



# Ending the Wait for **TOXIC-EXPOSED VETERANS**

A post-PACT Act blueprint for reforming the VA presumptive process





**DAV (Disabled American Veterans)** empowers veterans to lead high-quality lives with respect and dignity. It is dedicated to a single purpose: keeping our promises to America's veterans. DAV does this by ensuring that veterans and their families can access the full range of benefits available to them; fighting for the interests of America's injured heroes on Capitol Hill; linking veterans and their families to employment resources; and educating the public about the great sacrifices and needs of veterans transitioning back to civilian life. DAV, a nonprofit organization with nearly one million members, was founded in 1920 and chartered by the U.S. Congress in 1932.

**MOAA (Military Officers Association of America)** is the nation's largest and most influential association of uniformed service officers and their surviving spouses. It is an independent, nonprofit, politically nonpartisan organization with more than 360,000 members from every branch of uniformed service—including active duty, National Guard, Reserve, retired, former officers, and surviving spouses. MOAA is a powerful force speaking for a strong national defense by representing the people who make a strong national defense possible. Supporting all ranks across all services at every stage of their careers, MOAA serves as the leading voice on compensation and all benefit matters.





## PREFACE

Toxic exposures have harmed service members for more than a century: from entrenched Americans breathing the noxious fumes of mustard gas to those unknowingly exposed to Agent Orange in Vietnam to, most recently, the scourge of burn pits afflicting veterans and service members who served in Iraq and Afghanistan. There isn't a major conflict in the past 100 years that has been immune to this epidemic.

What's worse, these veterans often can't get access to VA benefits and health care for illnesses from toxic exposures because it takes years for their conditions to manifest, and by the time they do, it's almost impossible to prove exactly what they were exposed to or to what extent an exposure may be responsible for their illness.

To correct this inequity, the Department of Veterans Affairs and Congress sometimes create regulations or pass laws that provide affected veterans with quicker access to VA benefits without requiring them to provide all the usual proof; instead, the VA "presumes" that the illnesses were caused by exposures in service.

That's what Congress did for Vietnam War-era veterans exposed to Agent Orange and for Iraq and Afghanistan veterans exposed to burn pits. But in both those instances, and for many other military toxic exposures, it took decades for the VA and Congress to finally act, leaving millions of veterans waiting for health care and benefits they had earned through their service. Some died before achieving justice.

To improve the process for providing timely benefits and health care to toxic-exposed veterans, DAV (Disabled American Veterans) and MOAA (Military Officers Association of America) researched and analyzed the history of military toxic exposures as well as laws and regulations creating "presumptions" that toxic exposures caused illnesses and diseases. Our principal objective was to apply lessons learned from earlier debates over presumptions, such as with the PACT Act of 2022, and develop a new legal framework for establishing presumptions in the future.

While the PACT Act took care of most veterans harmed by burn pits and certain other exposures, it did not include all known military toxic exposures, nor did it adequately reform the presumption-making process to address all current and future exposures in a timely manner.

To build on that landmark law, DAV and MOAA are proud to release this report, *Ending the Wait for Toxic-Exposed Veterans: A Post-PACT Act blueprint for reforming the VA presumptive process*, which proposes a new paradigm and blueprint to complete what the PACT Act started by comprehensively reforming the way the VA responds to toxic wounds.

Together with a growing coalition of veterans organizations, we ask Congress, the VA and the administration to join us in this noble cause of ending the wait for toxic-exposed veterans.



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**F**or more than a century, the Department of Veterans Affairs and Congress have struggled to provide needed health care and earned benefits to veterans who were exposed to toxins and environmental hazards during their service. Despite major toxic-exposure laws enacted every decade or two over the past century, the time veterans have to wait from the moment of exposure to meaningful VA compensation and medical support remains shamefully long—more than three decades on average, according to our research.

To improve the process for providing benefits and health care to toxic-exposed veterans, DAV (Disabled American Veterans) and the Military Officers Association of America (MOAA) researched and analyzed the history of military toxic exposures as well as the laws and regulations implemented to help exposed veterans receive the benefits and health care they deserve.

Most military veterans seeking VA benefits and health care begin by filing claims for disability compensation, which is awarded if they are found to have a service-connected disability. To establish a service connection, a veteran must provide sufficient evidence to satisfy three components:

- Proof of an in-service incident
- Proof of a current disability
- Proof of a “nexus,” or causal link, between the incident and the disability

When a veteran’s claim satisfies all three components, they have established **direct service connection** and are then evaluated and assigned a disability rating level that

determines their eligibility for specific VA benefits and health care.

However, there may be circumstances where a veteran is unable to obtain and provide sufficient evidence to satisfy all three components of direct service connection, particularly when it involves toxic exposures. Oftentimes, veterans were unaware they had been exposed to hazardous materials on battlefields, and it could take years after separation from service before illnesses or diseases manifest. In such situations, they may establish **presumptive service connection**, an alternate legal mechanism in which the VA presumes the existence of certain missing evidence for a defined cohort of veterans, typically based on the time and location of their service.

For example, millions of service members deployed during the Vietnam War were exposed to Agent Orange, an herbicide used to defoliate forests for military purposes. After they returned home, many veterans developed cancers and other conditions they believed were related to their exposure. However, it was nearly impossible for them to prove their direct exposure years later. Further, when they made benefit claims in the 1970s and 1980s, there was not a scientific consensus linking Agent Orange to cancers or other conditions. As a result, Vietnam veterans were rarely able to establish direct service connection between Agent Orange exposure and conditions that materialized years later.

To overcome these evidentiary gaps, Congress passed the Agent Orange Act of 1991 (Public Law 102–4), which established presumptive service connection for Vietnam veterans. The law required that any service member





who was in Vietnam between 1962 and 1975 would be **conceded** to have been exposed to Agent Orange. In addition, the law presumed that there was a link between Agent Orange and certain cancers and diseases, and any Vietnam veteran who developed one of them would be awarded presumptive service connection for that condition. While the creation of this Agent Orange presumptive allowed millions of Vietnam veterans to receive the recognition, benefits and health care they deserved, it was decades too late for many of them.

In fact, our research and analysis found that toxic-exposed veterans have extremely long waits from the time they are exposed to when the VA creates a presumptive. On average, it takes the VA 31.4 years from the first incidence of exposure to formally acknowledge that exposure. Of the exposures acknowledged by VA that subsequently have presumptives established, it takes 2.4 years, on average, from acknowledgment to establishment of a concession of exposure and presumption of service connection. We found that the first veterans exposed to toxins have had to wait 34.1 years on average before they could receive presumptive service connection.

Our research found that policymakers typically waited decades before establishing toxic-exposure presumptives due to an incomplete understanding of how and why presumptives fill evidentiary gaps in claims for service connection. We recommend the following policy changes to provide quicker and more equitable outcomes for veterans.

■ **Recommendation 1:** Congress should enact legislation to create a new legal framework for establishing toxic-exposure presumptives that

has three separate, but related, major steps in the process:

1. Acknowledgment of a possible toxic exposure risk
  2. Concession of exposure to toxic substances
  3. Presumption of service connection between exposures and diseases
- Each of these steps would be linked through a series of timelines, triggers, thresholds and decisions, all based on well-grounded research and analysis.

■ **Recommendation 2:** Congress should enact legislation to expand and fund research, monitoring, surveillance and

oversight of all federal activities related to toxic exposures. Expanding scientific understanding of toxic exposures and environmental hazards is essential to support VA efforts to provide timely, comprehensive benefits and health care to exposed veterans.

■ **Recommendation 3:** Congress, the VA and the Department of Defense (DOD) should work together to eliminate barriers to supporting toxic-exposed veterans and their families. Specifically, the VA and DOD should create a system to allow pre-separation enrollment in the VA health care system for service members and fully implement seamless electronic health record sharing. In addition, Congress should eliminate budgetary pay-as-you-go (PAYGO) rules and statutes for toxic-exposure legislation.

■ **Recommendation 4:** The VA should create a new classification system for toxic exposures and presumptives based on evidentiary gaps that need to be filled by concessions and presumptions. We propose one model for a classification system with six types of toxic-exposure presumptives. (See Appendix D for a detailed explanation.)

This report provides a roadmap and blueprint for legislative and policy changes that, if enacted, would shorten the time it takes to create toxic exposure presumptives and provide additional benefits and support to affected veterans at each step of the process. Taken together, the findings and recommendations we propose would go a long way toward ending the wait for millions of current and future toxic-exposed veterans.

## MARK JACKSON

Army veteran



PHOTO BY EZ PHOTOGRAPHY

**W**hile Mark Jackson was at Karshi-Khanabad Air Base in Uzbekistan in the summer of 2003, he kept daily journals. Dozens of neon yellow tabs protrude from the pages, marking each day he felt sick.

“The very first thing I write about is my throat and my eyes stinging from ... this rotten smell,” the Army veteran said. “The next day, my journal entry said, ‘This place is toxic.’”

Jackson soon found himself logging a long list of symptoms: coughs, headaches, rashes, shortness of breath, fatigue.

K2’s toxicity wasn’t a secret. The Department of Defense knew that service members there were exposed to dangerous toxins, and a 2015 U.S. Army study found that K2 veterans have a 500% greater chance of developing

certain cancers. Still, the Department of Veterans Affairs does not recognize the majority of K2 exposures.

Soon after leaving K2, and at just 27 years old, Jackson’s thyroid effectively died. At 30, he was diagnosed with irritable bowel syndrome. At 43, his doctor told him he had the bones of an 80-year-old.

“I’ll go ahead and assume that I’m pretty well beyond middle-aged at this point based on the wheels coming off,” he said.

Jackson has only received service-connected disability benefits for his thyroid. That means it’s up to him to cover the costs of treatments for his other conditions, whether out of pocket or through private insurance.

Jackson said that despite everything, he’d do it all over again.

“And I don’t know anyone who wouldn’t,” he said. “The basic terms of service when you sign up are that you’re going to give all the way up to and including your life, but they’re going to take care of you and your family. And they’re not honoring their end of the bargain.”

While the PACT Act did provide some benefits for K2 veterans impacted by particulate matter and burn pits, it failed to acknowledge or concede exposure to enriched uranium and other deadly toxins that have devastated Jackson and so many others.

The reforms and legal framework proposed in this report could have ended their wait long ago, and would help future toxic-exposed veterans get access to VA health care and benefits more quickly.





PHOTO: ASSOCIATED PRESS

The enactment of the Sergeant First Class Heath Robinson Honoring our Promise to Address Comprehensive Toxics (PACT) Act of 2022 (Public Law 117-168) on Aug. 10, 2022, provided the largest expansion of health care and benefits for toxic-exposed veterans in a generation. In addition to expanding access for millions of veterans, the PACT Act created legal presumptions that dozens of diseases and illnesses were related to burn pits and other toxic exposures. It also included several process reforms to recognize related conditions by the Department of Veterans Affairs. The PACT Act has already brought new benefits and health care eligibility to millions of veterans; however, the law did not cover every toxic-exposed veteran. Too many veterans are still waiting for formal VA recognition of service-connected toxic—illnesses that would make

them eligible for life-changing benefits and health care to extend their lives and allow them to care for themselves and their families.

According to the Congressional Budget Office, the PACT Act's generational reforms will cost at least \$278.5 billion over 10 years, a massive cost and one of the main reasons it took years for this legislation to overcome congressional opposition and institutional resistance from the VA and the White House's Office of Management and Budget. Congress needed to pass such a massive bill because our country was decades delinquent in fulfilling obligations to veterans who had been exposed to toxic and environmental hazards. Instead of addressing these issues as they arose, our nation's leaders ignored them for far too long, a tragic failure repeated for generations of war veterans. Never



again should ill and injured veterans suffering the effects of military toxic exposures be forced to wait so long for essential, earned health care and benefits.

DAV (Disabled American Veterans) and the Military Officers Association of America (MOAA) began researching the history of how and when the VA and Congress formally recognized and established presumptives for military toxic and environmental exposures. We analyzed how, when and why presumptives had been created in the past to find choke points in the process, an approach that could guide proposals for a new and unified legal framework to more quickly and effectively create future presumptives. The full details of our research and analysis can be found in Appendix C.

Probably the best-known presumptive is exposure to the herbicide known as Agent Orange during the Vietnam War. Although the Department of Defense was known to have used dangerous chemicals that service members were exposed to during the war, it took years for these men and women to develop cancers and other debilitating conditions that they believed were caused by Agent Orange exposure. Due to the passage of time and limited DOD data, it was virtually impossible for most veterans to prove they had been exposed to Agent Orange decades earlier. Even if they could prove their individual

exposure, there was not yet a scientific or medical consensus that Agent Orange caused these various diseases, making it exceedingly difficult to establish the nexus required for direct service connection.

However, as the number and frequency of Vietnam veterans suffering from similar cancers and other diseases increased over time, alongside the level of clinical evidence about the dangers of Agent Orange, a critical mass of medical and scientific experts concluded that a link existed between this exposure and resulting diseases and conditions. On that basis – and after a lengthy national debate – the Agent Orange Act of 1991 (P.L. 102–4) was enacted. The law formally established a presumptive for Vietnam veterans diagnosed with diseases and conditions related to Agent Orange. Individual veterans no longer had to document their individual exposure or prove a medical nexus existed between their exposure to Agent Orange and a list of enumerated diseases.

Presumptives were established in similar ways for other exposures, including atomic testing in World War II; Persian Gulf War illnesses; contaminated water at Camp Lejeune, North Carolina; and, most recently, burn pits in Afghanistan, Iraq and other locations identified in the PACT Act. For more information on the history of toxic exposures and presumptives, see Appendices B and C.



*Karshi-Khanabad Air Base, known as "K2," is a former Soviet air base in Uzbekistan that was used by over 15,000 U.S. service members from 2001 to 2005 in support of the war in Afghanistan. The base contained a toxic stew of chemicals, radioactive materials, and burn pits, yet for two decades no toxic exposures there were recognized by the VA.*

PHOTO COURTESY OF MARK JACKSON

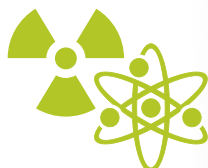
## A CENTURY OF MILITARY TOXIC EXPOSURES AND PRESUMPTIVES

Military toxic exposures have been part of warfare for thousands of years; however, the modern history of toxic exposures dates back to World War I when there was the first wide-scale usage of chemical weapons. Over the next century, American service members have been exposed to dozens of toxic substances, both while deployed abroad and stationed at home. In response, Congress has passed laws and VA has enacted regulations to create presumptives that make it easier for veterans get access to health care and benefits, however it can take many years from the time of the exposure to the creation of a presumptive.

### EXPOSURES

#### Chemical Warfare

The first-large scale use of chemical weapons occurred during World War I, where mustard gas, tear gas, and chlorine were utilized, resulting in more than 1 million casualties, including an estimated 72,000 American service members.



#### Fort McClellan Toxins

Opened during WWI, Fort McClellan hosted the Army's Chemical Corps for decades, before finally closing in 1999. VA has noted that potential toxic exposures may have included radioactive compounds, chemical warfare agents, and airborne PCBs.



#### Mustard Gas Testing

During World War II, more than 60,000 service members were involved in military testing about the effects of mustard gas and lewisite exposure, as well as the effectiveness of new equipment to protect against these toxins.



#### Camp Lejeune

For almost four decades, service members and civilians living or working at Marine Corps Base Camp Lejeune, North Carolina, were exposed to drinking water contaminated with industrial solvents, benzene, and other chemicals.

#### Atomic Veterans

Following the atomic bombs at Hiroshima and Nagasaki, more than 250,000 service members were involved in cleanup and occupation activities in Japan. Over the next two decades, 400,000 more service members were exposed to atmospheric nuclear tests.

World War I  
1917 to 1918

World War II  
1941 to 1945

Korean War  
1950 to 1953

### PRESUMPTIVES

#### Chronic Diseases & Chronic Constitutional Diseases (1921)

Following WWI, the federal Veterans' Bureau—precursor to the VA—established the first presumptives for “chronic diseases,” including tuberculosis and neuropsychiatric disease, as well as “chronic constitutional diseases,” including anemia, diabetes, and leukemia.

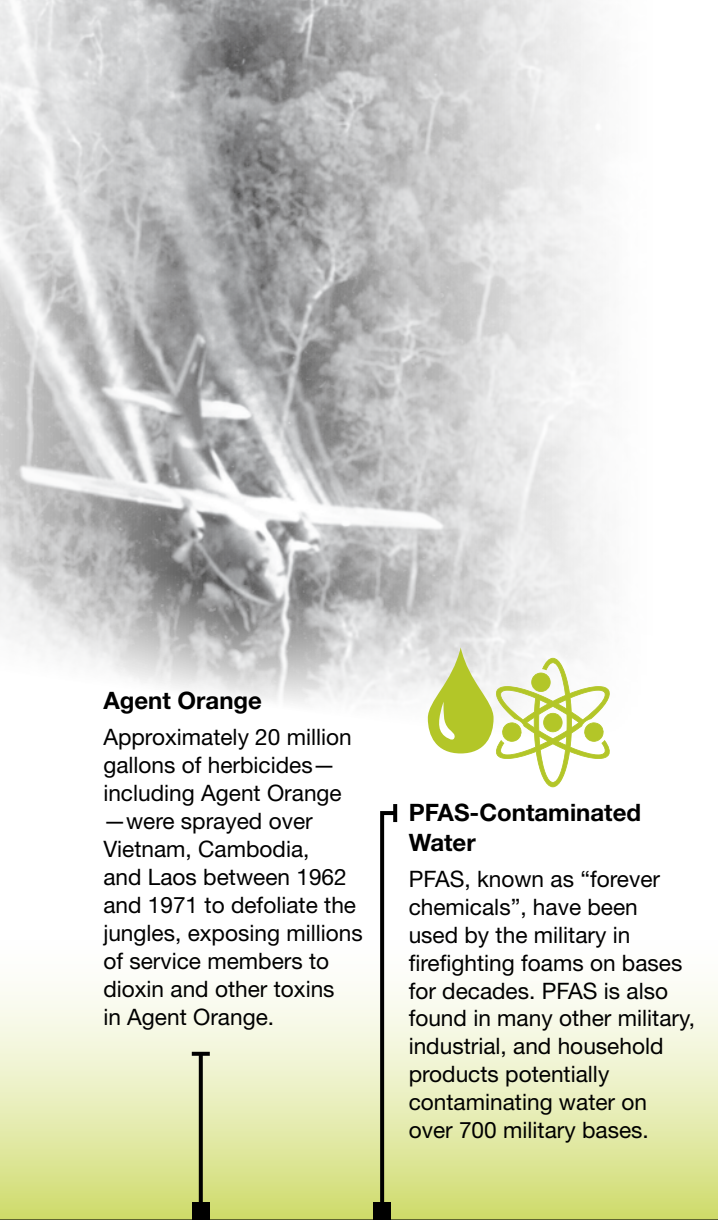
#### Tropical Diseases (1945)

Following World II, VA created a presumptive for “tropical diseases,” which initially included malaria, a disease contracted by many service members who served in the Pacific theater, and was later expanded to include cholera, dysentery, and yellow fever.

#### Former Prisoners of War (1970)

Congress passed legislation (P.L. 91-376) creating a new presumptive for former prisoners of war who served during World War II and the Korean and Vietnam wars, which initially covered beriberi, malnutrition, psychosis, and five other diseases.





### Agent Orange

Approximately 20 million gallons of herbicides—including Agent Orange—were sprayed over Vietnam, Cambodia, and Laos between 1962 and 1971 to defoliate the jungles, exposing millions of service members to dioxin and other toxins in Agent Orange.



### PFAS-Contaminated Water

PFAS, known as “forever chemicals”, have been used by the military in firefighting foams on bases for decades. PFAS is also found in many other military, industrial, and household products potentially contaminating water on over 700 military bases.



