

Health effects of short periods of exposure to second-hand smoke

- 5 minutes exposure** = stiffened aorta (main artery from the heart to the body)
- 20 minutes exposure** = the blood of a non-smoker becomes as “sticky” as the blood of a pack-a-day smoker
- 30 minutes exposure** = arteries are adversely affected
= fatty deposits can build up in arterial walls
- 120 minutes exposure** = heartbeat affected

After 5 minutes – stiffened aorta

Exposure to second-hand smoke stiffens the aorta as much as smoking a cigarette does, making it harder for the heart to pump blood around the body.¹

After 20 minutes – sticky blood

Exposure to second-hand smoke activates blood platelets which normally help the blood to clot and stop bleeding from a wound. If the platelets are activated while still in the bloodstream, the resulting sticky blood still has to move round the body. Sticky blood increases the likelihood of a blood clot forming, blocking a heart or brain artery, and causing a heart attack or stroke.

Sticky blood also damages the artery lining, which can lead to cholesterol build-up and narrowing of arteries. This can cause coronary heart disease, chest pains and heart attacks.²

After 30 minutes – arteries affected

Non-smokers usually have arteries that can dilate and boost blood flow to the heart more efficiently than a smoker’s arteries. But exposure to second-hand smoke compromises that advantage after 30 minutes, to the same degree as for a pack-a-day smoker.³

Also, after 30 minutes exposure to second-hand smoke, the body’s natural anti-oxidant defences, which help non-smokers manage LDL (bad) cholesterol, are depressed for several hours. Fatty deposits can then build up on the artery walls, increasing the risk of heart attack or stroke.⁴

After 120 minutes – heartbeat affected

As well as causing a faster and irregular heartbeat, second-hand smoke reduces the small random variations in the heartbeat rhythm known as “heart rate variability”. This in turn can cause arrhythmia – large variations in heartbeat – that can cause heart attack or death.⁵

The above information was adapted from www.tobaccoscam.ucsf.edu.⁶ This website has further information about second-hand smoke.

References

- ¹ Stefanadis C, Vlachopoulos C, Tsiamis E, Diamantopoulos L, Toutouzas K, Giatrakos N, Vaina S, Tsekoura D, Toutouzas P. Unfavorable effects of passive smoking on aortic function in men. *Annals of Internal Medicine* 1998;128:426-34.
- ² Burghuber C, Punzengruber Ch, Sinzinger H, Haber P, Silberbauer K. Platelet sensitivity to prostacyclin in smokers and non-smokers. *Chest* 1986;90:34-8.
- ³ Otsuka R, Watanabe H, Hirata K, Tokai K, Muro T, Yoshiyama M, Takeuchi K, Yoshikawa J. Acute effects of passive smoking on the coronary circulation in healthy young adults. *JAMA* 2001;286:436-41.
- ⁴ Valkonen M, Kuusi T. Passive smoking induces atherogenic changes in low-density lipoprotein. *Circulation* 1998;97:2012-16.
- ⁵ Pope A, Eatough D, Gold D, Pang Y, Nielsen K, Nath P, Verrier R, Kanner R. Acute exposure to environmental tobacco smoke and heart rate variability. *Environmental Health Perspectives* 2001;109:711-16.
- ⁶ Glantz S. A Little is Dangerous. 2003. Sourced from http://www.tobaccoscam.ucsf.edu/Secondhand/Secondhand_lid.cfm October 2003.