

## PUBLIC ABSTRACT

Applicant (primary) name: **Wisconsin Electric Power Company**

Applicant's address: **333 W. Everett St., Milwaukee, WI 53203**

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Team Members **ADA-ES  
Cummins & Barnard  
Environmental Elements Corp.  
EPRI**

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Proposal Title: **“TOXECON Retrofit for Mercury and Multi-Pollutant Control on Three 90 MW Coal-Fired Boilers”**

Commercial Application:  New Facilities  Existing Facilities

Technology Type: **Fossil Energy R&D, Air Pollution Control from Coal-Fired Power Plants**

Total Estimated Cost: **\$49,536,624**

Estimated DOE Share: **\$24,768,312**

Estimated Private Share: **\$24,768,312**

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Anticipated Project Sites: **Wisconsin Electric Power Company  
Presque Isle Power Plant  
2701 N. Lakeshore Blvd.  
Marquette, MI 49855-2017**

Type of coal to be used: **Powder River Basin**

Size or scale of project: **270 MW Total (Unit 7 = 90 MW, Unit 8 = 90 MW, Unit 9 = 90 MW net)**

Duration of proposed project: **60 months**

**PRIMARY CONTACT:**

For additional information,  
Interested parties should contact:

**Richard Johnson**  
**Principal Engineer Air Quality**  
**Wisconsin Electric Power Company**  
**333 W. Everett St.**  
**Milwaukee, WI 53203**  
**(414) 221-4234**  
**dick.johnson@we-energies.com**

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Alternative Contact:

**Jean Bustard**  
**Executive Vice President**  
**ADA Environmental Solutions, LLC**  
**8100 SouthPark Way, B-2**  
**Littleton, CO 80120**  
**(303) 734-1727**  
**jeanb@adaes.com**

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## **Brief description of project:**

In December 2000 EPA announced their intent to regulate mercury emissions from the nations coal-fired power plants. Draft legislation indicates that new regulations may require removal efficiencies as low as 50% or as high as 90% from existing sources. The most mature retrofit technology available today for meeting 90% mercury control of all species of mercury is injecting powdered activated carbon (PAC) before a fabric filter. It is also highly desirable that coal utilization byproducts (CUBs) are beneficially used, thereby reducing waste products. TOXECON is an EPRI patented process where sorbents for mercury and other air toxic emissions control are injected into a pulse-jet baghouse that is installed downstream of the existing particulate control device. The TOXECON configuration allows for separate treatment or disposal of the ash collected in the primary particulate control device.

We Energies proposes to design, install, evaluate and operate TOXECON as an integrated emissions control system for mercury and particulate matter from three 90 MW units at the Presque Isle Power Plant located in Marquette, Michigan. . The proposed project will also investigate the capabilities of the proposed system for SO<sub>2</sub> and NO<sub>x</sub> control. The primary attribute of TOXECON is that it potentially represents the low-cost option for greater than 80% mercury control for coal-fired power plants, and may be the primary mercury control choice for western coals, and the only choice for units with hot-side electrostatic precipitators. The approach used in this program of using one baghouse structure for three small boilers further enhances the cost effectiveness by taking advantage of economies of scale. This approach is also applicable to a significant number of existing coal fired units in the U.S. Twenty-six percent (26%) of U.S. units are 100 MW or smaller, and 53% of the units are 200 MW or smaller. Using TOXECON as a trim technology for other primary pollutants, SO<sub>2</sub> and NO<sub>x</sub>, further enhances its attractiveness for improved environmental control.

The overall objective of this project is to demonstrate TOXECON for air toxic control on at We Energies Presque Isle Power Plant coal-fired boilers Units 7, 8, and 9.

Specific objectives of the project are:

- Achieve at least 90% mercury removal;
- Increase collection efficiency of PM, especially during upset conditions;
- Determine viability of sodium injection for up to 70% SO<sub>2</sub> control;
- Determine capability of sodium injection for trim control of NO<sub>x</sub>;
- Recover at least 90% of mercury captured in the ash;
- Minimize waste disposal with a target of 100% utilization;
- Progress mercury CEMs into a reliable mercury measuring system; and
- Successfully integrate the entire system so that all subsystems are operating at peak performance.

The scope of work covers five Phases over a five year long period. Phase 1 will be completed in the first quarter of 2003. Phase 2 covers a 15-month time period and involves final design and engineering assessment of the various subsystems. Phase 3 is devoted to installation and construction with start-up scheduled for fall 2004. Demonstration activities will occur

during the three-year Phase 4 period. System operation, performance, optimization, and integration functions will be evaluated. Phase 5 is reserved for reporting and project management functions.

As a result of the project, there will be a significant reduction in the rate of air emissions from Presque Isle Units 7, 8 and 9 and progress will be made to establish the design criteria for one of the most promising mercury control retrofit technologies available today. The project will have a positive impact on the future of the station and will provide the power generating industry with important design and operating data on TOXECON. It is expected that the equipment installation phase of this project will be completed by fall of 2004.