COAL

Continued Commitment to a Clean Environment

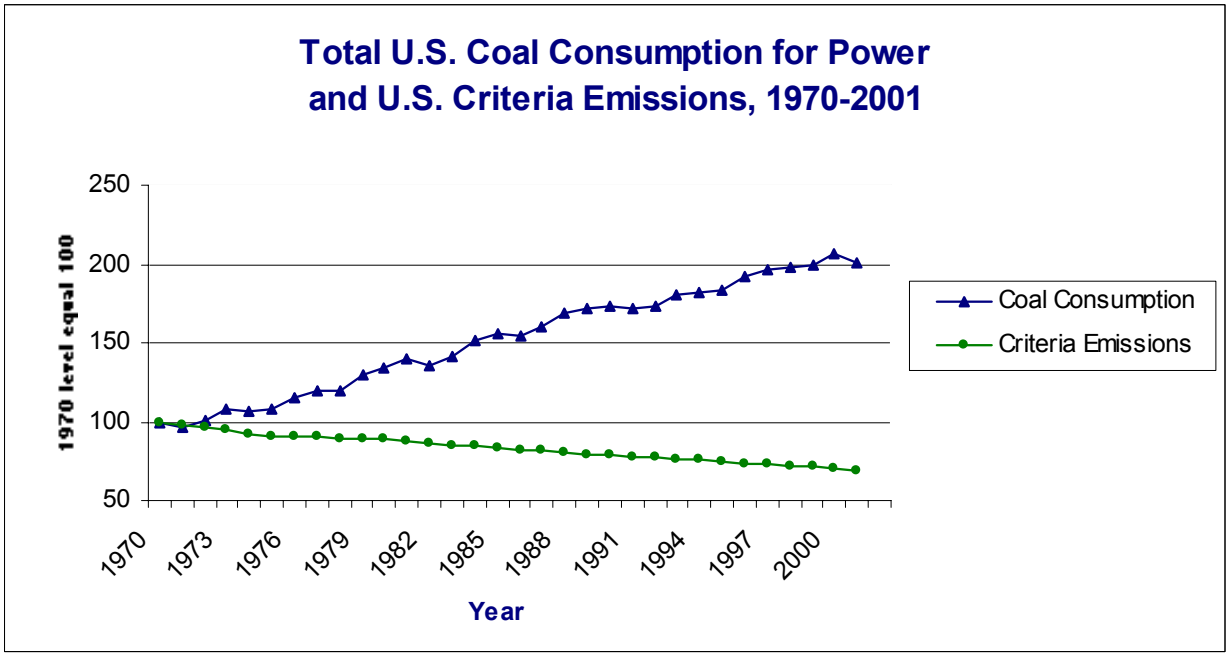
As a public advisory committee to the Secretary of Energy initially chartered in 1985, The National Coal Council has compiled over 30 reports at the Secretary's request on numerous issues affecting coal and U.S. energy policy. The factual information in this paper, and the conclusions based thereon, are drawn from these studies and the documents used to compile them, all of which have been submitted to the Secretary of Energy.

Coal Stays Committed to a Clean Environment

Over the past three decades, U.S. industry has invested over $50 billion in cutting edge clean coal and environmental technologies.

This investment has paid off: Research and development efforts produced technology advances that continue to reduce the level of total U.S. criteria pollutant emissions which include carbon monoxide, lead, nitrogen oxides, ozone, particulate matter, and sulfur dioxide. Comparing the decrease in total U.S. criteria emissions to the increase in U.S. coal use shows that the rate of emissions is only one-third of what it was in 1970 – a 70 percent improvement in environmental efficiency.

The Department of Energy's programs have played a major part of this success story. Begun in 1986, DOE's Clean Coal Technology Program (CCTP) was an ambitious government-industry



initiative to develop environmental solutions for the Nation's abundant coal resources. Thirty-eight projects became part of the CCTP which leveraged $1.8 billion of federal R&D resources by $3.5 billion in industry and state funding. The commercial scale projects have included sulfur dioxide (SO2) control systems, nitrogen oxides (NOx) control technologies, fluidized bed combustion, gasification, and advanced coal processing technologies. These technologies have allowed the U.S.'s reliance on coal to continue while cutting multiple pollutant emission levels by anywhere from 30 percent to 95 percent.