### Persian Gulf War (PGW) Exposures

Millions of PGW veterans were exposed to oil-well fires, depleted uranium, insecticides, burn pits, and possibly nerve agents, as well as sand and dust particles.



### Burn Pits and Airborne Hazards

During the first Gulf War, and in the post-9/11 wars, millions of service members were exposed to toxic fumes from open air burn pits that contained jet fuel, paints and solvents, petroleum, munitions and unexploded ordnance, medical and human waste.

### K2 Toxins

Over 15,000 service members were deployed to Karshi-Khanabad, known as K2, a former Soviet air base in Uzbekistan, and were exposed to enriched and depleted uranium, asbestos, jet fuel, and lead-based paint.

**Vietnam War**  
1962 to 1973

**Persian Gulf War**  
1990 to 1991

**Afghanistan & Iraq Wars**  
2001 to 2021

### Atomic Veterans (1985)

VA promulgated regulations to create a presumptive for “atomic veterans” involved in the cleanup and occupation of Hiroshima and Nagasaki, Japan, and later expanded to include service members involved in atmospheric nuclear testing and other radiation risk activities.

### Agent Orange Act of 1991

Congress created a presumptive for exposure to Agent Orange for veterans who later became ill with cancers and other diseases. The law also created a new process to evaluate additional diseases using independent assessments from the Institute of Medicine.

### Persian Gulf War Benefits Act of 1998

Congress established a presumptive for Gulf War veterans suffering from common symptoms but unknown conditions. VA later added “undiagnosed illness,” “chronic multisymptom illness,” and “chronic fatigue syndrome” to the presumptive.

### Camp Lejeune Contaminated Water (2017)

VA promulgated regulations creating a new presumptive for service members stationed at Camp Lejeune between 1953 and 1987, which included Parkinson’s disease and seven cancers.

### Honoring our PACT Act of 2022

The PACT Act provided the largest expansion of health care and benefits for toxic-exposed veterans in a generation. It created a new presumptive for burn pits and other airborne hazards for veterans of the first Gulf War and the post-9/11 wars in Afghanistan and Iraq.



## ALFRED “AL” LEWIS

Marine veteran

AGENT  
ORANGE



PHOTO COURTESY OF AL LEWIS

**D**espite ongoing war in Vietnam, 17-year-old Alfred “Al” Lewis Jr. enlisted in the Marine Corps.

He trained in chemical, biological, radiological and nuclear defense and deployed to Phu Bai Combat Base just south of Huế, Vietnam, in 1966. During his deployment, his primary duties were to stand guard at the air base and work in supply.

“I remember watching our planes spray a substance around the base to clear out the jungle,” Lewis explained. “We would end up walking through the substance while on duty at various points of the deployment and thought nothing of it at the time. It wasn’t until years later that we learned that it was Agent Orange and the impact it had on our health.”

Lewis, who retired after 21 years of service, filed a Department of Veterans

Affairs disability claim on his own and was granted compensation for hearing loss in one ear and injuries to his knee and back.

In 2012, Lewis retired from his career as an auditor. Less than a year later, he had a heart attack and received treatment at the Loma Linda VA Medical Center in California. During his recovery, a friend from church who happened to be an Air Force veteran told Lewis he should contact DAV to assist him with his disability claim.

Because the VA had adopted new regulations in 2001 to add ischemic heart disease to the Agent Orange presumptive, they were able to file a new claim to establish that Lewis’ heart condition was presumed to be service-connected. The VA subsequently awarded Lewis disability compensation for his heart.

However, the VA denied his claim for hypertension since it was not a presumptive condition at the time of filing.

In 2022, the PACT Act amended the Agent Orange regulations by adding hypertension to the list of covered diseases, allowing Lewis to file a new claim for benefits. In early 2023, Lewis got word that he would finally get the benefits he earned for that condition.

Although it took almost six decades from when he first deployed to Vietnam to get full recognition and justice for his military toxic exposure, Lewis and millions of others like him benefited from the creation and expansion of the Agent Orange presumptive.

The proposals in this report would help to ensure that future toxic-exposed veterans never have to wait that long.



## Use of Key Terminology in This Report

In reviewing statutes, regulations, legal history, scientific literature and other reporting sources on toxic exposures and legal presumptions, we found a need for uniformity in certain key terminology. To ensure clarity and understanding in this report, below are four key terms and a description of how they are used throughout the report. See page 43 for a full glossary of terms.

- **Concession of exposure:** A legal determination (concession) that veterans were exposed to toxic substances and other hazards while serving in qualified locations during specific periods.
- **Presumption of service connection:** The legal determination (presumption) that assumes a nexus, or causal link, between a veteran's health condition and their qualifying military service. Once presumptive service connection is established, a veteran may make claims for benefits for a defined list of diseases and disabilities.
- **Presumptive:** The legal mechanism that fills evidentiary gaps generally required for VA claims. By establishing a concession of exposure and a presumption of service connection (described above), a presumptive is the full legal mechanism in regulation or statute..
- **Acknowledgment of a toxic-exposure risk:** A determination by the VA that credible evidence of a toxic exposure or environmental hazard exists that may affect service members and veterans by resulting in adverse health outcomes. A formal acknowledgment is not required to establish a presumptive, although it has typically been made before any rulemaking or legislation.

## Role of Service Connection for VA Benefits

### Direct Service Connection

To understand the role and importance of presumptives for toxic exposures, it's critical to understand how veterans establish eligibility for VA benefits and health care and the role of service connection in that process.

A separating service member or veteran can apply at any time for one or more of the full array of VA benefits, programs and health care services, but disability compensation is usually central to eligibility. Every veteran is entitled to disability benefits in connection with an injury or disease incurred, aggravated or the result of active military service in the line of duty (Section 1110, Title 38, U.S. Code). When veterans file a claim for disability compensation, they have a presumption of "sound condition" unless otherwise noted when joining the service (38 USC §1111). This means the baseline from which all claims are evaluated

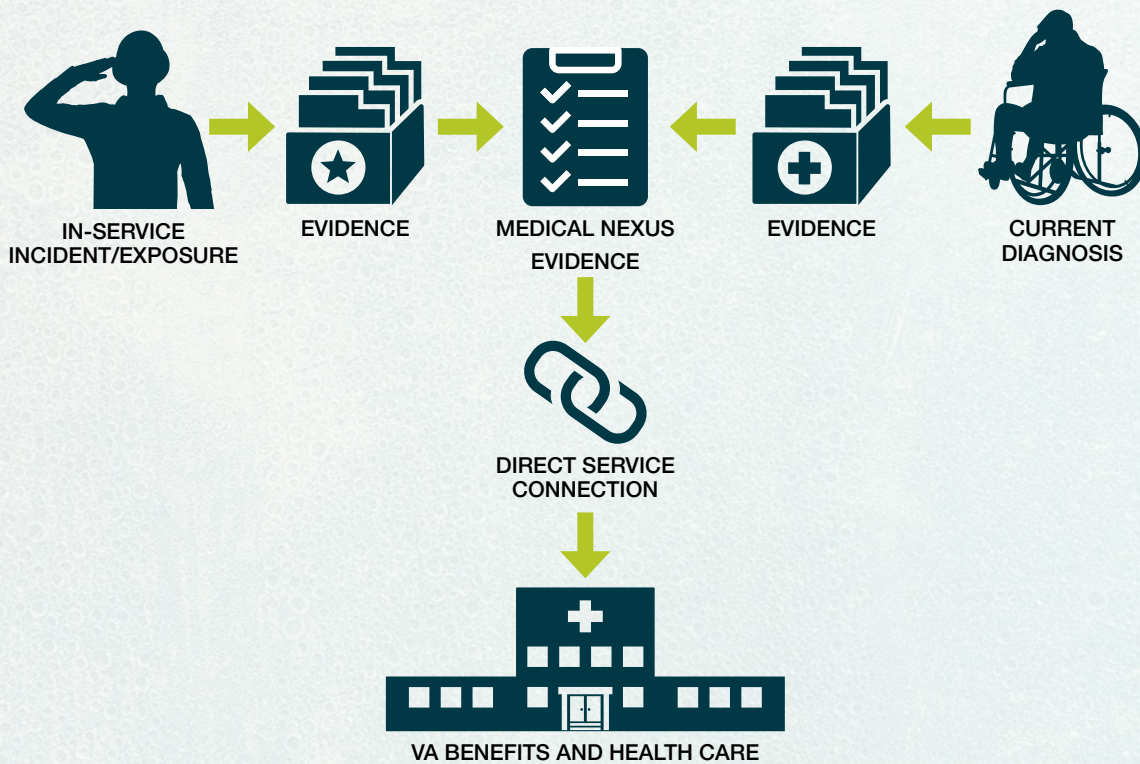
is that the veteran was in good health before entering the military and any injuries or illnesses in service are resulting from their military service. For the VA to rebut the condition, it must show clear and unmistakable evidence both that the disease or injury existed prior to service and that the disease or injury was not aggravated by service. When a veteran seeks to file a disability compensation claim for conditions or injuries, they must be able to establish service connection, the legal process of linking a veteran, a disability and service. If they meet the evidentiary burden directly, the VA refers to this as "direct service connection."

The components of service connection guide the VA claims process. These elements set the standard for directly connecting an injury or disease to military service. They also advise on how to consider pre-service disabilities that have worsened (aggravations) and how to determine if presumptive conditions established in statute or VA regulations apply (Section 3.303, Title 38, Code of Federal Regulations and M21-1). The Court of Appeals for Veterans Claims' decision in *Hickson v. West* defines the evidence a veteran must provide for their claim, including an in-service event, current disability and nexus connecting the two to establish a service connection for a claimed disability.

Each of these components contains several requirements to establish service connection. They can be achieved by evidence offered by the veteran or (as discussed below) with the help of presumptives established by law or regulation. In all cases, a claim must fulfill the same three components to establish service connection for a disability:

- **In-Service Event:** All claims must provide evidence an in-service event—accident, injury or disease while serving—occurred. The veteran can provide this evidence using service records or other sources. For many injuries, this is a straightforward process, as a single source of documentation, such as personnel or medical records, can prove the occurrence of the in-service event.
  - *Example: A service member parachutes from a plane during a training exercise and strains their right knee. The in-service event is documented by medical reports describing their treatment for a knee strain. Service records verify they were on a jump status.*
- **Current Disability:** The core of any claim is a current diagnosis showing the injury or illness of a veteran that qualifies as a VA disability. This medical determination affirms such an illness or injury or an aggravation of a pre-service condition. To meet this requirement, a veteran must show

## HOW TO ESTABLISH DIRECT SERVICE CONNECTION



evidence of current symptoms and a diagnosis of a chronic condition or defined disability for VA purposes.

– *Example (continued): The service member separates from service with persistent knee pain, which they attribute to the in-service event where they strained their knee. Two years after service, the service member was diagnosed with traumatic arthritis in the knee they injured while jumping.*

- **Medical Nexus:** The final piece is the need for evidence that the in-service event is the cause of, or is associated with, the veteran's current diagnosis. Requirements for a nexus can be met by showing evidence sufficient to conclude that the in-service event caused or aggravated the veteran's condition.

When assessing the nexus, the standard of proof is set at "equipoise"—a determination that the disability was at least as likely to have been caused by the in-service incident as to have been caused by something else. If the evidence is balanced, the tie goes to the veteran.

– *Example (continued): The service member's treating physician provides a medical opinion that the traumatic arthritis in the right knee was as least as likely as not caused by their injury on active duty.*

### Presumptive Service Connection for Toxic-Exposure Claims

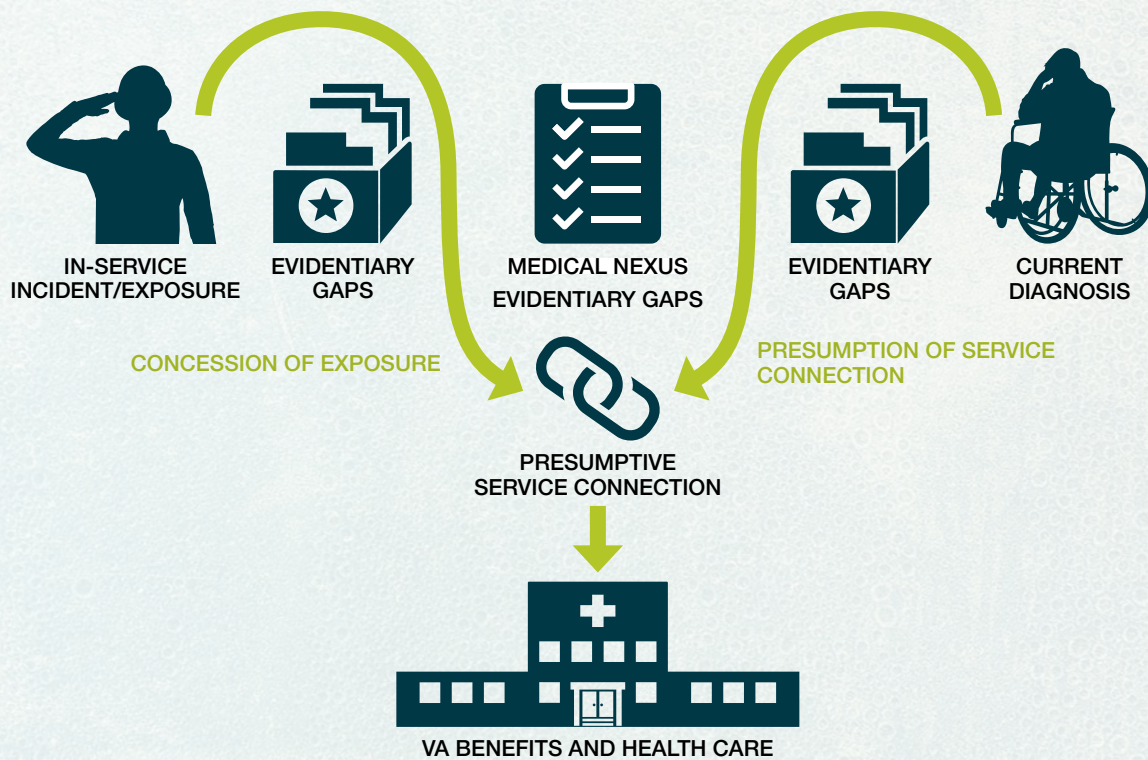
While direct service exposure can reasonably be established for most injuries, diseases and disabilities, conditions caused by toxic exposures or environmental hazards pose unique challenges. In many cases, the toxic exposure itself or the dangers from that exposure are not immediately known. For many diseases, even the first symptoms can take years to develop after exposure to the toxic substance and decades to be diagnosed. Further, it can take decades to develop adequate scientific evidence that a specific disease was caused by or associated with a particular exposure. For example, cancers resulting from Agent Orange developed years after exposure, and the evidence linking them took decades to develop. Providing sufficient evidence that a specific veteran was exposed to a toxic substance can be difficult when it occurred decades ago.

Each element required to establish service connection can be significantly more challenging for an individual with a toxic-exposure claim:

- **In-Service Event:** Having an injury identified in service medical records allows a medical opinion to easily point to a specific incident. However, with toxic exposures, a clear event is hard to document. Often, the exposure is not identified until years or decades later, and there can be no proof of an



## HOW TO ESTABLISH PRESUMPTIVE SERVICE CONNECTION



in-service event until the VA acknowledges and concedes this exposure.

- **Current Disability:** Once a disease is diagnosed, the veteran may not be aware it is related to an in-service exposure event. A veteran may have a spectrum of symptoms but be unable to diagnose their condition (or conditions) as stemming from a known disease or disability.
- **Nexus:** For toxic exposures, there may not yet exist sufficient scientific understanding of the links between the substances and the diseases. Details of these long-past events are not easily reported or remembered, which hinders the veteran's ability to receive a favorable medical opinion.

To overcome the challenges of proving direct service connection for toxic exposure claims, the VA can create a presumptive, thereby allowing a veteran to claim presumptive service connection. As previously stated, a presumptive is an alternate legal mechanism in which the VA presumes the existence of specific missing evidence for a defined cohort of veterans, typically based on the time and location of their service. A presumptive can be used to overcome any of the three direct service connection requirements (*Hickson v. West*, 12 Vet. App. 247, 253 (1999)):

- A disability, illness or other condition exists
- The condition occurred or was aggravated in the military (an in-service event)
- A medical connection (nexus) exists between the in-service event and the condition

Presumptives are necessary to overcome common evidentiary hurdles that cannot be filled given the nature of warfare and military service. In such circumstances, the VA or Congress can create presumptives to fulfill evidentiary gaps. "The only difference between direct and presumptive service connection is the amount of proof required." When a presumptive is used to fulfill a component or a requirement of a claim, a claim must still satisfy the aspects not covered by the presumption.

We know from experience with Agent Orange, radiation risk activities, burn pits and other toxic exposures that presumptives are not quickly or easily established. Despite the significant public interest, veteran advocacy and congressional support, presumptives are not usually established until multiple decades after the first exposure. The purpose of this report is to explore the most effective ways to shorten these long waits and provide timely care and benefits to veterans suffering from toxic exposures.



# FINDINGS

PHOTO BY SPC. BRIAN K. GRIGSBY/U.S. ARMY

## The Long Wait for Presumptives

The most objective and alarming finding from our research is that toxic-exposed veterans have extremely long waits—over three decades on average—from initial exposure to when VA presumptives allow them to receive presumptive service connection for related disabilities. Using our dataset of toxic exposures acknowledged by the Department of Veterans Affairs (see Appendix A), we were able to measure the average time it has taken from the first date of a toxic exposure to acknowledgment and concession of that exposure.

Since the end of World War I, the VA has acknowledged 30 toxic exposures; just over half of them (16) resulted in the establishment of a presumptive. For all acknowledged exposures, the average time between the first year veterans were exposed to an acknowledgment from VA is **31.4** years.

For the subset of 16 exposures that have presumptives, the time from acknowledgment to the establishment of a presumptive, as marked by a concession of exposure, is **2.4** years on average. Looking at the overall timeframe, we found it takes an average of **34.1** years after the first incidence of a military toxic exposure to the establishment of a presumptive.

This unacceptably long wait for presumptives actually understates the time it takes many veterans to receive the care and benefits they have earned. The establishment of a presumptive in law or regulation is often only the beginning of the process. For example, the Agent Orange presumptive created in 1991 covered just three diseases while setting up a process to review and add additional

diseases in the future. Over the next three decades, the VA and Congress added several other conditions, including:

- Respiratory cancers and multiple myeloma (1994)
- Prostate cancer (1996)
- Hairy cell leukemia, Parkinson's disease and ischemic heart disease (2010)
- Bladder cancer and hypothyroidism (2021)
- Hypertension (2022)

A veteran who served in Vietnam in 1962 and later developed hypertension had to wait 60 years from first exposure for the government to concede presumptive service connection. In addition, it took over 50 years to include some Vietnam-era veterans who served in other nearby locations, such as in Thailand and in the “blue waters” offshore of Vietnam.

These statistics objectively confirm what we believed to be true at the outset of this research project: Toxic-exposed veterans are waiting too long for the establishment of presumptives to ease their path to the benefits and health care they have earned. As we will discuss in our recommendations, we must shorten the time it takes to create presumptives.

