



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

ACTION MEMO

April 10, 2010, 10:30 a.m.

FOR: UNDER SECRETARY OF DEFENSE (AT&L)

FROM: Dorothy Robyn, DUSD (I&E)

SUBJECT: Joint Staff Report "Burn Pits in Context of the Contemporary Operating Environment"

- Request you sign the attached letters (TAB A) to the Senate and House Armed Services Committees releasing the attached report "Burn Pits in Context of the Contemporary Operating Environment" (TAB B). Section 317 of the NDAA of 2010 (TAB C) required DoD to develop policy limiting the use of burn pits and provide a report on the current use of burn pits. The policy was completed on March 30, 2010 with Directive-Typed Memorandum 09-032, "Use of Open-air Burn Pits in Contingency Operations." In parallel, the Joint Staff prepared, staffed and signed out this report on the current usage of burn pits (TAB D).
- USCENTCOM and its Service components have taken strong positive action to correct past burn pit practices in order to comply with Section 317 requirements and supporting DoD guidance. Recognizing the need to ensure health and safety at forward operating bases, NDAA 2010, Section 317 allows for some use of burn pits, but only under strict, enforceable guidelines. The report to Congress summarizes actions taken to remediate past practices and prevent recurrences.

RECOMMENDATION: Sign the letters at TAB A

COORDINATION: TAB D

Attachments:

As stated

Prepared By: LtCol Jonathan Thomas, ODUSD(I&E)/ER&S, 703-604-1747

USA001804-10

5/12/10



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

**MAY 12 2010**

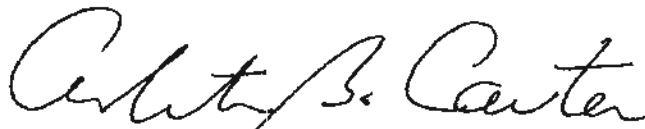
The Honorable David R. Obey  
Chairman, Committee on Appropriations  
U.S. House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

Pursuant to Section 317 of the National Defense Authorization Act for FY 2010, the Department of Defense provides the enclosed report, "Burn Pits in Context of the Contemporary Operating Environment." This report provides a holistic overview of the solid waste management and health challenges and efforts underway to overcome them during expeditionary operations. The end goal must be a recognition, understanding, and response throughout the force that protection of our Service members' and civilians' life, health, and safety from potentially hazardous environmental exposures deserves the same unwavering attention and energy used to counter the more immediate combat threats to our personnel.

A similar letter has been sent to the Senate Armed Services Committee, Senate Appropriations Committee, and House Armed Services Committee.

Sincerely,



Ashton B. Carter

Enclosure:  
As stated

cc:  
The Honorable Jerry Lewis  
Ranking Member



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

MAY 12 2010

The Honorable Daniel K. Inouye  
Chairman, Committee on Appropriations  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

Pursuant to Section 317 of the National Defense Authorization Act for FY 2010, the Department of Defense provides the enclosed report, "Burn Pits in Context of the Contemporary Operating Environment." This report provides a holistic overview of the solid waste management and health challenges and efforts underway to overcome them during expeditionary operations. The end goal must be a recognition, understanding, and response throughout the force that protection of our Service members' and civilians' life, health, and safety from potentially hazardous environmental exposures deserves the same unwavering attention and energy used to counter the more immediate combat threats to our personnel.

A similar letter has been sent to the Senate Armed Services Committee, House Armed Services Committee, and House Appropriations Committee.

Sincerely,

Ashton B. Carter

Enclosure:  
As stated

cc:  
The Honorable Thad Cochran  
Ranking Member



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

MAY 12 2010

The Honorable Ike Skelton  
Chairman, Committee on Armed Services  
U.S. House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

Pursuant to Section 317 of the National Defense Authorization Act for FY 2010, the Department of Defense provides the enclosed report, "Burn Pits in Context of the Contemporary Operating Environment." This report provides a holistic overview of the solid waste management and health challenges and efforts underway to overcome them during expeditionary operations. The end goal must be a recognition, understanding, and response throughout the force that protection of our Service members' and civilians' life, health, and safety from potentially hazardous environmental exposures deserves the same unwavering attention and energy used to counter the more immediate combat threats to our personnel.

A similar letter has been sent to the Senate Armed Services Committee, Senate Appropriations Committee, and House Appropriations Committee.

Sincerely,



Ashton B. Carter

Enclosure:  
As stated

cc:  
The Honorable Howard P. "Buck" McKeon  
Ranking Member



THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010

ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

**MAY 12 2010**

The Honorable Carl Levin  
Chairman, Committee on Armed Services  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

Pursuant to Section 317 of the National Defense Authorization Act for FY 2010, the Department of Defense provides the enclosed report, "Burn Pits in Context of the Contemporary Operating Environment." This report provides a holistic overview of the solid waste management and health challenges and efforts underway to overcome them during expeditionary operations. The end goal must be a recognition, understanding, and response throughout the force that protection of our Service members' and civilians' life, health, and safety from potentially hazardous environmental exposures deserves the same unwavering attention and energy used to counter the more immediate combat threats to our personnel.

A similar letter has been sent to the Senate Appropriations Committee, House Armed Services Committee, and House Appropriations Committee.

