Southwest Research Institute®

KEYWORDS

Weapons of Mass Destruction

WMD

Biological Agents

Chemical Agents

Agent Neutralization

High-Temperature Incendiary

Thermobaric Weapons

Bioassay

Explosives Testing

Weapons Effects

Anti-Terrorist

Counter-Terrorism

Arena Tests

Agent Release

Collateral Effects

Homeland Security

WEAPONS OF MASS DESTRUCTION (WMD) COUNTERMEASURES AND NEUTRALIZATION

The Engineering Dynamics Department and the Chemistry and Chemical Engineering Division of Southwest Research Institute® (SwRI®) conduct fundamental and applied research to investigate the effects of various weapon concepts to neutralize WMD chemical and biological agents. This research includes laboratory analyses (up to surety and biolevel 4 if required) and field testing of weapons concepts using simulants. Several unique test facilities have been designed, fabricated and utilized to accurately measure the effectiveness of different concepts. Analyses include environmental measurements of pressure and temperature (at very high rates) and bioassay of confined and vented effluent. Arena and range tests have been conducted with a wide variety of explosive, fragmenting, and high-temperature weapon concepts to evaluate agent release and collateral effects.

Capabilities

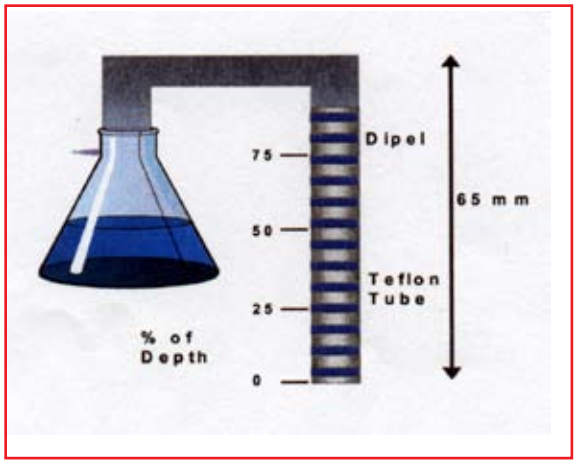
- High explosives testing
- High-speed digital imaging of impacts up to 100,000,000 frames per second
- Nicolet Multipro© high-speed data acquisition up to 100 MHz
- Test fixture fabrication, machine shops, welding
- Institute ISO-compliant QA
- Computer simulations—impact, explosions, fluid flow, particle motion, temperature fields (CTH, EPIC, LS-DYNA, FLOW 3D, CHEETAH)
- Material identification, bioassay, material preparation
- Extensive chemistry laboratories

Experience

- US Air Force Agent Defeat Program (5 years)
- US Air Force Weapons Effectiveness Evaluation Program
- US Air Force WMD Agent Release Program
- Thermobaric weapons evaluation program
- WMD sensor evaluation programs

Facilities

- Ballistics ranges with low-speed (<1000 ft/s) to high-speed (>6000 ft/s) gun systems
- High explosives testing ranges
- Fully equipped instrumentation trailers (one mobile)
- Highly instrumented blast chambers (up to 750 ft^3 in volume)
- Chemistry bioassay laboratories
- Mass spectrometers
- Malvern and Doppler laser-based particle sizing instrumentation



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Laboratory assessment of bio-agent kill mechanism


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Test personnel wearing protective clothing and equipment during experiments involving simulated chemical and biological weapon materials in a small-scale blast test facility

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Thermobaric device to be tested in a blast chamber against simulated biological agent

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High-speed photographs of Agent Defeat weapon field evaluation

Southwest Research Institute® is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies more than 1,200 acres in San Antonio, Texas, and provides nearly two million square feet of laboratories, test facilities, workshops and offices for more than 3,000 employees who perform contract work for industry and government clients.

We welcome your inquiries.

For additional information, please contact:

Scott A. Mullin, Manager
Ballistics and Explosives Engineering
(210) 522-2340
scott.mullin@swri.org

Donald J. Grosch, Manager
Ballistics and Explosives Range Operations
(210) 522-3176
donald.grosch@swri.org

Engineering Dynamics Department
Mechanical and Materials Engineering Division
Southwest Research Institute
6220 Culebra Road • P.O. Drawer 28510
San Antonio, Texas 78228-0510

Southwest Research Institute Website:
www.swri.org
Engineering Dynamics Department Website:
www.engdyn.org

18-0140 JCN 225527