## Presumptives Fill Evidentiary Gaps

Our comprehensive analysis of the history and role of presumptives in this report found that the primary role of presumptives is to fill evidentiary gaps. This is particularly crucial when circumstances beyond the control of veterans or the VA make it exceptionally difficult or even impossible to provide the evidence



## THE 60-YEAR DEVELOPMENT OF THE AGENT ORANGE PRESUMPTIVE

*It took almost three decades from the time that the first service members in Vietnam were exposed to Agent Orange before Congress created a presumptive. Over the next three decades VA and Congress continued adding additional diseases to the Agent Orange presumptive. If a veteran who served in Vietnam in 1962 developed hypertension after their service, they would have had to wait 60 years before VA officially recognized a presumption of service connection for that disease.*



2020

2022 Congress adds hypertension (PACT Act, P.L. 117-168)

2021 Congress adds bladder cancer, hypothyroidism and parkinsonism (P.L. 116-283)

2019 Congress codifies and expands Blue Water Navy concession of exposure (P.L. 116-23)

2018 U.S. Court of Appeals restores Blue Water Navy veterans to Agent Orange concession of exposure

2010

2010 Hairy cell leukemia, Parkinson's disease and ischemic heart disease added via regulation

2000

2001 Diabetes mellitus type II added via regulation

1997 Blue Water Navy veterans removed from concession of exposure by VA Office of General Counsel opinion

1990

Agent Orange Act of 1991 (P.L. 102-4)

Established concession of exposure to Agent Orange

Established first presumption of service connection (Hodgkin's Disease)

Established framework for adding new presumptions

1996 Prostate cancer added via regulation

1994 First Institute of Medicine report on Agent Orange

Respiratory cancers and multiple myeloma added via regulation

1985 Dioxin exposure conceded by VA in regulations

1984 First Agent Orange legislation approved (P.L. 98-542)

1978 VA creates Agent Orange registry, acknowledges Agent Orange exposure

1975 Last U.S. servicemembers in Vietnam

1971 Last use of Agent Orange in Vietnam

1980

1970

1962 First Agent Orange usage in Vietnam

1945 Development of Agent Orange at Fort Detrick



necessary to establish direct service connection. These gaps often stem from the difficulty of tracking and recording the exact time, location and extent of a service member's exposure to a toxic substance, particularly during wartime. Without this information, a veteran would struggle to meet the requirement to document an in-service incident, particularly a toxic exposure. There have also been instances, such as during the Persian Gulf War, where a group of veterans who served in the same locations during the same times later developed similar patterns of symptoms, but evidence of any specific exposure that could explain those symptoms was insufficient.

The most common and widely known evidentiary gap filled by a presumptive is the requirement to show a medical nexus between an in-service incident or exposure and a disease or health condition, such as with radiation and Agent Orange. These gaps may exist because there is not yet a scientific or medical consensus that those specific exposures "caused" the specific diseases affecting those veterans. This lack of evidence for such an association makes it difficult, if not impossible, for an examining doctor to render a medical opinion finding a nexus between the exposure and the disease.

As described previously, there are also situations without a recognized illness, disease or disability, only a spectrum of symptoms affecting a veteran's health, such as what was originally referred to as "Gulf War Illness." In that situation, the VA promulgated regulations to create new conditions that would qualify as recognized disabilities ("undiagnosed illnesses" and "chronic multisymptom illness"). This recognition is of utmost importance, as it allows the veteran to meet the service-connection requirement of a diagnosed disability.

Each element of direct service connection can be substituted with a concession or presumption, thus allowing the establishment of presumptive service connection. This finding may appear obvious at first, but it leads to other important insights, findings and ultimately recommendations for how to improve the creation of new (and expansion of existing) toxic-exposure presumptives.

## **Different Toxic Exposures Require Different Types of Presumptives**

Understanding that presumptives fill evidentiary gaps and that different military toxic exposures present exposed veterans with different challenges in meeting the evidentiary burden to establish service connection, we found that different toxic exposures require different types of presumptives.

For example, the presumptives for Agent Orange, mustard gas testing, radiation and burn pits are all missing evidence to prove a medical nexus linking those toxic substances with specific diseases, primarily because of the lack of scientific and medical knowledge about the effect of those exposures. Therefore, each required the absence of a nexus to be filled by establishing a presumption of service connection between the toxic substances and specific diseases. These presumptives also simplified the requirement to prove an in-service incident by establishing a concession of exposure so that a veteran only had to present service records showing they were in the covered locations at the times included in the concession.

A second type of toxic-exposure presumptive involves determining whether the exposure was sufficient to cause diseases that have already been associated with those exposures. For example, the presumptives for radiation-exposed veterans, often referred to as "atomic veterans," and those exposed to contaminated groundwater at Camp Lejeune, North Carolina, have identifiable toxic substances that have been associated with certain diseases but only if exposure levels or dosages are sufficient. The debate over whether to create these presumptives was about the dosage, not the association of the toxic substance to certain diseases. A dosage-estimate requirement was created for atomic veterans, whereas a minimum time-on-base requirement was established for Camp Lejeune.

The importance of correctly understanding and addressing these differences is demonstrated in the decades-long debate over whether to provide Blue Water Navy (BWN) Vietnam veterans a presumption of service connection for Agent Orange exposure and associated diseases. Although the clear language of the Agent Orange Act of 1991 included all who "served in the Republic of Vietnam during the Vietnam era," a VA Office of General Counsel (OGC) opinion in 1997 narrowed the concession of exposure to Agent Orange to those who had "boots on the ground," eliminating those who served on the waters offshore. Since then, the VA, Congress and veteran leaders have spent decades debating, researching and analyzing whether evidence shows that these veterans had been exposed to sufficient levels of Agent Orange to cause their diseases. However, these delays stemmed from a failure to understand what evidentiary gap needed to be filled.

To include BWN veterans in the Agent Orange presumptive, Congress (or the courts) only needed to reverse the OGC's flawed decision. There was no need to reassess or relitigate whether an association or causative relationship existed between Agent Orange



and the diseases veterans were suffering from since the Agent Orange Act had already established the standard that a veteran only needed “service in Vietnam”—which should include offshore waters—for concession of exposure. As such, all that should have been required was a determination that BWN veterans should be included in the concession of exposure, not what levels of exposure they had experienced and whether such levels caused the covered diseases.

In analyzing the history of military toxic exposures and the evolution of VA presumptives, we were able to develop some archetypes for presumptives and ultimately a model system for classifying different presumptive types. Such a classification system could enable the VA and Congress to better determine when and how to establish or expand a toxic-exposure presumptive.

### Three Major Steps to Establish Presumptives

From our review of presumptives history, we found that there are three critical steps or milestones along the pathway to creating a presumptive:

1. **Acknowledgment** of a possible toxic exposure risk
2. **Concession** of exposure to toxic substances
3. **Presumption** of service connection between exposure and the disease

When the VA or Congress creates presumptives, it typically follows a specific sequence. This involves establishing a concession of exposure at or about the same time as the initial presumption(s) of service connection. In almost all instances, the VA issues an acknowledgment of the toxic exposure before creating a presumptive.

It’s important to note that there is no inherent requirement, need or justification for effectively making all three of these determinations at or around the same time. Each of these is a separate and distinct decision with its own unique role and significance in the process of creating presumptives.

We found that a VA concession of exposure for toxic substances and environmental hazards (sometimes referred to as “presumption of exposure” in VA regulations and statutes) almost always occurred coincident with establishing the first presumption of service connection. However, the concession of exposure has its own separate and distinct function in creating a presumptive, based on different evidence than is required to establish either an acknowledgment or presumption of service connection. Our analysis of the history of toxic exposures and presumptions led us to the finding that exposed veterans could benefit if these three steps were allowed to be determined separately, as later discussed.



DAV, alongside our VSO partners, congressional leadership, veterans and their widows, stood in front of the U.S. Capitol, and called on President Trump to end the stay on Blue Water Navy claims.

## GARY SAUER

Army veteran (retired)

PFAS

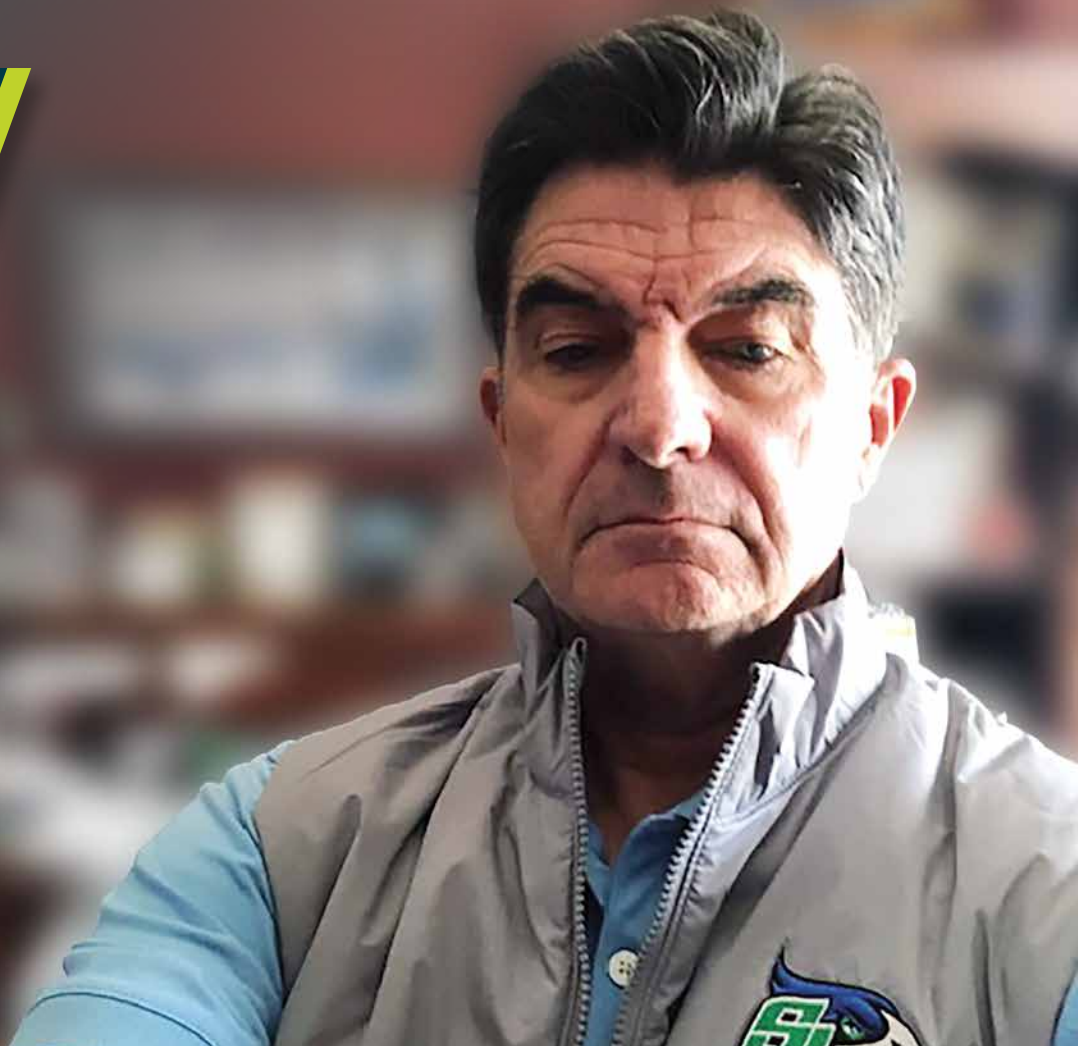


PHOTO COURTESY OF GARY SAUER

Six years ago, retired Army Lt. Col. Gary Sauer was diagnosed with non-Hodgkin's lymphoma, a type of blood cancer. He had no family history of cancer of any kind, and testing confirmed he wasn't genetically predisposed.

But over his 22-year military career, Sauer—who was also diagnosed with a rare kidney disease—served at numerous installations known to have the presence of perfluoroalkyl and polyfluoroalkyl substances (PFAS).

These synthetic “forever chemicals” are found in everything from clothing to cookware. With enough exposure, PFAS have been shown to cause cancer, thyroid disease, reproductive problems and other health issues.

Although the DOD recognizes more than 700 U.S. military sites known or likely to be contaminated with PFAS, the Department of Veterans Affairs does not concede PFAS exposure to those who served at any of those locations, nor does it acknowledge a 2022 report from the National Academies of Sciences,

Engineering, and Medicine (NASEM) noting diseases associated with PFAS exposure. That means veterans must prove their individual exposures and convince the VA there is a connection between their illnesses and that exposure in order to receive benefits.

On military bases, the primary source of PFAS—and one that can be particularly invasive—is the use of firefighting foam in training exercises. That foam can find its way into drinking water.

“We’re using that [water] to prepare food. We were drinking it straight from the water fountains. ... We were showering in it, brushing our teeth,” Sauer said. “So, the exposure of that was pretty significant.”

Sauer spent the first four years of his career at Fort Ord, California, a base that has since tested particularly high for PFAS. In 2017, according to Department of Defense data, the groundwater at Fort Ord contained PFAS chemicals at 334 parts per trillion—more than 80 times

the maximum allowable amount set by the most recent federal rule limiting PFAS in drinking water.

Armed with extensive research, medical testing that shows PFAS in his blood and a letter from an oncologist that says PFAS cannot be ruled out as a cause of his cancer, Sauer is optimistic he'll be successful with his own claim. But he knows too many veterans who don't have the resources, or whose illnesses are too acute, to fight what can be a long, trying fight.

That's why Sauer has dedicated much of his time—even setting aside a career—to advocate for PFAS-exposed veterans.

“I believe I have the obligation to the veterans and my fellow service members, that if there's anything I can do, I want to help them,” Sauer said.

Adopting the recommendations in this report would remove many of the evidentiary, financial, and political obstacles that prevent VA and Congress from creating presumptives for PFAS and other toxic exposures.





# RECOMMENDATIONS

PHOTO BY SENIOR AIRMAN JULIANNE SHOWALTER/U.S. AIR FORCE

## **Recommendation 1: Strengthen Legal Frameworks for the Presumptive-Making Process**

While the PACT Act codified an internal VA presumptive decision process generally modeled on the process first enacted by the Agent Orange Act, we propose to build on and strengthen that framework while seeking to avoid the political and fiscal obstacles that have frequently prevented previous legal frameworks from creating new and expanding existing presumptives for toxic-exposed veterans. We recommend Congress enact legislation to create a new legal framework built around the three steps in creating a presumptive: acknowledgment, concession and presumption of service connection.

Each step in our proposed framework should have specific timelines, thresholds, decisions and triggers that move the process toward a final decision. To ensure timely and accurate decisions, the Department of Veterans Affairs must strengthen its comprehensive data collection, veteran health surveillance, medical research and analysis. Robust transparency and veteran stakeholder engagement throughout the entire presumptive decision-making process is also necessary to ensure fairness, equity and public confidence.

### **1.1: Acknowledgment of Possible Toxic-Exposure Risk**

The first significant step in our proposed framework is for the VA to formally acknowledge a possible toxic-exposure risk when it has credible evidence of a toxic exposure or environmental hazard incident affecting

a group of service members. The goal is to make such determinations at the earliest possible date following an incident. This acknowledgment would only confirm that an incident occurred that may have been a toxic exposure affecting a group of service members; it would not require a determination of exactly what group of veterans was exposed, what specific substances they were exposed to or what specific health consequences could follow.

However, the acknowledgment would trigger several additional actions. First, the VA would be required to begin collecting and analyzing all relevant data and information about that incident to help determine whether a confirmed toxic exposure affected a group of service members. Second, within 90 days of an acknowledgment, the VA must decide whether to establish a concession of exposure, defer this decision for up to 90 days to collect and analyze additional data, or close the decision process without a concession of exposure. In addition, the department must decide whether to provide permanent or temporary health eligibility for veterans and their dependents who may have been exposed.

While it is possible to create a presumptive without first having a formal acknowledgment of an exposure by the federal government, requiring this first step has significant advantages. Our research found that the time from a formal VA acknowledgment of exposure to a concession of exposure was 13 times quicker than the time from the first exposure to the acknowledgment (2.4 years versus 31.4 years). Our proposed framework



If you serve overseas and you come home, or you serve in general and you've been exposed to toxic waste or any of those things, it's a battle. We've still got Vietnam War veterans fighting to get diseases covered for Agent Orange. This has to stop.

—Jon Stewart, *entertainer and advocate*

intends to significantly shorten the time from exposure to acknowledgment by redefining the role of acknowledgment and then establishing actions that are triggered after that acknowledgment.

For example, a fire at the Mishraq State Sulfur Mine Plant in Iraq in June 2003 burned for almost a month. According to the VA, the Department of Defense took samples of the air near the plant during the fire and found sulfur dioxide at levels that could be immediately dangerous to health and life. If there were no security or safety concerns with sharing this information, there could have been a formal acknowledgment at that time. In 2007, four years later, the Army evaluated several soldiers who had prolonged exposure to the sulfur dioxide emitted during that fire to determine if they had pulmonary symptoms. Again, absent national security or other significant military concerns, the DOD should have shared this information with the VA officials, who could have issued an acknowledgment then. Instead, the first formal acknowledgment of this toxic exposure did not occur until 2010 in a Veterans Benefits Administration training letter; however, no concession of exposure and no presumptive has been established since then.

### **1.2: Concession of Exposure to Toxic Substance(s)**

Within 90 days following a formal acknowledgment of a toxic exposure, the VA's next step—if justified—would be to establish a concession of exposure for the event, which would legally concede exposure to a toxic substance or substances for a cohort of affected veterans, typically based on the time and location of their service. The threshold for establishing a concession should be sufficient evidence to conclude a toxic-exposure or environmental-hazard incident occurred that could pose a risk to the health of service members. The concession does not address whether medical evidence of diseases linked to the exposure is sufficient; it only covers who was exposed to what, when and where. If this threshold is not met, the VA can either defer the decision for an additional 90 days and continue to collect

and analyze data, or it can determine that no concession of exposure is necessary.

The ILER—an individual electronic record of exposures designed in collaboration between the VA and the DOD for each service member and future veteran—should also play a role in conceding exposures. While the PACT Act required the VA to review a claimants' ILER records, we recommend every toxic exposure listed in a veteran's ILER should be considered a concession of exposure for that veteran.

Whenever a concession of exposure determination is made, it should trigger three additional actions:

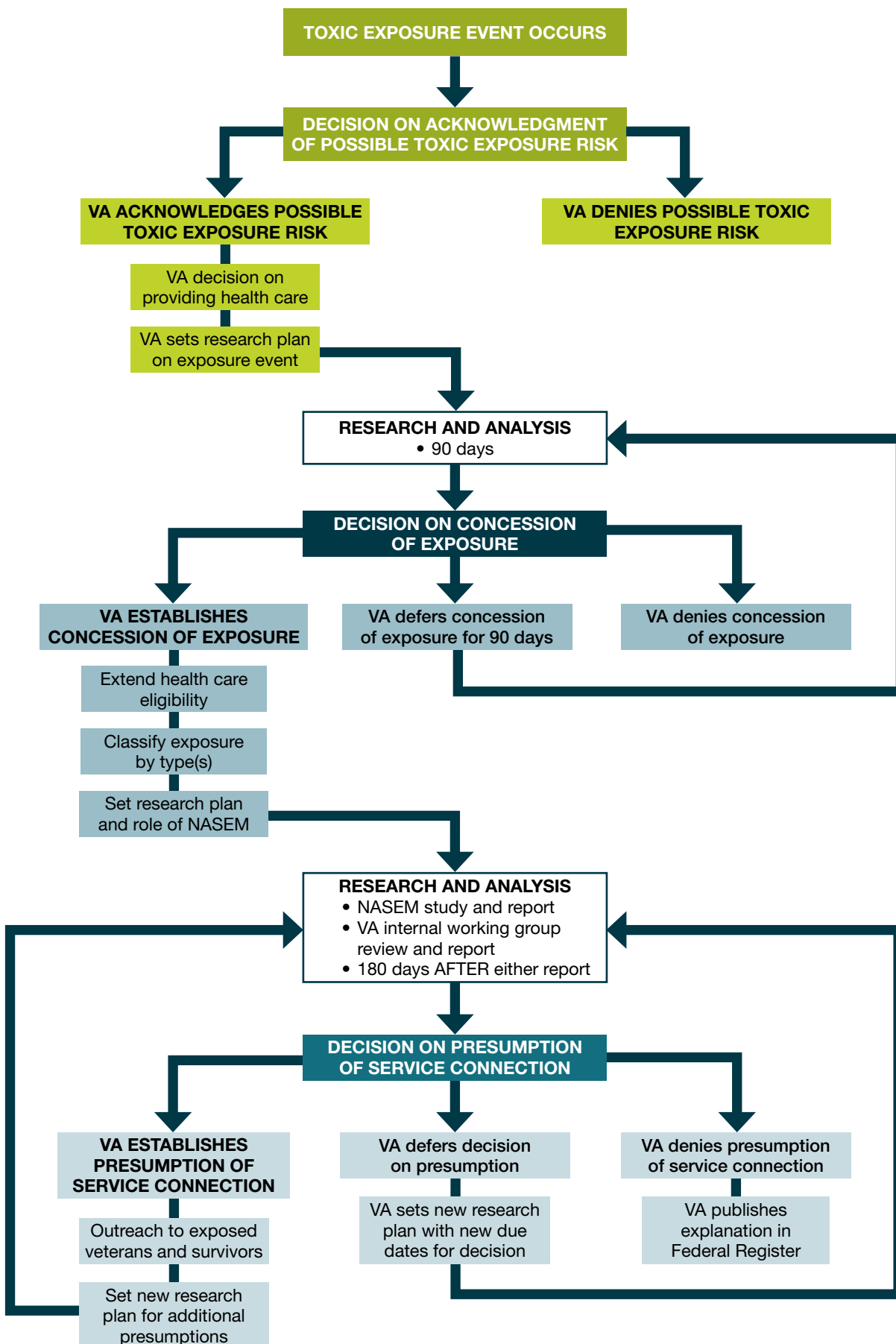
- Classification of the presumptive type or types that apply to that exposure, to inform and guide the VA in its research, analysis and decision-making. (See Recommendation 4 for further explanation.)
- Creation of a formal research plan to determine whether presumptions of service connection for related diseases are merited, which may or may not include a requirement for the National Academies of Sciences, Engineering and Medicine (NASEM) to study available scientific evidence.
- Extension of priority health care eligibility for veterans covered by the concession, to ensure that exposed veterans have access to VA health care for testing, treatment and preventive medicine, as appropriate.

