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Perspective

The Coal Industry's Influence on Health and the Environment

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INTRODUCTION

Coal pollution mitigation, also known as clean coal, refers to a set of systems and technologies aimed at mitigating (reducing harmful or unpleasant chemicals) the health and environmental impact of coal, specifically air pollution from coal-fired power plants and coal burned by heavy industry. Clean coal focuses primarily on removing Sulphur Dioxide (SO₂) and Nitrogen Oxides (NO_x), the two most major gases that create acid rain, as well as particulates that cause visible air pollution, disease and early death. It also minimizes fly ash and radioactive material emissions. Mercury emissions can be cut by 95%. Carbon dioxide emissions from coal are also being sought after.

DESCRIPTION

When coal is burned, it emits a variety of chemicals into the atmosphere, including mercury, lead and other heavy metals, Sulphur Dioxide (SO₂) and Nitrogen Oxides (NO_x), which contribute to acid rain and respiratory illnesses, particulates, which contribute to smog, haze, respiratory illness and lung disease, Carbon Dioxide (CO₂) (the primary greenhouse gas produced by burning fossil fuels) and finally radioactive materials, such as uranium for coal. Coal pollution mitigation is a set of techniques and technologies aimed at reducing the health and environmental impact of coal, namely air pollution from coal-fired power plants and coal used in heavy industry. Specifically targets Sulphur Dioxide (SO₂) and Nitrogen Oxides (NO_x), the two most major gases that generate acid rain, as well as particles that cause visual air pollution, disease and premature death. Flue-gas desulfurization can remove SO₂, while Selective Catalytic Reduction (SCR) can remove NO₂.

Electrostatic precipitators can be used to remove particulates. Wet scrubbers, while less effective, may remove both gases and particles. Reducing fly ash minimizes radioactive material emissions. Mercury emissions can be cut by 95%. Capturing carbon dioxide emissions from coal is a method that separates treats and transports a reasonably pure stream of Carbon Dioxide (CO₂) from industrial sources to a long-term storage facility.

Prior terminology

The term "clean coal" is increasingly being used in the industry to refer to carbon capture and storage, a sophisticated theoretical technique that would remove or greatly reduce carbon dioxide emissions from coal-fired power stations and permanently sequester them. More broadly, the word is now used to cover technologies that aim to improve the efficiency and environmental acceptability of coal extraction, processing and use.

Historically, clean coal was used to refer to clean-burning coal with low levels of impurities before being adopted in this manner, though this term faded as domestic coal usage declined. The phrase first appeared in a speech to mine workers in 1918, referring to coal that was "free of dirt and impurities." Prior to World War II, clean coal (also known as "smokeless coal") primarily referred to anthracite and high-grade bituminous coal, which were used for cooking and home heating.

The phrase clean coal was originally used to refer to technology meant to reduce pollutant emissions related with coal combustion, such as washing coal at the mine. This procedure eliminates part of the sulphur as well as

other pollutants such as pebbles and soil. This makes coal more environmentally friendly and less expensive to transport. The notion of clean coal has lately been expanded to include carbon capture and storage.

Clean coal technology typically solves the atmospheric issues caused by coal combustion. Historically, the primary focus was on SO₂ and NO_x, the two most important gases in the formation of acid rain, as well as particles, which generate visual air pollution and are harmful to human health.

Environmental impact of coal

Clean coal technology is currently a group of technologies being developed in an effort to reduce the negative environmental impact of coal energy generation and to alleviate global climate change. When coal is utilized as a fuel source, the gaseous emissions produced by its thermal decomposition include Sulphur Dioxide (SO₂), Nitrogen Oxides (NO_x), mercury and other chemical byproducts that vary depending on the type of coal used. These emissions have been shown to harm the ecosystem and human health by contributing to acid rain, lung cancer and cardiovascular disease. Consequently, efforts are being made to create clean coal technologies that eliminate or minimize emissions of pollutants into the atmosphere. Chemically washing minerals and impurities out of the coal, gasification (see also IGCC), better technology for treating flue gases to remove pollutants to stricter levels and with greater efficiency, carbon capture and storage technologies to extract carbon dioxide from the flue gas and dewatering lower rank coals (brown coals) to increase the calorific value and, consequently, the efficiency of the conversion into electricity are some of the

methods that would be used to achieve this. There are issues with these technologies' economic feasibility and delivery schedule, as well as possible large hidden costs in terms of harm to society and the environment, removal of carbon and other hazardous materials and disposal costs.

CONCLUSION

The United Nations Intergovernmental Panel (UNIP) on climate change claims that using fossil fuels like coal contributes significantly to global warming. Since coal-fired power generated 26% of the world's electricity in 2004, changing the way coal is used will be necessary to meet the Kyoto protocol's carbon dioxide reduction targets.

Coal, which is mostly used to generate power, is the US's second greatest domestic contributor to carbon dioxide emissions. The public's worry over global warming has resulted in new legislation. In an effort to counter negative perceptions, the coal industry has responded by running advertisements touting clean coal, claiming more than \$50 billion in development and deployment of "traditional" clean coal technologies over the last 30 years and promising \$500 million in carbon capture and storage research and development.

Clean coal technology is still seen as more environmentally beneficial than it is and the name "clean coal" has been cited as an example of "greenwashing." The Environmental Protection Agency (EPA) states, "despite the industry's hype, there's no such thing as 'clean coal.' But new technologies and policies can help reduce coal plants' deadly emissions."