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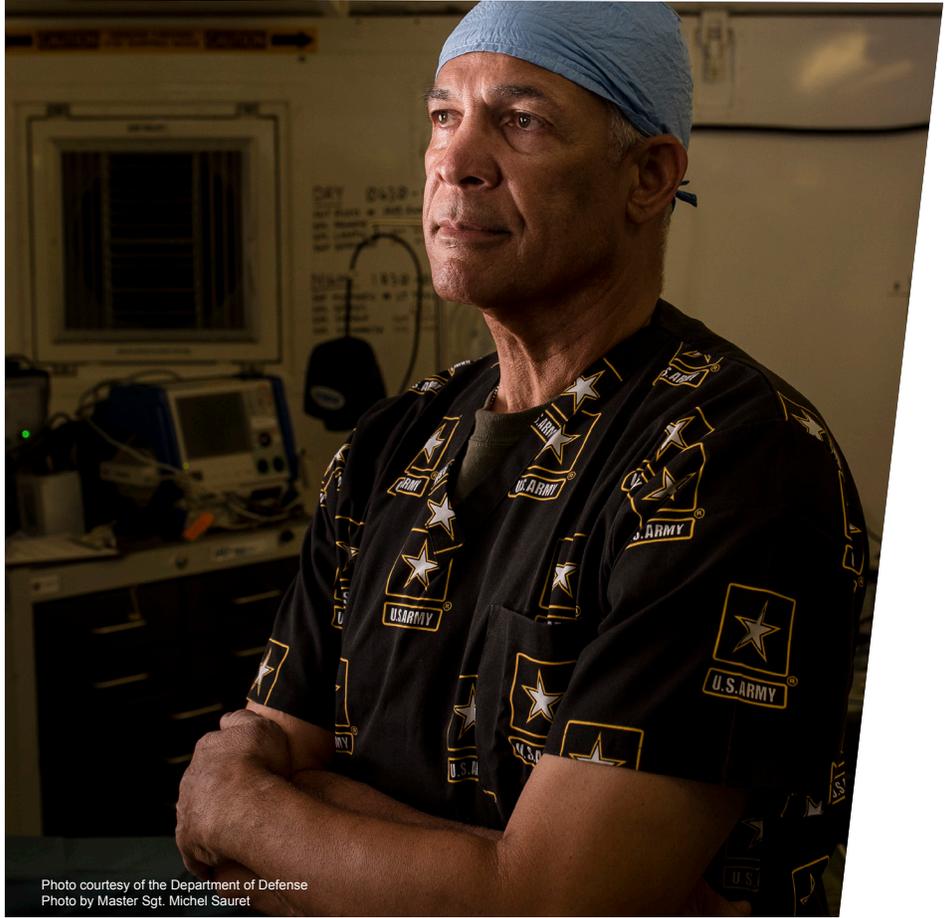


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# Airborne Hazards and Open Burn Pit Registry DoD Health Care Provider **CLINICAL TOOLBOX**



## Be Prepared to Treat Service Members Exposed to Airborne Hazards, Such as Open Burn Pit Smoke

The Department of Veterans Affairs (VA) developed the Airborne Hazards and Open Burn Pit Registry to enable service members and veterans to document their exposure to airborne hazards while serving overseas and to facilitate a discussion about their exposure with their provider. This toolbox contains background information on airborne hazards and the registry, guidance for conducting the medical exam, and resources for you to review and share with service members and other health care providers.

### Overview of Registry

Service members who have been exposed to airborne hazards, such as open burn pit smoke, while serving may be at risk for short- and long-term health issues. After deployment to locations with open burn pits and other pollution sources, service members have returned with a range of mild to serious respiratory illnesses. At this time, there are no biomarkers specific to the environmental exposure-related health concerns of service members who deployed to eligible theaters of operations (listed below). In June 2014, VA launched the [Airborne Hazards and Open Burn Pit Registry](#) in response to concerns that veterans were experiencing a range of respiratory illnesses possibly associated with exposure to burn pits while serving overseas. The registry allows eligible veterans and service members to document their exposures (such as smoke from burn pits, oil-well fires, or pollution) during deployment, as well as health concerns, through an online questionnaire. The registry is completely voluntary and does not affect access to VA healthcare or compensation benefits. Upon completion of the questionnaire, registry participants are encouraged to schedule a free medical exam to review their responses and health concerns with a medical provider.