In addition, a concession of exposure would begin a new timeline for determining whether to establish presumptions of service connection for diseases, if merited. The decisions must be made no later than 180 days after a recommendation from the VA's internal review process or delivery of a NASEM report, if ordered, that includes new or modified conclusions about the exposure.

Once a concession of exposure is established, it should be reviewed and adjusted on a regular basis as greater knowledge and understanding is developed about what veterans were exposed to what toxin(s) and environmental hazard(s).



## FLOW CHART FOR RECOMMENDED PRESUMPTIVE FRAMEWORK



## ANDREA LAFORCE

Air Force veteran

'K2'  
TOXINS



PHOTO COURTESY OF ANDREA LAFORCE

Air Force veteran Andrea LaForce deployed to Karshi-Khanabad Air Base in Uzbekistan in 2003, more than a decade into what would become a 29-year military career. Like so many others there, she experienced fatigue, headaches and coughing. Two months in, she developed eczema.

"We called it the 'Karshi crud,'" she said.

Signs around the base warned of chemical agents and radiation hazards. A pond ominously changed colors, earning the moniker "Skittles Pond." In some places, black goo emerged from the ground. And, as if transported into a sci-fi movie, LaForce remembers when workers dressed in hazmat suits and carrying Geiger counters visited the base.

But LaForce said she figured any potential exposures were a fair trade-off. After all, they weren't being shot at, and the aircraft always returned relatively safely.

Six months after leaving K2, LaForce suffered severe abdominal pain caused by a large ovarian cyst that burst. Nearly 20 years later, she continues to develop cysts and experience chronic pain. Her condition is manageable but takes constant care and monitoring. LaForce is also keenly aware that it could one day develop into ovarian cancer.

She received service connection for the ovarian cysts, but with a 0% disability rating.

"Apparently the hormonal treatments, the pain and everything don't count for

anything," she said. "While I'm thankful I haven't had cancer and haven't had some truly debilitating issues, chronic pain ain't no joke either."

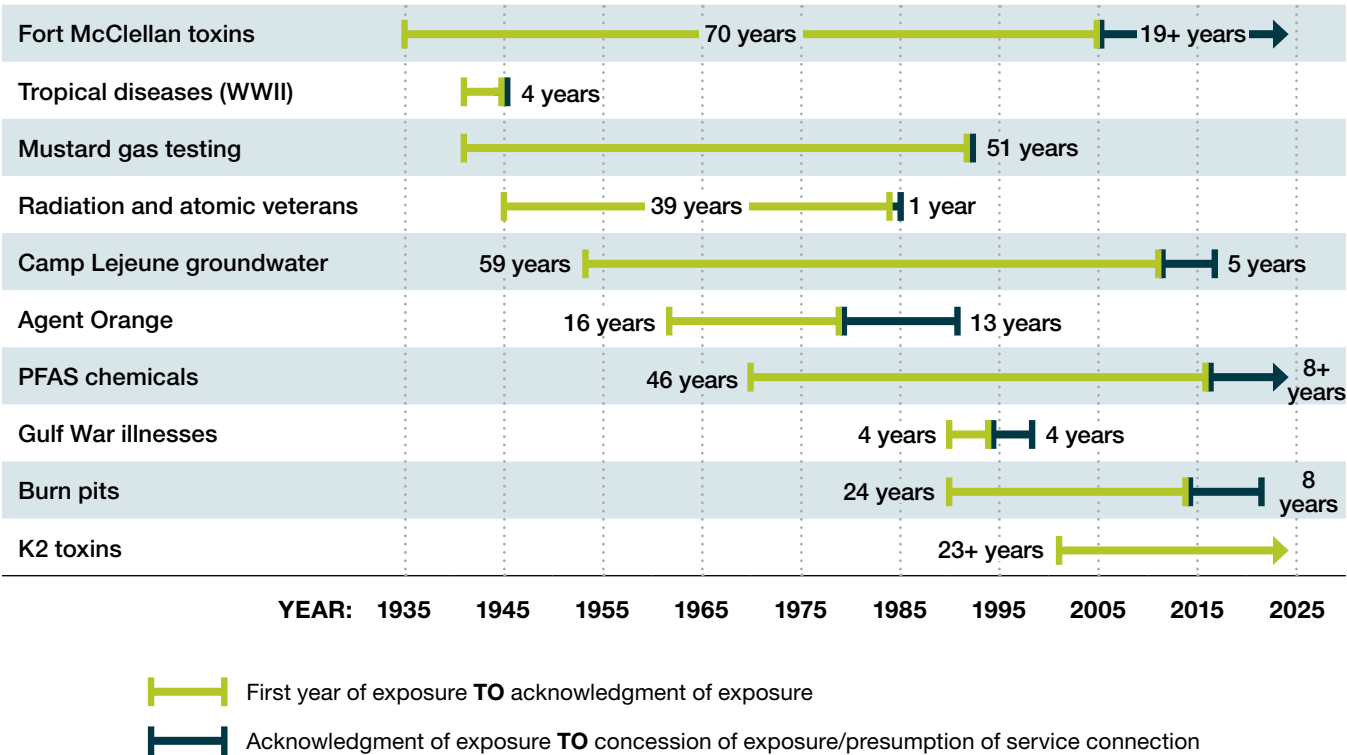
As she became more involved in the veteran community, LaForce met other female K2 veterans with high incidence rates of reproductive issues. Now she's motivated to keep fighting for recognition and benefits for her fellow veterans.

"I just feel that I owe them, and I owe myself," she said. "And I owe those that are going to come behind us."

The recommendations proposed in this report would help future toxic-exposed veterans get access to VA health care and benefits in a way that accurately and fairly recognizes their sacrifice.



# COMPARISON OF SELECTED TOXIC EXPOSURE TIMELINES



## 1.3: Presumption of Service Connection Between Exposure and Disease(s)

The third and final major step in our recommended framework is establishment of a presumption of service connection between an exposure and a disease or health condition. Following a concession of exposure, the VA must adopt a formal research plan to determine whether the toxic exposures covered under that concession can be linked to diseases and health conditions. Typically, we would expect the VA to engage NASEM to conduct a study as part of that plan, though some instances may not be feasible or advisable.

Once a NASEM report is delivered to the VA, or after an internal VA review results in a recommendation to create a presumption of service connection, the VA secretary would have 180 days to decide whether to create the presumption, defer a decision to a certain date with an explanation and action plan to develop additional information, or reject the creation of a presumption with an explanation. If a presumption is established, the VA must reaffirm or amend the prior concession of exposure based on any new and relevant information developed while researching the presumption. Following the establishment of a presumption, the VA must create an outreach plan to

all veterans, as well as their families or survivors, who are covered under the concession of exposure and should retroactively review any claims related to the covered conditions.

As described in this report, the PACT Act codified the VA's internal presumptive review process, which determines a list of toxic exposures to be reviewed each year and then whether to create a presumption of service connection for those toxic exposures. This internal process assesses the evidence for positive association, categorizes the strength of that evidence and makes a recommendation to the VA secretary on whether to establish a presumption of service connection. Ultimately, the secretary retains discretion to accept or reject the recommendations.

While this new VA process uses a positive association standard in assessing the evidence for presumptions, it does not require the VA to create a presumption when a positive association between a disease and an exposure is found. We recommend adding a statutory requirement, similar to language included in the Agent Orange Act, that whenever the VA determines that a positive association exists, based on all available evidence including NASEM reports, a presumption of service connection will be established.

## **Recommendation 2: Expand Scientific Understanding of Toxic Exposures Through Research, Monitoring, Surveillance and Oversight**

Expanding scientific understanding of toxic exposures and environmental hazards is essential to support the VA's efforts to provide timely, comprehensive benefits and health care to exposed veterans. Congress should support expanded research, monitoring, surveillance and oversight of federal research activities related to toxic exposures and provide adequate funding for each effort.

### **2.1: Permanent Contract with NASEM**

We recommend requiring the VA to enter a permanent contract with NASEM to research and report on military toxic exposures and environmental hazards. NASEM reports would provide conclusions about the level of evidence for positive association required to establish presumptions of service connection for diseases and illnesses.

### **2.2: Enduring Epidemiological Study of Service Members and Veterans**

The VA should contract with an outside organization to conduct an epidemiological study of service members' and veterans' overall health status. The Military Officers Association of America (MOAA) worked with the United Health Foundation on such a study (the 2020 Health of Those Who Served Report), which could serve as a model for regularly providing a health baseline for service members versus the civilian population.

### **2.3: Strengthen DOD Environmental Hazard Monitoring and Information Sharing**

We recommend requiring the DOD to strengthen its monitoring of military environmental hazards and individual exposures to toxic substances for all service members. This information must be publicly available to support congressional oversight as well as veteran and veterans service organization awareness of exposures.

### **2.4: Enhance Regular Review, Analysis and Reporting**

The federal government must maximize and optimize knowledge of toxic exposures for the following departments and agencies:

- DOD: Assess the operations and environmental factors of DOD operations (home or abroad) for potential toxic-exposure risks, and articulate actions the DOD took or is taking to mitigate toxic exposure. Regularly report to the VA and Congress

on the latest evidence of exposures. Further, DOD Health Affairs and TRICARE should monitor and assess service members' health conditions to look for early indications of conditions related to toxic exposures.

- VA Veterans Health Administration: Continually review and analyze veterans' health care usage that may be related to toxic exposures, and regularly report to Congress on the findings.
- VA Veterans Benefits Administration: Continually review and analyze veterans' claims for benefits that may be related to toxic exposures, and regularly report to Congress and the public on the findings.
- NASEM: In response to contractual requests from the VA on specific exposures, regularly report the latest research about military toxic exposure and environmental hazards to the VA and Congress.
- VA Secretary: Coordinate all Veterans Health Administration, Veterans Benefits Administration and DOD data analysis and reporting on toxic exposures; regularly report the latest findings and actions to Congress and post them publicly.
- Interagency Working Group: Continually develop, publicly publish and update a comprehensive research plan for all VA-acknowledged toxic exposures, as authorized by the PACT Act (Section 502). Congress should remove the current sunset provision for this reporting requirement and make it permanent.

### **2.5: Create a Toxic and Environmental Exposures Stakeholder Advisory Committee**

Establish an advisory committee comprising military, veteran and military-veteran family stakeholders with interest and expertise on military toxic exposures and veterans health care and benefits to advise the VA secretary. The advisory committee must be subject to the Federal Advisory Committee Act (FACA) to ensure sufficient transparency and oversight of military toxic and environmental exposures, along with the VA activities related to them.

## **Recommendation 3: Eliminate Legal Barriers to Receiving Toxic-Exposure Benefits for Veterans and Their Families and Survivors**

To remove some of the legal, political, and financial obstacles that have prevented the timely establishment of toxic-exposure presumptives in the past and to improve the delivery of care and benefits to toxic-exposed veterans and affected family members, we offer the following additional recommendations.





## DAVID CRETE

Air Force veteran



RADIATION

PHOTO BY PHOTOGRAPHERS OF LV

**W**hen David Crete graduated at the top of his class from the United States Air Force Security Police Academy in 1983, he thought he would have his preference for duty stations. Instead, Crete ended up being selected for an assignment at the Air Force's Tonopah Test Range (TTR), a highly classified weapons testing site in Nevada.

For nearly four years, Crete provided operational security at TTR, until a knee injury forced him to transfer to Nellis Air Force Base near Las Vegas.

"Shortly after arriving at Nellis, I started experiencing pulmonary issues," Crete said. "I developed pneumonia. Military doctors diagnosed me with asthma and eventually sent me on my way, but I continued to have respiratory issues."

After leaving the Air Force, Crete filed for disability compensation from

the Department of Veterans Affairs and received a 10% rating for his asthma, but chronic bronchitis continued to cause him problems. It's become a consistent reoccurrence in his life, developing at least twice a year and lasting anywhere from two weeks to two months at a time.

"About 20 years after leaving TTR, I developed lipomas and even had one about the size of a grapefruit removed from my back because it was causing so much pressure on my spine," Crete said. "I also have several other lipomas that may need surgical removal in the future, but fortunately they have all tested benign so far."

In 2016, while at a reunion with other TTR airmen, Crete and others noticed they all had similar health problems: pulmonary issues, tumors and various cancers. A couple of veterans said they

believed that radiation exposure was to blame.

Crete researched this further and discovered that various nuclear tests occurred decades earlier and that the illnesses and symptoms he and his fellow TTR airmen faced were long associated with radiation and toxic exposure.

When the PACT Act was signed in August 2022, Crete tried to refile for disability compensation for his various health conditions based on toxic exposure. But because the VA does not currently recognize TTR as a toxic exposure location, all of his claims were denied.

The recommendations and findings in this report, if adopted, could help Crete and other veterans whose toxic exposures are not yet recognized, acknowledged or conceded by VA or the Department of Defense.

### **3.1: Establish Pre-Separation Enrollment in VA Health Care**

A new transition program, similar to the Benefits Delivery at Discharge (BDD) program, must be created to provide separating service members the option to pre-enroll in the VA health care system, have the VA rapidly determine their priority group eligibility, and immediately transfer their DOD medical and service records to the VA.

### **3.2: Implement Seamless Record Sharing Among the VA, DOD, Federal and Private Partners**

The VA must complete the transition to a new electronic health record (EHR) system that allows seamless and instantaneous sharing of all relevant medical, exposure, service and claims records within and between the department and the DOD. In addition, the department must work with other federal agencies to develop a seamless EHR that works among federal agencies and private sector health care providers, particularly those who treat veteran patients.

### **3.3: Create a Process to Care for Family Members Harmed by Toxic Exposures**

The VA must work with the DOD to develop programs and processes so family members of service members who may have been exposed to military toxins can receive appropriate health care from the DOD or the VA, as appropriate, for conditions related to such exposures, similar to what was provided in response to groundwater contamination at Camp Lejeune, North Carolina.

### **3.4: Exempt Toxic-Exposure Costs from PAYGO Rules and Statutes**

Congress should amend pay-as-you-go (PAYGO) rules in the House and Senate, as well as the Statutory Pay-As-You-Go Act of 2010 (Public Law 111-139), to exempt all toxic-exposure-related costs for the VA and veterans benefits, services and programs. PAYGO has acted as a significant obstacle to providing long-overdue benefits, health care and justice for veterans who have suffered for years from exposure to toxic substances and environmental hazards. There is no logical or moral justification for requiring cuts to other veterans programs to provide justice to toxic-exposed veterans.

### **3.5: Retroactive Review of Cost Estimates for Adding Presumptives**

Congress should enact legislation to require the Congressional Budget Office (CBO) to conduct a retrospective review of cost estimates for legislation that expanded veterans benefits and health care due

to military toxic exposures compared with the actual costs after implementation. Many examples of CBO cost estimates overstate the cost of legislation to provide toxic-exposed veterans with benefits and health care, most recently for the legislation that had been proposed to finally include Blue Water Navy veterans under the Agent Orange presumptive. A review of past CBO estimates versus actual costs could provide a more realistic understanding of the costs of toxic exposures.

## **Recommendation 4: Establish a New Classification System for Toxic Exposures and Presumptives**

The VA should develop, adopt and use a new classification system that organizes military toxic-exposure presumptives into different types based on the evidentiary gaps veterans must overcome to prove the three elements of service connection:

- An in-service incident or exposure
- A current disability or disease
- A medical nexus or link

Some toxic exposures and presumptives may not fit perfectly into one type of exposure and could partially fit into two or more. In addition, a toxic exposure may initially fit into one type of presumptive, but after time and additional research, it could better be classified as a different type.

For example, we offer a model of such a classification system that would include the following six types of toxic-exposure presumptives:

- **Type 1—Limited Scientific Evidence for Late-Onset Disabilities:** This presumptive would require presumptions of service connection once a positive association between the exposure and the disease or illness was established and sometimes would require a concession of exposure for the cohort of veterans affected. Type 1 presumptives include Agent Orange, mustard gas and radiation.
- **Type 2—Uncertain/Inadequate Event Dosage:** This type of presumptive would require a presumption of service connection only for veterans who could provide evidence of sufficient dosage of the toxic substance, such as for “atomic veterans,” or a concession of exposure could be granted for an entire cohort, such as for Camp Lejeune veterans exposed to contaminated groundwater.
- **Type 3—Uncertain Exposure Event:** This presumptive includes events where the specific toxic substances are not known, such as Persian Gulf War illnesses. In addition, the VA’s establishment of presumptives for chronic and



constitutional diseases after World War I and tropical diseases after World War II are also examples of presumptives where the concession of exposure did not identify any specific toxic substances.

- **Type 4—Unrecognized or Limited Disabilities:** Some Persian Gulf War (PGW) illnesses were originally unrecognized disabilities until the VA formally recognized “unrecognized illnesses” and “chronic multisymptom illness” within the PGW presumptive. This type of presumption includes time-bound presumptives connected with Agent Orange exposure, such as chloracne, porphyria cutanea tarda, and acute and subacute peripheral neuropathy, which all have the requirement to manifest within a year of last exposure to Agent Orange.
- **Type 5—Unable to Eliminate Non-Service Events:** This type of presumptive includes exposures that are widespread outside the military environment, making it hard to determine which source caused a veteran’s illness or condition. Examples include

PFAS, noise and vibration exposures, as well as asbestos.

- **Type X—Unknown or Uncertain Disabilities:** This presumptive is the most nebulous since it initially involves uncertain incidents or exposures and uncertain illnesses or disabilities. As data and information are slowly aggregated, this type of exposure could move to a different type or it could be removed altogether. An example is the so-called “Havana syndrome,” in which U.S. diplomatic and military personnel overseas have reported symptoms consistent with head trauma. However, it cannot confirm a cause, though some speculation involves sonic attacks.

By using this type of classification system for toxic exposures and the presumptives created to address them, the VA would be able to focus on research and data gathering designed to address the specific evidentiary gaps of that type, rather than litigating issues that may have already been settled. For a more detailed information about our proposed classification system, see Appendix D.

