UXO CORROSION

Unexploded Ordnance Corrosion

The U.S. Army Environmental Command (USAEC) leads and executes environmental programs and provides environmental expertise that enables Army training, operations, acquisition and sustainable military communities. USAEC supports the Army's mission of readiness and training by consistently integrating environmental compliance into all aspects of base operations; and promoting the well-being of Soldiers and Family members, civilian employees, and citizens of neighboring communities. Although USAEC's programs vary in subject matter and scope, each program is dedicated to furthering the Army's mission through environmental sustainability.

Testing and training operations using exploding ordnance continue to play a key role in maintaining the readiness of the warfighter. A small percentage of the rounds used in these operations malfunction, resulting in unexploded ordnance (UXO). The U.S. Army has a growing need to respond to regulatory questions about the environmental impact of UXO in and around firing ranges, to ensure minimal environmental restrictions imposed on training military personnel.

The U.S. Army Environmental Command (USAEC), in collaboration with the University of Louisiana at Lafayette, Praxis Environmental Technologies, the Naval Research Laboratory (NRL) and the U.S. Army Corps of Engineers (USACE), managed a program to address UXO corrosion on military training lands. This program provided installation range managers with tools to evaluate the potential risk from UXO corrosion and the release of munitions-related compounds on their installations. Data generated from the UXO corrosion program supports the U.S. Army and installations, nationwide, in assessing the environmental impact of weapons firing as part of testing and training operations.

Initially, data was gathered to determine the likelihood of UXO degrading to the point of perforation. The work addressed if and how conventional UXO on military test ranges corrodes over time. This provided the parameters, assumptions and constraints of the modeling techniques used to develop the UXO Corrosion Model, a user-friendly computer tool that provides

DoD EPA DOE SERDP
Strategic Environmental Research and Development Program

For more information

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the number of years to perforation for a user-specified thickness of metal. As part of this program, soil samples containing concentrations of explosives were collected from beneath 161 ordnance items. In addition, UXO was collected from 14 sites where the UXO age is well-constrained and a variety of environmental conditions exist such as soil type, aqueous conditions and pH.

The UXO Corrosion Model, a comprehensive database, and a final modeling report for this program were submitted to SERDP in April 2004. The final modeling report will include several release scenarios to increase the understanding of UXO range risk.