

# Non-Smokers' Rights Association Smoking and Health Foundation

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## Secondhand Smoke in Homes and Cars

### *1. Current sources of exposure to secondhand tobacco smoke*

Secondhand smoke (SHS) refers to the mixture of smoke emanating from the lit end of a cigarette and the smoke exhaled by a smoker. The toxic mixture contains more than 4,000 substances in gaseous and particle form, and is a major source of indoor air pollution.<sup>1,2,3</sup> Two-thirds of the smoke emanating from a burning cigarette is not inhaled by the smoker, but is released into the ambient air, contaminating the air supply of others.<sup>4</sup> While some of the contaminants can be sensed because they irritate the eye, nose and throat, many of the chemicals in SHS are odourless and barely noticeable. Regardless of whether they are sensed or not, these toxic substances contaminate the air for hours and days after smoking has occurred.<sup>5</sup>

Over the years, exposure to SHS in homes and cars has decreased as smoking in the general population is in decline. However, there are still more than 5 million smokers in Canada.<sup>6</sup> According to Health Canada statistics for 2005, 15% of Canadian households reported that at least one person smoked regularly inside the home.<sup>6</sup> Of the remaining households, **almost three-quarter (73%) forbid any smoking to take place inside the home.**<sup>6</sup> **However, 9% of children under the age of 12 (380,000 children) are still regularly exposed to SHS at home.**<sup>6</sup> **Approximately 26% of the population reports being exposed to SHS in a car or vehicle.**<sup>6</sup> **In 2004, half of all smoking parents lit up in their home, and 44% of them also frequently smoked in the car, even when children were present.**<sup>7</sup>

Though smoking rates are in decline and many Canadian jurisdictions have legislation making workplaces and indoor public places smoke-free, many Canadians, especially children living with smokers, are frequently exposed to SHS while at home and/or in cars. **Therefore, for many children, the primary source of SHS exposure is the home.**<sup>8</sup>

According to Health Canada, secondhand smoke kills more than 1,000 Canadians every year.<sup>9,10</sup> Independent studies and reports over the past 30 years have confirmed health concerns and the burden of morbidity/mortality caused by exposure to SHS. The message from all of these reports is clear and consistent: all exposure to tobacco smoke is harmful. Therefore, involuntary exposure should be eliminated — whether exposure happens to occur in a public place or a private home or car.

## ***2. Opening windows, using air purifiers or oven hood fans will not reduce SHS to safe levels***

The health risks of SHS are influenced by the duration of the exposure to and the concentration of the chemicals in SHS. The concentration depends mainly on the number of smokers, the proximity of the smokers and the volume and ventilation of the room.<sup>11</sup>

Many Canadian smokers have opened a window (65%), turned on a fan (44%), smoked behind a closed door (33%) or used an air purifier (28%), mistakenly thinking that this will substantially reduce the amount of SHS in their homes.<sup>7</sup> **While increased ventilation can mask the presence of SHS, studies have shown that in order to reduce the toxins in SHS to harmless levels, one would need air exchange rates equivalent to tornado-force winds.** Indeed, considering the toxicity of substances found in SHS, experts in air quality estimate that an air flow of about 50,000 litres per second per occupant would be needed to reduce the risks of exposure to an acceptable level.<sup>12</sup>

SHS contaminants can settle on surfaces or remain in the air, thus contaminating carpets, walls, furniture and other household objects days and weeks after smoking has occurred.<sup>5</sup> In its most recent “Position Document” on SHS, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), an authority on the establishment of ventilation standards, states:

No other engineering approaches, including current and advanced dilution ventilation or air-cleaning technologies, have been demonstrated or should be relied on to control health risks from ETS [Environmental Tobacco Smoke or SHS] exposure in spaces where smoking occurs.<sup>13</sup>

Consequently, expensive air filtration systems will not achieve air quality objectives from a health perspective.

