

The Hidden Inferno: Burn Pit Exposure in the Military and Its Potential Links to Cancer

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In the course of carrying out their duties, US military personnel face numerous hazards. Although the risks of combat are widely recognized, there are other lesser-known dangers that can have significant, long-lasting impacts on the health of those who serve in the military. One such hazard is exposure to toxic smoke from open-air burn pits used by the military to dispose of waste during overseas operations.

To picture the scale of this issue, consider that there were approximately 200 active burn pits in Afghanistan in 2010, burning hundreds of tons of waste daily.¹ More than 3.5 million US military personnel have been potentially exposed to these burn pits since 9/11.²

The issue of burn pits and their potential health impacts is more than just a dry statistic or an abstract concern. According to a recent survey by the Iraq and Afghanistan Veterans of America (IAVA), 86% of veterans from these conflicts who responded reported exposure to burn pits and 89% of those believe they have symptoms directly related to that exposure.³

But what exactly are these burn pits, and what do they burn? How might exposure to burn pit emissions lead to health problems, including cancer? We aim to shed light on these questions, backed by the latest research and data, to raise awareness and promote informed discussions about this important but often overlooked issue.

What Are Military Burn Pits?

A burn pit is an area of land where the military disposes of waste by openly burning it.¹ These pits can range in size from as small as a swimming pool to as large as a few football fields.

The Department of Defense (DoD) has relied on open-air burn pits as a primary method for waste disposal during overseas operations.⁴ At the height of operations in Iraq and Afghanistan, there were approximately 250 burn pits operating, the largest of which was the 10-acre site at Joint Base Balad in Iraq.⁴ The Balad site burned an estimated 147 tons of waste daily in 2007.⁵

Now, imagine what types of waste might be generated by a large military operation. The waste burned in these



Active open-air burn pit.

pits includes ordinary trash and food waste, as well as more concerning items. Burn pits have been used to dispose of medical waste, plastics, metal cans, rubber, ammunition, explosives, paints, and even vehicles.¹ Each of these materials, when burned, can release a cocktail of potentially harmful substances into the air that military personnel working or living nearby might breathe in.

Burn Pit Exposure: Understanding the Risks

The smoke from burn pits carries a mixture of particles and chemicals that can be inhaled or ingested by individuals in the vicinity. Considering the composition of materials burned in these pits, the resulting emissions can include known carcinogens, such as dioxins, polycyclic aromatic hydrocarbons, volatile organic compounds, and heavy metals.¹

But how many military personnel could potentially be affected by this exposure? According to the Department of Veterans Affairs (VA), more than 3.5 million US military personnel have been potentially exposed to burn pit smoke since 9/11.² The results of a survey that included 134,434 veterans showed that approximately 91% were exposed to burn pit smoke, and almost 33% of those exposed had respiratory symptoms.²

Exposure to burn pit emissions can cause immediate and long-term health effects. In the short term, exposure can lead to coughing, difficulty breathing, and irritation

of the eyes and skin.¹ However, the potential long-term health impacts of burn pit exposure are of greatest concern. Repeated or heavy exposure to the toxins in burn pit smoke has been linked to serious health conditions, including cancer, respiratory diseases, cardiovascular diseases, and neurologic disorders.¹

The risk level can depend on various factors, including the duration and intensity of exposure, the specific materials being burned, the weather conditions, and the individual's health status and genetic factors.¹

Delving Into Cancer: The Potential Burn Pit Connection and Burn Pit Registry Findings

The link between burn pit exposure and cancer is an area of active research, with several studies and the findings of the VA's Burn Pit Registry pointing towards a potential correlation.^{2,6,7}

More than 3.7 million US service members have been involved in the Southwest Asia theater of military operations since 1990.⁸ A significant aspect of these deployments has been exposure to burn pits, which are recognized as substantial sources of smoke and fumes for many service members. Whereas burn pits are among many potential sources of airborne hazards during deployments, they have drawn significant attention and concern due to the various environmental contaminants they release.