## EXPOSURES BY PRESUMPTIVE TYPE

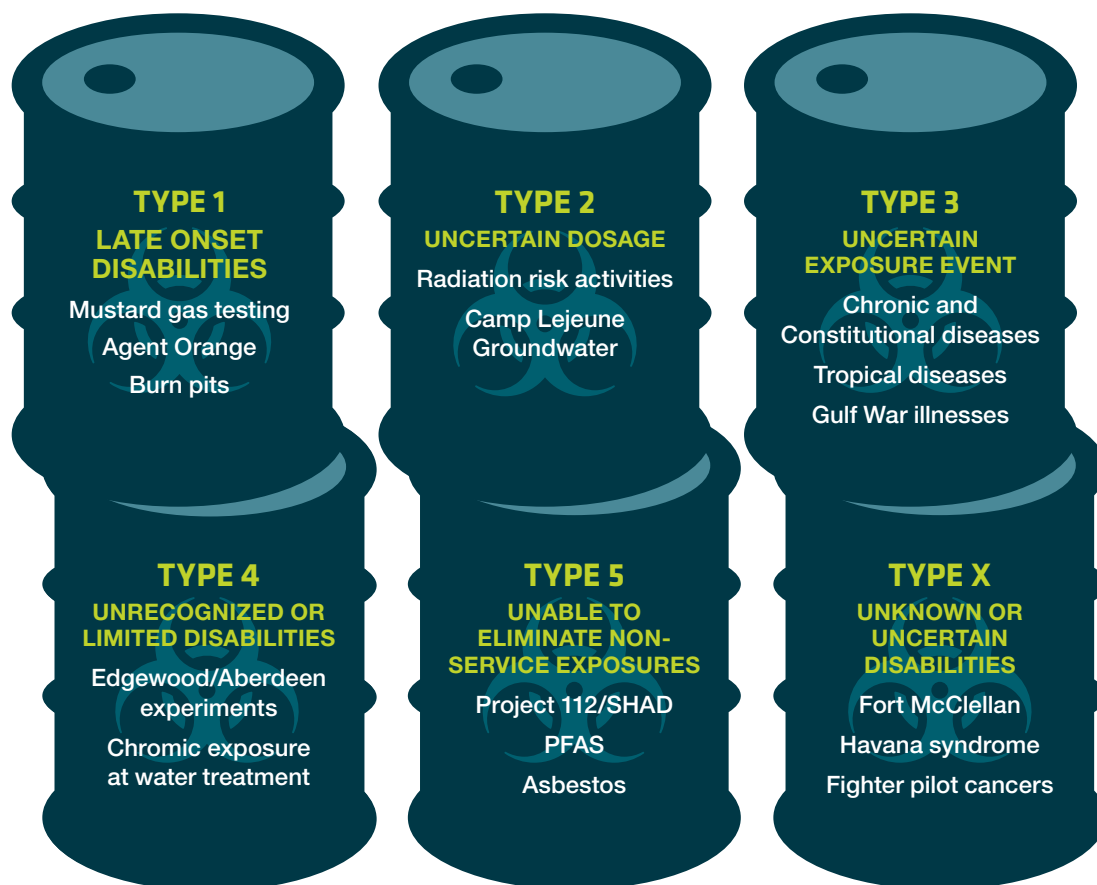




PHOTO COURTESY OF MARK JACKSON

# THE PATH FORWARD

Since the founding of our nation, America's service members have fought to protect our freedom, making sacrifices that have left millions of men and women with permanent injuries and illnesses from their service. Over the past century, we have learned that the full effect of military toxic exposures and environmental hazards can take years, sometimes decades, to manifest, leaving many veterans without the care and benefits they have earned.

Beginning shortly after World War I, our nation began using the legal mechanism of presumptives to overcome the challenges of proving certain injuries or illnesses were related to service, particularly for toxic-exposure claims. Unfortunately, scientific, policy, political and fiscal challenges have too often delayed the establishment of these presumptives, effectively denying justice for some veterans, their families and survivors. While there have been some significant leaps forward, such as the enactment of the Agent Orange Act of 1991

and the PACT Act of 2022, significant obstacles have left, and will continue to leave, too many toxic-exposed veterans waiting for the health care and benefits they have earned.

After reviewing and analyzing the history of toxic exposures and the evolution of presumptives, we believe it is time to finish what the PACT Act started by reforming the presumptive decision process. In this report, we have outlined what a new legal framework could look like, along with supportive policy changes to remove obstacles that have prevented the timely establishment of presumptives in the past. Moving forward, we call on the Department of Veterans Affairs and congressional leaders to join our growing coalition of veterans service organizations and other stakeholders to enact comprehensive reform so future generations of veterans never have to wait decades to receive the care and benefits they deserve. It's time to end the wait for toxic-exposed veterans.





## Case Study: Fort McClellan, Alabama

### What Happened Under Current Laws and Regulations

Fort McClellan, located near Anniston, Alabama, became an Army installation in 1917. After World War II, it was home to the Chemical Corps and Chemical Weapons School for the U.S. Army until the base closed in 1999. In 1953, Fort McClellan conducted Operation Top Hat, which used military personnel to test exposure and decontamination methods that included sulfur mustard and nerve agents. In 1962, Fort McClellan added the Biological Radiological Agency.

From 1929 to 1971, a Monsanto chemical plant operated south of Fort McClellan in Anniston. Airborne polychlorinated biphenyls (PCBs) from the plant entered the environment, and the surrounding community was exposed. In 2003, Monsanto Chemical settled a class action lawsuit with more than 200,000 residents of Anniston for more than \$700 million.

Although the base closed in 1999, a 2005 National Research Council report, *Contaminants in the Subsurface: Source Zone Assessment and Remediation*, recognized that both the groundwater and soil were contaminated.

The VA recognized the toxic chemicals used at Fort McClellan by 1996, noting that potential exposures could have included, but were not limited to:

- Radioactive compounds (cesium-137 and cobalt-60) used in decontamination training activities in isolated locations on the base
- Chemical warfare agents (mustard gas and nerve agents) used in decontamination testing activities in isolated locations on base
- Airborne PCBs from the Monsanto plant in Anniston

However, the VA has not established a concession of exposure for veterans who served at Fort McClellan or

created any presumptions of service connection for any diseases these veterans developed after that exposure. The PACT Act required an epidemiologic study of the health of veterans who served there, a long overdue initial step.

### What Would Have Happened Under Our Proposed Presumptive Framework

If our proposed framework for creating toxic-exposure presumptives had been in effect, veterans who served at Fort McClellan would very likely be in a better position.

Under our proposed framework, the VA would have been required to issue an acknowledgment of a possible toxic-exposure risk once there was credible evidence. Given the nature of the chemical weapons research at Fort McClellan and public concerns about the PCBs from the Monsanto chemical plant nearby, the VA would have likely been required to issue an acknowledgment by the 1990s at the latest.

The acknowledgment would have triggered additional VA investigation and forced a decision on creating a concession of exposure within 90 days. The 2005 National Research Council report likely would have met our proposed threshold to establish a concession of exposure. That step would have removed the evidentiary barrier requiring veterans to prove exposure, allowing them to pursue direct service connection claims for related conditions more easily and provide these veterans with priority health care eligibility.

The VA would likely have ordered a report from the National Academies of Sciences, Engineering and Medicine (NASEM). We note that an epidemiological study was required under the PACT Act—work that could generate evidence of a positive association between Fort McClellan exposures and health conditions in the coming years. Under our framework, that study might have been ordered 17 years earlier.

Finally, if a NASEM report had been presented to the VA secretary, it would have triggered a decision on whether to create a presumptive for Fort McClellan exposures, which could have established a presumption of service connection for one or more conditions. Under our framework, this might have taken place 10 to 15 years ago. Unfortunately, under the current system, we still have years before the epidemiological study is completed, which means veterans suffering from negative health effects will likely be waiting for many more years before the VA recognizes possible presumptive diseases. Some will die without ever achieving justice or qualifying their spouses and children for survivor benefits. Veterans who served at Fort McClellan deserve better.

# APPENDIX A: Dataset of Military Toxic Exposures

Exposure, Hazard or Incident	First Year of Exposure	Last Year of Exposure	First Acknowledge by Federal Government	Concession & Presumption Established	Exposure to Acknowledge (years)	Acknowledge to Concess. & Presumpt. (years)	Exposure to Concession & Presumption (years)	Concession Type	NASEM Study?
Chronic Diseases	1917	1921	1921	1921	4	0	4	Admin	No
Chronic Constitutional Diseases	1917	1921	1921	1921	4	0	4	Admin	No
Tropical Diseases	1941	1945	1945	1945	4	0	4	Admin	No
Radiation-Risk Activity – Atomic Veterans	1945	1974	1984	1985	39	1	40	Legis	Yes
Agent Orange or Other Herbicides	1962	1975	1978	1991	16	13	29	Legis	Yes
Mustard Gas or Lewisite	1941	1945	1992	1992	51	0	51	Admin	Yes
Agent Orange Birth Defects	1962	1975	1997	1997	35	0	35	Legis	Yes
Gulf War Veterans' Illnesses	1990	Ongoing	1994	1998	4	4	8	Legis	Yes
Herbicide Tests and Storage	1945	1977	2003	2003	58	0	58	Admin	Yes
Camp Lejeune Water Supplies	1953	1987	2012	2017	59	5	64	Admin	Yes
Sand, Dust & Particulates	1990	Ongoing	2014	2021	24	7	31	Admin	Yes
Oil Well Fires	1991	1991	2021	2021	30	0	30	Admin	Yes
Burn Pits & Airborne Hazards	1990	Ongoing	2014	2022	24	8	32	Legis	Yes
Plutonium Cleanu, Palomares, Spain	1966	1967	2022	2022	56	0	56	Legis	No
Thule Air Force Base in Greenland	1968	1968	2022	2022	54	0	54	Legis	No
Radiological Cleanup of Enewetak Atoll	1977	1980	2022	2022	45	0	45	Legis	No
Depleted Uranium	1990	Ongoing	1994		4				Yes
Pesticides & Gulf War Veterans	1990	1991	1996		6				Yes
Chemical & Biological Weapons in Iraq	1991	1991	1996		5				Yes
Radium Irradiation Treatments	1940	1965	1998		58				No
Project 112/Project SHAD	1962	1973	2000		38				Yes
Fort McClellan, Alabama	1935	1999	2005		70				No
Chromium Exposure at Qarmat Ali, Iraq	2003	2003	2009		6				No
LORAN radiation	1942	2010	2010		68				No
Sulfur Fire (Al Mishraq, Iraq)	2003	2003	2010		7				No
Fukushima Nuclear Accident, Japan	2011	2011	2012		1				No
Radiation at McMurdo Station, Antarctica	1962	1979	2013		51				No
Edgewood/Aberdeen Experiments	1955	1975	2016		61				Yes
PFAS Exposure at Military Facilities	1970	Ongoing	2016		46				No
Atsugi Waste Incinerator	1985	2001	2000	Not Conceded	15				Yes
AVERAGE YEARS					31.4	2.4	34.1	Admin Total 8	Yes 16
								Legis Total 8	No 14



Acknowledgement Reference	Concession - Presumption Reference
<a href="http://nap.nationalacademies.org/read/11908/chapter/23">nap.nationalacademies.org/read/11908/chapter/23</a>	<a href="http://nap.nationalacademies.org/read/11908/chapter/23">nap.nationalacademies.org/read/11908/chapter/23</a>
<a href="http://nap.nationalacademies.org/read/11908/chapter/23">nap.nationalacademies.org/read/11908/chapter/23</a>	<a href="http://nap.nationalacademies.org/read/11908/chapter/23">nap.nationalacademies.org/read/11908/chapter/23</a>
<a href="http://nap.nationalacademies.org/read/11908/chapter/23">nap.nationalacademies.org/read/11908/chapter/23</a>	<a href="http://nap.nationalacademies.org/read/11908/chapter/23">nap.nationalacademies.org/read/11908/chapter/23</a>
<a href="https://congress.gov/bill/98th-congress/house-bill/1961">congress.gov/bill/98th-congress/house-bill/1961</a>	<a href="https://archives.federalregister.gov/issue_slice/1985/8/26/34451-34461.pdf">archives.federalregister.gov/issue_slice/1985/8/26/34451-34461.pdf</a>
<a href="https://publichealth.va.gov/PUBLICHEALTH/docs/agentorange/reviews/ao_newsletter_nov82.pdf">publichealth.va.gov/PUBLICHEALTH/docs/agentorange/reviews/ao_newsletter_nov82.pdf</a>	<a href="https://congress.gov/bill/102nd-congress/house-bill/556/text">congress.gov/bill/102nd-congress/house-bill/556/text</a>
<a href="https://archives.federalregister.gov/issue_slice/1992/1/15/1697-1700.pdf">archives.federalregister.gov/issue_slice/1992/1/15/1697-1700.pdf</a>	<a href="https://archives.federalregister.gov/issue_slice/1992/1/15/1697-1700.pdf">archives.federalregister.gov/issue_slice/1992/1/15/1697-1700.pdf</a>
<a href="https://congress.gov/104/plaws/publ204/PLAW-104publ204.htm">congress.gov/104/plaws/publ204/PLAW-104publ204.htm</a>	<a href="https://congress.gov/104/plaws/publ204/PLAW-104publ204.htm">congress.gov/104/plaws/publ204/PLAW-104publ204.htm</a>
<a href="https://congress.gov/bill/103rd-congress/house-bill/5244/text">congress.gov/bill/103rd-congress/house-bill/5244/text</a>	<a href="https://congress.gov/bill/105th-congress/house-bill/4328/text/pl?s=2&amp;r=1">congress.gov/bill/105th-congress/house-bill/4328/text/pl?s=2&amp;r=1</a>
<a href="https://gao.gov/assets/gao-19-24.pdf">gao.gov/assets/gao-19-24.pdf</a>	<a href="https://gao.gov/assets/gao-19-24.pdf">gao.gov/assets/gao-19-24.pdf</a>
<a href="https://congress.gov/bill/112th-congress/house-bill/1627">congress.gov/bill/112th-congress/house-bill/1627</a>	<a href="https://federalregister.gov/documents/2017/01/13/2017-00499/diseases-associated-with-exposure-to-contaminants-in-the-water-supply-at-camp-lejeune">federalregister.gov/documents/2017/01/13/2017-00499/diseases-associated-with-exposure-to-contaminants-in-the-water-supply-at-camp-lejeune</a>
<a href="https://veteran.mobilehealth.va.gov/AHBurnPitRegistry/">veteran.mobilehealth.va.gov/AHBurnPitRegistry/</a>	<a href="https://federalregister.gov/documents/2021/08/05/2021-16693/presumptive-service-connection-for-respiratory-conditions-due-to-exposure-to-particulate-matter">federalregister.gov/documents/2021/08/05/2021-16693/presumptive-service-connection-for-respiratory-conditions-due-to-exposure-to-particulate-matter</a>
<a href="https://federalregister.gov/documents/2021/08/05/2021-16693/presumptive-service-connection-for-respiratory-conditions-due-to-exposure-to-particulate-matter">federalregister.gov/documents/2021/08/05/2021-16693/presumptive-service-connection-for-respiratory-conditions-due-to-exposure-to-particulate-matter</a>	<a href="https://federalregister.gov/documents/2021/08/05/2021-16693/presumptive-service-connection-for-respiratory-conditions-due-to-exposure-to-particulate-matter">federalregister.gov/documents/2021/08/05/2021-16693/presumptive-service-connection-for-respiratory-conditions-due-to-exposure-to-particulate-matter</a>
<a href="https://veteran.mobilehealth.va.gov/AHBurnPitRegistry/">veteran.mobilehealth.va.gov/AHBurnPitRegistry/</a>	<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>
<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>	<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>
<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>	<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>
<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>	<a href="https://PACTAct.congress.gov/bill/117th-congress/senate-bill/3374">PACT Act: congress.gov/bill/117th-congress/senate-bill/3374</a>
<a href="https://congress.gov/103/statute/STATUTE-108/STATUTE-108-Pg4645.pdf">congress.gov/103/statute/STATUTE-108/STATUTE-108-Pg4645.pdf</a>	N/A
<a href="https://pubmed.ncbi.nlm.nih.gov/25121335/">pubmed.ncbi.nlm.nih.gov/25121335/</a>	N/A
<a href="https://ncbi.nlm.nih.gov/books/NBK233462/">ncbi.nlm.nih.gov/books/NBK233462/</a>	N/A
<a href="https://congress.gov/bill/105th-congress/house-bill/4110">congress.gov/bill/105th-congress/house-bill/4110</a>	N/A
<a href="https://health.mil/Military-Health-Topics/Health-Readiness/Environmental-Exposures/Project-112-SHAD">health.mil/Military-Health-Topics/Health-Readiness/Environmental-Exposures/Project-112-SHAD</a>	N/A
<a href="http://nap.nationalacademies.org/download/11146">nap.nationalacademies.org/download/11146</a>	N/A
<a href="https://academic.oup.com/milmed/article/181/4/307/4158514">academic.oup.com/milmed/article/181/4/307/4158514</a>	N/A
<a href="https://dtra.mil/Portals/61/Documents/NTPR/5-RDA_Docs/DTRA-TR-10-26 - USCG LORAN Transmitter X-Ray Exposure.pdf">dtra.mil/Portals/61/Documents/NTPR/5-RDA_Docs/DTRA-TR-10-26 - USCG LORAN Transmitter X-Ray Exposure.pdf</a>	N/A
<a href="https://cswab.org/wp-content/uploads/2021/02/Environmental-Exposures-to-Service-Members-Chemicals-and-Sources-10-03-Veterans-Admin-26-April-2010.pdf">cswab.org/wp-content/uploads/2021/02/Environmental-Exposures-to-Service-Members-Chemicals-and-Sources-10-03-Veterans-Admin-26-April-2010.pdf</a>	N/A
<a href="https://af.mil/News/Article-Display/Article/110512/dod-launches-tomodachi-registry-website">af.mil/News/Article-Display/Article/110512/dod-launches-tomodachi-registry-website</a>	N/A
<a href="https://dtra.mil/Portals/61/Documents/NTPR/5-RDA_Docs/dtra-tr-12-003-mcmurdo-station-dose-assessment-(final-6-21-12).pdf">dtra.mil/Portals/61/Documents/NTPR/5-RDA_Docs/dtra-tr-12-003-mcmurdo-station-dose-assessment-(final-6-21-12).pdf</a>	N/A
<a href="https://apps.dtic.mil/sti/pdfs/AD1009505.pdf#">apps.dtic.mil/sti/pdfs/AD1009505.pdf#</a>	N/A
<a href="https://epa.gov/sites/default/files/2016-05/documents/pfoa_health_advisory_final_508.pdf">epa.gov/sites/default/files/2016-05/documents/pfoa_health_advisory_final_508.pdf</a>	N/A
<a href="https://justice.gov/archive/opa/pr/2000/March/145civ.htm">justice.gov/archive/opa/pr/2000/March/145civ.htm</a>	N/A

# APPENDIX B: History of Military Toxic Exposures

A critical aspect of our research was to examine the history of military toxic exposures. By understanding how exposures occurred and what care was or was not provided, a clear picture of the need for our proposed framework emerged. Toxic exposures are as old as war itself. For this report, we examined every major toxic exposure since World War I. For a century, America's service members have been exposed to different types of toxic substances—some deployed by our adversaries and some employed by the Department of Defense (intentionally or unintentionally) without full knowledge of possible long-term health effects. The following are short overviews of many of the most widely known and significant military toxic exposures over the past century.

## Mustard Gas and Lewisite

Beginning in World War I and through World War II, both the Axis and Allies produced millions of tons of chemical weapons and prepared for their use. The U.S. established secret research programs to develop better chemical and toxic weapons and methods of protecting against these poisons. More than 60,000 U.S. service members had acted as human test subjects by World War II's end, with at least 4,000 of them participating in tests conducted with high concentrations of mustard agents or lewisite in gas chambers or field exercises over contaminated ground areas. The service members were intentionally exposed to mustard agents or lewisite, from mild (a drop of the agent on the arm in patch tests) to quite severe (repeated gas chamber trials, sometimes without protective clothing).