Nor will confining smoking to one room or to a certain area of the home reduce SHS to a safe level.<sup>14,15</sup> Children with asthma, who live in homes where indoor smoking is completely banned, as opposed to where it is allowed but restricted to some areas, suffer less severe asthma symptoms and require less acute medical care for their asthma.<sup>16</sup> However, when smoking is restricted to the outdoors, regardless of the number of cigarettes smoked, children’s exposure to SHS can be avoided.<sup>14,17</sup>

Cars are a particularly dangerous place for SHS exposure.<sup>5,18</sup> According to a study for the San Francisco Department of Public Health, SHS levels are 9 times greater in a car where smoking occurs and the window remains open, as compared to a smoke-free car.<sup>19</sup> By comparison, smoking with the window closed but with the ventilation on, increases SHS concentrations by a factor of 70. When the same smoking occurs but with the window closed and the ventilation off, SHS levels increase by a factor of 200.

The San Francisco Department of Public Health warns:

if five hours of exposure in a car are compared to five hours of exposure in a home — both with one smoker smoking two cigarettes per hour — the exposure in the car can be more than 25 times higher than that of a residence.<sup>19</sup>

**The only way to eliminate exposure to SHS in homes and cars is for smokers to smoke outside, away from door and window openings through which smoke could drift back inside.**

### ***3. The health risks from exposure to SHS***

**In adults**— SHS is carcinogenic and harmful in many other ways.<sup>2, 20</sup> Exposure to SHS causes several illnesses and conditions including: eye and nose irritations, breathing problems, heart attacks and other heart disease, lung cancer, foetal growth impairment,<sup>21,22,23</sup> in addition to the onset and worsening of asthma<sup>21</sup>, nasal sinus cancer<sup>21</sup> and breast cancer among younger pre-menopausal women.<sup>21,24</sup> Evidence also suggests that SHS is likely to cause strokes, cervical cancer, miscarriages and exacerbation of pulmonary diseases such as cystic fibrosis.<sup>21</sup> More specifically, non-smoking spouses of people who smoke at home are 20-30% more likely to develop lung cancer,<sup>22,25</sup> at least 8 times out of 10 a terminal disease.<sup>26,27</sup>

The U.S. Environmental Protection Agency and the World Health Organization’s International Agency for Research on Cancer have labelled SHS as a “Class A” or “Group 1” carcinogen – the highest risk category for which no known level of exposure is considered safe.<sup>4</sup> Other Class A/ Group 1 cancer-causing compounds include asbestos, arsenic, coal tars, benzene and radionuclides.

Moreover, exposure to SHS initiates cardio-vascular changes which are associated with heart disease and even heart attacks.<sup>9,21-23,28</sup> Consequently, studies have shown that non-smoking spouses living with people who smoke at home, are 25-30% more likely to die of heart attacks (ischemic heart disease) than those living with non-smokers.<sup>22,29,30,31</sup> Another study found the risk to increase by as much as 60%.<sup>32</sup>

**In children**— Smaller bronchial tubes and less developed immune systems make children more vulnerable to the contaminants in SHS. Children also breathe more rapidly than adults, and consequently breathe in more harmful chemicals per kilogram of their weight than an adult would in the same amount of time. Children are particularly vulnerable to SHS exposure in small confined spaces such as cars.<sup>21,33</sup>

Exposure to SHS can impact a child’s health even before birth. A non-smoking mother exposed to SHS has a 38% higher risk of giving birth to a low-weight baby.<sup>14</sup> **The risk of Sudden Infant Death**

**Syndrome (SIDS) in children exposed to SHS is almost twice that observed in non-exposed babies.**<sup>34</sup> As stated above, the primary source of an infant's exposure to SHS is in the home and in the car.

In addition to the many negative health effects experienced by adults, SHS causes the following symptoms or diseases in children: asthma onset and exacerbation, bronchitis, pneumonia, and middle ear infections.<sup>21-23</sup> Recent investigations have also revealed that postnatal exposure to SHS is associated with cognitive deficits, meaning that children exposed to SHS experience greater difficulty in reading, reasoning and comprehension.<sup>35</sup> Furthermore, a California study showed that these respiratory-related illnesses lead to increased school absenteeism,<sup>36</sup> which may, in turn, affect children's overall development and social behaviour.<sup>37</sup>

