

**Wisconsin Nurses Association
2011 Reference Report # 6**

Subject: Coal Burning and Health Effects
Introduced by: Marilyn A. Bazinski, RN, BSN-BC
Mara Eisch-Schweitzer, DNP, RN, CNE
Wisconsin Environmental Health Nursing Coalition
WNA Core Issue: Patient Safety/Advocacy

Summary:

Coal used for generating electricity is formed by the decomposition of organic materials. Once extracted from the earth's surface or underground mines, it is transported to power plants. Power is obtained by burning coal in boilers to produce steam, which runs through turbines to generate electricity. Environmental issues associated with coal burning include: air emissions, use of water resources, water discharges, solid waste generation, and land resource use. According to 2005 data, Wisconsin has 70 coal-fired power units at 27 locations (Sourcewatch, 2011). A few of these locations have since converted and others have incorporated natural gas, wind, and other alternative fuels.

The burning of coal produces many chemicals that are well documented as harmful. Recognized as one of the most lethal byproducts, mercury emissions from coal-burning power plants contribute over 40 percent of all domestic human-caused mercury emissions. According to 2005 air emission inventory data, 2,586 pounds (or 62.5 percent) of all mercury emissions were from coal-fired electrical generating units (www.dnr.state.wi.us). Utilities are instructed to reduce mercury pollution from coal-fired power plants by 90 percent by 2015, a result of the State Legislature's Joint Committee for Review of Administrative Rules (Clean Wisconsin, 2008).

Coal processing uses large quantities of water for impurity reduction, steam production, and cooling. This water removed from and returned to local lakes and streams impacts fish and other aquatic life. Rain falling on exposed coal piles and discharged chemicals pollute water sources. A 2010 study reported that Wisconsin, along with 34 states, had significant groundwater contamination from coal ash, which is not regulated by the Environmental Protection Agency (Sourcewatch, 2011).

Impacts of environmental problems are most devastating to poor, developing populations, and minorities throughout the world. The most vulnerable populations include pregnant women, children, older adults, and those with underlying co-morbidities. Children are more strongly impacted by pollutants because of the skin's greater absorption, slower clearance of toxicants, and a decreased ability to repair damaged DNA (Millman, Tang, & Perera, 2011). Exposure to mercury vapors over time is associated with neurological, developmental, or respiratory problems in children. Exposure to coal's pollutants cause significant cardiovascular, neurological, and respiratory disorders, and increased risk of cancers (Lee, 2009). Millions of citizens live in areas that do not meet the health based standards of the Clean Air and Water Acts.

Ambient air pollution in dirty cities has more impact than smoking on the health of its citizenry. For disease prevention, the focus must be on emission reduction, monitoring, and emphasis on clean energy alternatives. The Clean Air Act attempts to reduce mercury and other toxic air pollution from power plants by tightening energy efficiency standards. Alternative energy sources such as wind and solar supplement the growing need for electricity. The United States government requests developing countries share in pollution reduction efforts, but fails to make solid commitments to reduce its own contributions to global environmental problems. As a main contributor of global warming, the United States and Wisconsin should take the lead to reduce emissions of greenhouse gases.

Recommendations: That the Wisconsin Nurses Association will...

1. Promote nursing involvement in the development of sound public health, local, state, and national environmental health policies.
2. Provide educational and collaborative opportunities with other professionals to develop policy.
3. Collaborate in developing and advocating for environmental health legislation to strengthen regulations restricting air emissions and management of byproducts and waste.
4. Elevate public awareness of environmental hazards associated with coal production, transportation, and burning.

WNA Goals:

Goal 1: Collectively and collaboratively advocate for access to comprehensive quality health care services for all people, and;

Goal 2: Assure that the registered nurse is an essential provider in all practice settings through education, research, workplace advocacy, legislation, and regulation.

References:

Bergquist, L. & Content, T. (2007). "Our insatiable appetite for coal" *Milwaukee Journal Sentinel Online (JSOnline)*. Retrieved from: <http://www.jsonline.com/business/29330939.html>

Center for Progressive Regulation (2008). "International environmental justice and climate change. Environmental enforcement" Retrieved from:
<http://www.progressiveregulation.org/perspectives/enviroEnforce.html>
<http://www.progressiveregulation.org/perspectives/intlEnvironJustice.html>
<http://www.progressivereform.org/perspintlEnvironJustice.cfm>

Cohen, B. (1990). "Environmental problems with coal, oil, and gas. The nuclear energy option" University of Pittsburg, Plenum Press. Retrieved from: <http://www.phyast.pitt.edu/~blc/book/chapter3.html>

"Emissions of hazardous air pollutants from coal-fired plants" (2011). *Environmental Health and Engineering, Inc.* Retrieved from: http://www.ucsusa.org/clean_energy/coalvswind/brief_coal.html

Environmental Protection Agency (2007). "Coal." Retrieved from: <http://www.epa.gov/cleanenergy/energy-and-you/affect/coal.html>

"International Environmental Justice and Climate Change," Environmental Enforcement.

"Mercury Rule Media Kit" (2011). Wisconsin Department of Natural Resources. Retrieved from: http://www.dnr.state.wi.us/news/mediakits/mk_mercury.asp

Millman, A., Tang, D., & Perera, F. (2008). "Air pollution threatens the health of children in China" *Pediatrics*. Retrieved from: 122:620-628. DOI: 10.1542/peds.200-3143

Sourcewatch. (2011). Retrieved from: http://www.sourcewatch.org/index.php?title=Wisconsin_and_coal

Union of Concerned Scientists. (2009). "Citizens and Scientists for Environmental Solutions" Retrieved from: http://www.ucsusa.org/clean_energy/coalvswind/brief_coal.html

“Wisconsin's Mercury Rule to Become Law” (2008). *Clean Wisconsin*. Retrieved from:
<http://cleanwisconsin.org/index.php?module=cms&page=304>

“Wisconsin State Profile of Exposure to Coal-Fired Power Plants” (2000). Retrieved from
http://www.catf.us/resources/factsheets/files/Children_at_Risk-Wisconsin.pdf