CDMRP
DEPARTMENT OF DEFENSE
CONGRESSIONALLY DIRECTED MEDICAL RESEARCH PROGRAMS

cdmrp.health.mil/terp

TOXIC EXPOSURES RESEARCH PROGRAM

Military-related toxic exposures are exposures to known or unknown, naturally occurring, or manmade substances encountered by Service Members, Veterans, or their beneficiaries that result in adverse health effects; toxic exposures may be associated with deployed, garrison, or other work environments and living conditions. While many exposures Service Members encounter may be unique to their duties, location, and assignments, some exposures are more ubiquitous and may also impact the American public.

VISION: *Minimize and mitigate the impact of military-related toxic exposures and improve the health and quality of life of those affected*

MISSION: *Support impactful research aimed at identifying the cause and understanding the health outcomes, comorbidities, and pathological mechanisms associated with military-related toxic exposures to facilitate the prevention, diagnosis, and treatment of the visible and invisible diseases and symptoms impacting Service Members, Veterans, and the American public*

PROGRAM HISTORY

The Toxic Exposures Research Program, or TERP, started in FY22 as a new, broad program dedicated to improving the scientific understanding of the pathobiology of toxic exposures, more efficiently assessing comorbidities, and speeding the development of treatments, cures, and preventions. The TERP received a total of $60 million in congressional appropriations between FY22-FY23 to support military-related toxic exposure research across four major topic areas: *Neurotoxin Exposure, Gulf War Illness and Its Treatment, Airborne Hazards and Burn Pits and, Other Military Service-Related Toxic Exposures in General, Including Prophylactic Medications, Pesticides, Organophosphates, Toxic Industrial Chemicals, Materials, Metals, and Minerals.*

Prior to FY22, the CDMRP received congressional support for other programs with research areas aimed at providing health care solutions for some of the diseases/conditions associated with toxic exposures, including the Gulf War Illness Research Program, the Peer Reviewed Medical Research Program Burn Pits and Metals Toxicology Topic Areas, and the Neurotoxin Exposure Treatment Parkinson's Research Program.

MILITARY RELEVANCE

Over 3.7 million U.S. Service Members participated in operations in the Southwest Asia Theater of Military Operations and Afghanistan since 1990, and individuals who served in that region were likely exposed to a number of toxic agents including, but not limited to, emissions from open burn pits, dust and sand particles suspended in the air, industrial pollution, sarin, pyridostigmine bromide, oil-well fire smoke, and vehicle exhaust.[1] While many exposures are associated with deployment environments, other exposures such as paints, fuels, exhausts, and contaminated water also occur in non-deployment settings.[2,3] As of July 2023, of the over 4 million Toxic Exposure Screenings completed by the VA, approximately 42% of Veterans screened identified at least one potential exposure to toxic substances.[4]

Neither the short- nor long-term effects of toxic exposures are well-defined and, in many cases, identifying a particular exposure can be challenging. Moreover, correlating diseases, conditions, and symptoms to a particular operational environment, exposure, combination or series of exposures poses additional challenges. Many toxic exposures have been identified. However, there are likely unknown exposures or mixtures of exposures that have not been identified yet and, the relationship of these exposures to health outcomes such as Gulf War illness, respiratory, neurologic, and cardiac diseases and conditions, sleep disturbances, cancers, and other symptoms remain poorly understood.

The TERP aims to support research that will significantly impact the field of military-related toxic exposure research and/or patient care, with the intent to provide solutions for Service Members, Veterans, and/or the American public who have been or could potentially be impacted by military-related toxic exposures. The TERP coordinates with similar activities in the VA and encourages collaborations between military and/or VA institutions with non-military/non-VA institutions.