This commitment continues as coal research and development addresses future environmental challenges such as global climate change. Through a partnership with the U.S. Department of Energy, the coal industry supports the "Vision 21" program to reduce emissions to near zero by 2020. In addition, DOE last year began the Clean Coal Power Initiative, the next-generation government-industry partnership that will focus on enhancing the reliability and environmental performance of coal-fired power plants. Research will include new environmental challenges, including trace impurities in coal such as mercury. Commercially available technology that uniformly controls mercury emissions to the limits expected to be included in current federal initiatives needs further development. Information on all of the above is available from the National Energy Technology Laboratory (NETL) at www.netl.doe.gov .

Mercury Emissions and Public Health

Mercury is a naturally occurring metal in the Earth's crust that is released into the environment as a result of both natural and human activities. At present, mercury in the atmosphere is well below any level that would be considered a potential health concern. There are certain studies that suggest that ingestion of mercury can be toxic at high levels. However, there are many scientific uncertainties about what level of mercury exposure is harmful to public health. Significant efforts have been made over the past decade to reduce mercury amounts reaching waterways.

Current research and information do not indicate a direct link between electric utility mercury emissions and the species of mercury that affects public health, and it is not clear how much of the mercury deposited in the U.S. is directly attributable to domestic combustion sources. Nevertheless, electricity generators are making a concerted effort to reduce mercury emissions.

Mercury in the atmosphere is a global issue. It results both from natural and human activities. Emissions of mercury from U.S. coal-based generation plants represent only a small fraction of

mercury in the environment. Trace amounts of mercury are present in coal, and when electric utilities burn coal to generate electricity, mercury is released. In 2000, the total mercury content of the coal used by power plants was approximately 75 tons. Because of environmental control equipment, total mercury emissions were 45 tons -- approximately a 40% reduction relative to "as received" coal.

Future Potential Mercury Regulation

On December 14, 2000, EPA announced its intent to regulate emissions of mercury (and other toxics) from coal and oil-based electric utility steam generating power plants. Unfortunately, the existing process results in an inflexible command-and-control approach to regulation. The agency will likely propose regulations by December 2003, promulgate a final rule by December 2004, and expect compliance by December 2007 unless Congress would authorize a more flexible, market-based approach. Additional potential regulations could come from individual state or local jurisdictions, or Federal legislation.

Besides the current EPA regulatory process, there are numerous legislative proposals on mercury being debated. These proposals are being discussed at the federal, state, and local levels. It is not clear what the final result will be.

Current Technology Issues and Status

Mercury control is the subject of ongoing R&D and demonstration initiatives today. The U.S. government should provide greater support for these initiatives and provide for lessons learned to be factored into regulatory policy.

Injection of powdered activated carbon (PAC) represents one of the technological approaches for reducing mercury emissions from coal-fired boilers. Full-scale testing at three plants suggests that PAC injection may be capable of reducing mercury by 50-90% from some coals used in units with electrostatic precipitators (90% of the existing fleet of coal-fired boilers) and up to 90% for units with fabric filters (10% of the existing fleet). Mercury emissions are also reduced at units equipped with flue gas desulfurization (FGD) equipment as well (20% of the existing fleet). These reductions vary significantly depending on fuel characteristics (such as sulfur, chlorine, and mercury content), plant configuration and operating conditions. To further mature this technology to a commercial stage, additional short-term field tests and long-term demonstrations must be conducted at a number of plants representing a range of plant

designs, operating characteristics and fuel types. The control of mercury emissions needs to be based on comprehensive research that fully identifies the capabilities of any removal technologies under development and their applicability to coals with different characteristics as well as different plant configurations.

Activated carbon impacts the ability to sell coal combustion byproducts. Unless the carbon is removed, large quantities of fly ash may require disposal rather than being sold for commercial use. Any acceptable technology must resolve this issue so that fly ash use continues to increase. The Integrated (multi-pollutant) environmental controls being developed avoid these problems because they do not use carbon. However, they are in the early stages of development and need support to complete their development and to confirm performance and cost-competitiveness.

Additional mercury removal can be achieved with some coals by existing coal cleaning plants. Also, new processes that could be retrofitted at coal cleaning plants to make further mercury reductions are in development. Removal of mercury from coal prior to combustion needs additional investigation to determine the potential benefits of avoiding other more costly technology options.

Mercury control methods will be highly dependent on power plant design and operating characteristics and type of coal used. Since potential mercury emission reductions are unique to each unit, cost factors may vary considerably based on site-specific considerations.

Electricity generators have made and will continue to make significant reductions in emissions. The most cost-effective regulations that will maximize public health protection and have the least impact on reliability of electricity production will include market-based mechanisms, such as emissions banking and trading, with achievable reduction targets and time schedules. A well-crafted, market-based approach can improve regulatory certainty, thereby increasing investment in new, more efficient generation technologies.

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