



Preserving tomorrow's world... today

ARCTECH, Inc.
14100 Park Meadow Drive
Chantilly, VA U.S.A. 20151-2217
Phone: (703) 222-0280 FAX: (703) 222-0299
www.arctech.com

Actodemil®

The Solution to Munitions Waste Disposition

Permanent and irreversible destruction of energetics
Applicable to bulk, wastewaters, soils and decon
Recycles energetics to safe fertilizer
Approved by US EPA as a recycling technology
Non-Incineration and Resource recovery technology
Environmentally friendly and lower costs than thermal

FOR IMMEDIATE PRESS RELEASE

November 10, 2010

ARCTECH, Inc. Announces Innovative and Sustainable Actodemil® Technology Now Available for Remediation of Explosives-Contaminated Soils

ARCTECH, Inc. announces the applicability of the proven and established Actodemil® technology now for remediation of explosives-contaminated soils. The effectiveness of the Actodemil® technology has been previously demonstrated on a number of different bulk propellants, high explosives and other energetics including NC, NG, NQ, TNT, DNT, RDX, HMX, and PETN. The Actodemil® technology system has been accepted by the U.S. Army as a recovery, recycle, and reuse (R3) technology. The end fertilizer product from the process has been approved by the U.S. Environmental Protection Agency (EPA) as a non-hazardous product. The proven and established Actodemil® technology is now available as an effective and sustainable process for remediating explosives-contaminated soils. The Actodemil® technology is covered under an U.S. Patent Number 5,538,530 dated July 23 1996 and assigned to ARCTECH, Inc.

The Actodemil® technology for treatment of explosives-contaminated soils is a land-farming process that consists of simply spraying proprietary a-HAX™ reactant and working it into the contaminated soils. Unlike traditional methods of composting and incineration the Actodemil® technology offers a simpler, more effective and a significantly less expensive approach.

Composting is labor intensive and treatment periods can range from 60 to 80 days. In many cases, the treated soils may still be hazardous. Onsite disposal can be a problem because of the large volumes of treated material that have been generated. Incineration is expensive. The equipment costs are high and the need for stringent emission controls can increase the equipment costs even higher. Permitting of an incinerator unit can be very difficult and time consuming.

Recently, ARCTECH, Inc. undertook a treatability test to demonstrate effectiveness of the Actodemil® technology for treatment of explosive compounds in soils. Soil samples were obtained from a former Ordnance Manufacturing facility. The purpose of the tests were to demonstrate that the Actodemil® technology can effectively treat the contaminants of concern (COCs) to the remedial goals (RGs). In addition, the test was also aimed to demonstrate that lead in the soils is treated to the regulatory mandated concentration of 5 mg/L (TCLP).

The test results showed that:

- All explosives compounds were reduced to the Remedial goals (RGs) including TNT, DNTs, and amino DNTs. (TNT was reduced from an initial concentration of 1,250 ppm to less than 1 ppm)
- Time period for remediation was only 7 days
- Lead in the soils was reduced to the regulatory mandated levels
- Treated soils are non-hazardous and can be put back onto the ground.

Completed Actodemil® Projects

- DAC/McAAP – conducted production-scale operations to recycle different propellants. Recycled fertilizer met regulatory requirements for land application and sold to local farmers.
- Dyno Nobel – Demonstrated treatment of explosives-contaminated wastes.
- Hercules Corp – Conducted project to successfully destroy and recycle Nitrocellulose (NC) Fines.
- USACE TAC – Deployed a Production-Scale Facility to decontaminate and demilitarize empty projs from melt-out operations.
- NAVEODTECHDIV – Conducted project for successful recycling of high explosives.
- Hawthorne AD – Actodemil® used to recycle single, double, and triple base propellants. Resultant fertilizer provided to local farmers.
- Pentarch Inc/Australia – Conducted project to successfully recycle different propellants.
- Israel MOD - Conducted project to successfully recycle different propellants.
- Iowa / U.S. Army – Actodemil® removed depleted Uranium from explosive wastes

Permanent and irreversible destruction of energetics
Applicable to bulk, wastewaters, soils and decon
Recycles energetics to safe Fertilizer
Approved by US EPA as a recycling technology
Non-Incineration and Resource recovery technology
Environmentally friendly and lower costs than thermal

Actodemil® Technology Advantages:

- All of the explosives compounds of concern are treated to meet the RGs for the various compounds.
- Soils from the Actodemil® technology process can be put back onto the ground eliminating need for offsite disposal.
- No specialized equipment is required. After soils have been excavated and windrows constructed the a-HAX™ reactant can be worked into the soils using standard equipment used in the agricultural industry.
- It is a one-step, one-technology approach that is effective for soils contaminated with a variety of explosive compounds and for heavy metals such as lead.
- With use of the Actodemil® technology the final treated soils contains valuable plant nutrients such as potassium, nitrogen and iron, and organic humic acid which will promote plant growth.
- Cost of Actodemil® technology for explosives-soils treatment ranges from \$150 to \$200 per CY, significantly less than composting (\$400 to \$450 per CY) and incineration (\$700 to \$850 per CY)

At a number of Ordnance manufacturing facilities and firing ranges in the US and around the world there is a significant quantity of soils that are contaminated with explosive compounds such as TNT, RDX, and NC. This contamination has resulted from discharge of untreated wastewaters from manufacturing operations into unlined settling/drainage ponds and from pistol and rifle firing operations.

The explosives compounds such as TNT, RDX and NC are persistent in the soils and pose serious problems to human health and the environment. The presence of NC poses both a safety and ecological hazard. Treatment of these contaminated soils should incorporate the complete and irreversible destruction of the explosive compounds. The Actodemil® technology now offers an effective and sustainable way to accomplish the goal.

ARCTECH, Inc. is a diversified company that provides technologies, services and products to meet growing needs of clean energy and for preserving the environment. The entrepreneurial scientists and engineers at ARCTECH have pioneered the use of vast resources of coal and coal-derived humic acid products such as actosol® fertilizer; HUMASORB®, a multipurpose contaminant adsorber; Actodemil®, described herein for cost effective disposal of munition; and an overall encompassing MicGAS™ technology for production of clean energy while reducing the build up of greenhouse CO₂ emissions. For additional information about our outside the box solutions, please visit our website: www.arctech.com.

For additional information, please contact Mr. Nand Kaushik at (703) 222-0280 or nkaushik@arctech.com.