Indian Coal Power Plant Pollution Standards 4 to 20 Times Worse Than Those In China

In March of 2013, Greenpeace India and Conservation Action Trust commissioned a report by UrbanEmissions demonstrating the health impacts from coal fired power plants. That analysis found between 80,000 and 115,000 people die every year from coal plant pollution in India. To better understand why air pollution is having such a negative impact on our population, we undertook a subsequent analysis comparing Indian power plant air emissions standards with those of China and Japan. We found that Indian air quality standards are anywhere between four and twenty times worse than those in China, a country which hit international headlines a few months ago for choking air pollution in major cities. We hope these findings spur a vigorous debate on the urgent need to strengthen Indian pollution standards in order to protect the lives of hundreds of thousands of Indians.

Air Quality Standards Explained: Many countries employ a multi-tiered approach to managing air pollution. Typically these countries employ a mix of technology-based requirements and health based limitations. The technology based requirements ensure that the very largest sources, which are the most cost-effective opportunities to reduce pollution, apply state of the art pollution controls. Technology based requirements are typically found in two forms. The first is a broad based emission limit that all sources in a given industry can be expected to meet. In the U.S. such standards are known as New Source Performance Standards ("NSPS"); in the EU they were known as the Large Combustion Plant (LCP) Directive, now updated and strengthened as the Industrial Emissions (IE) Directive. Since these broad-based standards are designed to be met by all new sources in a category and are only updated infrequently, technology-based programs usually include a requirement that each new source obtain a pre-construction permit based on the best performing technology that is feasible for the intended purpose of the plant. In the U.S. this permit is known as a BACT (Best Available Control Technology) permit, in the EU it is known as a BAT (Best Available Technique) permit.

Health-based controls involve setting standards for the amount of pollution in an air shed that is deemed "safe." These standards are based on the results of epidemiological studies of the health effects of different pollutants and are known as ambient (i.e. outside rather than indoor air) air quality standards. Permit authorities employ computer modeling to determine whether controls beyond those required by technology-based programs are required. These controls may require reduced emissions at large sources, pollution reduction programs for smaller sources and/or controls on motor vehicle emissions and fuels.

The data that follow set out technology based limits for several jurisdictions. India does not impose technology-based control for SO2 and NOx and India's ambient air quality standards have not been used to impose such controls. Where a pollutant is unregulated –SO2 and NOx for India, emission rates can vary widely depending on the sulfur and nitrogen content of the coal being used and the operating temperature of the boiler. We have applied "nominal" figures of 2000 mg/m^3 for uncontrolled SO_2 emissions and 1000 mg/m^3 for uncontrolled NO_x emissions. A description of the performance that can be achieved by modern, well controlled coal-fired unit can be found at http://www.masterresource.org/2010/11/clean-coal-plant-today/

Country	*PM (mg/m^3)*	*SO_2 (mg/m^3)*	*NO_x (mg/m^3)*
India[1]	150	none	none

Japan (general)[2]	50	permit	200
Japan (special area)	30	permit	200
Japan (permit)[3]	5	27	40
China[4]	30	100	100
China (key regions)[5]	20	50	100
EU-LCP Directive[6]	30	200	200
EU – IE Directive[7]	10	150	150
EU-BAT[8]	5	20	50
United States – NSPS/NESHAP[9]	14.5	100	110
United States (BACT)[10]	14.5	22	70
Natural gas[11]	5	35	50
Wind/Solar	0	0	0

1 http://www.tatapower.com/sustainability/pdf/mundra-20-APPENDIX_26-27ENVT-STNDS.pdf

2 http://www.neaspec.org/documents/som17/SOM17_TAP_Annex%20I.pdf; http://www.egcfe.ewg.apec.org/publications/proceedings/EGCFE/AtmosphericEmissionsRegulations_Study_1997.pdf

3 http://www.masterresource.org/2010/11/clean-coal-plant-today/

4 http://www.chinafaqs.org/files/chinainfo/China%20FAQs%20Emission%20Standards%20v1.4_0.pdf; http://switchboard.nrdc.org/blogs/bfinamore/NRDC%20Unofficial%20English%20Summary.docx

5 http://www.chinafaqs.org/files/chinainfo/China%20FAQs%20Emission%20Standards%20v1.4_0.pdf

6 http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2001/L/02001L0080-20011127-en.pdf

7 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:334:0017:0119:EN:PDF

8 http://www.iea.org/media/workshops/2011/cea/Ito.pdf

9 http://www.epa.gov/ttn/oarpg/t3/fr_notices/boilerfinal.pdf

10 See, permits for AES Puerto Rico and Dominion VCHEC.

11 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:334:0017:0119:EN:PDF, SO2 and NOx are for combined cycle units (CCGTs); PM is for natural gas combustion other than CCGTs (no limit is specified for CCGTs); The correct unit for these standards is mg/Nm3 @6% O2 except for natural gas CCGTs (mg/Nm3 @15% O2) and other gas mg/Nm3 @3% O2. However, flue gas volume from natural gas is smaller than that of coal, therefore the same mg/Nm3 limit implies lower emissions.