Sincerely,



Ashton B. Carter

Enclosure:  
As stated

cc:  
The Honorable John McCain  
Ranking Member



**REPORT TO CONGRESS ON THE USE OF OPEN-AIR  
BURN PITS BY THE UNITED STATES ARMED FORCES**

**Pursuant to Section 317(b) of the National Defense  
Authorization Act for Fiscal Year 2010,  
Public Law 111-84**

**April 28, 2010**

## **Report to Congress Pursuant to Section 317 of the National Defense Authorization Act for Fiscal Year 2010**

Purpose: Pursuant to Section 317, this report provides:

- (1) an explanation of the situations and circumstances under which open-air burn pits are used to dispose of waste during military exercises and operations worldwide;
- (2) a detailed description of the types of waste authorized to be burned in open-air burn pits;
- (3) a plan through which the Secretary intends to develop and implement alternatives to the use of open-air burn pits;
- (4) a copy of the regulations required to be prescribed by subsection (a);
- (5) the health and environmental compliance standards the Secretary has established for military and contractor operations in Iraq and Afghanistan with regard to solid waste disposal, including an assessment of whether those standards are being met;
- (6) a description of the environmental, health, and operational impacts of open-pit burning of plastics and the feasibility of including plastics in the regulations prescribed pursuant to subsection (a); and
- (7) an assessment of the ability of existing medical surveillance programs to identify and track exposures to toxic substances that result from open-air burn pits, including recommendations for such changes to such programs as would be required to more accurately identify and track such exposures.

### **References:**

- a. DoDI 6490.03, "Deployment Health", August 11, 2006
- b. Directive-Type Memorandum (DTM) 09-032 – Use of Open-air Burn Pits in Contingency Operations,<sup>1</sup> March 30, 2010
- c. Chairman's Memorandum (MCM) 0028-07, "Procedures for Deployment Health Surveillance," November 2, 2007
- d. USCENTCOM Regulation (CCR) 220-1, "Deployment Health Surveillance and Force Health Protection," February 24, 2010
- e. CCR 200-1, "Protection and Enhancement of Environmental Assets," October 2, 2009
- f. CCR 200-2, "Contingency Environmental Guidance," September 3, 2009

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<sup>1</sup> The term "contingency operation" has the meaning given that term by title 10, United States Code, section 101(a)(13).

- g. U.S. Forces Afghanistan (USFOR-A), "Environmental Guidance Document," September 2009
- h. U.S. Forces Iraq (USFOR-I), "Environmental Standard Operating Procedure (SOP)," December 2009
- i. USFOR-A, "Environmental Standard Operating Procedure (SOP)," April 2010
- j. U.S. Army Central (ARCENT), "Waste Management Assessment Report," March 12, 2010 (pursuant to HQDA EXORD 292-09)
- k. 361123 GAO NOR & POC Request and RFI List, August 14, 2009

## **Executive Summary**

### **Burn Pits in Context of the Contemporary Operating Environment**

Pursuant to Section 317, the DoD and USCENTCOM have responded to evolving concerns regarding potential hazards to the health of our deployed personnel from the use of open air burning for solid waste disposal by promulgating policy and regulations that place limits on the use of burn pits as well as materials that can be disposed in them. While the tenets of this report apply worldwide to DoD operations, the common use of burn pits is currently limited to the USCENTCOM area of responsibility (AOR). This report focuses on current and evolving burn pit related actions in Iraq and Afghanistan, but it also shapes guidance and options for the future. Solid waste management is only one of several areas needing further development for expeditionary basing systems. A more holistic review of basing issues is fostering a new approach to the base camp as a "system of systems," with the goal to reduce logistics overhead and associated vulnerabilities.<sup>2</sup> Efforts to improve base camp sustainability, to include solid waste management, have now found energy across the DoD. In theater, more precise waste characterization and differentiation has led to increased waste segregation, as well as new emphasis on waste stream reduction, recycling, and reuse in order to limit materials to be burned. Specific guidance on "covered wastes" will ensure deliberate decision making with appropriate risk assessments prior to granting authorization for open burning of designated materials. The introduction of incinerators, plus other thermal (to include waste-to-energy) and non-thermal waste disposal options, are intended to eventually displace the use of burn pits. It is anticipated that during military operations, open-air burning will be the safest (from a total threat standpoint), most effective, and expedient manner of solid waste reduction until current research and development efforts produce efficient, reliable, and deployable technology to support sustainable operations. Recognizing this, new policy was promulgated pursuant to Section 317 placing conditions on decisions to continue use of burn pits in expeditionary environments. This report addresses current health standards and exposure guidelines for military operations in contingencies, and the systems needed to provide proper monitoring and enforcement of directed standards. New requirements and gaps are indicated in base camp

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<sup>2</sup> For list of recent and ongoing studies, see list at Appendix 1



governance, health related and mechanical systems, as well as implications for personnel training (military, civilian or contractor). While the use of burn pits cannot be eliminated in all expeditionary environments, it is the intent of the Department to provide our deployed forces safe and viable alternatives, and the right guidance and tools to make informed risk decisions regarding solid waste disposal options.