Not until 1991, over 70 years after the first use of mustard gas in World War I and over 50 years from the secret testing in later decades, did the Department of Veterans Affairs provide guidelines for establishing claims related to these exposures. In 1992, the VA requested a study from the National Institute of Medicine, now the National Academy of Medicine. The report, *Veterans at Risk: The Health Effects of Mustard Gas and Lewisite*, was issued in 1993 and prompted an update to the regulatory provision in 1993 and 1994.

## Radiation Exposure

Some of the first "atomic veterans" were service members who were sent to Hiroshima and Nagasaki to assist in cleanup efforts. Approximately 255,000 troops were involved in the occupation of the Japanese cities. Also, the U.S. conducted about 200 atmospheric nuclear tests from 1946 to 1962, with approximately 400,000 service members as witnesses or post-test cleanup crews. Sworn to secrecy, many of these service members never told anyone about what they witnessed; doing so could have led to a \$10,000 fine and a trial for treason.

On Oct. 24, 1984, nearly 40 years after the initial exposure, the Veterans' Dioxin and Radiation Exposure Compensation Standards Act (Public Law 98-542) was enacted to ensure veterans and their survivors received compensation for disabilities or deaths related to exposure to ionizing radiation during atmospheric nuclear testing or the occupation of Hiroshima and Nagasaki. In May 1988, more than a quarter-century after the last exposures from atmospheric testing, new statutory provisions expanded compensation on a presumptive basis for other radiation-exposed veterans who developed specific diseases.

## Agent Orange

The U.S. program code-named Operation Ranch Hand sprayed more than 20 million gallons of various herbicides over Vietnam,

Cambodia and Laos from 1961 to 1971. The purpose was to strip the thick jungle canopy that could conceal opposition forces, destroy crops that those forces might depend on, and clear tall grasses and bushes from the perimeters of U.S. base camps and outlying fire-support bases. At the time of the spraying, 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), the most toxic form of dioxin, was an unintended contaminant generated during the production of 2,4,5-T and so was present in the herbicide known as Agent Orange.

Many Vietnam veterans developed multiple illnesses and fatal diseases after service. It was not until the Veterans' Dioxin and Radiation Exposure Compensation Standards Act of 1984 that the VA recognized presumptive service connection for an illness related to Agent Orange. The Agent Orange Act became public law in 1991, nearly 30 years after the use of Agent Orange began and 20 years after the end of spraying. Significantly, the Agent Orange Act (P.L. 102-4) created a process for adding more diseases to be presumed as service-connected.

## Project 112/SHAD

Concerned about threats from the Soviet Union and China, Project SHAD (Shipboard Hazard and Defense) was a series of Navy tests between 1962 and 1974. Its purpose was to evaluate how effective U.S. warships were in detecting and protecting against chemical and biological attacks while maintaining a warfighting capability.

Approximately 6,000 military personnel, primarily from the Navy and Marine Corps, are reported to have been included in Project SHAD testing. The SHAD tests involved over two dozen military vessels that tested at least 16 hazardous substances. At the time the tests were conducted, virtually all aspects were classified as secret or top secret.

In the 1990s, some veterans who participated in the Project SHAD tests expressed concerns to the VA that their health problems could be the result of exposures in the testing. Congress and the VA requested information from the DOD to clarify what substances veterans might have been exposed to and when the tests had taken place. In 2002 and 2003, the DOD publicly released fact sheets that described each test; identified the participating military units; and named the chemical and biological agents, simulants, decontaminants and tracers used. Still, many details about the tests remain classified, and the VA has not conceded these exposures or established presumptives for diseases and conditions associated with these exposures. The last exposure test was in 1974, now 50 years ago.

## Persian Gulf War, Undiagnosed Illnesses and Infectious Diseases

In response to Iraq's invasion of Kuwait in August 1990, the U.S. led a coalition of 34 countries in Operation Desert Shield in the Persian Gulf region. This was followed by Operation Desert Storm, which began in January 1991 and ended with a cease-fire in April 1991. Almost 700,000 U.S. troops were deployed to the region during the height of the buildup.

Thousands returned home and began suffering from several serious illnesses considered related to smoke and petroleum from over 750 oil-well fires, depleted uranium, insecticides, burn pits, vaccinations including anthrax, and potentially the nerve agents sarin and cyclosarin, as well as sand and dust particles and local environmental air pollution.



The Persian Gulf War Veterans Act of 1998 (P.L. 105–277), codified in Section 1118, Title 38, United States Code, was established to associate the numerous health effects known as Persian Gulf War illnesses, which include unexplained chronic multisystem illnesses and symptoms. These presumptive conditions were established less than 10 years from the first day of exposure. Subsequently, the VA extended them to those who served in operations Enduring Freedom and Iraqi Freedom.

In 2010, via regulatory rulemaking, the VA added infectious diseases endemic to these areas as presumptives for service connection. Those diseases are brucellosis, campylobacter jejuni, coxiella burnetii (Q fever), malaria, mycobacterium tuberculosis, nontyphoid salmonella, shigella, visceral leishmaniasis and West Nile virus.

### **Contaminated Water at Camp Lejeune**

From the 1950s through the 1980s, people living or working at Marine Corps Base Camp Lejeune, North Carolina, were exposed to drinking water contaminated with industrial solvents, benzene and other chemicals. The Honoring America's Veterans and Caring for Camp Lejeune Families Act of 2012 (P.L. 112–154) recognized exposure and treatment for 15 specific diseases for veterans and family members, including lung cancer, breast cancer and leukemia.

In 2017, by regulation, the VA secretary established eight presumptive diseases, including leukemia, bladder cancer, kidney cancer, liver cancer and Parkinson's disease, for active-duty service members, reservists, and National Guard members who were stationed at Camp Lejeune for 30 aggregate days. These presumptive diseases were established over 60 years from the first date of exposure and 30 years after the date of last exposure.

In January 2024, the Agency for Toxic Substances and Disease Registry released a new report identifying several other cancers not previously connected to exposure at the base, including throat, thyroid, lung, multiple blood and male breast cancer. While this information has been presented to the VA and Congress, no decision has been made to add these diseases. It has been almost 40 years since the date of last exposure.

### **Airborne Hazards and Open Burn Pits**

Veterans who served in Southwest Asia during the first Persian Gulf War and those serving in Afghanistan, Iraq, and other Southwest Asia locations after 9/11 were exposed to burn pits. Although service members were aware of the nature of some of the toxic materials being disposed of in these burn pits, and the DOD knew about the potential health risks, the dangers did not become public until a whistleblower leaked a DOD memo in 2008. In fact, it was a DAV employee, Dan Clare, who at that time was an activated airman stationed at Joint Base Balad in Iraq, who shared this memo with the media and finally brought this issue to light.

In 2014, the VA established the Airborne Hazards and Open Burn Pit Registry, which formally acknowledged the existence and potential dangers from burn pits. The DOD has acknowledged the vast use of burn pits to dispose of nearly all forms of waste, with several studies indicating veterans were exposed to burned waste products including, but not limited to, plastics, metal/aluminum cans, rubber, chemicals (such as paints and solvents), petroleum and lubricant products, munitions and other unexploded ordnance, wood waste, and medical and human waste. The pits did not effectively burn the volume of waste generated, and smoke from the burn pits blew over bases and penetrated all living areas and quarters.

In August 2021, the VA announced it was establishing a presumption of service connection for several diseases related to particulate matter exposure for those who served in areas where burn pits were used. Originally asthma, sinusitis and rhinitis were added. Subsequently, the VA added rare cancers associated with the exposures.

The Sergeant First Class Heath Robinson Honoring our Promise to Address Comprehensive Toxics (PACT) Act, signed into law (P.L. 117–168) in August 2022, conceded exposure to burn pits and established presumptions of service connection for over three dozen diseases related to burn pits and particulate matter exposure. The law covers veterans of the Persian Gulf War as well as those exposed after 9/11 in Afghanistan, Iraq and other Southwest Asia locations. It was more than 30 years after the end of the Persian Gulf War and over 20 years after the wars in Afghanistan and Iraq began that this law was enacted.

### **PFAS-Contaminated Water**

The synthetic substances perfluoroalkyl and polyfluoroalkyl, commonly referred to as PFAS, are made up of chains of carbon and fluorine atoms held together by some of the strongest chemical bonds found in nature. They are found in many products, such as clothing, carpets, fabrics used in furniture, adhesives, paper packaging for food and heat-resistant/nonstick cookware. They are also present in firefighting foams (or aqueous film forming foam, also known as AFFF) used by both civilian and military firefighters. Dubbed as “forever chemicals,” they will never degrade or break down.

In the 1970s, the DOD began using AFFF to fight fuel fires. The release of these chemicals into the environment during training and emergency responses is a significant source of PFAS contamination of groundwater on military bases.

In 2018, the DOD examined 524 installations for two of the most prevalent PFAS chemicals in AFFF and found 401 locations with some level of contamination. Twenty-four of those locations had drinking water contamination at levels higher than the Environmental Protection Agency's lifetime health advisory of 70 parts per trillion. In September 2019, an environmental working group revealed that 90 more current and former Army and Army National Guard installations than previously indicated had groundwater or drinking water contamination. In March 2020, the DOD released new data showing that more than 600 military sites have been contaminated with PFAS, a significantly higher number than previously disclosed.

### **Toxic Exposures at Karshi-Khanabad (K2)**

Karshi-Khanabad Air Base, known as K2, is a former Soviet air base in southeastern Uzbekistan, which shares a border with northern Afghanistan. Over 15,000 U.S. service members were deployed to Camp Stronghold Freedom at K2, which supported combat missions from 2001 to 2005.

While it was a Soviet air base, K2 contained chemical weapons, enriched uranium, and soil saturated with fuels and other solvents that formed a “black goo.” Air samples at the base found elevated levels of tetrachloroethylene as well as the residuals of chemical weapons, including cyanide in the showers. Other health assessment tests found the base had elevated levels of volatile organic compounds (VOCs), and total petroleum hydrocarbons (TPH) were detected at numerous locations throughout Stronghold Freedom.

A 2002 assessment recommended not to dig “into soil contaminated with jet fuel,” but those areas were populated with tents soldiers slept in and aircraft hangars, according to the

declassified document. In the same year, another DOD health risk assessment found between 50% and 75% of personnel at Stronghold Freedom would be exposed to elevated levels of TPH. A 2015 U.S. Army study found veterans exposed at K2 have a 500% increased likelihood of developing cancer, including malignant melanoma and neoplasms of the lymphatic and hematopoietic tissues.

For more than two decades after service members first deployed to K2, no toxic exposures were recognized by the VA, and there are still no presumptive conditions or a concession of exposure for toxin specific to K2. However, in April 2020, the VA confirmed it will study health trends among the thousands exposed. In July 2020, the DOD shared documents with Congress that revealed the Pentagon knew troops were exposed to toxic hazards at K2. The language in the PACT Act considers veterans who served at K2 to be exposed to burn pits and particulate matter, but the law did not cover all the toxic exposures at K2.

In August 2024, VA announced some significant changes in how K2 veterans' exposures would be treated in the future. VA indicated it would soon recognize K2 as a toxic exposure risk activity (TERA), specifically acknowledging several toxic substances, including jet fuel, VOCs, asbestos, and lead-based paint. In addition, VA claims processors will be required to consider all acknowledged exposures when examining a K2 veteran's claim for benefits and must conduct pre-decisional reviews of all K2 claims to ensure every relevant toxic exposure was considered. VA also announced it would include K2 veterans within the Persian Gulf War presumptive that covers undiagnosed illness and medically unexplained chronic multi-symptom illness, also known as Gulf War Illness.

### **Emerging Potential Toxic and Environment Exposures**

As progress is made for some affected by toxic and environmental exposures, the fight continues for other populations as diseases and evidence emerge. Often significant political pressure is required for their challenges to be addressed, as has been shown for missileers, fighter pilots, and service members and families affected by contaminated water from Red Hill Underground Fuel Storage Facility in Hawaii.

Each of these communities is facing toxic or environmental exposure or has seen clusters of harmful health conditions.

All too often, awareness starts from the affected veterans noticing health trends within their community, and usually, these conditions are experienced firsthand.

An example of this is for Air Force missileers. Initial studies in 2001 and 2005 deemed their underground capsules and silos safe. Still, decades later, their conditions are being reconsidered, sparked by media coverage and hundreds of self-reported cancers. The subsequent reviews found unsafe levels of PCBs; further reviews are expected. The Air Force is in the early stages of counting current and former missileers with cancer.

Similarly, advocates noticed clusters of cancers within the aviator community and were able to drive lawmakers' attention to conduct research. The process is further along for military aviators and their ground crews. The fiscal year 2021 National Defense Authorization Act (P.L. 116–283) required a two-phase study examining whether they had increased rates of cancer. An initial Air Force study of pilots from 1970 to 2004 found an increased risk of certain cancers. This work was followed by a study of air and ground crews from 1992 to 2017, reinforcing higher cancer rates in this community.

While hazards for aviators is unknown, possible factors are radiation (galactic cosmic, ultraviolet and radar), non-ionizing radiation from radars and jamming equipment, and exposure to jet fuel and fumes. The next phase of the study will work to identify the hazards and any trends associated with these health conditions. Only when a hazard is identified will a broad-based concession of exposure for all aviators and ground crews be established.

Service members and families exposed to contaminated water from the Red Hill Underground Fuel Storage Facility face a different challenge. Their exposure is apparent, but establishing the medical link between current and future conditions will need to be overcome. Despite knowing many of the health consequences that stem from exposure to fuel, the VA has historically required studies of the exposed population groups before establishing presumptive conditions.

Each of these exposures has unique challenges that must be overcome before presumptions will be granted. For those who are ill now, getting recognition from the VA is vital to receiving health care and benefits.



# APPENDIX C: Research and Analysis

## Methodology

In developing this report, DAV and MOAA comprehensively examined military-related toxic exposures since World War I to assess the timeliness of presumptives and analyze how our nation's response to military toxic and environmental exposures has evolved. Building on this baseline understanding of presumptives, we examined publicly available Department of Veterans Affairs information and built a dataset to compare the exposures military service members have encountered over the past century as well as the actions the VA, the Department of Defense and Congress have taken regarding each exposure. In particular, we looked at the timing and sequence of each step in the presumptive-making process, the obstacles faced, and the critical factors that led to favorable outcomes for veterans.

We also compared and contrasted the history of statutes and regulations establishing presumptives. For exposures that do not yet have presumptives, we reviewed scientific literature and public policy documentation detailing the arguments for and against establishing new presumptives. In addition, this report benefited from our direct involvement in the multiyear campaign to draft and enact the PACT Act as well as our continued engagement in public policy debates over its implementation.

Our initial data collection focused on cataloging known military service exposures and presumptive conditions recognized by the VA, along with the exposure or hazard from which they are presumed to result and the date and mechanism by which they were established. This approach allowed us to capture presumptives established or modified by executive order, regulation, legislative action or judicial ruling and to augment this data with variables such as whether or not a determination of positive association by the National Academies of Sciences, Engineering, and Medicine (NASEM) accompanied the presumptive.

The dataset contains the following information (see Appendix A):

- Exposure/Hazard/Incident
- Dates of Exposure — When this toxic exposure event occurred
- Year Acknowledged by the VA — When the first formal acknowledgment from the VA is documented, indicating that an incident occurred that “may” have exposed veterans to toxic substances
- Time Between Acknowledgment and First Exposure (Years)
- Year Conceded by the VA — When the VA publicly stated that an incident occurred and had negative health consequences for the exposed veterans
- Time from Exposure to Concession (Years)
- Time from Acknowledgment to Concession (Years)
- Concession Type — Legislative or Administrative
- NASEM Study — Whether a NASEM study has been conducted on this exposure/hazard/incident

Although the initial goals of these data collection efforts were to analyze the time between exposure and establishment of a presumption of service connection and to construct a timeline of milestones along the way to establishing a presumptive, we quickly reassessed after data collection was complete. Because presumptive service connection requires the VA to make a logical leap during the nexus of a hazardous in-service event and a resultant health condition—a leap that does not meet the evidentiary standards of direct service connection—these data by nature have systematic gaps that preclude a single method of analysis. These gaps are the ad hoc stumbling blocks that

the scientific and veteran communities must resolve for each presumptive condition related to each in-service incident. As a result, we rejected the idea of a singular framework for reforming the presumptive-making process, but we continued to search for commonalities that would help us identify best practices in the policymaking process.

We turned our attention to the model of direct service connection, which requires an in-service incident, a manifesting health condition and the nexus point at which they are understood to be related. The nexus could be based on evidence of causal relationships between incidents and resultant health conditions or an emerging body of evidence that there is a positive association between them. Direct service connection may be established on an individual basis for known, existing conditions. Presumptive service connection is established for groups, many members of which may not manifest the condition covered by the presumptive. With this, we grouped presumptives into types based on what information was missing from the model for direct service connection. Although some of these presumptives are not yet resolved, this approach would help establish a path to addressing future conditions related to ongoing and future exposure events.

## Evolution of Toxic-Exposure Presumptives

Our recommended framework for toxic-exposure presumptives was developed after reviewing and analyzing regulations and laws approved by the VA and Congress over the past century. We found three distinct eras of presumptive making, each evolving to address weaknesses in the previous era and responding to new challenges arising from the political environment. This analysis of the evolution of toxic-exposure presumptives is the foundation for many of our recommendations.

### 1920s to 1980s: First Presumptives and Benefit of the Doubt Era

In 1921, Congress and the federal Veterans Bureau (precursor to the Veterans Administration and ultimately the Department of Veterans Affairs) established a presumptive for “chronic diseases,” specifically tuberculosis and neuropsychiatric disease (later called “psychoses”), with a requirement that they must be manifested to at least 10% within two years of separation from service. A second category of “chronic constitutional diseases”—initially anemia, diabetes, leukemia, rickets, scurvy and several other conditions—was later added. These “constitutional” diseases had to manifest within a year of separation.

The underlying logic behind the first presumptives was that many veterans of World War I had been exposed to hazardous substances and dangerous environmental conditions, such as chemical weapons. If they developed diseases that might have been related to their exposures, they deserved the benefit of the doubt that the diseases were service-connected.

Congress and what would become the VA added chronic and constitutional diseases to both presumptives over the next two decades and modified and codified these presumptives multiple times through laws and regulations. Although initially conceived as related to wartime service, these presumptives remain in use today for all veterans, regardless of the wartime status of their military service.

In 1945, the Veterans Administration created another presumptive for a new category of “tropical diseases,” which initially included malaria, a disease contracted by

many who served in the Pacific theater of World War II. Over the next two decades, Congress and the Veterans Administration continued to expand and modify the list of chronic and tropical diseases and the rules for how the presumptive would apply to covered veterans.

In 1970, Congress created a new presumptive for former prisoners of war who served during World War II and the Korean and Vietnam wars, which initially covered beriberi, malnutrition, psychosis, and five other diseases and conditions. Like previous presumptives, an implicit assumption of severe mistreatment of prisoners of war justified providing a benefit of the doubt for conditions that could reasonably be related to their service and captivity. Over the next decade and a half, Congress and the Veterans Administration added new diseases and conditions to the prisoner of war presumptive as well as new chronic and tropical diseases.

This first era of VA presumptives—from about the 1920s to the 1980s—was driven by a desire to provide veterans of major military conflicts with the benefit of the doubt, both by Congress and what would become the VA. Their reasoning was that chronic, constitutional and tropical diseases that developed shortly after active-duty service likely were connected to that military service. These presumptives were not based on specific in-service incidents or exposures; instead, they flowed from a common understanding that military service, particularly when it involved combat conditions, exposed service members to hazards that could later cause illnesses. The prisoner of war presumptive stemmed from the same basic concept that the unique dangers and injuries from military service would lead to further health complications later in life.

