Wood Smoke
Chemical Composition

⊗Indicates a chemical present in both wood smoke and tobacco smoke
☠Indicates a hazardous chemical for which ATSDR has prepared a toxicological profile
🕷Indicates a chemical classified as a carcinogen by the US government
●Indicates a chemical that is one of the Top 20 CERCLA priority hazardous substances
[1-275] Indicates position on the CERCLA priority hazardous substances list

ALL CHEMICALS LISTED BELOW ARE REPORTED PRESENT IN WOOD SMOKE

⊗☠[198]carbon monoxide, [66]methane, volatile organic compounds (C_2-C_7), *aldehydes*: ⊗☠🕷[245]formaldehyde, ⊗☠[72]acrolein, propionaldehyde, butyraldehyde, ⊗acetaldehyde, furfural; substituted furans, ⊗☠🕷●[6]benzene, *alkyl benzenes*: ⊗☠🕷[68]toluene, ⊗acetic acid, ⊗formic acid; ⊗☠nitrogen oxides (NO, NO_2), ☠sulfur dioxide, ☠methyl chloride, ⊗☠[77]naphthalene, ⊗substituted naphthalenes, *oxygenated monoaromatics*: guaiacol (and derivatives), ⊗☠[162]phenol (and derivatives), syringol (and derivatives), ⊗catechol (and derivatives); particulate organic carbon, oxygenated polycyclic aromatic hydrocarbons, ☠●[9]*polycyclic aromatic hydrocarbons*: ⊗☠[270]fluorene, ⊗☠[219]phenanthrene, ⊗☠anthracene, methylanthracenes, ⊗☠[106]fluoranthene, ⊗☠[249]pyrene, ⊗☠🕷[34]benzo(a)anthracene, ⊗☠[117]chrysene, ⊗☠🕷●[10 60 70]benzofluoranthenes, ☠benzo(e)pyrene, ⊗☠🕷●[8]benzo(a)pyrene, ☠perylene, ⊗☠🕷[180]indeno(1,2,3-cd) pyrene, ☠benzo(ghi)perylene, coronene, ⊗🕷dibenzo(a,h)pyrene, retene, ⊗☠🕷●[16]dibenz(a,h)anthracene; *trace elements*: Sodium, Magnesium, ☠[186]Aluminum, Silicon, Sulfur, [96]Chlorine, Potassium, Calcium, Titanium, ☠[197]Vanadium, ⊗☠🕷Chromium, ☠[138]Manganese, Iron, ⊗☠🕷[53]Nickel, ☠Copper, ☠[73]Zinc, Bromine, ⊗☠🕷●[2]Lead; particulate elemental carbon, normal alkanes (C_{24}-C_{30}), cyclic di-and triterpenoids, dehydroabietic acid, isopimaric acid, lupenone, friedelin, ☠🕷chlorinated dioxins

Sources:

Larson TV and Koenig JQ. 1994. *Wood Smoke: Emissions and Noncancer Respiratory Effects*. Table 1, Chemical composition of wood smoke. *Annual Review of Public Health*, v.15, p.136-137.

US Surgeon General. 1989. *Reducing the Health Consequences of Smoking*. Tables 5-8, p.81-89.

US Department of Health and Human Services. Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological Profiles.

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72 ☠	acrolein
☠	acetaldehyde
6 ☠🕷●	benzene
68 ☠🕷	toluene
	acetic acid
	formic acid
☠	nitrogen oxides (NO, NO_2)
77 ☠	naphthalene
	substituted naphthalenes
162 ☠	phenol
☠	catechol
270 ☠	fluorene
219 ☠	phenanthrene
☠	anthracene
106 ☠	fluoranthene
249 ☠	pyrene
34 ☠🕷	benzo(a)anthracene
117 ☠	chrysene
10 60 70 ☠🕷●	benzofluoranthenes
8 ☠🕷●	benzo(a)pyrene
180 ☠🕷	indeno(1,2,3-cd)pyrene
🕷	dibenzo(a,h)pyrene
16 ☠🕷●	dibenz(a,h)anthracene
☠🕷	chromium
53 ☠🕷	nickel
2 ☠🕷●	lead

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