who live with smokers are less likely to acknowledge the health effects of smoking. *[Survey on Smoking in Canada, 1994-95, Cycle 2, Statistics Canada]*

Yet most Canadians are unfamiliar with the impact of second hand smoke on children's illnesses. Only 1 in 5 Canadians surveyed believed that second-hand smoke could cause ear infections. Even among those who know that second-hand smoke poses a danger, many mistakenly believe that children's health is only harmed by smoking directly around them. *[Environmental Tobacco Smoke: Knowledge, Attitudes and Actions of Parents, Children and Child Care Providers, Health Canada, 1995].*

## Impact of mothers' smoking on the fetus

Maternal smoking can affect the fetus and the outcome of the pregnancy. Smoking deprives the fetus of needed oxygen and other nutrients. This may result in:

- deficits in intellectual ability and behavioral problems
- low birth weight or intra-uterine growth retardation
- spontaneous abortion (miscarriage)
- stillbirth
- reduced lung function in the baby
- complications in pregnancy

Exposure to someone else's smoking can harm an expectant mother's baby. Research into this area is still incomplete, and the full effects are still unknown. What we do know is that the best chance for a healthy baby and healthy mother is a pregnancy where both are not

exposed to any tobacco smoke. [*Environmental Tobacco Smoke (ETS) in Home Environments, Health Canada, 1996*].

## Why kids are especially vulnerable

Young children are especially vulnerable to second-hand smoke in the home because:

- they breathe more air relative to body weight (and for the same level of exposure will absorb more tobacco smoke toxins)
- they are less able to complain (either because they are too young, or because their complaints are ignored)
- their immune system is less protective
- they are less able to remove themselves from exposure

## What's in second-hand smoke

Tobacco smoke contains more than 4,000 substances, of which more than 40 are known to cause cancer.

These carcinogens include:

Arsenic, nickel, chromium, cadmium, lead, polonium-210, vinyl chloride, formaldehyde, benz(a)anthracene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, chrysene, dibenz[a,h]anthracene, dibenzo[a,l]pyrene, dibenzo[a,i]pyrene, indeno [1,2,3-c,d]pyrene, 5-methylchrysene, quinoline, dibenz[a,h]acridine, dibenz[a,i]acridine, 7H-dibenzo[c,g]carbazole, *N*-nitrosodimethylamine, *N*-nitrosoethylmethylamine, *N*-nitrosodiethylamine, *N*-nitrosopyrrolidine, *N*-nitrosodimethylamine, *N*-nitrosomorpholine, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone, *N*-nitrosoanabasine, *N*-nitrosomorpholine, 2-toluidine, 2-naphthylamine, 4-aminobiphenyl, acetaldehyde, crotonaldehyde, benzene, acrylonitrile, 1,1-dimethylhydrazine, 2-nitropropane, ethylcarbamate, hydrazine.

Even if smoking is restricted to a single room, the harmful constituents of cigarette smoke can be dispersed throughout the house. Many of these highly dangerous chemicals are in invisible gas form.