### Eligibility

Service members who served in the Southwest Asia theater of operations **on or after August 2, 1990, or in Afghanistan or Djibouti on or after September 11, 2001**, are eligible to sign up. These regions include the following countries, bodies of water, and the airspace above these locations: Iraq, Afghanistan, Kuwait, Saudi Arabia, Bahrain, Djibouti, Gulf of Aden, Gulf of Oman, Oman, Qatar, United Arab Emirates; and waters of the Persian Gulf, Arabian Sea, and Red Sea.

### Background of Open Burn Pits

Open burn pits were used in Operation Enduring Freedom and Operation Iraqi Freedom to dispose of all sorts of solid wastes. Material burned in some locations, especially early in the conflict, may have included human and medical waste, as well as substances known to generate carcinogens and other harmful substances through the combustion process. In addition, elevated levels of particulate matter (PM), including dust from the desert and from industrial activities and other man-made sources, contributed to poor air quality in many locations.

In 2011, the Institute of Medicine (IOM) reviewed the scientific literature related to the possibility of adverse long-term health effects of open burn pits. [The report](#) noted U.S. Department of Defense (DoD) air quality monitoring data measured levels of PM higher than generally considered safe by U.S. regulatory agencies. It also cited work linking high PM levels to cardiopulmonary effects, particularly in individuals at increased risk due to pre-existing conditions such as asthma and emphysema. The IOM concluded there is only limited evidence suggestive "of an association between exposure to combustion products and reduced pulmonary function in these populations."

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## Conducting the Medical Exam

DoD will provide service members with a free, optional medical exam upon request. Active duty service members, including activated Reserve and Guard, can contact their local military hospital or clinic to schedule an exam. Army National Guard, Air National Guard, and Reserve members, whether discharged or still serving, can contact VA to schedule an exam. Veterans or inactive/separated National Guard members or Reservists enrolled in the VA health care system can contact their local VA Environmental Health Coordinator to schedule an exam.

If the service member is receiving the medical exam after signing up for the registry online, they are encouraged to bring a printed copy of their completed questionnaire. Providers can also access a copy of their patient's completed questionnaire today through the Defense Occupational and Environmental Health Readiness System and eventually through the Individual Longitudinal Exposure Record. Providers should start by reviewing the service member's questionnaire and discussing their medical history with an emphasis on occupational/environmental exposures. Providers should assess the intensity and specific focus of concern of the individual, bearing in mind that patients seeking medical attention may have a variety of symptoms and exposure concerns.

**The provider should discuss and document the service member's exposures in as much detail as possible.**

**Questions to ask include, but are not limited to:**

- What type of pollution were you exposed to during deployment (e.g., off-base pollution such as factories, cars, burning trash, or dust; or on-base pollution such as burning fuel or burn pits)?
- How many hours per day were you exposed?
- How many days, months, or years were you exposed?
- What airborne pollutants have you been exposed to outside of deployment?

Providers should rely on their own evidence-based knowledge, expertise, and skills to guide a patient-centered evaluation and treat their symptoms according to clinical best practices. If clinically indicated, providers may:

- Perform a physical exam, with focus and extent determined by symptoms and/or health concerns
- Order chest radiograph and spirometry as baseline studies and further diagnostics based on clinical symptoms
- Refer the service member with chronic symptoms to specialists (e.g., internal medicine, pulmonology, and/or occupational medicine) for further evaluation
- Consider referral for enrollment in ongoing research studies at Brooke Army Medical Center Pulmonary

**Upon completing the exam, providers should document the encounter in the electronic health record; no additional forms are required. Providers should record the following diagnostic codes:**