None of the above presumptives relied primarily on scientific research that produced findings of positive association or causation, nor was there any consistent process or standard for determining when additional diseases would be added to a presumptive. Instead, these early presumptives were established and expanded due to a combination of medical, legal and political factors easily justified and accepted by the federal government and the public. While veterans of this era were widely known to have been exposed to toxins and environmental hazards during their military service, neither Congress nor what would become the VA took actions to identify or concede any specific exposures had occurred, nor did they specifically seek to connect any diseases or conditions to such exposures. Instead, they relied on a sense of duty to care for those who had served and were willing to give them the benefit of the doubt when they became ill after service.

#### **1980s to 2020s: Late-Onset Diseases and Independent Scientific Review Era**

By the 1980s, as long-term health concerns of veterans who had been exposed to radiation and toxic chemicals were becoming more widely known, a new era of presumptives began. While the diseases covered by earlier presumptives were diagnosed in veterans either during military service or relatively soon after, most of the diseases linked to radiation and toxic chemicals were late-onset conditions, manifesting years or even decades after service. As a result, there were questions about whether these diseases were caused by exposure during service or by other events and exposures that occurred after separation from the military. As more veterans were diagnosed with similar diseases and conditions and as greater scientific understanding developed around the dangers of radiation and toxic chemicals, pressure mounted on the Veterans Administration and Congress to act.

In 1982, Congress passed legislation (Public Law 97-72) to provide priority access to health care for veterans who could have been exposed to dioxin in herbicides used in Vietnam or to ionizing radiation from either nuclear testing or service in Japan after the use of atomic bombs. This was the first legal recognition of the dangers faced by veterans who had been exposed. In 1984, Congress passed the Veterans' Dioxin and Radiation Exposure Compensation Standards Act (P.L. 98-542), which required the Veterans Administration to enact regulations to provide disability compensation for Vietnam veterans exposed to herbicides containing dioxin (which would soon be referenced commonly as Agent Orange) and for veterans exposed to ionizing radiation in connection with atmospheric nuclear testing and the occupation of Hiroshima or Nagasaki, Japan. A year later, new legislation and regulations established presumptives for ionizing radiation and dioxin (Agent Orange).

Unlike the earlier presumptives that only required the diseases to manifest with a year or two after active-duty service, the radiation and dioxin presumptives were limited to a defined cohort of veterans who were likely to have been exposed based on the time and location of their service. The Veterans Administration established a "concession of exposure" (often called a "presumption of exposure" by the VA) so veterans did not have to provide evidence of exposure to ionizing radiation and dioxin; instead, they only had to show service records that indicated they were present in the times and locations where these exposures were conceded to have occurred. The law then required what would become the VA to develop a list of diseases scientifically linked to these exposures.

In the following years, Congress enacted laws expanding the radiation presumptive to include other atomic testing and a new category of "radiation risk activities." The VA also added a new presumptive for service members who had participated in military testing of protective equipment for exposure to mustard gas and lewisite that occurred during and after World War II. But the most crucial development was the enactment of the Agent Orange Act of 1991 (P.L. 102-4), which established the modern template for creating and expanding presumptives.

Responding to rising concern about the long-term health effects of Agent Orange exposure, the small number of diseases and conditions the VA had connected to that exposure, and a successful class action lawsuit on behalf of exposed veterans (*Nehmer v. U.S. Department of Veterans Affairs*), Congress passed, and the president signed, the Agent Orange Act of 1991. The law established two critical new elements to the VA's process for creating presumptives. First, it defined the standard for establishing a presumption of service connection as "positive association" with exposure to Agent Orange, rather than a scientific finding of "causation"—a higher scientific bar to clear.

The second new element was a requirement that the VA contract with the National Academy of Sciences (NAS) to review and evaluate the available scientific evidence regarding associations between diseases and Agent Orange exposure. The VA subsequently contracted with the Institute of Medicine (IOM), which was part of NAS, to produce a report on Agent Orange exposure and its relation to diseases and conditions that exposed veterans were developing in significant numbers. The mandated biennial Agent Orange reports contained IOM conclusions about the level of association between Agent Orange exposure and suspected diseases, resulting in the addition of respiratory cancers and multiple myeloma in 1994 and prostate cancer in 1996. Following future IOM biennial reports, the VA also added diabetes mellitus type 2 in 2001 and hairy cell leukemia, Parkinson's disease and ischemic heart disease in 2010.



Although the Agent Orange Act established a policy to provide independent scientific review as the basis for establishing presumptions of service connection, the decision of whether to add new diseases or conditions remained solely within the discretion of the VA secretary, who could accept or reject the conclusions of the IOM. In addition, Congress retained its constitutional authority to establish new presumptives, or expand existing ones, through legislation.

The VA also contracted with IOM during the 1990s to study a number of other exposures and diseases for veterans who had been prisoners of war, exposed to radiation, and exposed to mustard gas and lewisite during testing. The resultant IOM reports included findings and conclusions about the level of association between these exposures and suspected diseases, which led to additional diseases added to those presumptives.

In 1998, passage of the Persian Gulf War Veterans Act (P.L. 105–277, Title XVI) established a new presumptive for veterans of this war using the same model for determining which diseases and conditions would be presumed service-connected. While the model of decision-making was similar, there was a significant difference. Veterans from the Persian Gulf War (PGW) were returning with illnesses widely suspected to be related to smoke and petroleum from oil-well fires, sand and dust particles, and other pollutants and toxins.

However, the presumptive did not specifically identify any toxic exposures or environmental hazards, as is typical in a concession of exposure. Instead, the law only required a positive association between a disease and PGW service to create a presumption of service connection. This presumptive also included undiagnosed diseases under the presumption of service connection, making it the first presumptive to fill an evidentiary gap because there was not a diagnosis of a recognized VA disability.

By the 2010s, the costs of VA benefits and health care for veterans who receive eligibility through presumptive service connection had significantly increased. The addition by then-VA Secretary Anthony Principi of ischemic heart disease to the Agent Orange presumptive, a common condition among the general population, raised doubts among some policymakers about whether presumptives were scientifically justified or financially prudent. At the same time, increasing concerns about rising federal budget deficits and the national debt led to renewed calls to limit the growth of VA benefits and health care. The IOM continued producing Agent Orange reports with new conditions found to have a positive association with Agent Orange, but several of these diseases were not added to the presumptive by the VA. Efforts by members of Congress to add the diseases legislatively were thwarted by the need to meet pay-as-you-go (PAYGO) requirements to offset the cost of new veterans benefits by cutting existing benefits. In 2014, key provisions of the Agent Orange Act were allowed to expire, further complicating efforts to add new diseases.

Another example of the breakdown of the presumptive process was the failure over several decades to allow Blue Water Navy (BWN) veterans who served on the water around Vietnam to be covered by the Agent Orange presumptive. Although BWN veterans were originally included in the concession of exposure for Agent Orange, a VA general counsel opinion in 1997 removed this group from the presumptive. Despite a broad, bipartisan coalition of senators, representatives and veterans service organizations advocating for a legislative solution, significant opposition remained over the scientific justification and potential costs of including this cohort of veterans.

Congressional PAYGO rules requiring spending offsets and a

Congressional Budget Office cost estimate of billions of dollars made enactment of a legislative solution a daunting challenge. Further, the lack of consensus about whether the level of Agent Orange exposure experienced by BWN veterans decades earlier was sufficient to result in the diseases covered by the presumptive complicated regulatory and legislative efforts. Since the Agent Orange Act had established the standard that no minimum dosage levels were required to be covered by the presumptive, we contend that the same standard should have applied to all veterans included in the concession of exposure. As such, the only relevant issue should have been whether and where to draw expanded geographic and chronologic limits to include BWN veterans within the concession of exposure. The debate over dosage was settled with enactment of the Agent Orange Act in 1991 and should never have been reopened for BWN veterans.

In January 2019, the U.S. Court of Appeals for the Federal Circuit ruled in *Procopio v. Wilkie* that veterans who served within 12 nautical miles of Vietnam during the Vietnam era should be included in the concession of exposure for the Agent Orange presumptive. As such, they would not need to establish any dosage levels and would be covered by all presumptions of service connection for Agent Orange. Later that year, Congress enacted legislation (P.L. 116–23) to codify and expand the court's decision, as that judicial action removed most of the PAYGO scoring obstacles. PAYGO scores are based on increases in spending directly related to legislation, but the *Procopio* decision had already added most of the BWN veterans to the Agent Orange presumptive that were codified by the new legislation.

By the end of the 2010s, it was clear that despite growing evidence and public interest in redressing the dangers to veterans from military toxic exposures and environmental hazards, there was no longer an accepted process or consensus for creating or expanding presumptives to cover them.

### **2020s and Beyond: Toxic Exposures and the PACT Act Era**

Following the successful campaign to provide justice to BWN veterans, this same coalition of congressional and veterans leaders turned their attention to Afghanistan and Iraq war veterans who were exposed to burn pits, as well as to Vietnam veterans suffering from diseases positively associated with Agent Orange in NASEM reports but not yet added to that presumptive by the VA or Congress.

On Jan. 1, 2021, the William M. Thornberry National Defense Authorization Act for Fiscal Year 2021 was signed into law (P.L. 116–283), which included a provision to add bladder cancer, hypothyroidism and parkinsonism to the diseases presumed service-connected from Agent Orange exposure. After years of advocacy by veterans service organizations, Congress finally decided to do what the VA would not. Later that year, as public pressure mounted for comprehensive legislation to create a presumptive for burn pits, the VA established a new administrative process to create presumptives and announced it was considering several conditions related to service in Afghanistan and Iraq. In August, the VA completed its review of the first group of diseases and promulgated a new regulation to establish a presumptive for sand, dust and other particulate matter exposure in Southwest Asia associated with asthma, rhinitis and sinusitis. The addition of these six new presumptions of service connection in 2021 was the first in over a decade—these successful advocacy campaigns by veterans service organizations added to the growing momentum for new comprehensive toxic-exposure legislation.

In August 2022, after a tumultuous multiyear advocacy campaign,

Congress finally approved and the president signed the PACT Act (P.L. 117–168), the most comprehensive toxic-exposure legislation ever enacted. The law created a new presumptive for exposure to burn pits and other airborne hazards for veterans of the Gulf War and the post-9/11 era, adding over two dozen cancers and respiratory diseases presumed to be service-connected. The law also added the two remaining diseases positively associated with Agent Orange by NASEM: hypertension and monoclonal gammopathy of undetermined significance.

In addition to many other changes to improve the ability of veterans exposed to toxic substances to receive their benefits and health care in a timelier manner, the PACT Act codified the VA's new administrative process for considering toxic-exposure presumptives. The VA was required to establish an internal working group of Veterans Health Administration and Veterans Benefits Administration personnel to determine and publicly announce a list of toxic exposures for annual evaluation.

The VA secretary would establish an internal group to formally evaluate each toxic exposure using all available evidence, including scientific studies, claims data and other factors. The internal VA group would then submit a recommendation to the secretary on whether to create a new presumptive, a concession of exposure and/or a presumption of service connection for a specific disease. The secretary would then have 160 days to decide — in their sole discretion — whether to accept or reject that recommendation.

The law also required the VA to enter into an agreement with NASEM to conduct additional research and establish an interagency working group on toxic-exposure research that would include the DOD, the Department of Health and Human Services, the Environmental Protection Agency, and other appropriate federal entities.

In 2023, NASEM found the VA's presumption decision process lacking in sufficient detail and justification for the methods used to evaluate and determine whether to create presumptions. In 2024, RAND Corp. called for the VA to strengthen the scientific rigor and transparency of its new presumptive process and recommended greater stakeholder engagement throughout the VA's decision-making process.

While the PACT Act directly established presumptions of service connection for over two dozen diseases and codified an internal presumption review process, the law contains many of the weaknesses present throughout the VA's presumption-making processes. The secretary is still not required to follow any recommendations to create presumptives or add new diseases, regardless of the strength of the evidence. While the law sets the standard of "positive association," it does not establish what level of evidence should be the threshold for adding a disease.

Finally, it is worth noting that although the Congressional Budget Office score for the PACT Act ran into hundreds of billions of dollars, Congress waived compliance with PAYGO when it passed the legislation. However, toxic-exposure legislation has been delayed or denied in many other instances due to PAYGO concerns, and we expect the rule will remain a major impediment moving forward.

### **Equipoise and Benefit of the Doubt**

One bedrock principle of the VA's claims process is that veterans receive the benefit of the doubt in all determinations, particularly for direct-service-connection claims. This doctrine is defined in VA statutes, regulations and administrative manuals for adjudication.

Section 5107(b), Title 38, U.S. Code

*"When there is an approximate balance of positive and negative evidence regarding any issue material to the determination of a matter, the Secretary shall give the benefit of the doubt to the claimant."*

### **Section 3.102, Title 38, Code of Federal Regulations – Reasonable doubt**

*"When, after careful consideration of all procurable and assembled data, a reasonable doubt arises regarding service origin, the degree of disability, or any other point, such doubt will be resolved in favor of the claimant. By reasonable doubt is meant one which exists because of an approximate balance of positive and negative evidence which does not satisfactorily prove or disprove the claim."*

### **VA M21-1MR, Part III, Subpart iv, Chapter 5, 12 d. Handling Evidence in Equipoise**

*"Resolve reasonable doubt in favor of the claimant if all procurable evidence, after being weighed, is found in approximate balance or equipoise. 38 CFR 3.102 dictates that the veteran prevails when the evidence neither satisfactorily proves nor disproves an issue."*

As explained above, equipoise for VA claims purposes is considered the "approximate balance" of evidence, not an exact balance, since it is not possible to actually determine a precise weight of evidence for or against a matter. Unless there is clearly greater evidence against any element of a veteran's claim, the VA must give the benefit of the doubt and grant the claim.

In making determinations about presumptives, both the Agent Orange Act of 1991 and the Persian Gulf War Veterans Act of 1998 used the concepts of "equipoise" and "benefit of the doubt," and both used the exact definition of "positive association":

*"An association ... shall be considered to be positive ... if the credible evidence for the association is equal to or outweighs the credible evidence against the association."*

The presumption decision process codified in the PACT Act also uses similar language. In accordance with 38 USC §1173, the secretary must "determine whether the evidence supports a finding of a positive association between the toxic exposure and the illness." The code further requires a determination of the strength of the evidence for positive association based on four categories:

(A) *The "sufficient" category, where the evidence is sufficient to conclude that a positive association exists.*

(B) *The "equipoise and above" category, where the evidence is sufficient to conclude that a positive association is at least as likely as not, but not sufficient to conclude that a positive association exists.*

(C) *The "below equipoise" category, where the evidence is not sufficient to conclude that a positive association is at least as likely as not, or is not sufficient to make a scientifically informed judgment.*

(D) *The "against" category, where the evidence suggests the lack of a positive association.*

In line with the VA's underlying "benefit of the doubt doctrine," the standard of evidence necessary to create a new or expand an existing presumptive should be whenever the evidence is in relative equipoise. It should never require a preponderance of the evidence or any other standard beyond relative equipoise.

### **Acknowledgment vs. Concession vs. Presumption**

There are three critical steps or milestones along the pathway to creating a presumptive:



1. **Acknowledgment** of a possible toxic-exposure risk
2. **Concession** of exposure to toxic substances
3. **Presumption** of service connection between exposure and disease

As previously discussed, when the VA or Congress creates a presumptive, it establishes a concession of exposure at or about the same time as the initial presumption(s) of service connection. In almost all instances, the VA issues an acknowledgment of the toxic exposure before creating a presumptive.

### **Acknowledgment**

An acknowledgment by the VA is a statement that there is credible evidence that a specific cohort of veterans—typically defined by location and time period—may have been exposed to potentially harmful toxins and environmental hazards. By contrast, a concession of exposure is a determination that a cohort of veterans **was** exposed to harmful substances. Historically, acknowledgments by the VA or the DOD have come decades after the exposure, which may partially reflect the inherent secrecy in military operations. However, absent reasonable national security considerations, the DOD and/or the VA should acknowledge each exposure at the earliest possible date. An acknowledgment from either department should serve as a trigger for the VA to decide whether to establish a concession of exposure. In turn, a decision to establish a concession of exposure should trigger research by the VA about whether to create presumptions of service connection.

Although the VA and the DOD have at various times “acknowledged” that toxic exposures have taken place, there is no formal or legal requirement for making such a determination, nor does such a finding trigger or require any additional actions. The VA maintains a webpage, “Public Health: Military Exposures” ([publichealth.va.gov/exposures](http://publichealth.va.gov/exposures)), listing dozens of military exposures in different categories and subcategories, such as “Agent Orange Related Diseases,” “Iraq War Exposures,” “Chemicals,” “Radiation, Military Exposures” and others, which served as the basis of our list of acknowledged toxic exposures and from which we calculated the average length of time veterans have waited for presumptives. However, there is no specific definition or standard for how or when the VA should acknowledge a toxic exposure. For purposes of our statistical analysis, we set the date of acknowledgment for each toxic exposure as the earliest date when the VA, DOD or Congress formally documented that a toxic exposure had been recognized.

For Agent Orange, we cite the first edition of the Agent Orange Review, published by the Veterans Administration in November 1982. It states that “the Veterans Administration became aware of concerns about Agent Orange in 1978.” This was the earliest official documentation we could find, although DOD and VA officials were certainly aware many years earlier. For burn pits, we used the date that the VA created the Airborne Hazards and Open Burn Pit Registry in 2014, although a DOD memo about the health dangers of burn pits was publicly leaked and reported on in 2008. For water contamination at Camp Lejeune, the first formal public confirmation we found was the enactment of the Honoring America’s Veterans and Caring for Camp Lejeune Families Act of 2012 (P.L. 112–154), legislation that provided health care eligibility to veterans and family members who served on the base, even though the Marine Corps had discovered specific volatile organic compounds in the drinking water as early as 1982.

Some VA acknowledgments included an extension of benefits or health care eligibility for affected veterans, thus implicitly confirming the toxic exposure may be harmful to those who were

exposed, such as for Agent Orange. Other VA acknowledgments, such as for Karshi-Khanabad Air Base (K2), indicated exposure levels were considered below the threshold at which there could be health dangers, thus offering no benefits or health care to those who were exposed. The need for the military to maintain operational security and secrecy about military testing, troop locations, or materials used or encountered during deployments has undoubtedly complicated the timing and caused delays in formal VA or DOD acknowledgments.

As outlined earlier in the report, the PACT Act provides K2 veterans with a concession of exposure to particulate matter as well as a presumption of service connection for the more than two dozen diseases covered by the burn pit presumptive. However, the VA still has not formally recognized the other toxic exposures and potential diseases unique to K2.

### **Concession**

A concession of exposure is a legal determination that a specific cohort of veterans, using parameters of time and location of service, shall be considered to have been exposed to specific toxic substances and/or environment hazards. Thus, future scientific findings of positive association that add new presumptions of service connection will automatically apply to veterans covered in the concession of exposure. Further, once a concession of exposure has been established, veterans who seek to prove direct service connection for diseases not covered under the presumptive would not have to provide evidence of individual exposure to that specific toxic substance, as the VA already conceded that exposure.

In some unique situations, such as for the Persian Gulf War presumptive, the concession of exposure is not defined as specific toxins or other hazardous materials. Instead, the statute concedes exposure to biological, chemical and other toxic substances; environmental hazards; and medicines or vaccines “associated with the illness” that the VA determines should be presumed service-connected under the procedures in the law. At the time the legislation was enacted, the VA and DOD were unable to determine specific toxic exposures responsible for the conditions and diseases included in this presumptive. (There is growing evidence that it was sarin gas exposure.) Among the conditions presumed to be service-connected are “undiagnosed illnesses” and “chronic multisymptom illness,” which have been listed in lieu of providing evidence of a disability recognized by the VA.

