TOXIC EXPOSURES RESEARCH PROGRAM

CDMRP
DEPARTMENT OF DEFENSE
CONGRESSIONALLY DIRECTED MEDICAL RESEARCH PROGRAMS

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, their Families, Veterans and the American public

Congressional Appropriations FY22-FY24: $90M total

"As a 23-year Veteran of combat arms and an end user of the research being funded under the CDMRP TERP, I will admit that I had some reservation of exposing myself again even if it was only mentally to the environment that all Service Members experience while serving our country. After serving on the TERP programmatic panel, I was humbled by the volume of knowledge, experience and determination that was assembled for the purpose of actually finding solutions."

1st Lt. Andrew Myatt, U.S. Army Retired, Wounded Warrior Project, FY24 Programmatic Panel Member

SCOPE OF THE PROBLEM

Military-related toxic exposures are exposures to known or unknown, naturally occurring or manmade substances associated with deployed, garrison or other military-linked environments that result in **adverse health effects**.

The **harmful effects of military-related toxic exposures** may impact Service Members, their Families, Veterans and the American public.

Identifying specific exposures, mixtures or series of exposures is a **challenge**.

Health outcomes are diverse and, in many cases, **poorly defined**.

RELEVANCE TO MILITARY HEALTH

- As of April 2024, **44%** of the over 5 million Veterans completing the VA's Toxic Exposure Screening identified at least one potential exposure to toxic substances.[1]
- Since 1990, more than **3.7 million** U.S. Service Members deployed to combat environments with airborne hazards, such as burn pit emissions, oil-well fire smoke, vehicle exhaust and sand.[2]
- Service Members may also encounter toxic exposures in non-deployment settings.[3, 4]

PROGRAM PRIORITIES*

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

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.

*Topic areas and program goals not listed in order of importance

For more information, visit: **https://cdmrp.health.mil/terp/**

PROGRAM IMPACT

Advancing solutions for Pre- and Post-9/11 Service Members, their Families, Veterans and the American public

Encouraging collaboration with DOD and VA researchers and clinicians to leverage access to existing resources

Encouraging partnership

Supporting a wide range of investigators from a diversity of organizations and expertise

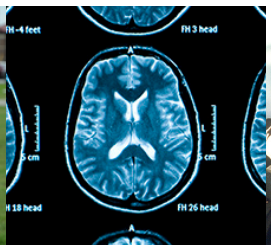
Supporting research from basic science through clinical trials

Coordinating with the VA, NIH and other agencies and organizations

EXAMPLES OF ONGOING HIGH-IMPACT RESEARCH







- Biological mechanisms of **cadmium**-induced **prostate cancer**
- Effects of oral **jet fuel exposure** on **reproduction and offspring**
- Contributions of the immune response to **Parkinson's neurodegeneration** following **trichloroethylene exposure**
- **Biomarkers** for **Gulf War illness** identified from pre- and post-deployment serum samples
- **Clinical biomarkers** to monitor **benzene exposures** and prevent associated health effects
- **Personal monitoring device** to detect **hazardous substances** such as pesticides, fuels,and toxic industrial chemicals
- **Quantitative imaging** to diagnose and predict **deployment-related respiratory disease**
- Evaluation of **per- and poly-fluoroalkyl substances, PFAS,** serum levels and association with increased risk of **testicular germ cell tumors** in Service Members
- Safety profiles of **malaria prophylactic medications** and **maternal, fetal and infant** health outcomes
- Evaluation of **dietary fiber** to reduce the burden of **PFAS** in the body, thus reducing the potential for PFAS toxicity and improving the health of those exposed
- Understanding the impact of **cadmium exposure** on **brain aging and Alzheimer's disease**
- Confirmatory **clinical trial** to evaluate the effectiveness of **acupuncture** at improving physical function and reducing pain in Veterans with **Gulf War illness**.

[1] https://department.va.gov/pactdata/wp-content/uploads/sites/18/2024/04/VA-PACT-Act-Performance-Dashboard.pdf

[2] 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*.

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

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

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