#### ***4. Philip Morris' ploys to misrepresent the risks of SHS in the home***

Surveys around the world show that as the public becomes more aware of the impact of SHS on children's health, smoking parents are more motivated to restrict smoking in their home or to quit smoking all together. Non-smokers, in turn, become determined to prevent anyone from smoking around their children. As popular knowledge of the risks from SHS becomes widespread, so does support for smoke-free practices and policies — even those making homes and cars smoke-free.<sup>6,38,39</sup>

Not surprisingly, given what we have learned from tobacco industry documents now in the public domain, the industry has tried to corrupt science and prevent such policies and practices from being implemented. Philip Morris (PM), the world's largest privately owned cigarette company, foresaw how concerns over SHS exposure in the home would favour smoke-free policies and practices, which would affect the industry's profitability. An internal document from PM outlines the need to address the threat of popular concern over SHS in the home in a 1993 proposal. The document warns:

The issues of maternal, spousal and work-place smoking all come together when considering pregnancy... Directly mobilizing such a significant segment of the adult population around such an emotional issue has the potential for providing tremendous impetus to all sorts of restrictive legislation in the home, in public areas as well as in the workplace. There is perhaps no other issue as powerful facing the industry [emphasis added].<sup>40</sup>

In line with the tobacco industry's long-running strategy to cast doubt on the actual hazards of SHS, the proposal sets out research opportunities to undermine the health community's message on the detrimental effects of SHS on newborns.<sup>41</sup>

The “Sullivan and Barlow literature review”, a study<sup>42</sup> paid for and essentially scripted by Philip Morris, was published in a respected pediatric epidemiology journal in 2001.<sup>43</sup> The study has been cited at least 19 times in scientific journals.<sup>43</sup> Written communication between its main author (Frank Sullivan) and Ted Sanders, an executive working for Philip Morris Worldwide Scientific Affairs (WWSA), shows that a draft<sup>44</sup> was reviewed and edited to better serve tobacco industry interests.

As expressed by the following, the original draft confirmed that an infant’s health was affected by SHS in the home:

The evidence for causality includes the consistent relationship between maternal/parental smoking and risk of SIDS and a strong dose-response relationship, together with limited evidence of a further increase in risk associated with smoking in the same room as the infant, and a reduction in risk associated with maternal cessation of smoking (whether before birth, after birth, or both).<sup>45</sup>

However, the version sent for publication following Philip Morris’s intervention read as follows:

The evidence for causality includes the consistent relationship between maternal smoking and risk of SIDS and a clear dose-response relationship. Although the effects of pre- and postnatal smoke exposure are difficult to separate, the majority of the effects of smoking can be explained by prenatal smoking by the mother. The limited evidence of a further increase in risk from environmental tobacco smoke, such as that associated with smoking in the same room as the infant, and the presence of other smokers in the household is less well established.<sup>46</sup>

This final draft clearly attributes most of the risks to a mother’s smoking before giving birth. To the extent that Philip Morris’ editing changed the paper’s conclusions, the company downplayed the positive impacts that a ban on smoking in the home would achieve.

Through Philip Morris, a key player on matters of policy for the tobacco industry, cigarette manufacturers likely succeeded in misleading many physicians, parents, researchers and decision-makers regarding the importance of eliminating the exposure of children, especially newborns, to SHS in homes and cars. Indeed, the industry revealed internally that it was pursuing such deceitful machinations as recently as 1998, by writing:

**Impact Assessment** [original emphasis]

Should provide the necessary scientific background for a policy on the acceptability of smoking around children.<sup>47</sup>

Philip Morris Worldwide Scientific Affairs, 1998.

## 5. *What can be done to reduce SHS risks in homes and cars?*

At the moment, the prevention of exposure to SHS is left almost entirely to the discretion of individuals. Even though the health effects from SHS are significant, parents, whether smokers or non smokers, have virtually an unrestricted right to expose their children to SHS. And they do. After all, if many smokers engage in the psychological denial of the risks from their own smoking, it is unlikely that they will accept that their SHS is a health risk for their children.

Similarly, owners of multiple housing units are largely free to ignore concerns about ambient tobacco smoke in their properties. In the interplay between the right to be free of exposure to a recognized health hazard and the right to be free of legislative or regulatory interventions within the home, at the moment, public health clearly comes out the loser.

