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COAL TAKES HEAVY HUMAN TOLL: Some 25,100 U.S. Deaths from Coal Use Largely Preventable

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Startling new research shows that one out of every six women of childbearing age in the United States may have blood mercury concentrations high enough to damage a developing fetus. This means that 630,000 of the 4 million babies born in the country each year are at risk of neurological damage because of exposure to dangerous mercury levels in the womb.

Fetuses, infants, and young children are most at risk for mercury damage to their nervous systems. New studies show that mercury exposure may also damage cardiovascular, immune, and reproductive systems. Chronic low-level exposure prenatally or in the early years of life can delay development and hamper performance in tests of attention, fine motor skills, language, visual spatial skills, and verbal memory. At high concentrations, mercury can cause mental retardation, cerebral palsy, deafness, blindness, and even death.

Humans are exposed to mercury primarily by eating contaminated fish. Forty-five of the 50 states have issued consumption advisories limiting the eating of fish caught locally because of their high mercury content. New analyses of fish samples collected by the Environmental Protection Agency (EPA) from 500 lakes and reservoirs across the country found mercury in every single sample. In 55 percent of them, mercury levels exceeded the EPA's "safe" limit for a woman of average weight eating fish twice a week, and 76 percent exceeded limits for children under the age of three. Four out of five predator fish—those higher on the food chain, such as tuna or swordfish—exceeded the limits.

The largest source of mercury pollution is coal-fired power plants. Airborne mercury emitted by these facilities is deposited anywhere from within a few hundred kilometers of the smokestacks to across continents, far from its source. Biological processes change much of the deposited mercury into methylmercury, a potent neurotoxin that humans and other organisms readily absorb. Methylmercury easily travels up the aquatic food chain, accumulating at higher concentrations at each level. Larger predator species contain the most mercury, which is then passed on to those who eat them.

Since the industrial revolution began, mercury contamination in the environment has jumped threefold. The 600 plus coal-fired power plants in the United States, which produce over half of the country's electricity, burn 1 billion tons of coal and release 98,000 pounds (44 metric tons) of mercury into the air each year. Power plants yield an additional 81,000 pounds of mercury pollution in the form of solid waste, including fly ash and scrubber sludge, and 20,000 pounds of mercury from "cleaning" coal before it is burned. In sum,

coal-fired power plants pollute the environment with some 200,000 pounds of mercury annually.

Solid wastes from coal-fired power plants also contain heavy metals like arsenic, selenium, chromium, and cadmium; carcinogenic organic compounds; and radioactive elements. These toxins can leach into streams and groundwater supplies, compromising people's health.

Other atmospheric emissions from burning coal include sulfur dioxide (SO₂), carbon dioxide (CO₂), particulate matter, and nitrogen oxides (NO_x), which in turn form ground-level ozone. SO₂ and ozone are highly corrosive gases that cause respiratory distress and contribute to low birth weight and increased infant mortality. SO₂ and NO_x are also the primary causes of acid rain. CO₂ is the dominant gas responsible for the greenhouse effect that is warming the planet.

Particulate matter from coal combustion has long been known to harm the respiratory system. Now recent research has shown that small airborne particulate matter also can cross from the lungs into the bloodstream, leading to cardiac disease, heart attacks, strokes, and premature death.

In the United States, 23,600 deaths each year can be attributed to air pollution from power plants. Those dying prematurely due to exposure to particulate matter lose, on average, 14 years of life. Burning coal also is responsible for some 554,000 asthma attacks, 16,200 cases of chronic bronchitis, and 38,200 non-fatal heart attacks each year. Atmospheric power plant pollution in the United States racks up an estimated annual health care bill of over \$160 billion.

The Bush administration's so-called Clear Skies initiative allows for an increase in SO₂, NO_x, particulate matter, and mercury pollution above the levels permitted under the existing Clean Air Act, and it does nothing to limit climate-disrupting CO₂. Older coal-burning power plants failing to meet modern air emissions standards release 10 times more NO_x and SO₂ than modern coal plants do. Under the administration's plans, these "grandfathered" plants could continue to circumvent emissions controls—with unhealthy effects.

Although pollution scrubbers in modern smokestacks do reduce air pollution, they do nothing to help the coal miners who die each year in mine accidents or from diseases brought on by breathing hazardous coal dust. While the annual number of worker fatalities on-site in the 2,000 U.S. coal mines has fallen to around 30, pneumoconiosis—commonly known as black lung disease—kills an estimated 1,500 former coal miners a year. One in every 20 miners in the United States has X-ray evidence of this disease, a number that is bound to worsen if the Bush administration succeeds with plans to quadruple allowable levels of coal dust in mines.

Using coal, a hazardous nineteenth-century fuel, when we have twenty-first-century alternatives is hard to understand. Renewable energy sources, such as wind and solar, do not require dangerous mining or mountaintop removal, nor do they pollute the air, land, and water with a slew of toxic chemicals. Full-cost pricing of coal to include the

environmental damages and the enormous health care burden of using it, combined with removing antiquated subsidies on all fossil fuels, could go a long way toward encouraging more investment in renewables.

In addition, simple energy efficiency measures can reduce our reliance on fossil fuels and save money, too. Research from the Alliance to Save Energy indicates that improving efficiency standards for household appliances in the United States could allow 127 power plants to close. More stringent air conditioner efficiency standards could shut down 93 power plants. And raising the efficiency standards of both new and existing buildings through mechanisms like tax credits and energy codes could close 380 power plants. Using these methods to shut down the 600 most polluting coal-fired power plants in the country would be a boon for public health.

Several European countries have begun to lead the transition away from coal. (See data at www.earth-policy.org/Updates/Update42_data.htm.) In Germany, coal use has been cut in half since 1990, while expanding wind electric generation is taking its place. Coal use in the United Kingdom has dropped by 46 percent over the same period, offset by efficiency gains and a shift toward natural gas. Plans are moving ahead for a huge expansion in wind energy in the U.K. and other European countries.

By moving beyond coal, the United States could avoid a legacy of smog-filled skies, acid rain, polluted waterways, contaminated fish, and scarred landscapes. This could each year save some 25,000 lives, reduce respiratory and cardiovascular illnesses, avert potential neurological damage for 630,000 babies, and erase a health care bill of over \$160 billion.

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FOR ADDITIONAL INFORMATION

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LINKS

Alliance to Save Energy
<http://www.ase.org>

Clean Air Task Force
<http://www.catf.us>

Clear the Air
<http://cta.policy.net>

Mercury Policy Project
<http://www.mercurypolicy.org>

National Resources Defense Council: Air Pollution
<http://www.nrdc.org/air/pollution>

Physicians for Social Responsibility: Mercury Action
<http://www.mercuryaction.org>

U.S. Environmental Protection Agency
<http://www.epa.gov>

U.S. Environmental Protection Agency Fish Advisory Page
<http://www.epa.gov/ost/fish>

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