- In the Armed Forces Health Longitudinal Technology Application (AHLTA), use both of the following International Classification of Disease (ICD)-10 codes: Z91.82 (personal history of military deployment) and X08.8 (exposure to other specified, smoke, fire)
- In Military Health System (MHS) GENESIS, use both of the following Systemized Nomenclature of Medicine-Clinical Terms (SNOMED-CT): codes 3042585015 (history of military deployment) and 165638013 (exposure to environmental pollution, occupational)
- Any additional applicable diagnostic or symptom codes

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## Clinical Considerations

While there is no single approach to evaluating patients with dyspnea and normal spirometry, [Appendix C](#) of the Borden Institute book on [Airborne Hazards Related to Deployment](#) proposes the following evaluation framework. Considerations should be given to establishing the presence or absence of airway hyperactivity and upper airway disorders as well as ruling out parenchymal lung disease.

### Potential Evaluation of Patients with Chronic Symptoms

Proposed Test	Considerations
<b>Spirometry Post-BD</b>	Review spirometry for reduction in forced expiratory volume in one second (FEV1); 12% increase in post-bronchodilator (post-BD) diagnostic of airway hyperactivity (AHR)
<b>Spirometry w/symptoms</b>	Intermittent nature of asthma may require repeat spirometry when patients are symptomatic
<b>Chest Radiograph</b>	Will be normal in most patients; helpful to eliminate pulmonary infiltrates, effusions, or mediastinal disease
<b>Complete Blood Count</b>	Rule out anemia, especially in females
<b>Inspiratory FVL</b>	Review the inspiratory flow volume loop (FVL) on all spirometry exams for truncation or flattening
<b>Exercise Laryngoscopy</b>	Presence of abnormal FVL or history of inspiratory wheezing or noisy breathing; diagnostic for vocal cord dysfunction
<b>Bronchoprovocation Testing</b>	With normal spirometry, important to rule out underlying airway reactivity such as exercise-induced bronchospasm (EIB)
<b>Methacholine</b>	Most common test used for AHR with good negative predictive value; diagnostic for EIB with associated exercise symptoms
<b>Eucapnic Hyperventilation</b>	Equivalent to methacholine for diagnosing AHR, but requires 15% decrease in FEV1
<b>Exercise Spirometry</b>	Poor predictability compared to other methods and may not reproduce symptoms in laboratory setting
<b>Impulse Oscillometry</b>	Newer modality that measures airway resistance and may identify AHR based on reduction in post-BD values
<b>High Resolution CT</b>	May identify subclinical lung disease, airway trapping or bronchiectasis; low diagnostic yield in this population
<b>Cardiopulmonary Exercise Testing</b>	Primarily used to assess patient's ability to exercise and measure VO2 max; given limited reference values and low suspicion for cardiac disease, may not identify specific cause
<b>Allergy Evaluation</b>	Consideration for allergy testing in patient with other atopic symptoms such as atopic dermatitis, allergic rhinitis
<b>Cardiology Evaluation</b>	Very low likelihood of cardiac disease in a younger population; referral should be based on physical exam findings
<b>Electrocardiogram</b>	Numerous nonspecific changes found in younger population and rarely diagnostic
<b>Echocardiogram</b>	Numerous nonspecific changes found in younger population and rarely diagnostic

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## Schematic of DoD Medical Follow-Up

An active duty service member, including an activated Reserve and Guard member, becomes aware of the registry through his/her health care provider or via outreach efforts such as direct mail communications, social media content, events/briefings, or [Health.mil/AHBurnPitRegistry](https://health.mil/AHBurnPitRegistry).

The service member accesses the Airborne Hazards and Open Burn Pit Registry at <https://veteran.mobilehealth.va.gov/AHBurnPitRegistry> and successfully completes the online questionnaire.

The service member requests an optional medical exam at his/her local military hospital or clinic to specifically address "health concerns related to the Airborne Hazards and Open Burn Pit Registry exposures."\*

The service member attends the medical exam, and if possible, should bring a printed copy of their completed questionnaire.