**Public education**— Many adults are still unaware or unable to accept the nature and magnitude of the health risks of SHS. Public education efforts are therefore a crucial step towards achieving the social norm that smoking in homes and cars is unacceptable.

Through public education, society must be encouraged to understand that:

- minors, especially young children, are vulnerable to SHS;
- SHS remains in the air, long after smoking has occurred;
- oven hood fans, filters, air purifiers and open windows do not reduce SHS to safe levels;
- landlords have the legal right to ban smoking in their rental units.

By adopting the measures below, homes and cars would no longer be significant sources of exposure to SHS:

- both non-smokers and smokers should ensure that if smoking takes place, it should be done outside, away from windows and doors;
- given that SHS remains long after smoking has occurred, parents and caregivers should make certain that childcare providers and others do not smoke at any time in childcare facilities or in vehicles used to transport children;
- car owners should prohibit smoking in their cars;
- non-smokers should demand “smoking-prohibited” apartments, condominiums, hotel rooms and taxis.

**Governments and public health departments**— Many governments have established smoking bans in most indoor public places such as bars, restaurants and taxis. However, for fear of being perceived as too intrusive, governments have been reluctant to extend smoking restrictions to people’s homes

and cars. Because they represent the principal source of SHS exposure for children, who are likely less able to remove themselves from such environments, current public health measures do not adequately protect their health.<sup>48</sup> Despite political opposition from the tobacco industry and libertarian groups, governments should not turn a blind eye to a public health issue which creates unsafe environments for those unable to protect themselves.

According to Barbara Brenner, Executive Director of Breast Cancer Action, an American coalition of health groups, no state has as yet enacted a smoking ban in private cars.<sup>49</sup> Indeed, tobacco industry lobbying has been successful in preventing local level legislative attempts (in the state of Colorado, Georgia, New Hampshire and California) to ban smoking in cars when young children are present. However, a law adopted in April 2006 makes Arkansas the first state to ban smoking in cars. Starting in July 2006, smoking will be banned in all motor vehicles carrying a child who is younger than 6 and weighs less than 60 pounds.<sup>50</sup> In March 2007, Puerto Rico will similarly ban smoking in private cars carrying children less than 13 years old.<sup>51</sup> These successful inroads are likely to spread to other American states and across the world.

Law reform in Canada is now being recommended by Ontario physicians. In its landmark report dealing with the lack of measures protecting children from SHS, the Ontario Medical Association (OMA) recommends that:

Caregivers should not be permitted to smoke in vehicles while transporting children, and ... the provincial government [should] take steps to ensure the protection of children from SHS while travelling in vehicles through the introduction of legislation banning the use of tobacco inside vehicles used to transport children.<sup>52</sup>

Considering that a recent survey<sup>53</sup> shows that only 37% of Canadian smokers make their vehicles smoke-free, the OMA's recommendations deserve serious consideration.

For too long, tobacco industry interference and the sheer number of smokers in the population lead to an inappropriate, almost blind tolerance of SHS. As social norms are evolving and many people are banning smoking inside their homes, the government has a responsibility to protect the population as a whole, and especially the children that do not benefit from living in smoke-free homes. It is quite unfeasible for some type of authority to be going from household to household checking for the presence of SHS. Enforcement of a ban on smoking in the home is as expensive and complicated as it is controversial. Furthermore, it is important to bear in mind the real dilemma which single parents highly addicted to nicotine will face: going outside to smoke means leaving young children unattended.

Restrictions on smoking in vehicles are a different matter all together. The State already regulates various aspects related to driving a car, such as making seat belts mandatory. People's cars are considered more of the public domain than a person's home. A smoke ban in cars would also be easier to enforce: police would not require a search warrant to uncover offenders. Finally, the high levels of SHS found in cars when people smoke make cars a preferred target for any legislative measure attempting to reduce children's exposure to SHS.

Given the magnitude of the health risks associated with SHS exposure, especially to children, governments and public health authorities have an obligation to educate the public not only on the risks of SHS, but more appropriately, on the means by which it can be resolved, short of quitting smoking — smoking outside. Given the straightforward solution, public support for government intervention is likely to increase, even amongst smokers.