## **Section 1 – Operational Conditions Requiring Use of Burn Pits**

*“provide an explanation of the situations and circumstances under which open-air burn pits are used to dispose of waste during military exercises and operations worldwide”*

The preferred means to dispose of solid waste in military operations worldwide is through commercial contracting for logistics services, either directly with a local national or host-nation service provider or through use of standing contracting instruments available to military commanders locally. If this service is not available, then the following options are explored:

- a. Develop or contract for US operated or controlled landfills
- b. Purchase or lease or contract for incinerators
- c. Collect and transport waste to a location where either landfills or incinerators are available
- d. If a, b, and c are not available, use of open air burn pits IAW DTM 09-032 (details below)

The duration of our operations in Iraq and Afghanistan have led to conditions where military solid waste production equals, if not exceeds, waste production at our fixed installations at home, but in environments where there are far fewer options for safe disposal. USCENTCOM recognized the challenging and competing issues surrounding the use of burn pits for solid waste disposal and issued CCR 200-2, where the section on waste incineration acknowledges that “open burning is the most convenient method of waste disposal initially as base camps are established. However, exposures to burn pit emissions may contribute to health issues and should be terminated as soon as practical, in order to protect the life, health and safety of USCENTCOM and coalition personnel. The disposal method must shift to incineration as camps mature.”<sup>3</sup> With the recently published DoD DTM 09-032, the decision to use burn pits<sup>4</sup> in deployed operations is

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<sup>3</sup> CCR 200-2, Chapter 13-2a.

<sup>4</sup> Per the DTM, an “open air burn pit” is defined as “an area, not containing a furnace or other equipment designed for burning of solid waste, designated for the purpose of disposing of solid waste by burning in the outdoor air at an installation with more than 100 attached or assigned personnel and that is in place longer than 90 days.”

retained at operational command level,<sup>5</sup> based on local conditions and in accordance with higher level guidance. In the absence of host nation agreements or other applicable requirements, the primary consideration for the use of burn pits in combat zones is the overall life, health, and safety of our deployed force. DoD guidance allows commanders to assess the total risk for most situations, balancing combat risks against other risks such as environmental exposures. Studies are underway to determine what risks may be inherent in exposure to burn pit smoke.<sup>6</sup>

Alternatives to burn pits are always sought out; however, they are not always available or safe. Neither Iraq nor Afghanistan has a commercial solid waste management industry capable of supporting their own population let alone the waste generated by U.S. and coalition forces.<sup>7</sup> Force protection requirements may limit options. For example, it is generally unsafe to locate waste dumps outside controlled camp perimeters. Frequent predictable transiting between camp and dump exposes troops and workers to enemy attack and IEDs.

Exacerbating the deployed waste generation problem is that U.S. forces use many disposable items due to sanitary concerns. Examples include: disposable plates and cutlery in dining facilities, water bottles, and food shipping materials, most of which create high waste volumes that require vector control. The military does not have personnel specialties, dedicated structure (units), or organic equipment specifically for solid waste management and disposal. While LOGCAP<sup>8</sup> contractors may operate burn pits at the larger US bases in Iraq and Afghanistan, the majority of burn pits are operated by troops, detailed to the task, as LOGCAP does not service all bases. There are also bases where U.S. forces are tenants and coalition partners operate burn pits, outside of US control.

DoD did not find any instances of U.S. forces using burn pits for solid waste disposal worldwide outside of USCENTCOM AOR.

## **Section 2 – Waste Stream Characterization for Burn Pits**

*“provide a detailed description of the types of waste authorized to be burned in open-air burn pits”*

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<sup>5</sup> Per the DTM, “The operational commander shall develop and approve a solid waste management plan for the contingency operation. The use of open-air burn pits shall not be allowed unless included within this plan. This plan must also address the disposal of any covered wastes.” The operational commander is the senior commander of a Joint Task Force or deployed force.

<sup>6</sup> Institute of Medicine study sponsored by the VA – see Appendix 1.

<sup>7</sup> Although local commercial landfills are now being used in Bagram.

<sup>8</sup> CCR 200-2 has been incorporated into the LOGCAP contract in Afghanistan, but not yet in Iraq (LOGCAP III vs. IV). The Joint Staff is working with the Army as the Executive Agent for LOGCAP to remedy this.

DTM 09-032 provides a list of wastes that are not allowed to be disposed of in burn pits. The list is more extensive than required by section 317 and is almost identical to the list in USCENCOM's pre-existing CCR 200-2.

Currently, U.S. Forces Iraq Environmental Standard Operating Procedure (SOP) encourages waste minimization and reduction prior to burning. Open burning is not allowed unless specifically authorized by the Commander. Maintaining staging areas near burn pits for waste segregation (plastic, aluminum cans, scrap metal, and usable wood) is recommended to support recycling efforts. Prior to burn pit disposal, waste is examined and sorted to ensure prohibited items are not present in the waste stream. Wet waste (high moisture-content) cannot exceed 25 percent of total waste stream in order to keep burn temperatures high and reduce smoldering.<sup>9</sup> USFOR-A has similar SOPs that mirror Iraq's.

