THE POTENTIAL HEALTH IMPACTS OF RESIDENTIAL WOOD BURNING

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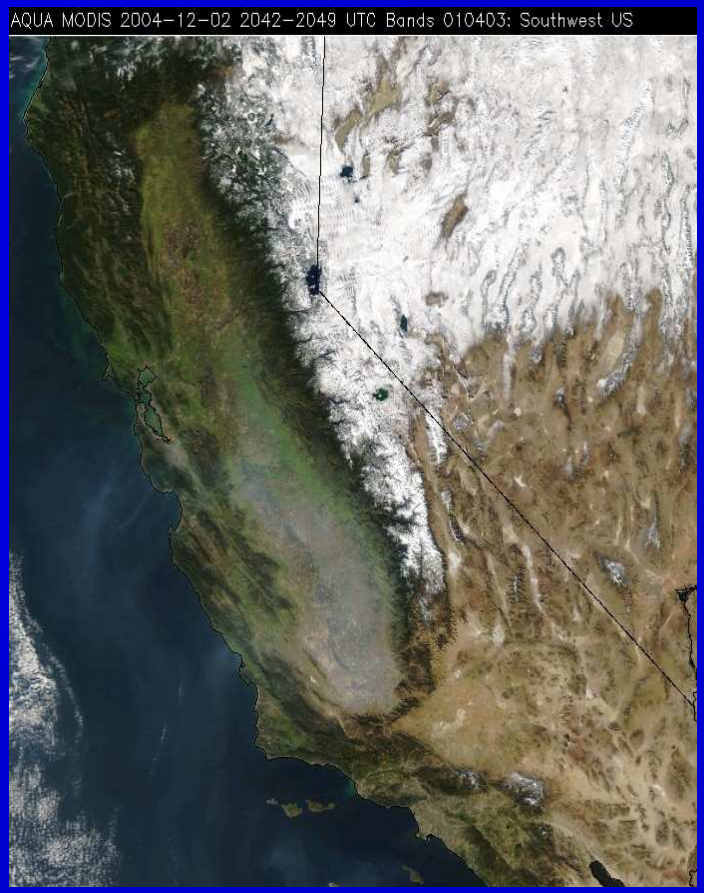
Air Resources Board

California Environmental Protection Agency

Wood Smoke Emissions

Background

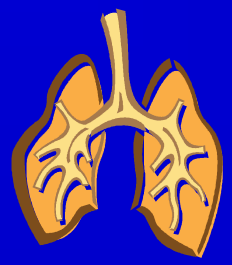
- **Can be from 20% to 80% of ambient wintertime particulate matter (PM)**
- **Is a complex mixture of health damaging pollutants**
- **Readily penetrates other households throughout neighborhoods and regions**



Panel and Chamber Studies

- **Decreased lung function in asthmatic children with exposures to combustion generated components of ambient PM2.5[1]**
- **Increases in airway inflammatory markers with ambient exposure to local combustion in adult asthmatics[2]**
- **Increases in inflammatory markers and in blood-clotting markers in healthy adults from wood smoke exposure[3]**

1.Allen R, et al. 2008, *Inhal Toxicol* 20(4):423-433.
2.Jansen, K., et al. . 2005. *Environ. Health Perspect.* 113(12):1741–1746.
3.Barregard L, et al. 2006., *Inhal Toxicol* 18(11):845-853.



Population Based Study

- **10% increase in asthma hospital admissions among children associated with wood and agricultural burning**
- **8% increase in respiratory and 4% increase in cardiovascular hospital admissions among seniors associated with wood and agricultural burning**

1. Anderson, Z.,et al. 2007. *J. Expos. Sci. Environ. Epidemiol.* 17(7):625–636.

Current ARB-Funded Projects

- **Effects of wood smoke exposure on cardiopulmonary responses in healthy and asthmatic adults (UCSF)**
- **Exposure assessment of residential wood smoke sources (Cal Poly)**

Current In-House Projects

- **Potential effects of residential wood burning regulations and reductions in pollution and health impacts in the San Joaquin Valley**
  - Preliminary results show decreases in cardiovascular and respiratory hospitalization and deaths
- **Comparison of emissions from wood burning devices**

Conclusions

- **Negative health effects are associated with wood smoke exposure**
- **Wood smoke can dominate ambient air pollution**
- **Several air districts implementing regulations to meet standards and protect health**