



U.S. ARMY CHEMICAL MATERIALS AGENCY

Wastewater treatment using wet air oxidation

After more than eight years of technology evaluation and testing, the U.S. Army Non-Stockpile Chemical Materiel Project (NSCMP) chose wet air oxidation as the best process to treat wastewater produced from destroying two chemical agent compounds stored at Pine Bluff Arsenal, Ark. These two chemicals, DF (a component of sarin) and QL (a component of VX nerve agent), were neutralized at the Pine Bluff Binary Destruction Facility in 2005 and 2006. The wastewater resulting from this process, called neutralent, is 70 to 80 percent water and contains byproducts requiring additional treatment before disposal.

Shaw Environmental, Inc., NSCMP's waste management support contractor, proposed using wet air oxidation for this additional treatment step because of its proven ability to destroy the hazardous byproducts, including compounds banned by the Chemical Weapons Convention (CWC). Texas Molecular, LLC, a licensed disposal facility experienced in handling similar materials, houses and operates the wet air oxidation unit.

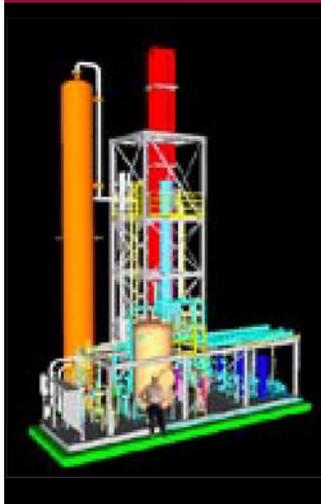
About wet air oxidation

Wet air oxidation, an established technology, has more than 50 years of commercial history. Originally developed in the 1930s as a process to produce artificial vanilla, it was patented as a waste treatment process in 1950. Since then, it has been used to treat wastewater from refineries and acidic material from industrial plants as well as for pretreating sewage sludge.

USFilter/Zimpro, a manufacturing and wastewater treatment systems company in Rothschild, Wisc., built a modular wet air oxidation unit specifically designed for processing the NSCMP neutralent. NSCMP based the unit's design on an extensive testing program conducted since 2001.

The hazardous byproducts in the neutralent will be destroyed in a closed vessel using heat and the oxygen in air. The process operates at 572 degrees Fahrenheit and 2,400 pounds per-square-inch pressure, similar to a pressure cooker. Liquid from this

Testing wet air oxidation technology for neutralent breakdown



NSCMP is committed to identifying and evaluating alternative technologies for treatment and disposal of its wastes. NSCMP evaluated more than 100 technologies and tested nine using similar wastes and actual NSCMP neutralent wastes. The testing demonstrated that wet air oxidation can achieve greater than 99.9 percent destruction of the organic or hazardous content of all the wastes

tested. Two independent technology evaluation panels identified wet air oxidation technology as an effective treatment process for NSCMP neutralents. The panels consisted of technical experts as well as citizen members familiar with and active in the chemical weapons destruction programs. The panels based their conclusions on the test results and input from the National Research Council.

For more information, contact the CMA Public Affairs Office at (410) 436-3629 (800) 488-0648

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Wastewater treatment using wet air oxidation (continued)

treatment process will be treated further at a commercial waste treatment facility. Any gas resulting from the process also will be treated. The unit will be capable of processing the total volume of NSCMP's neutralent over an eight-month period. Following neutralent processing, the wet air oxidation unit will be cleaned and dismantled or may be sold to the commercial treatment facility for use on other wastes. To learn more about wet air oxidation technology, visit USFilter/Zimpro's Web site at www.zimpro.com/wetox.

NSCMP disposes of chemical materiel in a safe, environmentally sound and cost-effective manner, ensuring compliance with the CWC. This does not include items part of the Army's chemical weapons stockpile

and may include chemical ingredients and equipment used to produce some types of weapons, buried items recovered from military ranges and test kits once used to determine exposure to chemical weapons. The project emphasizes the importance of engaging a spectrum of individuals and organizations involved in or potentially affected by disposal of chemical materiel and offers opportunities for public involvement, including small-group and other public meetings and workshops.