

**Senate Democratic Policy Committee Hearing**

**“Are Burn Pits in Iraq and Afghanistan Making Our Soldiers Sick?”**

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Mr. Chairman, thank you for the opportunity to testify before you today. I am Dr. Darrin Curtis, a recently retired Lieutenant Colonel with the United States Air Force. I have received a Ph.D. in Engineering and master's and bachelor's degrees in Civil Engineering from the University of Arkansas. My graduate degrees included environmental research in contaminate handling and transport. I am also a Professional Engineer in Utah and Arkansas.

I spent nearly 27 years in the United States Army and Air Force, serving the last 20 years as a Biomedical Science Corps officer with the United States Air Force. In my capacity as a Bioenvironmental Engineer, I provided preventive medicine services to service members.

I was deployed to Balad Air Base in Iraq from September 2006 to January 2007 as part of the 332nd Expeditionary Aerospace Medicine Squadron as the Bioenvironmental Engineering Flight Commander. My responsibility was to assess hazards relating to the Airmen and other personnel on base in coordination with the Army preventive medicine detachment. There are more than 25,000 men and women stationed at the Balad Air Base at a time. The base, which occupies a 25 square kilometer site, is the largest and busiest aerial port operation in Iraq.

One of the very first things I noticed upon arriving at the Balad Air Base was the smoke from the burn pit. I arrived at night and the weather conditions had caused the burn pit smoke plume to hang close to the ground. The smell was noxious and looked like a very thick fog hanging low to the ground. Shortly after my arrival, an inspector from the US Army's Center for Health Promotion and Preventive Medicine (CHPPM) told me that the Balad burn pit was the

worst environmental site he had ever seen, and that included the 10 years he had performed environmental cleanup work for the Army and Defense Logistics Agency.

The burn pit was the very first point of discussion I had with the Bioenvironmental Engineer I was replacing. He provided me with information on some past sampling that was inconclusive and mentioned that a large study including air sampling would be conducted during my rotation. The sampling strategy for this study was finalized by me and members of CHPPM, the Air Force Institute of Operational Health, and the Air Force Central Command's Bioenvironmental Engineer Forward. It took several months for us to get the equipment and sampling media ready for the study. My team and I were only able to sample a few days of the sampling protocol before redeploying back to the United States. I handed off the rest of the sampling to my replacement.

Before my team started sampling, I thought it would be very difficult to capture the dynamic smoke plume from the burn pit with our sampling equipment. My concerns were validated during our sampling. I did not feel confident that we had captured the plume during our sampling. The dynamic nature of a smoke plume makes it highly unpredictable, especially in close proximity to a river. I saw the plume move downwind in unexpected ways, including when the plume would rise and then come back to the ground more than a mile away from the burn pit.

The sample results from this study were used for the CHPPM health risk assessment published in May 2008 in which CHPPM stated that "adverse health risks are unlikely." Since then, the Department of Defense (DoD) has relied on this report to conclude that "long-term health effects are not expected to occur from breathing the smoke" at Balad Air base.

Although some DoD officials are now saying that no hazardous exposure was found in

the sampling data, I do not feel that the air samples reflected the true exposures that the service members had experienced and it is extremely difficult to predict the synergistic effects from multiple chemicals. It should also be noted that CHPPM did not consider measurements of particulate matter PM 10, PM 2.5 or ultra-fine PM levels in its risk assessment published in May 2008.

Although I wrote part of the sampling plan, coordinated all the equipment and sampling media, and sampled several days of the study, I was not contacted to provide input or to review the CHPPM report. Normally in scientific investigations individuals who prepare the sampling strategy and take the samples are brought in as part of the team to write the report. It seems like it would be very difficult to write a report without the input of those who were at the site during the study.

In December 2006, about a year and half before the CHPPM report was published, I wrote a report on the burn pits at Balad. In my report, I stated that:

- “There is an acute health hazard for individuals. There is also the possibility for chronic health hazards associated with the smoke.”
- “The smoke hazards [at Balad] are associated with burning plastics, Styrofoam, paper, wood, rubber, POL products, non-medical waste, some metals, some chemicals (paints, solvents, etc.), and incomplete combustion by-products.”
- “Open bit burning may only be practical when it is the only available option and should only be used in the interim until other ways of disposal can be found. This interim fix should not be years, but more in the order of months.”
- “It is amazing that the burn pit has been able to operate without restrictions over the past few years without significant engineering controls being put in place.”

I wrote the memo because, despite the acute health hazard associated with the use of the burn pits, it was evident that the construction of the incinerators at Balad was not moving forward. I was told that there were contracting and/or money problems associated with the construction of the incinerators. Knowing that incinerators could drastically reduce the service members' exposure to the burn pit smoke, I drafted the memo to document that there were real health hazards associated with the burn pits.

I felt like my hands were tied when trying to deal with the constant complaints from service members exposed to the smoke. Most of these complaints, which included headaches, nausea, irritation of the eyes and upper respiratory complaints, were probably associated with particulate matter. Air Force Commanders also called and asked what I was doing about the burn pits. A commander contacted me to let me know he had Airmen who had vomited the night before because of the thick smoke. In addition to the possible long-term health problems from potential carcinogens and other toxins, the quality of life for those thousands and thousands of service members who had to breathe the thick smoke for months on end was poor. Given the lack of action in ending the use of the burn pits at Balad, the most I could do was to let the Airmen know the exposure would be included in their medical records upon redeployment.

Although I could not help the current service members at the time, I felt the memo might expedite the construction of the incinerators and possibly reduce the smoke exposure for service members stationed at Balad in the future. I also hoped that it would change the way burn pits are viewed in the military and that burn pits would not be permitted to be used in the future. My memo was strongly endorsed by the 332nd's Chief of Aerospace Medicine. It was sent to both the 332nd Expeditionary Medical Group Commander and the Air Force Central Commands' Bioenvironmental Engineer Forward. I do not know how far the memo made it up the Air Force

Chain of Command. I sent a copy of the memo to my counterpart in the Army at Balad, who then provided it to others.

Air Force leadership did get involved with the burn pits when the smoke hindered air operations at Balad. They would have the fires dowsed with water from the fire department to reduce the smoke so air operations would not be effected. You must understand that the Army was running the burn pits and they were also in charge of the construction of the incinerators. We in the Air Force could only voice our concerns and I believed it was my job to document what I thought was a health hazard affecting every individual who was stationed at Balad.

During medical redeployment briefings with each Air Force service member, the smoke from the burn pits was the issue of most concern for our Airmen. These service members would request that the burn pit exposure be placed in their medical records because they were concerned about the long-term impact to their health associated with their exposures. After my return, the one common experience I have noticed when talking to my fellow veterans who served in Iraq is the burn pits. Everyone who served seems to have been near a burn pit.

I do not believe that CHPPM has the necessary data to make a determination that “long-term health effects are not expected to occur from breathing the smoke” at Joint Base Balad. I finalized the sample plan and conducted some of the air sampling that was used to prepare the CHPPM report about the burn pit at Balad. I understand the limitations of those sample results and believe that CHPPM has overestimated the ability to adequately collect relevant samples associated with the burn pit plume.

Although I have no hard data, I believe that the burn pits may be responsible for long-term health problems in many individuals who were exposed to the smoke plumes.