The following are specifically prohibited from burning IAW CCR 200-2:

- (1) Petroleum, Oils, and Lubricants (POL) products (other than waste fuel to start a fire), rubber, tar paper, asphalt shingles, tires, treated wood, batteries of any type, unexploded ordnance (UXO), aerosol cans, compressed gas cylinders, plastic (except de minimis<sup>10</sup> amounts), paint, paint thinner and strippers, pesticides, pesticide containers, asbestos, appliances and electrical equipment, electrical wires, or other materials that create unreasonable amounts of smoke, fumes, or hazardous air pollutants;
- (2) Hazardous Waste (HW), Hazardous Materials (HM).
- (3) Regulated Medical Waste (RMW).

### **Section 3 – The Way Ahead on Alternatives to Burn Pits**

*“provide a plan through which the Secretary intends to develop and implement alternatives to the use of open-air burn pits”*

DoD has several initiatives to reduce reliance on burn pits that fall into three categories: drivers that change policy and doctrine; practices on the ground; and material solutions to support them. Drivers for these changes have evolved over time, and include the Section 317 directive, the growing concern from health professionals regarding effects of exposure to burn pit smoke, and acknowledgement of a need for sustainable base camp systems. Policy now exists worldwide under DTM 09-032 and CCR 200-2 specifically for the CENTCOM AOR, further amplified by local SOPs in Iraq and

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<sup>9</sup> CCR 200-2, Chapter 13-2g

<sup>10</sup> A level of risk too small to be concerned with; a “virtually safe” level. In this use, represents a “good faith” effort to remove most plastics prior to waste reduction in a burn pit.

Afghanistan, all updated within the last eight months. Additionally, the Joint Staff is developing guidance based on CCR 200-2 for use across all Combatant Commands. Meanwhile, USFOR-I and USFOR-A continue to install waste incinerators in both theaters to reduce burn pit use.<sup>11</sup>

In November 2009, USFOR-I also established a Burn Pit Operational Planning Team (OPT) including officials from the appropriate technical communities (engineering, contracting, environmental, health, preventive medicine), focused on solid waste management plans for bases to be used by U.S. forces on the final base set in Iraq. They assessed risk factors at each location and are implementing mitigation measures including: an inspection program, an incinerator distribution plan, an Iraq-wide recycling program, and other waste stream reduction strategies. Continued focus on burn pit operations over the past year have resulted in better oversight, uniform operating guidance, and waste segregation, all of which are improving burn pit operations and reducing the potential exposure to burn pit smoke. Through the implementation of the above measures and the reduction of bases during the Responsible Drawdown, most of the burn pits in Iraq will be closed by December 2010.

Similar activities are underway in Afghanistan. New bases under construction for the 30,000-troop plus-up include designs for small (2-3 ton per day) solid waste incinerators to eliminate burn pits, even though in some locations larger incinerators would be more effective.<sup>12</sup> As of early December 2009, fifty-five forward operating bases (FOBs) and contingency operating bases (COBs) in Afghanistan had contracts for purchase of incinerators awarded and are pending delivery and installation throughout FY 2010. At least a dozen camps already have operational waste incinerators and 12 have Mediburn incinerators for medical waste.

Where feasible in Afghanistan, camps that cannot support their own incinerator will be considered for designed and properly operated burn trenches with air curtain devices, which are better than burn pits due to their increased aeration and higher burning temperatures. Military construction (MILCON) projects planned for larger hub bases will integrate waste reduction activities to include: composting, waste sorting yards, compacting facility, incinerator plot, HAZMAT yard, land farming area, and waste water treatment facilities. USFOR-A is pursuing integrated solid waste management policies and practices that will reduce overall environmental impact and produce more sustainable base camp operations. Composting converts food waste, paper, cardboard, sewage sludge, and some wood into a useful product for agriculture. Land farming or bioremediation of petroleum contaminated soils produces a nutrient rich soil amendment

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<sup>11</sup> Pursuant to the Iraq Responsible Withdrawal plan, some bases there will not get previously planned incinerators due to impending closure.

<sup>12</sup> The combination of expedited need and current statutory limits on the use of operation and maintenance (O&M) funds for purchase and installation of waste incinerators encourages the acquisition of smaller, less expensive devices.



useful for agriculture. Switching to dish washing machines vice disposable dishes and utensils in the larger dining facilities will reduce solid waste by about 0.75 lbs/person/day. All of these initiatives are also in line with counterinsurgency strategy, minimizing the impact of our footprint on the local population and environment while providing support for the local populace.

The Department currently has a number of broader initiatives under way that will help develop the strategic way ahead to ensure sustainable base camps for future contingencies. In December 2009, the Army completed a collaborative study of strategic guidance, current doctrine, and lessons learned. The study identifies the capabilities required to support base camp lifecycle management during the 2015-2024 timeframe, and serves as a reference guide for future analysis and combat development efforts. Its focus is on the planning, design, construction, deconstruction, and operations and management of base camps.<sup>13</sup> There is also growing DoD interest in waste stream reduction and developing new technologies, such as waste-to-energy systems, conducive to military operations.