While a concession of exposure logically follows after an acknowledgment of possible exposure, it also logically comes before a presumption of service connection between that exposure and an associated disease. For late-onset diseases and disabilities such as cancers, heart disease and hypertension, the health impacts of a toxic exposure may not manifest in a veteran for decades. This was the case for exposure to Agent Orange, radiation, burn pits and other materials.

For example, when the Agent Orange Act became law in 1991, it conceded exposure to Vietnam-era veterans and created a presumption of service connection for non-Hodgkin’s lymphoma, soft-tissue sarcoma and chloracne at the same time. However, no reason or impediment prevents the establishment of a concession of exposure **before** any presumptions of service connection are established, which is effectively what occurred for a number of Agent Orange diseases. Although the concession of exposure to Agent Orange was formalized in 1991, multiple diseases received presumptions of service connection over the next three decades; the most recent, hypertension, was added in 2022. Deciding to establish a concession of exposure separately

and first is logical and would strengthen the ability of individual veterans to prove direct service connection.

It is much more difficult to look back decades to determine who should be covered in a concession of exposure than it is to do so as close as possible to the time of that exposure. Determining the exact location of service members during military engagements is already a significant challenge, given the “fog of war,” but allowing years or decades to pass before attempting to make such determinations is much more complicated as information and memories may fade or disappear.

Exposed veterans can also gain advantages from the establishment of a concession of exposure closer to the time the exposure occurred. Once the VA has determined a cohort of veterans has a significant likelihood of toxic substance exposure, health care screening, monitoring and preventive health care can and should be provided.

Further, even if the VA never develops sufficient evidence to establish a presumption of service connection for certain diseases, an individual veteran will have an easier time proving a claim for direct service connection to that disease if they do not have to prove their individual exposure. A concession of exposure by the VA should also be sufficient justification for the department to begin population health monitoring of the cohort of veterans covered by the concession.

Finally, a concession of exposure determination made closer to the actual exposure should prompt the VA, DOD and other federal agencies to begin new research, accelerate existing work and review past findings on the association between the exposures and potentially related diseases and conditions.

### **Presumption**

The final step in creating a presumptive is typically the establishment of the first presumption of service connection between an exposure and a disease or health condition. Some presumptives were created with specific diseases written into the law or regulation establishing the presumptive; for example, the Agent Orange Act included three conditions within the statute itself, while the PACT Act contained about two dozen cancers and respiratory diseases with a presumption of service connection for exposure to burn pits and airborne hazards included in the concession of exposure.

A presumptive may also establish a process for determining when to add (or remove) presumptions of service connection, such as the research, review and decision processes included in the Agent Orange Act, the Persian Gulf War Veterans Act, and the PACT Act. These types of presumptives continue to add new diseases for years and decades after their initial establishment.

The history of toxic exposures and presumptives demonstrates presumptions of service connection are made when there is a sufficient level of scientific evidence, public interest and political pressure to overcome any policy or fiscal constraints. While each of these three considerations played a role during the first era of

presumptives (1920s to 1980s), an era of scientific scrutiny and codified decision processes dominated presumptives for the next couple of decades (1980s to 2000s) before political and financial concerns ground the process to a halt during the 2010s.

The advocacy campaigns that resulted in successive legislative victories for Blue Water Navy veterans, inclusion of hypertension among Agent Orange presumptives and the PACT Act all had sound scientific bases but were more the result of massive political pressure exerted on Congress by veterans service organizations and other stakeholder advocates. The codification of the VA's internal presumptive review process is an attempt to overcome institutional resistance, but the statute retains two significant weaknesses that have delayed the establishment of past presumptions.

First, the decision to create a presumptive or presumption of service connection has been and remains the purview of either the executive branch (typically via VA regulations) or the legislative branch (through legislation) and is therefore by nature a political decision. While we can hope such decisions are made based on sound science and enlightened public policy, we cannot overlook the fact that partisan and political stalemates have increasingly slowed down almost all legislation over the past two decades.

Second, federal rules, regulations and laws created to address rising national debt have become significant obstacles to establishing new presumptions of service connection due to long-term costs, particularly for conditions that affect large numbers of veterans (such as hypertension among those exposed to Agent Orange).

At the same time, the political process can bring justice and equity to long-suffering veterans in situations where there is not, and may never be, sufficient evidence or numbers of affected veterans to justify the creation of a presumption of service connection. Examples include veterans of Palomares, Spain; Enewetak Atoll, Marshall Islands; and Thule Air Base, Greenland. For veterans exposed to radiation in those locations, the political and legislative process was able to bridge gaps—albeit decades too late—that the scientific process alone had not and maybe never would.

We believe one way to provide greater impetus to breaking through persistent political and fiscal obstacles, while leaving the decision-making process in the hands of elected and appointed federal offices, would be to create a series of interconnected triggers and timelines for decisions. For example, the Agent Orange Act, Persian Gulf War Veterans Act and PACT Act all included timelines for the VA to decide on creating presumptions of service connection after adequate evidence and recommendations were presented. Treating VA decisions on acknowledgment, concession and presumption as separate but connected steps, each of which would trigger new actions and timelines for decisions, could effectively overcome institutional resistance, thereby helping to produce more timely, accurate and fair decisions for toxic-exposed veterans.



# APPENDIX D: Model Toxic-Exposure Presumptive Classification System

## Type 1: Limited Scientific Evidence for Late-Onset Disabilities

While an in-service event may be recognized, there may be significant knowledge gaps about the long-term effects of the toxic exposure. Even if the Department of Veterans Affairs has recognized the event and created a presumptive, many more conditions are not yet presumed to be service-connected. While chronic conditions occurring close to the event are easier to connect, late-emerging conditions are much more challenging to associate. In many cases, it takes years to identify and research late-emerging disabilities.

### CHARACTERISTICS:

- **In-Service Event:** A toxic exposure event is recognized by the VA.
- **Disability:** A current disability is recognized and diagnosed.
- **Nexus:** The claimed disability is not recognized as associated with the toxic exposure.

**EXAMPLES:** Agent Orange, mustard gas and radiation

Long-term health consequences of toxic exposures must be tracked by the federal government. It has been decades since the military stopped using Agent Orange, but veterans are still suffering the consequences, and evidence continues to emerge about potential long-term health problems. Two such examples are liver cancer and increased dementia risk. A study from the Republic of Korea indicates liver cancer could be associated with Agent Orange exposure; however, “there has been no study in U.S. veterans with [chronic hepatitis C] and cirrhosis that has evaluated exposure to Agent Orange as a risk factor for [hepatocellular cancer].” Additionally, an earlier study shows the possible increased risk of dementia for veterans exposed to Agent Orange. While neither piece of evidence is conclusive, they point to areas that must be examined—but are unfortunately being overlooked.

**POLICY CONSIDERATIONS:** Ongoing research is vital when working on this type of exposure. Illnesses caused by toxic exposures often have significant data gaps and require associative research to provide the necessary links. In addition to the research burden, there is a need for continued monitoring and follow-up because new conditions may emerge much later in life. Claims analysis, epidemiological studies and veteran registries can contribute to future research efforts and should be prioritized when an in-service incident occurs.

## Type 2: Uncertain/Inadequate Event Dosage

The Uncertain/Inadequate Event Dosage exposure type comes from real-time measurements or recordkeeping limitations when working around toxic exposures. This type has a recognized current disability from an in-service event but with an uncertain level of exposure from the incident.

The dosage requirement is unique to toxic exposures—no other claims require a service member to provide this information. As such, the reliance on this data makes it more difficult for a veteran seeking to prove a toxic exposure incident harmed them. Individual veterans cannot retrospectively provide individual dose estimates for themselves; oftentimes, a single, general dosage policy is set for all individuals within the exposed cohort. Unfortunately, when a veteran must prove individual dosage, the claim usually fails.

### CHARACTERISTICS:

- **In-Service Event:** An event is recognized, but dose estimates are not captured at the time or evidence has been lost over time.
- **Disability:** A veteran has a clear diagnosis.
- **Nexus:** An individual medical nexus may support a veteran’s claim, but a general VA policy on dosage often overrides individual medical opinions.

**EXAMPLES:** Blue Water Navy veterans, atomic veterans, Thailand Agent Orange, K2 and Camp Lejeune groundwater

Disability recognitions for Blue Water Navy Vietnam veterans and those who served in Thailand serve as examples of dosage disputes—ones eventually overcome by congressional action. Veterans who set foot in Vietnam had a concession of exposure to a sufficiently harmful herbicide dose. Due to data limitations, Congress and the VA chose this approach because it was the most equitable option to care for veterans; however, it was not universally applied.

The premise of the Agent Orange Act of 1991 was that any exposure to Agent Orange is harmful, and all Agent Orange-exposed veterans should be cared for accordingly. In Thailand, only certain military occupational specialties at recognized bases were deemed to have been exposed in high enough doses to have harmful health consequences. The Department of Defense argued that herbicides were only sprayed on the perimeter, thereby exposing only a small population to harmful amounts. This double standard, which lasted for decades, highlights the challenges veterans face with dose estimates for toxic exposures.

**POLICY CONSIDERATIONS:** Once the in-service incident emerges, policymakers should consider the availability of, and access to, dosage data for exposed individuals. When possible, efforts to capture dosage estimates should be undertaken, due to limitations of capturing future data. Additionally, each veteran may respond differently to the toxic exposure and may have individually experienced much higher doses than estimates provided.

Today, the Individual Longitudinal Exposure Record (ILER) is used as the system of record to capture service member exposures, but it has limitations:

- ILER data generally begins in 2013.
- ILER will never be a comprehensive exposure record, as the system will never capture some exposures. This limitation should not be held against veterans when other data is available to support their claims.
- Variance within exposure levels for an ILER means an individual veteran may have received higher doses than the record indicates.

## Type 3: Uncertain Exposure Event

The Uncertain Exposure Event exposure type first appears when a common disability (or disabilities) emerges in a population but the exact event is unclear. Given a vital component of direct service connection is missing, claims for the in-service event are denied.

### CHARACTERISTICS:

- **In-Service Event:** An event is undetermined or unrecognized by the VA or DOD.
- **Disability:** Veterans have a diagnosis or symptoms

prevalent in a population.

- **Nexus:** Given an uncertain incident, a medical nexus cannot be clearly established.

**EXAMPLE:** Connection between Gulf War Illness and amyotrophic lateral sclerosis (ALS)

With Gulf War Illness, many possible incidents were grouped together and classified as a single condition. “During the War, service members were given multiple immunizations, exposed to numerous potentially toxic substances including debris from the military operations and oil well fires, paints, pesticides, infectious agents, chemoprophylactic agents, and indigenous diseases” (Zeglin, 2006).

The blanket term “Gulf War Illness” captures conditions that stem from many different incidents, and efforts to untangle the source of service member disabilities have not been successful to date. However, recent studies showing sarin gas as a possible source could help move this condition to a different exposure type.

**POLICY CONSIDERATIONS:** Conducting research on potential exposures is possible as illnesses emerge, but the ability to collect evidence in hindsight is challenging. One approach could be to seek to establish a constellation of statistically significant manifesting conditions.

#### **Type 4: Unrecognized or Limited Disabilities**

Following an exposure, a common type emerges where a recognized current disability has limitations that prevent it from being connected to the in-service event. These limitations often involve a time limitation for the illness to manifest.

##### **CHARACTERISTICS:**

- **In-Service Event:** The toxic exposure is recognized by the VA.
- **Disability:** A current disability is recognized but has limitations, often in the form of requirements to manifest to a certain level within a certain amount of time.
- **Nexus:** Medical nexus connects a veteran’s service with their diagnosis.

**EXAMPLES:** Time-bound presumptives connected with Agent Orange exposure as well as tropical diseases

The VA recognizes many conditions if they manifest within a given period, be it separation from service, departure from a geographic location or a discrete event. While time limits are not in question for all such conditions, there are concerns about limiting them when scientific data is limited on the exposure or if the requirements include evidence a veteran cannot access. The Agent Orange-linked conditions of chloracne, porphyria cutanea tarda, and acute and subacute peripheral neuropathy have the requirement to manifest within a year of last exposure to Agent Orange.

If a veteran has no supporting documentation to show their conditions manifested within one year, the VA likely will deny their claim. This is incredibly challenging when the last exposures to Agent Orange in Vietnam took place in 1975, but the policy was not created until 1991. Also, no follow-on studies about the rationale for the one-year manifestation policy have been conducted.

**POLICY CONSIDERATIONS:** When the VA writes regulations with limitations for such illnesses, inquiring about the scientific basis for such limitations is vital. Some limited manifestation periods do not have a scientific basis, or there is very little follow-on research on the exposure and related diseases. By failing to recognize these exposures, the VA limits its ability to collect

further data on the exposures, to the detriment of veterans.

Additionally, a veteran’s illness may meet the prescribed criteria but may not have the required supporting documentation. Even if a veteran sought medical attention, records may no longer be available to prove when their disability manifested. In such cases, considerations should be made to support the evidentiary gaps veterans face with presumptives.

#### **Type 5: Unable to Eliminate Non-Service Events**

The Unable to Eliminate Non-Service Events exposure type occurs when there is a recognized disability and an in-service event, but it is uncertain whether the disability or disabilities stem from service-related toxic exposure. This occurs when there are too many other variables to distinguish a nexus.

These incidents are likely to have occurred during service, and evidentiary support connects the conditions to exposures, but the exposure is ubiquitous, making it difficult to isolate and attribute a service-related dosage.

##### **CHARACTERISTICS:**

- **In-Service Event:** In-service exposure is recognized.
- **Disability:** Current disability is recognized.
- **Nexus:** A medical link is uncertain given many other possible factors.

**EXAMPLES:** PFAS, sonic/noise exposure, vibration exposures, some low-ionizing radiation and asbestos

PFAS have been used throughout military and civilian life for decades. The potential harm of these substances is emerging, but given their prevalence, it is challenging to link exposures to service. Aqueous Film Forming Foam (AFFF), a type of PFAS, is used in firefighting foam; the military’s use, given its effectiveness at combating aircraft fires, is suspected to have led to the substance leaking into on-base water supplies. While there is evidence of in-service exposures, the use of this foam is not unique to the military; many civilian fire departments use it as well. The rate and prevalence of exposures among civilians is uncertain in comparison to the military population.

**POLICY CONSIDERATIONS:** When exposure comes from both civilian and military service, the lines become unclear as to the responsibility we have to care for those who serve and have served. Guiding such decisions is the positive association evidentiary standard and the benefit of the doubt given to a veteran’s claim. However, to do this, we must ensure there is sufficient evidence to support a claim and distinguish exposures in and out of service. It should be noted that despite known negative health consequences, there may be a military imperative to continue to use toxic materials like PFAS. When such a decision has been made, the scales must tip even further in favor of the veteran when determining their eligibility for benefits.

#### **Type X: Unknown or Uncertain Disabilities**

This final type of exposure is the most nebulous, given an uncertain in-service event and an uncertain current disability. It occurs when an in-service event, populations and manifesting disabilities are unknown and untracked, including “ghost exposures” that may be perceived as fringe and do not have sufficient political support for further investigation. These exposures may become better understood and fit other types as evidence emerges.

##### **CHARACTERISTICS:**

- **In-Service Event:** Populations are so small or unconnected that drawing connections proves difficult.



- **Disability:** This may be diagnosed or may emerge as symptoms a veteran is seeking to treat.
- **Nexus:** Statistical evidence is unable to show links given the limited population size.

**EXAMPLES:** Pesticide exposure in Hawaii and fighter pilot cancers

The internet has been an incredible resource to help identify Type X exposures. A good example of this is the abnormally high prevalence of cancer among fighter pilots. Initially, no publicly available data supported fighter pilots having a higher risk of cancer, but veterans with these conditions turned to social media

and patterns began to emerge through outreach and sharing. From there, research helped provide the data needed.

**POLICY CONSIDERATIONS:** The burden of identifying such illnesses should not fall on veterans' shoulders. Technological advancements provide the ability for the VA to monitor health populations and to identify high-risk populations by monitoring aggregated veterans' health and taking into consideration databases like ILER. Enhancing these oversight efforts will allow the VA to intervene earlier to help veterans. For past exposures, studies such as epidemiology research will help identify common conditions affecting a population group.

## APPENDIX E: Glossary of Terms

**Acknowledgment:** As used in this report, an “acknowledgment of toxic exposure risk” occurs when an agency of the U.S. government, typically the Department of Defense or the Department of Veterans Affairs, publicly communicates that an exposure occurred that may involve toxic substances and could result in negative health consequences. It does not formally concede that this exposure would have negative health consequences for service members or veterans.

**Association:** A relationship between two variables such that the pattern of data in one variable is related to the pattern of data in another variable. Association is similar to correlation, which is a relationship between two variables such that when one variable rises or falls, the other variable does the same.

**Causation:** A relationship in which one variable or event (the cause) influences another variable or event (the effect). In medicine and science, establishing causation requires both a statistical association (or correlation) and a plausible biological mechanism to explain how the cause produces the effect.

**Concession of Exposure:** The legal determination (concession) that an in-service incident (exposure) was experienced by a specific group of military service members, usually defined by the time and location of their service. It is sometimes referred to in statute or regulation as a “presumption of exposure”; however, we use the term “concession” to more clearly distinguish it the term “presumption of service connection.”

**Current Disability:** To establish a current disability, a veteran must have adequate evidence that they have a condition, illness or disability that is recognized on the VA Schedule of Rating Disabilities.

**Direct Service Connection:** To establish direct service connection, a veteran must have adequate evidence of a current disability, an in-service event that caused or aggravated that condition, and a medical nexus linking the two.

**Environmental Hazard:** Extreme events or substances that may cause negative health effects, which include chemical (e.g., dioxin, benzene), physical (e.g., radiation, noise), biological (e.g., parasites, bacteria), mechanical (e.g., vibration) and psychosocial (e.g., stress) hazards.

**Equipoise:** In legal terms, the point at which evidence for and against a proposition is equal. Relative equipoise occurs when there is an approximate balance of evidence for and against a proposition.

**In-Service Event/Incident:** An event or incident, such as an illness, injury, accident or wound, that occurs while on active duty or active duty for training.

**Nexus:** Generally, a connection or link between things, persons or events that is or is part of a chain of causation. For establishing service connection, a nexus is a link or connection between a veteran’s current medical condition or disability and their military service.

**Positive Association:** Per Section 1116(b)(3), Title 38, U.S. Code, an association is to be considered positive “if the credible evidence for the association is equal to or outweighs the credible evidence against the association.”

**Presumption of Service Connection:** The legal determination (presumption) that a nexus (causal link) is deemed to exist between an in-service incident (exposure) and one or more specific diseases and disabilities. When a presumption of service connection has been established, a veteran is relieved of the burden of providing some or all of the evidence normally required to establish service connection.

**Presumptive Service Connection:** An alternate method of establishing service connection in which one or more elements of a presumptive are used in lieu of direct evidence normally required to establish service connection.

**Presumptive:** A legal mechanism that fills evidentiary gaps for disability compensation claims through the establishment of a concession of exposure and/or a presumption of service connection. A presumptive can be established by the VA (regulations) or Congress (legislation) when extenuating circumstances make it difficult or impossible for a veteran to provide all of the evidence normally required to establish service connection. Note that “presumptive” is the term used to describe the full legal mechanism in regulation or in statute. For example, the Agent Orange presumptive includes both a concession of exposure to Agent Orange for Vietnam veterans and a presumption of service connection for a Vietnam veteran who has one or more of the diseases and conditions listed in the Agent Orange presumptive.

**Service Connection:** A finding by the VA that an illness or injury was caused or aggravated by active military service.

**Toxic Exposure:** Direct or indirect contact with natural (toxins) or synthetic (toxicants) substances that can cause negative health effects. A military toxic exposure can occur on battlefields, during deployments and missions, or on military bases at home or abroad.

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