

Chem-Mod Fact Sheet

Chem-Mod LLC, based in Rolling Meadows, Illinois, is a private environmental services company specializing in advanced, multi-pollutant control technologies. Chem-Mod's principal product, *The Chem-Mod™ Solution*, offers a proven, cost-effective and viable solution for coal-fired power plants seeking to meet and exceed regulatory requirements, and improve environmental stewardship by reducing emissions of mercury, sulfur dioxide, nitrogen oxide and other pollutants into the air with minimal impacts to operations.

What is The Chem-Mod™ Solution?

The Chem-Mod™ Solution is a system that has the ability to reduce significantly mercury, sulfur dioxide and nitrogen oxide emissions into the air. *The Chem-Mod™ Solution* also is proven to reduce air emissions of chloride, arsenic and other heavy metals, all with a fraction of the substantial capital cost commitments other air emissions control technologies require. At the same time, *The Chem-Mod™ Solution* delivers a minimal impact on power plant operations.

Tested and Proven

The Chem-Mod™ Solution has a track record built on more than 10 years of pilot- and full-scale testing and commercial operations, much of which utilized the facilities and expertise of the [Energy & Environment Research Center](#) (EERC) at the University of North Dakota, which was contracted by ChemMod to perform testing.

Through testing conducted by EERC, *The Chem-Mod™ Solution* was proven to achieve significant reductions in coal-fired power plant air pollutant emissions in full-scale commercial tests:

Testing Site	Timing of Tests	Emission Reduc		
		Mercury (%)	Sulfur (%)	Nitrogen Oxide (%)
Commercial Test #1	October 2005	98	40	21
Commercial Test #2	November 2005	90	75	10
Commercial Test #3	December 2005	86	48	18
Commercial Test #4	August 2006	87	68	31
Commercial Test #5	October 2006	98	65	13

Chem-Mod's test results were overseen and measured by EERC personnel during five individual tests conducted at four commercial power plants. These results are the maximum air emissions reductions that were recorded during the commercial testing period, as reflected in the listed reductions for mercury (Hg), sulfur dioxide (SO₂) and nitrogen oxide (NO_x).

The level of pollutant reduction achieved at a particular plant using *The Chem-Mod™ Solution* will vary depending on the type of coal burned and other operating conditions.

Cost-Effective and Customizable

The Chem-Mod™ Solution is less costly to implement than other existing mercury and sulfur control technologies. Equipment installation costs typically range from \$2 million to \$8 million, depending on the size and complexity of the related coal-fired power plant. Due to *The Chem-Mod™ Solution's* ability to reduce air emissions, plant operations that meet the federal government's threshold for qualified air

pollutant emissions reduction may be eligible to receive a tax benefit, currently approximately \$6.60 per ton (please consult your tax advisor).

When used with some coals, *The Chem-Mod™ Solution* can reduce boiler [slagging](#) by forming more friable deposits that are more easily removed than the slag formed by normal coal. This may result in improved efficiency and can allow for longer operating periods without the need for extensive outages. And because *The Chem-Mod™ Solution* can be customized for each plant on a case-by-case basis, it carries minimal impact on plant operations and should not result in adverse maintenance costs. *The Chem-Mod™ Solution* can be implemented and operational at a coal-fired power plant within 30 days once the necessary equipment has been installed. Power plants currently using [sorbents](#) during their coal combustion process may already have the required storage equipment installed at their facilities and would be in a position to receive almost immediate air emissions benefits from implementing *The Chem-Mod™ Solution*.

The system's main byproduct is a high-quality essentially non-leachable [fly ash](#) based on Toxicity Characteristic Leaching Procedure ([TCLP](#)) test results. The fly ash has been proven to increase the strength of concrete mixes versus standard cement and fly ash (Type C) mixes. This fly ash can replace between 30 and 50 percent of Portland cement when making concrete, creating a more reliable revenue stream for plant operators who choose to sell the byproduct.

Emissions Control and Environmental Benefits

In addition to providing proven levels of air emissions reduction, *The Chem-Mod™ Solution* works to reduce the environmental impact of coal from boiler to byproduct. By increasing furnace efficiency, *The Chem-Mod™ Solution* helps reduce the quantities of coal burned. Moreover, because the produced fly ash can be recycled for use in making concrete, *The Chem-Mod™ Solution* allows plants to bypass landfilling the ash byproduct that is used in concrete. The use of more fly ash in concrete also reduces the production of greenhouse gases when compared to standard Portland cement mixes.

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