

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 (C₂-C₇), *aldehydes*: ⊗²⁴⁵ formaldehyde, ⊗⁷² acrolein, propionaldehyde, butyraldehyde, ⊗ acetaldehyde, furfural; substituted furans, ⊗⁶⁸ benzene, *alkyl benzenes*: ⊗⁶⁸ toluene, ⊗ acetic acid, ⊗ formic acid; ⊗ nitrogen oxides (NO, NO₂), ⊗ 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} benzo(a)fluoranthenes, ⊗ benzo(e)pyrene, ⊗⁶ 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 (C₂₄-C₃₀), 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.

US Department of Health and Human Services. National Toxicology Program. *Report on Carcinogens*. Tenth. 2002.

US Department of Health and Human Services. Agency for Toxic Substances and Disease Registry (ATSDR). Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). List of Priority Hazardous Substances, 2001

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 (C₂-C₇), *aldehydes*: ⊗²⁴⁵ formaldehyde, ⊗⁷² acrolein, propionaldehyde, butyraldehyde, ⊗ acetaldehyde, furfural; substituted furans, ⊗⁶⁸ benzene, *alkyl benzenes*: ⊗⁶⁸ toluene, ⊗ acetic acid, ⊗ formic acid; ⊗ nitrogen oxides (NO, NO₂), ⊗ 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} benzo(a)fluoranthenes, ⊗ benzo(e)pyrene, ⊗⁶ 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 (C₂₄-C₃₀), 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.

US Department of Health and Human Services. National Toxicology Program. *Report on Carcinogens*. Tenth. 2002.

US Department of Health and Human Services. Agency for Toxic Substances and Disease Registry (ATSDR). Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). List of Priority Hazardous Substances, 2001

For Our Children's Health

*With all this information, wouldn't
you hope that every child could:*

Expect that the home, education, athletic and recreation facilities should be smoke-free, so that scholastic and athletic achievements are not limited by uncontrolled asthma and lost school days due to infections.

Be cared for by a supportive physician who explains to parents and teachers the dangers of wood smoke and tobacco smoke and their role in causing: asthma, immune system damage leading to auto-immune diseases, respiratory damage, increased risk of infection, aggravation of heart disease, and cancer.

Learn self-management skills to minimize exposure to smoke and to have confidence they will not be exposed to hazardous combustion toxins contained in tobacco and wood smoke whether at home, school or play.

Expect adults entrusted with their care to understand how to handle pollution emergencies and expect public guardians to protect them from smoke and other hazardous pollutants.

www.burningissues.org

For Our Children's Health

*With all this information, wouldn't
you hope that every child could:*

Expect that the home, education, athletic and recreation facilities should be smoke-free, so that scholastic and athletic achievements are not limited by uncontrolled asthma and lost school days due to infections.

Be cared for by a supportive physician who explains to parents and teachers the dangers of wood smoke and tobacco smoke and their role in causing: asthma, immune system damage leading to auto-immune diseases, respiratory damage, increased risk of infection, aggravation of heart disease, and cancer.

Learn self-management skills to minimize exposure to smoke and to have confidence they will not be exposed to hazardous combustion toxins contained in tobacco and wood smoke whether at home, school or play.

Expect adults entrusted with their care to understand how to handle pollution emergencies and expect public guardians to protect them from smoke and other hazardous pollutants.

www.burningissues.org