During the service member's medical exam, the health care provider:

- Determines the patient's concern or chief complaint
- Reviews questionnaire responses with the service member, and documents pertinent positives in the medical record
- Takes a medical history with an emphasis on occupational/environmental exposures, especially airborne hazards, and smoking history

If clinically indicated, the health care provider may:

- Perform a physical exam, with focus and extent determined by symptoms and/or health concerns
- Order chest radiograph, spirometry, and/or further diagnostics based on clinical symptoms
- Refer the service member to a pulmonary specialist for further evaluation

Upon completion of the medical exam, the health care provider:

- Fully documents the encounter and any referrals in the service member's medical record
- Uses the following diagnostic codes and any other applicable diagnostic or symptom codes related to the visit:
  - ❖ In the Armed Forces Health Longitudinal Technology Application (AHLTA), use both of the following International Classification of Disease (ICD)-10 codes:
    - Z91.82 (personal history of military deployment)
    - X08.8 (exposure to other specified, smoke, fire)
  - ❖ In Military Health System GENESIS, use both of the following Systemized Nomenclature of Medicine-Clinical Terms (SNOMED-CT) codes:
    - 3042585015 (history of military deployment)
    - 165638013 (exposure to environmental pollution, occupational)

\*Retirees and National Guard and Reserve Component members (separated or still serving) are managed by VA

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## Provider Resources

This section contains resources DoD providers can review to learn more about the Airborne Hazards and Open Burn Pit Registry and pass along to colleagues or patients. Click links to download materials or to view more information.

### Materials for Providers:

- [Airborne Hazards and Open Burn Pit Registry Fact Sheet](#) (DoD)
- [Airborne Hazards and Open Burn Pit Registry FAQs](#) (DoD)
- [Clinician's Guide to Airborne Hazards](#) (VA)
- [Airborne Hazards and Open Burn Pit Registry Overview PowerPoint Presentation](#) (VA/Army Public Health Center [APHC])
- [Airborne Hazards Registry Initial In-Person Evaluation: A Guide for Veterans and Providers](#) (VA)
- [Airborne Hazards Fact Sheet for Providers](#) (VA)
- [Airborne Hazards and Open Burn Pit Registry Fact Sheet](#) (VA/APHC)
- [Frequently Asked Questions about Burn Pit Exposure Fact Sheet](#) (APHC)
- [Burn Pit: Airborne Hazards and Open Burn Pit Registry Poster](#) (APHC)
- [Burn Pit: Airborne Hazards and Open Burn Pit Registry Tip Card](#) (APHC)
- [Airborne Hazards and Open Burn Pit Registry Pre-Participation Fact Sheet](#) (VA)
- [Summary of Evidence Statement: Chronic Respiratory Conditions and Military Deployment Fact Sheet](#) (APHC)

### Websites:

- [Airborne Hazards and Open Burn Pit Registry](#) (VA)
- [MHS: Airborne Hazards and Open Burn Pit Registry](#) (MHS)
- [WRIISC: Introduction to Airborne Hazards for Providers](#) (VA)
- [Directory of Environmental Health Coordinators](#) (VA)

### Videos:

- [VA Airborne Hazards and Open Burn Pit Registry for Veterans and Service Members](#) (APHC)
- [Airborne Hazards and Open Burn Pit Registry](#) (VA)
- [The Airborne Hazards and Open Burn Pit Registry - Participation Benefits](#) (VA)

## Training

Log in to Joint Knowledge Online (JKO) at <https://jkodirect.jten.mil> to search for and complete the training course titled [DHA-US035 Airborne Hazards and Open Burn Pit Registry Review](#).

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## Clinical Reports and Further Reading

Download or explore the following resources to learn more about open burn pits, exposures, and airborne hazards, as well as the Airborne Hazards and Open Burn Pit Registry.