The Department is sponsoring a Joint Staff/OSD Workshop Series on Expeditionary Camp Operations Sustainability that specifically address base camp sustainability issues of solid waste, water, and power.<sup>14</sup> The workshops draw on varied ongoing efforts across DoD looking at these and related issues, such as the Power Surety Task Force, the Army's Green Warrior Project and Base Camp Integrated Concept Development Team, USMC's Experimental Forward Operating Base (ExFob), and the Army's Net Zero efforts at the National Training Center. Many of these efforts will identify existing commercial equipment that can be made available to our forces today, or will find gaps that need further research and development. Likewise they will identify new environmental, health, and expeditionary sustainability skill sets required for our uniformed and civilian personnel and contracted partners. The intent of the workshop series is to generate a broad community of interest that looks across the DOTMLPF<sup>15</sup> construct for this complex challenge, with senior participants from the communities that affect the three categories mentioned above. DoD expects a variety of outcomes from this effort, from new practices that reduce the waste stream at the source, to new devices that help our forces dispose of the wastes we must produce, but in a safe, sustainable manner. Over all of this, DoD will develop and promulgate the doctrine of sustainability

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<sup>13</sup> TRADOC Pamphlet (Pam) 525-7-7, "The United States Army Concept Capability Plan for Army Base Camps in Full Spectrum Operations for the Future Modular Force 2015-2024," December 7, 2009. This document was the result of a collaborative effort involving subject matter experts from throughout the Army, and the product of a detailed study of strategic guidance, current doctrine, and lessons learned. It identifies the capabilities required to support base camp lifecycle management during the 2015-2024 timeframe, and serves as a reference guide for future analysis and combat development efforts. Its focus is on the planning and design, construction and deconstruction, and operations and management of base camps.

<sup>14</sup> The first workshop was held in late February 2010; the second will convene in May 2010.

<sup>15</sup> DOTMLPF = Doctrine, Organization, Training, Material, Leadership, Personnel, and Facilities

necessary to drive both practice and material solutions through the processes by which we develop and employ our armed forces.

#### **Section 4 – Directive-Type Memorandum (DTM) 09-032 – Use of Open-air Burn Pits in Contingency Operations**

*“provide a copy of the regulations required to be prescribed by subsection (a)”*

DTM 09-032 is attached in Appendix 2.

#### **Section 5 – Standards and Compliance for Safe Burn Pit Operations**

*“provide the health and environmental compliance standards the Secretary has established for military and contractor operations in Iraq and Afghanistan with regard to solid waste disposal, including an assessment of whether those standards are being met”*

The health standards set by the Secretary of Defense and that are required to be used for military operations (Ref. DoDI 6490.03, “Deployment Health,” August 2006), are contained in US Army Center for Health Promotion and Preventive Medicine (now U.S. Army Public Health Command) Tech Guide 230, “Chemical Exposure Guidelines for Deployed Military Personnel.” This Guide includes hundreds of ‘military exposure guidelines’ (MEGS) for different chemical compounds. MEGS are designed to be highly protective. These exposure guidelines were derived from nationally recognized exposure standards such as those of the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA). The MEGS differ from EPA and OSHA exposure standards because they have been adapted for 24-hours per day exposures and for exposure durations of less than a lifetime, in order to align with time frames associated with deployments. An exceeded MEG does not necessarily indicate an elevated health risk. It does, however, require an environmental health professional to determine whether a health risk may actually exist. In essence, it serves as an action driver for further investigation

With respect to potential exposures from open-air burn pit operations, an extensive amount of air monitoring, involving hundreds of air samples, was performed at Joint Base Balad (JBB) in Iraq from 2006 – 2008, which at the time had the largest burn pit in Iraq. The burn pit was also selected for study because it was believed to represent a worst case scenario for emissions generated by any burn pit used in theater. Air sampling results were used to assess associated health risks using EPA-developed risk assessment methods. While there were some chemicals that were identified above their MEGS, the health risk assessment indicated the risks for cancers or other long-term health risks were

very low and fell into the range categorized as “acceptable” by EPA criteria. The health risk assessment was subsequently validated through independent review by the Defense Health Board. There is, however, some uncertainty as to whether these data and the results of the health risk assessment can be applied to JBB prior to 2006 or to other base camps with burn pits in Iraq and Afghanistan. Several parameters or factors affecting burn pit emissions and potential exposures may vary at other base camps, including the location of the burn pit relative to the base camp, prevailing wind directions and other atmospheric effects, and materials burned. Furthermore, the health risk assessment did not consider the effect of combined exposures (e.g., burn-pit smoke, particulate matter, and in some cases, adjacent host nation industrial emissions, e.g. power plants, or personal exposures such as tobacco smoke) or differing individual susceptibilities such as preexisting health conditions and genetic factors. As a result, although DoD has confidence in our present exposure guidelines, we cannot be completely certain that adverse health effects will not be caused by open pit burning. With the planned replacement of many burn pits across Iraq and Afghanistan with incinerators or other devices, both theaters will develop new air and ground emissions monitoring plans to sample all potential sources of harmful emissions, in addition to the remaining burn pits.