Burn pits were initially employed as a temporary waste disposal solution in Iraq and Afghanistan, given their cost-effectiveness and operational efficiency. As of 2011, the DoD documented 197 burn pit sites in Afghanistan and 63 in Iraq, with these pits burning large quantities of waste, including plastics and medical waste, daily. The incomplete combustion of such diverse waste materials can produce a multitude of toxic byproducts, raising health concerns.¹

To delve deeper into these health implications, in August 2021, the VA established a presumptive service connection for 3 chronic respiratory health conditions, including asthma, rhinitis, and sinusitis.⁸ This presumption was linked to exposures to fine particulate matter. Fast forward to April 25, 2022, and the VA further recognized a presumptive service connection for 9 rare respiratory cancers associated with exposure to fine particulate matter.⁸ These inclusions demonstrate a growing acknowledgment of the potential adverse health outcomes tied to burn pit exposures.

The Airborne Hazards and Open Burn Pit Registry, established in 2013, further accentuates the pursuit to monitor and understand the implications of such exposures.⁸ Although the registry faced initial challenges, such as voluntary participation and self-reported data, it continues to serve as a vital tool to gather insights on the exposures and associated health conditions of veterans.

Importantly, in the context of health outcomes, the registry data have provided indicators towards respiratory symptoms among veterans, although distinguishing the specific impact of burn pits remains challenging.⁸ Continuous efforts, through legislative changes and stakeholder engagements, aim to improve and expand the scope of this registry, ensuring comprehensive data collection and better health outcomes for the veterans.

Current Policies and Measures

Recognizing the potential health hazards associated with burn pits, the DoD and the VA have taken several measures to address this issue.

The DoD has made significant efforts to reduce the use of burn pits. In 2009, the DoD issued a policy stating that open-air burn pits should only be used as a last resort and for short-term emergency situations.⁹ As of 2016, the number of burn pits in use had been reduced to only 1 in Iraq and none in Afghanistan.¹⁰

For its part, the VA established the Airborne Hazards and Open Burn Pit Registry to help understand the potential health effects of burn pit exposure.² As of 2020, more than 209,000 veterans and service members had completed the registry questionnaire, providing valuable data on self-reported health issues and exposures.¹¹

The VA also offers many benefits and services to veterans who believe their health issues may be related to burn pit exposure under the PACT Act, including health examinations, disability compensation, and specialized healthcare services.¹²

Conclusion

Burn pit exposure presents a complex and pressing issue for military personnel and veterans. Although significant steps have been taken to understand and mitigate the potential health risks from burn pit exposure, there remains a pressing need for further action.

Given the potential links to serious and life-threatening diseases, including cancer, understanding the full health impact of burn pit exposure should be a high priority. More comprehensive and robust research is needed to establish clear links between burn pit exposure and specific health outcomes. This requires a substantial investment and commitment to transparent and rigorous science.

Beyond research, there is a need for policy interventions. Although the use of burn pits has been reduced, the question remains: What can be done for those who have already been exposed to burn pits and may be living with the health consequences? Advocacy groups such as Burn Pits 360 and IAVA are fighting for policy changes that recognize and compensate these service members appropriately.

Finally, the issue of burn pit exposure underscores the need for a paradigm shift in how we understand and approach the health risks associated with military service. Although physical injuries and psychological traumas are rightly recognized as serious hazards of military service, less visible threats, such as toxin exposures, must also be considered.

The men and women who serve our country in the military deserve our gratitude and respect, but also our unwavering commitment to safeguarding their health during and after their service. This commitment must include a determined effort to fully understand, address, and prevent the risks associated with burn pit exposure.

Disclaimer

The statistics and references mentioned in this article do not imply any formal conclusions on behalf of the author or affiliated organizations. The information provided is intended to foster conversation and encourage further research into this critical subject.

Author Disclosure Statement

Ms Szewczyk declares that no financial support or compensation has been received from any individuals or organizations that could potentially influence the submitted work. There are no personal, professional, or financial relationships with other persons or organizations that could inappropriately influence or bias the content of the paper. There are no patents, whether planned, pending, or issued, broadly relevant to the work. There has been no significant financial support for this work that could have influenced its outcome. The manuscript has been read and approved by all named authors.

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