[1] National Academies of Sciences, Engineering, and Medicine. 2020. Respiratory Health Effects of Airborne Hazards Exposures in the Southwest Asia Theater of Military Operations. Washington, DC: The *National Academies* Press. https://doi.org/10.17226/25837

[2] https://www.publichealth.va.gov/exposures/categories/occupational-hazards.asp

[3] https://www.publichealth.va.gov/exposures/publications/military-exposures/meyh-2/garrison.asp

[4] https://www.accesstocare.va.gov/pdf/VA_PACTActDashboard_Issue11_072123__508.pdf

PROGRAM GOALS

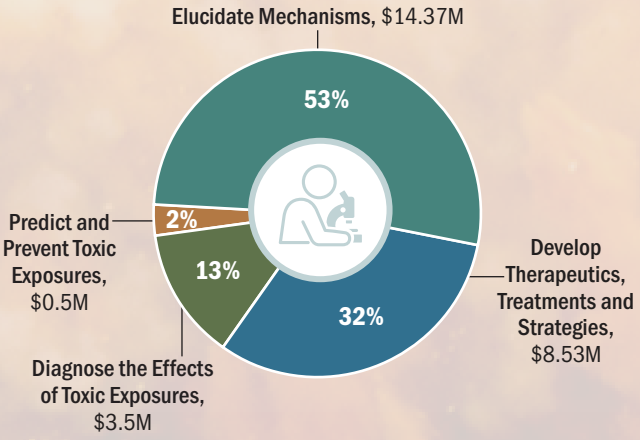
ELUCIDATE MECHANISMS OF HOW MILITARY-RELATED TOXIC EXPOSURES RESULT IN ADVERSE EFFECTS, including, but not limited to, toxicities, malignancies, neurologic and respiratory disorders, cardiac complications, sleep disorders, immune system dysfunction, gastrointestinal issues, etc.

DIAGNOSE THE EFFECTS OF MILITARY-RELATED TOXIC EXPOSURES, understand the phenotypic, pathological, and clinical outcomes associated with short-term and long-term exposures, and predict disease progression.

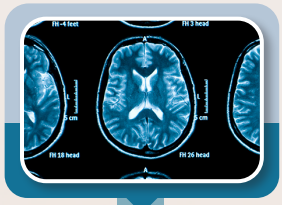
PREDICT AND PREVENT MILITARY-RELATED TOXIC EXPOSURES by identifying strategies that can anticipate, identify, monitor, and prevent Service Members and the American public from adverse effects of exposures to toxic substances.

DEVELOP THERAPEUTICS, TREATMENTS, AND STRATEGIES to minimize symptoms and disease progression associated with military-related toxic exposures.

FY22 TERP Portfolio Investment by Program Goal



TOPIC AREAS



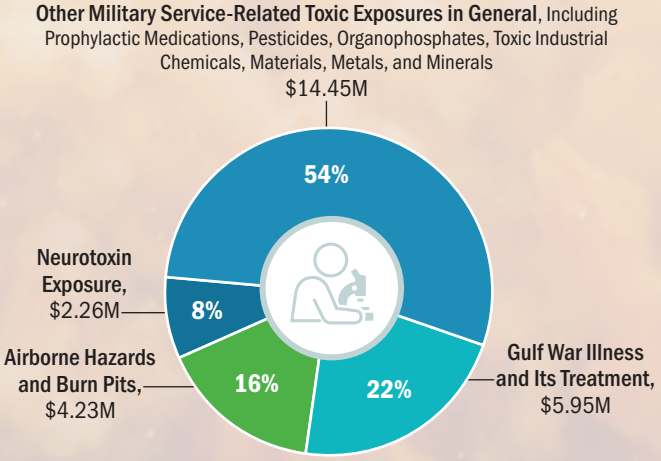
Neurotoxin Exposure

Gulf War Illness and Its Treatment

Airborne Hazards and Burn Pits

Other Military Service-Related Toxic Exposures in General,
Including Prophylactic Medications, Pesticides, Organophosphates, Toxic Industrial Chemicals, Materials, Metals, and Minerals

FY22 TERP Portfolio Investment by Topic Area



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