## **Section 6 – Implications of Plastics in Burn Pits**

*“provide a description of the environmental, health, and operational impacts of open-pit burning of plastics and the feasibility of including plastics in the regulations prescribed pursuant to subsection (a)”*

The plastics most commonly used in theater include polystyrene, polyethylene, polyethylene terephthalate (used in single use drink bottles), and polyvinyl chloride (PVC). With the exception of PVC, all of these common plastics contain only carbon, hydrogen, and oxygen, and with sufficient oxygen can be completely converted to carbon dioxide and water when burned at a high temperature range, minimizing health and environmental impact to acceptable levels. Open-air burn pit operations are inherently difficult to control with respect to temperature and oxygenation, often resulting in incomplete combustion, which can cause the generation of various intermediate chemical forms which may be hazardous. Other plastics containing such elements such as chlorine, nitrogen, or sulfur may form other potentially toxic compounds. Depending on the concentrations of these compounds and durations of exposure, long-term health effects could result from prolonged exposure. Such adverse health outcomes could include pulmonary disease and various types of cancer.

The burning of segregated, non-chlorinated plastics in properly operated incinerators is non-problematic. Due to their high energy content they could be considered a positive addition to the waste stream once properly designed and operated

waste-to-energy systems are developed for use in deployed environments. Both DTM 09-032 and CCR 200-2 address restrictions for plastics in burn pits.

## **Section 7 – Required Medical Surveillance Capabilities for Burn Pits**

*“provide an assessment of the ability of existing medical surveillance programs to identify and track exposures to toxic substances that result from open-air burn pits, including recommendations for such changes to such programs as would be required to more accurately identify and track such exposures.”*

Current environmental health surveillance capabilities are not adequate to meet demand. Since the beginning of Operation Enduring Freedom in 2003, over 14,000 air, water, and soil samples have been collected throughout Iraq and Afghanistan in order to monitor for potential health hazards and exposures. Existing deployment environmental health surveillance systems have improved greatly since 2003, but still remain severely stressed to manage monitoring the large and increasing number of bases, particularly in Afghanistan. All military services support environmental data collection from active deployment locations. These include air, water, and soil collection, assessment, and archiving. In-theater health encounters as well as those subsequent to redeployment to home station are monitored for any adverse trends that may indicate unacceptable exposures. Service members also have an opportunity to provide self-reported exposure on their post-deployment health assessments which serve as a means of clinical referrals, when indicated. Those assessments are also monitored for trends.

DoD is now receiving once-daily individual service member location information on most of our deployed personnel. This information now makes it possible to link personnel to environmental monitoring results/conditions (and possible exposures). This allows for the creation of cohorts and registries of personnel exposed to common agents at a particular place and time.

While our current environmental health surveillance systems are much improved, there are limitations. The once-daily personnel location data is often not specific enough to definitively establish exact location(s) of personnel at any given time during a 24-hour period. As a result, this data provides limited assistance in determining potential exposure concentration or duration of exposure. It is only practical to estimate health risks based on conservative exposure assumptions regarding environmental concentrations. Unless a cluster of the same conditions develops among similarly exposed personnel, it may be difficult or impossible to draw conclusions for rare health conditions regarding cause and effect relationships that are associated with the occurrence of particular health conditions. Due to continuing concerns regarding the potential for long-term health outcomes associated with exposure to burn pit smoke, the Department of Veterans Affairs (DVA) requested the Institute of Medicine to investigate the potential



for adverse health effects as a consequence of burn pit smoke exposures in Iraq and Afghanistan.

In order to address existing gaps and limitations and more accurately identify/track such exposures and the possibility of long term health impacts, the DoD is taking action in the following areas. We are comprehensively addressing some areas, and in other areas (e.g., exposure biomarkers and chemical exposure dosimeters) we are in the nascent stage of addressing the gaps.

- Identifying through research, exposure biomarkers for high-priority chemicals/compounds of concern.
- Ensuring that the collection of biological media (other than serum) is consistent with the current “omics” technologies (genomics, proteomics, metabolomics, etc.) that are available today so they can be used to better characterize individual exposures for exposure assessments and future health studies/investigations based on analysis of biological media.
- Developing and fielding individual chemical exposure dosimeters for a wide variety of toxic materials that are likely to be encountered during deployments.
- Fusing existing environmental health surveillance systems with enhanced personnel location data, individual exposure dosimeters, and biomarkers of exposure with the electronic health record to develop the individual longitudinal exposure record as envisioned in Presidential Review Directive 5, “A National Obligation: Planning for Health Preparedness for and Readjustment of the Military, Veterans, and Their Families after Future Deployments” (August 1998). These longitudinal exposure records will be a key component of the DoD electronic health record and will be used for diagnosis and treatment by both DoD and DVA providers and by DVA claims adjudicators.
- Assuming the responsibility of ensuring individual exposure-related information is provided to the DVA, removing the onus from the veteran to provide the DVA with this difficult to acquire information.
- Utilizing contracts to assist with the completion of a wide-range of high-priority environmental monitoring and analyses, including the monitoring of the burn pit operations and incinerators, and the accomplishments of health risk assessments that cannot be completed in a timely manner given existing resource limitations (e.g., availability of in-theater environmental health personnel and equipment).

