

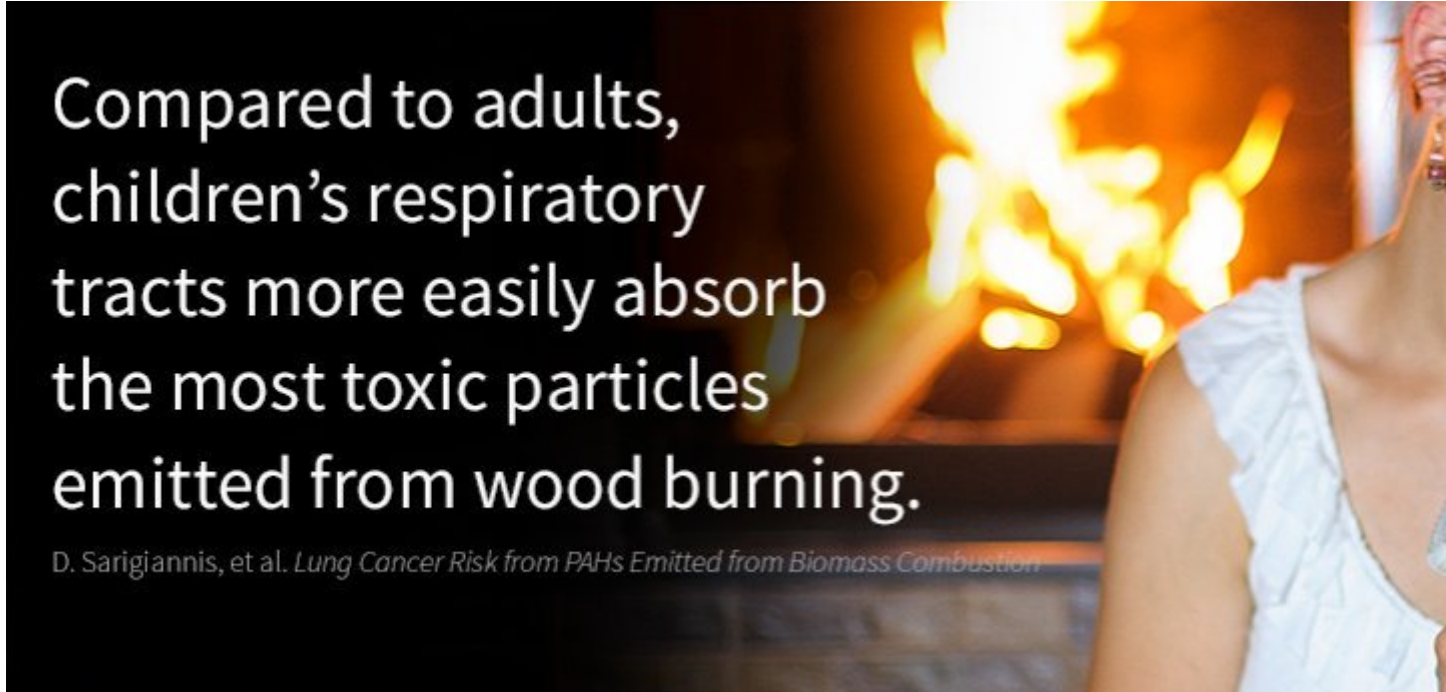
One fact that I am astounded by is how some of the particles in wood smoke are so tiny that they are referred to as ultrafine that we ingest straight through our nostrils, and those particles easily proceed via the olfactory nerve across the blood brain barrier and lodge in our brains and CNS.

The harm being done by PM's (all three size variations) should leave no one feeling comfortable with the status quo.

But now the focus switches to children, they don't have an easy time of it either when exposed to wood smoke.

Fact is that no one escapes the ill effects whatever their age, whatever their state of health, and yes adults and babies can even die from exposure to wood smoke.

Sorry to be alarmist, so sad, but so true.



Compared to adults,
children's respiratory
tracts more easily absorb
the most toxic particles
emitted from wood burning.

D. Sariannis, et al. Lung Cancer Risk from PAHs Emitted from Biomass Combustion

Children and Wood Smoke Pollution

Children are among the most vulnerable to the harmful effects of particulate air pollution. Children breathe faster and inhale more pollutants in proportion to their body weight than do adults. Their immune systems and organs are still developing.

Particulate pollution has been shown to affect lung function and lung development. [Eighty percent](#) of the lungs' alveoli are formed after birth, and children's lungs continue to develop through adolescence. During infancy, the developing lung is highly susceptible to damage from environmental pollutants, including those from wood smoke.

There is evidence that the particulates and toxins in wood smoke affect fetal and infant development.



Infant Mortality and

Pregnancy Outcomes

Research with children born in areas with high PM_{2.5} respiratory-

But the effects of particulate pollution begin before birth. For example, increased levels of particulate pollution have been associated with increased risk of preterm birth and lower birth weight. Recent research also suggests an association with increased exposure to fine particulate matter during pregnancy and an increased risk of stillbirth.

Polycyclic aromatic hydrocarbons (PAHs), which are in wood smoke (please see our Toxins page), have been shown to reach placental tissue in several studies. Once in the placenta, they may impair fetal nourishment and growth.

The Brain and Neurological Development

Evidence also suggests that exposure to fine particulate pollution during pregnancy increases the risk of a child later developing autism.



In the developing world, children of women who cook with wood, as opposed to kerosene, [have been shown](#) to have lower cognitive performance and less frequent structured play.

Lung Development and Respiratory Health

Wood smoke pollution [has been shown](#) to raise the risk of bronchiolitis, a respiratory disorder that is a leading cause of hospitalization in infants, as well as [rates of hospitalization](#) for childhood pneumonia and bronchitis. [Studies](#) have also shown that children living in homes with wood stoves are more likely to have severe respiratory symptoms.

For children who already have serious illnesses, wood smoke can be particularly harmful. For example, [this study](#) found that primary and secondary aerosol emissions from a newer model wood stove were cytotoxic to, and caused inflammation in, bronchial epithelial cells from both healthy donors and from those with cystic fibrosis, but the emissions were even more cytotoxic to the cells from donors with cystic fibrosis.

Increased Asthma Attacks and Hospital Visits



Children who are exposed to higher levels of particulate pollution, including from wood smoke, are [more likely](#) to develop asthma by age 5.

Asthmatic children who live in neighborhoods with more wood smoke [have been shown](#) to have significant decreases in lung function. As this study noted, “wood smoke resembles environmental tobacco smoke, for which numerous studies have shown deleterious effects on the respiratory health of children.”

[Several studies](#) in Seattle, where wood burning is a primary source of fine particles, have shown a strong correlation between particulate levels and emergency room visits and hospitalizations for asthma.

Asthma is [the leading cause](#) of missed school days and the third leading cause of hospitalizations of children in the US. In 2007, 185 children in the US died from asthma.

More Ear Infections

Wood smoke pollution exposure has also [been associated](#) with increased middle ear infections.

Cancer

[A study](#) found an association between use of a wood stove in the home and childhood brain tumors. [Another study](#) found evidence that use of a wood stove in the year before or during pregnancy may increase the chance of a child developing acute lymphoblastic leukemia.

As a society, we no longer think it is acceptable to force children to breathe secondhand tobacco smoke. It's time to extend this attitude to wood smoke.

[Children and Wood Smoke References](#)