EPA Hearing on Mercury and Air Toxics Standards May 26, 2011

Hello. I am Dr. Anne Mellinger-Birdsong, a pediatrician, epidemiologist, and parent of 2 children growing up in Atlanta. I am proud to represent the American Academy of Pediatrics. The AAP is a non-profit professional organization of more than 60,000 pediatricians, pediatric sub-specialists, and pediatric surgeons dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults. We are proud to have a long history of supporting the work of the EPA in cleaning up the air we breathe.

Children do not choose where they live, where they go to school, or whether the air they breathe is polluted or not. Adults in their families, and community and business leaders, make these decisions for them. However, children bear the consequences of decisions adults have made, in the form of illness, hospitalization, missed school days, and even their lives. Some of the effects continue into adulthood.

Children have a higher minute ventilation, meaning they breathe more air per pound of body weight than adults do, even at rest. They spend more time outdoors, and also run more and breathe harder when they are outdoors. For these 3 reasons, at any given level of air pollution, children are more exposed and get a higher amount of pollution per pound of body weight than adults.

Our current federal standards requiring power plants to limit emissions of hazardous air pollutants are weak and outdated. Polluted air makes people sick, particularly infants and children. Toxins in the air, which can accumulate in our water and food supply, cause numerous health effects. These include birth defects, neurological damage, asthma exacerbations, other respiratory problems, and heart disease. Some forms of air pollution also reduce (stunt) lung growth; people who grow up in polluted areas can have smaller lungs as adults compared to people who grow up in non-polluted areas. Lung growth and remodeling continues through the adolescent years, so this is not just an issue for young children.

Coal fired power plants are the largest source of mercury emissions in the United States. This is of particular concern since mercury can accumulate in the water and food supply. Power plants which burn fossil fuels release mercury into the air, which then deposits in water, where bacteria convert it to methylmercury. Methylmercury is readily absorbed and readily crosses the placenta and blood/brain barrier. Children can be exposed to methylmercury by eating contaminated fish; fetuses are exposed in utero when their mothers eat

contaminated fish. Many states have issued advisory warnings about not eating fish from contaminated waters. Georgia has issued health advisories that women and children limit eating fish from over half our lakes, rivers, and estuaries (39 of 69 lakes, 44 of 83 rivers, and 6 of 10 estuary systems[i]).

Methylmercury is most toxic to the developing brain of the fetus and young child; it can also affect the kidneys and immune system. The damage it causes is permanent and irreversible. In the developing brain, methylmercury causes focal necrosis of neurons, destruction of glial cells, and interferes with neuronal migration. In studies of areas with high exposures (outside of the US), mothers gave birth to infants who initially appeared normal, but who went on to develop problems such as blindness, deafness, and seizures.[ii] In utero exposure to lower levels of mercury has been associated with more subtle effects on memory, attention and language.[iii]

Fine particulates are very complex structures. They are mixtures of polycyclic hydrocarbons, heavy metals such as arsenic, chromium and lead, and other chemicals. Because they are so small, they go deep into the lung, carrying all the chemicals and heavy metals with them. Fine particulates are known to increase respiratory problems and contribute to a range of other disorders. **R**ecent studies show:

- For children with asthma, increased air pollution levels are associated with increase asthma symptoms,[iv] as well as asthma exacerbations.[v]
- Even short-term increases in exposure to elevated levels of fine particulates, were associated with a significant increase in all-cause mortality (1.21%) and respiratory related mortality (1.78%).[vi] This may not sound like a lot, but at the population level, it is significant.
- Reducing air pollution can have life-saving effects on a population level. A 2009 study found that reduced air pollution (a decrease of 10 µg per cubic meter in the fine-particulate concentration) was associated with an estimated increase in life expectancy of over ½ a year (0.61±0.2 year). This is a remarkable impact and reinforces the need to reduce the levels of fine particulate matter in our air across the board.[vii]

The American people have been waiting many years for this important rule, and we cannot afford any further delays. In 1990, Clean Air Act Amendments raised the need to assess power plant emissions. Ten years later, the EPA determined it was “appropriate and necessary” that these hazardous air pollutants, particularly mercury emissions, be reduced. Now, another eleven years later, we still have yet to take appropriate action. People who were born at the time the amendments were passed in 1990, are now in college and have reached the age of legal majority.

Insufficient forward action by EPA and pressure from polluters has delayed needed action, allowing levels of mercury and other toxins to continue to accumulate in our water and bodies.

Statements on the draft rule

- The AAP fully supports EPA's new standards for reducing toxic air pollutants from power plants. These vital standards will reduce emissions of mercury, other toxic metals (arsenic, chromium and nickel), acid gases (hydrogen chloride and hydrogen fluoride), and fine particulates to levels currently being achieved in the best-performing plants.
- The AAP supports using the standard of Maximum Achievable Control Technology to attain these reasonable goals. We also support requiring the implementation of this technology within three years, as proposed under the rule. While some may argue that this rule will impose costs upon power companies, the AAP would respond that the high costs of pollution are currently being borne by our children and other vulnerable populations, and by all of us in the form of higher insurance premiums and taxes to pay for medical treatment of those suffering the health effects of air pollution.

This rule will lead to cleaner air and better health for millions of American children and families. We ask the EPA to insist on timely implementation, without further delay. Each day children are at risk of being born with preventable birth defects, suffering asthma exacerbations, and bearing the other health consequences of air pollution. The tools and technology already exist. We need to use them to protect our children and families, starting today.

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[i] http://www.gaepd.org/Files_PDF/gaenviron/fish_advisory/GADNR_FishConsumptionGuidelines_Y2007.pdf

[ii] Amin-Zaki L, Elhassani S, Majeed MA, Clarkson TW, Doherty RA, Greenwood M. Intra-uterine methylmercury poisoning in Iraq. Pediatrics.1974;54:587–595.

[iii] Grandjean P, Weihe P, White RF, et al. Cognitive deficit in 7-year-old children with prenatal exposure to methylmercury. Neurotoicol Teratol. 1997; 19: 417-428.

[iv] Yu O, Sheppard L. Lumley T, Koenig JQ, Shapiro GC. Effects of ambient air pollution on symptoms of asthma in Seattle-area children enrolled in the CAMP study, Environ Health Perspect. 2000;108:1209-1214.

[v] Ostro B, Lipsett M, Mann J, Braxton-Owen H, White M. Air pollution and exacerbations of asthma in African-American children in Los Angeles. Epidemiology. 2001;12:200-208.

[vi] Franklin M, Zeka A, Schwartz J. Association Between PM2.5 and All-Cause and Specific-Cause Mortality in 27 U.S. Communities. Journal of Exposure Science and Environmental Epidemiology 2007;17:279-287.

[vii] Pope CA III, Ezzati M, Dockery DW. Fine-Particulate Air Pollution and Life Expectancy in the United States. N Engl J Med 2009; 360:376-386.