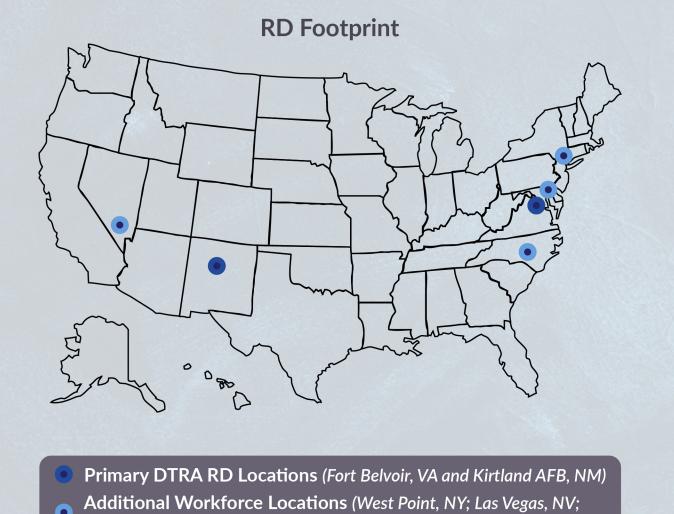
DTRA's Research & Development (RD) Directorate

generates customer focused, threat informed, trusted technical solutions to deter and counter critical WMD problems for today and tomorrow.

RD executes its mission by delivering innovative solutions that meet current mission requirements in a timely manner and by anticipating and preparing for emerging and future threats with a balance of advanced technology development and fundamental & applied research across the portfolio.



Fort Liberty, NC; and Edgewood/Aberdeen Proving Ground, MD)

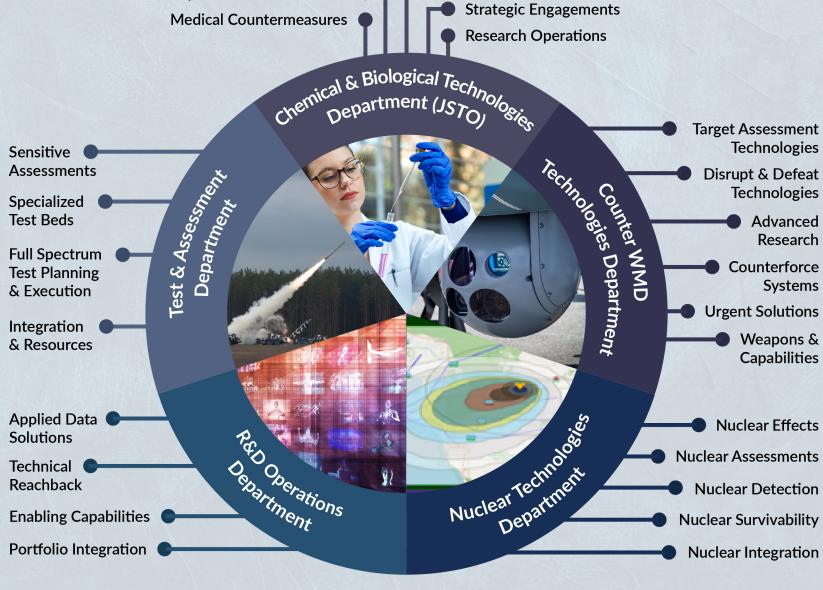




RD Organization

Physical Countermeasures

Enabling S&T



DTRA RD Impacts

2014 - Syria Chemical Weapons Crisis: Developed the Field Deployable Hydrolysis System which is used to eliminate 600 metric tons of declared chemical weapons

