

Chemicals from Second-Hand Smoke: What a typical restaurant employee would inhale

Below is a list of the amount of selected chemicals, emitted in sidestream smoke, that a restaurant employee, weighing approximately 65 kg (140 lbs), would **directly** inhale (not the total exposure amount) over an 8-hour shift in a 300m² area.

All chemicals marked in bold type are carcinogens (they cause cancer). All of the chemicals below cause adverse health effects.

These calculations assume 10 smokers per 300m² each smoking 2 cigarettes per hour,¹ totaling 160 cigarettes over the 8-hour time period, and take into account standard ventilation rates.²

Further information about these calculations can be found at: www.smoke-free.ca/eng_issues/etschems2.htm

Table 1: Amount of Chemicals Inhaled by A Restaurant Employee

CHEMICAL	amount (ug)	CHEMICAL	amount (ug)	CHEMICAL	amount (ng)
carbon monoxide	5606	1,3-butadiene	25	resorcinol	123
tar	3128	hydroquinone	24	benzo[a]pyrene	18
nicotine	678	methyl ethyl ketone	23	cadmium	9.7
acetaldehyde	207	catechol	22	1-aminonaphthalene	8.5
nitric oxide	190	propionaldehyde	17	chromium	7.1
isoprene	151	cresols	15	lead	6.0
acetone	121	hydrogen cyanide	14	2-aminonaphthalene	5.2
toluene	66	styrene	13	nickel	4.2
formaldehyde	54	butyraldehyde	12	3-aminobiphenyl	2.4
phenol	44	acrylonitrile	11	4-aminobiphenyl	1.4
acrolein	40	crotonaldehyde	10		
benzene	36	quinoline	1.3		
pyridine	33				

¹ Americans for Nonsmokers' Rights: Questions and Answers Regarding Eliminating Smoking in Restaurants. February 5, 1992.

² ASHRAE Standard (62-1981) office ventilation rate of 10L/second per person (assuming 7 persons per 100 meters squared floor space). According to American's for Nonsmoker's Rights: Protecting Nonsmokers from Secondhand Smoke (fact sheet), these ventilation rates would need to be improved 270 times, at enormous cost, in order to reduce the carcinogenic risk from tobacco smoke to federal (US) accepted levels. This would "create a virtual windstorm indoors".