REFERENCES

1 State of Washington, Department of Ecology, Health Effects of Wood Smoke

2 State of Washington, Department of Ecology, Health Effects of Wood Smoke

3 Chronic Neuroimmune Diseases, Woodburning, American Lung Association (last updated 2014)
   http://www.anapsid.org/cnd/mcs/fireban2.html

4 EPA Burn Wise
   http://www.epa.gov/burnwise/healtheffects.html

5 New Hampshire Department of Environmental Services, Environmental Fact Sheet

6 PubMed, Woodsmoke Health Effects: A Review

7 Scientific American, October 3, 2008
   http://www.scientificamerican.com/article/fire-pit-environmental-dangers/

8 Environmental Health Perspectives
   April 2005: 113(4): A254-A255
   http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1278521/

9 Utah Physicians for a Healthy Environment

10 Utah Physicians for a Healthy Environment

11 Burning Issues, December 2001
    http://burningissues.org/simple-facts.htm

12 Puget Sound Clean Air, Wood Burning and the Law
    http://burningissues.org/simple-facts.htm

13 Colorado Department of Health, Utah Department of Health, New Mexico Air Quality, California Air Now
   https://www.colorado.gov/pacific/cdphe/indoor-burning-restrictions
   http://www.whentoburn.com/utah-air-quality-monitoring-no-burn-days
   http://www.cahtaq.gov/airquality/todays-status/burn-no-burn
   http://www.sparetheair.org/stay-informed/particulate-matter/wood-smoke/recommended-no-burn-days

EHHI BOARD MEMBERS

Susan S. Addiss, MPH, MUrS. Past Commissioner of Health for the State of Connecticut; Past President of the American Public Health Association; Past member of the Pew Environmental Health Commission; Director of Health Education for Environment and Human Health, Inc.

Nancy O. Alderman, MES. President of Environment and Human Health, Inc.; Past member of the National Board of Environmental Defense; Recipient of the GT Bar Association, Environmental Law Section’s, Clyde Fisher Award and the New England Public Health Association’s Robert C. Huestis/Eric Mood Award given to individuals for outstanding contributions to public health in the environmental health area.

Andrea Gottsegen Asnes, MD, MSW. Associate Professor of Pediatrics at the Yale School of Medicine; Associate Director of the Yale Child Abuse Programs and Child Abuse Prevention Programs; Co-Director of the third year clerkship in Pediatrics; Associate Director of the MD/PhD Program.

D. Barry Boyd, M.D. Clinical Professor of Medicine, Yale University School of Medicine; Oncologist at Greenwich Hospital and Affiliate Member of the Yale Cancer Center; Founder and Director of Integrative Medicine at Greenwich Hospital – Yale Health System.

David R. Brown, Sc.D. Public Health Toxicologist and Director of Public Health Toxicology for Environment and Human Health, Inc.; Past Chief of Environmental Epidemiology and Occupational Health at Connecticut’s Department of Health; Past Deputy Director of The Public Health Practice Group of ATSDR at the National Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia.

Thomas F. Harrison, Esq. Connecticut Environmental Lawyer; Past Assistant Attorney General in the New York State’s Attorney General’s office; Past Regional Counsel in the largest U.S. EPA Office, Region 5; Past Senior Corporate Counsel to the B.F. Goodrich Company; Past Partner at the Hartford law firm of Day Pitney LLP; Served on the CT Council of Environmental Quality; Past Chairman of the Environmental Section of the Connecticut Bar Association.

Pinar H. Kodaman, MD, PhD. Assistant Professor of Obstetrics, Gynecology, and Reproductive Sciences, Division of Reproductive Endocrinology and Infertility, Yale University School of Medicine; Director of the Early Recurrent Pregnancy Loss Program at the Yale Fertility Center.

Robert G. LaCamera, M.D. Clinical Professor of Pediatrics, Yale University School of Medicine; Primary Care Pediatrician in New Haven, Connecticut from 1956 to 1996 with a sub-specialty in children with disabilities.