### Reports and General Information:

- [Open Burn Pit Report to Congress \(DoD\)](#)
- [Self-Reported Health Information from the Airborne Hazards and Open Burn Pit Registry \(VA\)](#)
- [DoD Instruction 4715.19. Use of Open-Air Burn Pits in Contingency Operations \(DoD\)](#)
- [DoD Needs to Fully Assess the Health Risks of Burn Pits \(Government Accountability Office\)](#)
- [Assessment of VA Airborne Hazards and Open Burn Pit Registry \(National Academies\)](#)
- [Airborne Hazards Related to Deployment \(Office of Surgeon General, Borden Institute\)](#)
- [Long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan \(IOM\)](#)

### Airborne Hazards and Particulate Matter Research:

- [Particulate Matter \(PM\) Air Pollution Exposures during Military Deployments \(APHC\)](#)
- [Health Implications of Deployment Exposures: Diesel and JP-8 Engine Exhaust \(APHC\)](#)
- [Documentation of Deployment Exposures and the Periodic Occupational Environmental Monitoring Summary \(POEMS\) Information for Preventive Medicine Personnel \(APHC\)](#)
- [The Periodic Occupational and Environmental Monitoring Summary \(APHC\)](#)
- [A Case-Crossover Study of Ambient Particulate Matter and Cardiovascular and Respiratory Medical Encounters Among US Military Personnel Deployed to Southwest Asia \(APHC\)](#)
- [Integrated Science Assessment for Particulate Matter \(U.S. Environmental Protection Agency\)](#)

### Reports on Clinical Concerns Related to Airborne Hazard Exposures:

- [Evaluation of Deployment Related Respiratory Symptoms \(Federal Practitioner\)](#)
- [Chronic Respiratory Conditions and Military Deployment \(APHC\)](#)
- [Acute Eosinophilic Pneumonia \(AEP\) and New Onset Smoking \(APHC\)](#)
- [Burn Pits: Trash and Human Waste Exposures \(VA\)](#)
- [Newly Reported Respiratory Symptoms and Conditions Among Military Personnel Deployed to Iraq and Afghanistan: A Prospective Population-Based Study \(American Journal of Epidemiology\)](#)
- [New-onset Asthma Among Soldiers Serving in Iraq and Afghanistan \(National Center for Biotechnology Information\)](#)
- [Acute Eosinophilic Pneumonia Among US Military Personnel Deployed in or near Iraq \(Journal of the American Medical Association\)](#)
- [Constrictive Bronchiolitis in Soldiers Returning from Iraq and Afghanistan \(New England Journal of Medicine\)](#)
- [Occupational Causes of Constrictive Bronchiolitis \(NCBI\)](#)
- [Risk Communication in Deployment-Related Exposure Concerns \(NCBI\)](#)
- [Overview and Recommendations for Medical Screening and Diagnostic Evaluation for Post Deployment Lung Disease in Returning U.S. Warfighters \(NCBI\)](#)
- [Diagnosis and Management of Chronic Lung Disease in Deployed Military Personnel \(NCBI\)](#)



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## Location-Specific Assessments and Reports

- [Joint Base Balad Burn Pit](#) (APHC)
- [Bagram Theater Internment Facility](#) (APHC)
- [Medical Assessment of Air Quality at Narhwan Brick Factory and FOB Hammer in Iraq](#) (APHC)
- [Health Assessment of 2003 Al Mishraq Sulfur Fire Incident](#) (APHC)
- [Health Assessment of 2003 Qarmat Ali Water Treatment Plant Sodium Dichromate Incident Status Update: May 2020](#) (APHC)



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Photo by Airman 1st Class Hanah Abercrombie

## Looking Ahead

DoD is developing guidance for periodic health assessments, separation history and physical examinations, and deployment assessments to meet FY20 National Defense Authorization Act requirements.

Assessments will include an evaluation of whether the service member was based or stationed at a location where an open burn pit was used or exposed to toxic airborne chemicals or other airborne contaminants. Additionally, if an evaluation establishes that the service member was stationed at a location with an open burn pit or exposed to toxic airborne chemicals or contaminants, the service member shall enroll in the Airborne Hazards and Open Burn Pit Registry, unless they elect not to enroll.

In the meantime, we highly recommend all providers encourage eligible service members to sign up for the registry at <https://veteran.mobilehealth.va.gov/AHBurnPitRegistry> or to visit <http://health.mil/AHBurnPitRegistry> to learn more and download resources.

