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Children's Response to Air Pollutants.

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It is important to focus on children with respect to air pollution because (1) their lungs are not completely developed, (2) they can have greater exposures than adults, and (3) those exposures can deliver higher doses of different composition that may remain in the lung for greater duration. The undeveloped lung is more vulnerable to assault and less able to fully repair itself when injury disrupts morphogenesis. Children spend more time outside, where concentrations of combustion-generated air pollution are generally higher. Children have higher baseline ventilation rates and are more physically active than adults, thus exposing their lungs to more air pollution. Nasal breathing in adults reduces some pollution concentrations, but children are more typically mouth-breathers - suggesting that the composition of the exposure mixture at the alveolar level may be different. Finally, higher ventilation rates and mouth-breathing may pull air pollutants deeper into children's lungs, thereby making clearance slower and more difficult. Children also have immature immune systems, which plays a significant role in asthma. The observed consequences of early life exposure to adverse levels of air pollutants include diminished lung function and increased susceptibility to acute respiratory illness and asthma. Exposure to diesel exhaust, in particular, is an area of concern for multiple endpoints, and deserves further research.

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#### Related Links

Air pollution and children's health. [Pediatrics. 2004] PMID:15060197

Health effects of acute exposure to air pollution. Part I: Healthy and asthmatic subjects exposed to diesel exhaust. [Res Rep Health Eff Inst. 2003] PMID:14738208

Health effects of outdoor air pollution. Committee of the Environmental and Occupational Health Assembly of the American Thoracic Society. [Am J Respir Crit Care Med. 1996] PMID:8542133

The effects of air pollution on children. [Environ Health Perspect. 1995] PMID:8549489

[Suspended particulates and lung health] [Wien Klin Wochenschr. 2004] PMID:15518085