Furthermore, messages communicating the indirect benefits of having smoke-free homes are crucial in preventing smoking and reducing the disease and death attributable to tobacco industry products. Indeed, smokers living in smoke-free homes generally smoke less (6 cigarettes less) per day and are more inclined to quit than smokers who smoke in their home.<sup>54</sup> Reducing daily cigarette consumption facilitates and often leads to quitting for good.<sup>55</sup> In addition, children with non-smoking parents are less likely to become smokers themselves. Hence, public education, policies and legislation to curb smoking in cars and at home support health promotion and disease prevention objectives.

**Litigation**— Historically speaking, rulings from cases where a few determined individuals have taken SHS issues to court have contributed to the public's and decision-makers' increased understanding of the risks of SHS exposure.<sup>56</sup> Backed by scientific evidence, the courts have confirmed that restrictions on smoking are a necessary intervention to prevent behaviour that would otherwise “*jeopardize the health of those [non-smokers] who must remain around him [the smoker]*”.<sup>57</sup> With respect to smoking restrictions in the home, precedents have been set through child-custody cases. These have been heard before North American courts, and have involved — but have not been limited to — children with underlying conditions exacerbated by SHS.

Generally the law recognizes that:

- no individual is free to commit legal wrongdoing (torts) against another, and that includes members of the same family;
- a minor is guaranteed a duty and level of care by his or her parent(s) or guardian(s);
- pleading to a lack of knowledge of the risks of SHS does not constitute a valid defence.<sup>58</sup>

The courts have expressed a wide range of responses involving SHS, which include lack of concern and child abuse.<sup>59</sup> A father was granted custody of his child who had been repeatedly hospitalized for pulmonary illnesses exacerbated by the mother's smoking, when the judge qualified the mother's smoking in the presence of the child as “*no less child abuse than if you had deprived him [the child] of*



*food or medical treatment*".<sup>60</sup> In another case, a minor's exposure to SHS was considered "a failure of the court's mandate to protect the children under its jurisdiction"—regardless of whether the exposure was due to the parents or other people smoking at home or in places regularly visited by the child.<sup>61</sup>

The vast majority of parents undeniably take their children's health to heart. However, their addiction to nicotine is just as indisputable and, too often, prevents some of them from acknowledging the health risks their smoking brings to their children. The court rulings on SHS should serve as a reminder that even without laws which formally ban smoking in homes and cars, authorities, whether civic, medical, legal or child welfare, have the obligation to communicate the risks incurred by persons exposed to SHS, especially where children are concerned. That is to say, a judge, a family doctor, nursing or any other health agency personnel should remind parents, guardians and child providers of their ability to prevent many diseases and conditions children develop when exposed to SHS. Even without legislation specifically dealing with these issues, it is well within the court's mandate to deal with cases of SHS exposure brought to its attention by health and other agencies.

## **6. Concluding remarks**

### *Public education*

Governments and health agencies need to support initiatives promoting the public's understanding of SHS risks in homes and cars. Such messages are likely to further the already mounting public support for certain smoking restrictions, namely a smoking ban in cars transporting children. More importantly, such messages are likely to modify smoking patterns in manners which prevent SHS exposure and reduce the overall prevalence of smoking in society.

### *Ban smoking in vehicles*

Though the notion of restricting certain behaviours in the home and in private cars causes much controversy, governments have the responsibility to set health standards, especially for those who are unable to care for themselves. Just as many governments have banned smoking to protect the non-smoking public and workforce, they also need to take action to protect minors who are exposed to SHS in homes and cars. The high levels of SHS contaminants readily found in cars and the parallel with safety belts should facilitate smoking bans in cars, without monopolizing law enforcement resources or infringing into people's private lives.

### *Reducing tobacco-use among the whole population is the ultimate solution*

The decline in the social acceptability of smoking and smoking prevalence, in conjunction with increased knowledge of SHS health risks have resulted in fewer Canadians allowing smoking in their

home. While policy makers may be tempted to focus on changing individual behaviour through public education alone, they must continue to use measures known to be the most effective tobacco control strategies from a total population perspective. This includes the use of taxation policy, smoking bans in indoor and some outdoor public places, effective health warnings, the elimination of all tobacco promotion and telling the public the truth<sup>62</sup> about the tobacco industry's role in the evolution and maintenance of the tobacco epidemic.

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