

Baltimore County Public Schools Water Treatment Program

Excellence in Environmental Engineering and Science Conference



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Project Partners

- Green and Sustainable Services, LLC
 - Founded in 2008
 - Identifies technical approaches, processes, and solutions that are environmentally responsible and resource efficient
 - Woman and disadvantage owned small business
- Chem-Aqua, Inc.
 - Founded in 1919
 - Global leader in water treatment solutions
 - Wholly owned subsidiary of NCH Corporation
- Baltimore County Public Schools
 - 26th largest school district in the United States
 - Provides heating and cooling for 107,000 students annually



Project Facts: Water

- Water is a precious natural resource
- Life cannot be sustained without it
- The water used in boilers, cooling towers, and process systems must be treated to prevent waterside problems including
 - Scale
 - Corrosion
 - Microbiological Fouling



Project Challenges

- Obtaining good results from a water treatment program is a complex task when dealing with multiple locations
- To be successful, the program must consider the differences from site to site in
 - Water quality
 - Heating and cooling system design
 - Operating conditions
 - Maintenance practices



Water Treatment Team

- Chem-Aqua and Green and Sustainable Services (GSS) have implemented the HandiChem™ Solid Water Treatment System at Baltimore County Public Schools (BCPS)
- GSS' role includes
 - Quality control
 - Quality assurance
 - Site assessments and report/test review
- Chem-Aqua's role includes
 - Primary contractor
 - Chemical and equipment provider
 - Onsite services, tests, and reports



Liquid vs. Solid Water Treatment

- With a traditional liquid water treatment program
 - Chemicals are packaged in 55 gallon drums
 - Splash and spill concerns must be considered
 - Drum disposal concerns must be handled



Liquid vs. Solid Water Treatment

- With the HandiChem™ System
 - Chemicals are packaged as solid concentrates in one-gallon recyclable plastic bottles
 - Solid concentrates are dissolved as needed into a small plastic reservoir (reducing splash and spill concerns versus liquids)
 - Drum disposal concerns are eliminated



HandiChem™ Benefits

- The HandiChem System addresses green building goals and objectives
 - Reduces splash and spill concerns versus liquids
 - Contains lower levels of sodium hydroxide than liquids
 - Eliminates drum handling, storage, and disposal
 - Reduces packaging requirements and disposal



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*Registered trademark of Chem-Aqua, Inc.



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HandiChem™ Benefits

- The HandiChem System helps reduce a building's overall carbon footprint
- Using a solid water treatment program
 - Is like eliminating the exhaust of 52,000 automobiles annually (replacing all liquid water treatment products with the solid equivalent)
 - Reduces the weight of product shipment
 - Provides fuel savings of 2.5 gallons of diesel fuel (for delivering a 50 pound case of HandiChem solid concentrates versus a 55 gallon drum)



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HandiChem™ System at BCPS

- Customized water treatment program for boilers, cooling towers, and closed loop systems
- Scale inhibitors, corrosion inhibitors, and biocides
- Solid product is blended to reduce hazardous chemicals and eliminate water as a transporting agent
- Solid concentrates are dissolved as needed onsite
- Once empty, the one-gallon plastic bottles are rinsed and recycled, which eliminates drum disposal concerns for the school district



HandiChem™ System at BCPS

- Goals and Objectives
 - Protect BCPS' water systems (avoid scale, corrosion, and microbiological fouling)
 - Reduce fresh water usage and wastewater discharge
 - Provide economic and efficient water treatment



HandiChem™ Benefits at BCPS

- The HandiChem System is a sustainable solution that has helped provide BCPS with economic results
 - Maximized cycles of concentration
 - Conserved water by reducing makeup water usage
 - Decreased chemical consumption
 - Reduced wastewater cost by decreasing the amount of blowdown sent to the municipal sewer system
 - Increased energy efficiency
 - Reduced shipping costs for product delivery
 - Minimized space needed for chemical storage



Safety at BCPS

- With the HandiChem™ System, BCPS maintains neater and cleaner mechanical rooms, which decreases hazards for their onsite employees
 - Reduced splash and spill concerns versus liquids
 - Drum handling, storage, and disposal are eliminated
 - Reduced potential for injury as product loading only requires handling a single 10 to 15 pound container



ROI at BCPS

- The HandiChem™ System was also used at the University of Maryland Medical Center
 - ROI of 993% over two years
 - Payback period of one month
- BCPS expects a favorable ROI for the HandiChem System at their facilities
 - The program must be in place for 12 to 18 months to generate any actual savings



Summary

- BCPS acknowledges Chem-Aqua and GSS have provided a solid water treatment program that is
 - Financially sound
 - Technically advanced
 - Safe and reliable
 - Environmentally sustainable