## **Summary**

This report provides a holistic overview of the solid waste management and health challenges faced during expeditionary operations and the efforts underway to overcome them. It is the expressed intent of the Department to ensure timely, effective support to COCOM commanders in order to protect deployed military and civilian personnel. DoD

must continue to explore viable technical solutions for waste reduction and waste disposal in all categories—solid, medical, and hazardous—and then make such solutions available through easily acquired commercial or DoD provided equipment. Commanders in the field recommend using the following methods to reduce the potential health risk in circumstances where there is no feasible alternative to open-air burning:

- Implementing the DTM 09-032 and enforcing requirements.
- Ensuring properly trained environmental teams are deployed in sufficient strength and as early as possible; providing proper training to units at bases with burn pit responsibilities.
- Providing technically trained personnel to operate burn pits in accordance with all technical directives, as well as qualified personnel to enforce performance standards with contracted burn pit operations.
- Ensuring sufficient funds are available to provide necessary equipment and, where appropriate, qualified contractor support.
- Providing up-front waste stream reduction through integrated waste management, including reduction and proper selection of packing and shipping materials.
- Locating burn pits appropriately with respect to troop (and locals) living and work areas and prevailing wind patterns.
- Increasing public and theater awareness of and responsibility for waste stream segregation and reduction.
- Providing continuous assessment (standards compliance and preventive medicine checks) with appropriate corrective actions.

Experience from operations in Iraq and Afghanistan and the nature of today's contemporary operating environment have forced DoD to re-examine how to sustain certain aspects of expeditionary operations. The issue of open air burning for solid waste disposal is but one of several challenges currently being addressed. The Office of the Secretary of Defense, the Joint Staff, Combatant Commands, and the military services will continue to aggressively work on these challenges and monitor and assist operations in the USCENTCOM AOR as alternatives to burn pits are developed and tested. There will inevitably be circumstances in our current and future wars where the only feasible solution for solid waste disposal is open air burning. It is the Department's intention to develop and provide viable alternatives for commanders to consider and to issue well-designed and scientifically based risk management tools for commanders to apply. The end goal must be a recognition, understanding, and response throughout the force that protection of our service members' and civilians' life, health, and safety from potentially hazardous environmental exposures deserves the same unwavering attention and energy used to counter the more immediate combat threats to our personnel.

## **APPENDIX 1**

### **Ongoing Studies Related to Environmental Considerations, Base Camp Operations, Health Effects, Energy, and Sustainability across DoD**

1. VA sponsored, Institute of Medicine executed study, “Potential Long-Term Health Consequences of Exposure to Burn Pits in Iraq and Afghanistan”
2. U.S. Army Maneuver Support Center of Excellence (MS CoE) Base Camp ICDT CBA efforts (CCP, FAA, FNA and FSA)<sup>16</sup>
3. U.S. Army Green Warrior Project, Army Environmental Policy Institute (AEPI)
4. OSD/JS Sponsored Expeditionary Camp Operations Sustainability – Joint Strategic Framework Workshop
5. USMC ExFOB Project, (Experimental Forward Operating Base), Quantico, VA
6. U.S. Army Net Zero FOB effort at the National Training Center, Fort Irwin, CA
7. Power Surety Task Force and ARCENT Efficient Shelter Study
8. Army Studies Program study “Contingency Base Camp Solid Waste Requirements and Management” being conducted by ERDC-CERL<sup>17</sup>
9. U.S. Army Engineer School sponsored Environmental Considerations and Sustainability During Contingency Operations Study being conducted by ERDC-CERL

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<sup>16</sup> Integrated Capability Development Team Capability Based Assessment

<sup>17</sup> U.S. Army Corps of Engineers Engineering Research and Development Center, Construction Engineering Research Laboratory

**SEC. 316. PROCUREMENT AND USE OF MUNITIONS.**

The Secretary of Defense shall—

(1) in making decisions with respect to the procurement of munitions, develop methods to account for the full life-cycle costs of munitions, including the effects of failure rates on the cost of disposal; Methods.

(2) undertake a review of live-fire practices for the purpose of reducing unexploded ordnance and munitions-constituent contamination without impeding military readiness; and Review.

(3) not later than 180 days after the date of the enactment of this Act, submit to Congress a report on the methods developed pursuant to this section and the progress of the live-fire review and recommendations for reducing the life-cycle costs of munitions, unexploded ordnance, and munitions-constituent contamination. Deadlines.  
Reports.

**SEC. 317. PROHIBITION ON DISPOSING OF WASTE IN OPEN-AIR BURN PITS.** 10 USC 2701  
note.

(a) REGULATIONS.—

(1) IN GENERAL.—Not later than 120 days after the date of the enactment of this Act, the Secretary of Defense shall prescribe regulations prohibiting the disposal of covered waste in open-air burn pits during contingency operations except in circumstances in which the Secretary determines that no alternative disposal method is feasible. Such regulations shall apply to contingency operations that are ongoing as of the date of the enactment of this Act, including Operation Iraqi Freedom and Operation Enduring Freedom, and to contingency operations that begin after the date of the enactment of this Act. Deadline.  
Determination.

(2) NOTIFICATION.—In determining that no alternative disposal method is feasible for an open-air burn pit pursuant to regulations prescribed under paragraph (1), the Secretary shall— Applicability.

(A) not later than 30 days after such determination is made, submit to the Committees on Armed Services of the Senate and House of Representatives notice of such determination, including the circumstances, reasoning, and methodology that led to such determination; and Deadline.

(B) after notice is given under subparagraph (A), for each subsequent 180-day-period during which covered waste is disposed of in the open-air burn pit covered by such notice, submit to the Committees on Armed Services of the Senate and House of Representatives the justifications of the Secretary for continuing to operate such open-air burn pit. Time periods.  
Submission.