- 2017 Hurricane Harvey: Fielded the initial WebTak interface to the National **Guard Bureau to coordinate** personnel and materials through secure map-based information sharing
- 2019 Stryker Nuclear Biological Chemical Reconnaissance Vehicle: Transitioned chemical and biological sensors, remote network sensors, and isotope identification capabilities for improved identification and integration of **CBRN** sensor data
- 2022 Tactical Hazard Protection for the Warfighter: Developed the TacHazE HAZMAT suit to increase suit mobility, reduce thermal load, and maximize mission use for CBRN specialists in chemical & biological contested environments
- 2023 Conventional Nuclear Capabilities: Discovered the **Ouantum Cascade Laser** spectroscopy technique used to distinguish conventional versus nuclear blasts at a short standoff distance

2014

2015

2016

2017

2018

2019

2020

2021

2022

2023

2024

- 2015 Ebola Outbreak: Accelerated access to vaccines and therapeutics, transportable diagnostic labs, protective equipment, and epidemiological modeling for DoD operations in impacted African Countries
- 2017 Rinderpest Elimination: Fielded modeling and simulation tools to DoD operators to replace the need for live virus stockpiles in 20 African nations
- 2018 DHS WMD Terrorism Prevention: Deployed the Vulnerability and Protection Options modeling and simulation tool to DHS and the NYPD Counterterrorism Bureau to assist in predicting the effects of a WMD terrorism threat including human injury and structural damage
- 2020 COVID-19 Pandemic: Fielded the Transportation Isolation System to transport critically-ill Service Members
- 2022 Middle East Crisis: Fielded the Cross Border Tunnel Suitability tool to assess and characterize underground facilities for an operational end user
- 2024 Nuclear Detonation Modeling and Simulation: Deployed the Mission Impact of **Nuclear Events Software to over 70** DoD organizations to estimate the combat effectiveness of military units after a nuclear detonation



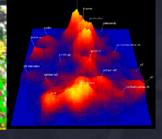
Radiation Detection Capabilities



Capabilities







Therapeutic **Development** Artificial Intelligence, Machine Learning, & Data Science **Software Development**

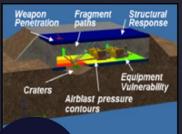


Physical CBRN Protection & Detection





Hazard Modeling & **Post Event Analysis Capabilities**







Weapons Effects & **Targeting** Capabilities

DTRA RD By the Numbers



Military personnel and Federal

165 technologies transitioned to customers since FY 2022

2.7 Billion

CPU hours utilized at the DoD High Performance Computing **Modernization Program since 2020**

University Research Alliances,



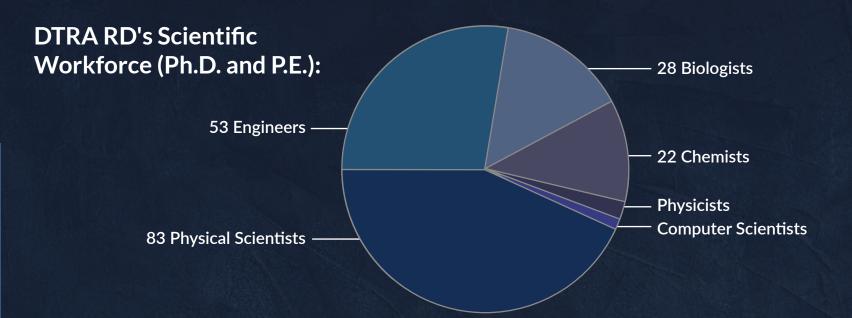
149 peer-reviewed basic research articles, and

external presentations More than **1000**



requests for **Technical** Reachback support each

year for the Combatant Commands, Military Services, Joint Staff, OSD, Intelligence Community, and other Federal **Agencies**



More than 300

personnel with advanced degrees (Masters, Ph.D.s, and Professional Engineering)



12 technology awards and



40 patents earned since since FY 2022

Research and technologies utilized by over

DoD partners



sensitive assessments completed and

over 200 formal products transitioned

since FY 2020



International Data & Information Exchange Annexes and

International Project Agreements and Task Plans





technical papers and research articles published since FY 2022

625 academic, industry, and government research & engineering partners **leveraged** since FY 2021