Hugh S. Taylor, M.D. Anita O’Keeffe Young Professor and Chair of the Department of Obstetrics, Gynecology and Reproductive Sciences and Department of Molecular, Cellular and Developmental Biology; Yale University School of Medicine; Chief of Obstetrics and Gynecology at Yale-New Haven Hospital.

John P. Wargo, Ph.D. Tweedy Ordway Professor of Environmental Health and Politics, Yale University’s School of Forestry and Environmental Studies, and Professor of Political Science. Author of two award-winning books, Green Intelligence and Our Children’s Toxic Legacy.
Although wood smoke conjures up fond memories of sitting by a cozy fire, it is important to know that the components of wood smoke and cigarette smoke are quite similar, and that many components of both are carcinogenic. Wood smoke contains fine particulate matter, carbon monoxide, formaldehyde, sulfur dioxide and various irritant gases, such as nitrogen oxides, that can scar the lungs. Wood smoke also contains chemicals known or suspected to be carcinogens, such as polycyclic aromatic hydrocarbons (PAHs) and dioxin.1

Wood smoke interferes with normal lung development in infants and children. It also increases children’s risk of lower respiratory infections such as bronchitis and pneumonia.2

Wood smoke exposure can depress the immune system and damage the layer of cells in the lungs that protect and cleanse the airways.3

According to the Environmental Protection Agency (EPA), toxic air pollutants are components of wood smoke. Wood smoke can cause coughs, headaches, and eye and throat irritation in otherwise healthy people.4

For vulnerable populations, such as people with asthma and chronic respiratory disease, and those with cardiovascular disease, wood smoke is particularly harmful — even short exposures can prove dangerous.5

The particles of wood smoke are extremely small and therefore are not filtered out by the nose or the upper respiratory system. Instead, these small particles end up deep in the lungs where they remain for months, causing structural damage and chemical changes. Wood smoke’s carcinogenic chemicals adhere to these tiny particles, which enter deep into the lungs.6

Recent studies show that fine particles that go deep into the lungs increase the risk of heart attacks and strokes. EPA warns that for people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. If you have heart disease, these tiny particles may cause you to experience chest pain, palpitations, shortness of breath, and fatigue.7

The particulate matter in wood smoke is so small that windows and doors cannot keep it out — even the newer energy-efficient weather-tight homes cannot keep out wood smoke.8

The EPA estimates that a single fireplace operating for an hour and burning 10 pounds of wood will generate 4,300 times more PAHs than 30 cigarettes. PAHs are carcinogenic.9

A study by the University of Washington in Seattle showed that 50 to 70 percent of the outdoor levels of wood smoke were entering homes that were not burning wood. EPA did a similar study in Boise, Idaho, with similar results.10

**What Others Are Doing**

Iowa's Supreme Court in 1998 declared that government bodies do not have the right to allow burning that results in smoke crossing property lines.11

The State of Washington has laws to address neighbors’ wood smoke. According to the Puget Sound Clean Air Agency, "generating excessive smoke is not only unneighborly, it’s illegal. Under state regulations, smoke from a person’s chimney cannot exceed 20 percent opacity for six consecutive minutes. Greater smoke densities could result in fines from air pollution control officials. It is always illegal to smoke out your neighbor. Everyone has a right to breathe clean air. If smoke from your fire is affecting your neighbors, it is considered a nuisance and subject to enforcement action."12

Many states have restricted wood burning in fireplaces and wood-burning stoves on certain high-pollution days: Colorado; Utah; Albuquerque, New Mexico; and many towns in California have set up pollution numbers to call to find out if you can burn wood.13

**What Needs to Be Done**

There is much we can do to protect the public’s health from wood smoke exposures. Fireplace and wood stove chimneys should be regulated so that they are high enough to protect neighbors from exposures. Individual towns should pass zoning regulations to protect public health. State legislatures and state departments of health should strengthen local health departments with specific wood smoke language so that they can deal on a case-by-case basis with situations in which people are made sick by their neighbors’ smoke. As the State of Washington Clean Air Agency has stated: “It is always illegal to smoke out your neighbor.”