(b) REPORT.—Not later than 180 days after the date of the enactment of this Act, the Secretary shall submit to the Committees on Armed Services of the Senate and House of Representatives a report on the use of open-air burn pits by the United States Armed Forces. Such report shall include—

(1) an explanation of the situations and circumstances under which open-air burn pits are used to dispose of waste during military exercises and operations worldwide;

(2) a detailed description of the types of waste authorized to be burned in open-air burn pits;

(3) a plan through which the Secretary intends to develop and implement alternatives to the use of open-air burn pits;

(4) a copy of the regulations required to be prescribed by subsection (a);

(5) the health and environmental compliance standards the Secretary has established for military and contractor operations in Iraq and Afghanistan with regard to solid waste disposal, including an assessment of whether those standards are being met;

(6) a description of the environmental, health, and operational impacts of open-pit burning of plastics and the feasibility of including plastics in the regulations prescribed pursuant to subsection (a); and

(7) an assessment of the ability of existing medical surveillance programs to identify and track exposures to toxic substances that result from open-air burn pits, including recommendations for such changes to such programs as would be required to more accurately identify and track such exposures.

(c) **DEFINITIONS.**—In this section:

(1) The term “contingency operation” has the meaning given that term by section 101(a)(13) of title 10, United States Code.

(2) The term “covered waste” includes—

(A) hazardous waste, as defined by section 1004(5) of the Solid Waste Disposal Act (42 U.S.C. 6903(5));

(B) medical waste; and

(C) other waste as designated by the Secretary.

#### **SEC. 318. MILITARY MUNITIONS RESPONSE SITES.**

(a) **INFORMATION SHARING.**—Section 2710(a)(2)(B) of title 10, United States Code, is amended by inserting “, including the county, where applicable,” after “political subdivisions of the State”.

(b) **MILITARY MUNITIONS RESPONSE PROGRAM AND INSTALLATION RESTORATION PROGRAM.**—As part of the annual budget submission of the Secretary of Defense to Congress, the Secretary shall include the funding levels requested for the Military Munitions Response Program and the Installation Restoration Program.

### **Subtitle C—Workplace and Depot Issues**

#### **SEC. 321. PUBLIC-PRIVATE COMPETITION REQUIRED BEFORE CONVERSION OF ANY DEPARTMENT OF DEFENSE FUNCTION PERFORMED BY CIVILIAN EMPLOYEES TO CONTRACTOR PERFORMANCE.**

(a) **REQUIREMENT.**—Paragraph (1) of section 2461(a) of title 10, United States Code, is amended—

(1) by striking “A function” and inserting “No function”;

(2) by striking “10 or more”; and


(3) by striking “may not be converted” and inserting “may be converted”.

(b) **EFFECTIVE DATE.**—The amendments made by subsection (a) shall apply with respect to a function for which a public-private competition is commenced on or after the date of the enactment of this Act.

COORDINATION

SUBJECT: Burn Pits in Context of the Contemporary Operating Environment Report

Prepared By: LtCol Jonathan Thomas, ODUSD(I&E)/ER&S, 703-604-1747,  
jonathan.thomas@osd.mil

OFFICE	NAME	DATE
Dir, ARA Dr. Nancy L. Spruill		5/6/2010
ASD LA	Seamus Ahern	4/30/10
OSD GC	Phillip Sheuerman	4/30/10

## **Coordination**

Subject: Joint Staff Report "Burn Pits in Context of the Contemporary Operating Environment"

<u>Office</u>	<u>Name</u>	<u>Date</u>	<u>Concur / Non-concur</u>
OCJCS/JSS	RADM Smith	9Apr10	Concur
J-4/HSSD	COL Lamb	9Apr10	Concur
USCENTCOM	MG Dowd	9Apr10	Concur
USAFRICOM	CAPT Kiwus	1Apr10	Concur
USEUCOM	CAPT Nickle	9Apr10	Concur
USSOUTHCOM	COL Cintron	2Apr10	Concur
USPACOM	CAPT Cook	6Apr10	Concur
USA	COL Chmura	8Apr10	Concur
USN	CAPT Peck	31May10	Concur
USMC	Col Muller	8Apr10	Concur
USAF	Col Matusieqicz	9Apr10	Concur
OCJCS/LA	Col Blackman	7Apr10	Concur
OCJCS/LC	CAPT Laurer	6Apr10	Concur
JS/PACC	Col Lawler	7Apr10	Concur



**THE JOINT STAFF**  
**WASHINGTON, DC**

Reply ZIP Code:  
20318-0300

DJSM 0227-10  
13 April 2010

**MEMORANDUM FOR THE UNDER SECRETARY OF DEFENSE FOR  
ACQUISITION, TECHNOLOGY, AND LOGISTICS**

**Subject: Prohibition on Disposing of Waste in Open-Air Burn Pits**

1. In response to your request,<sup>1</sup> enclosed is the subject congressional report pursuant to Section 317 of the National Defense Authorization Act of 2010.
2. The Joint Staff point of contact is Mr. William Mackie; J-4/ED;  
703-697-4443; [william.mackie@js.pentagon.mil](mailto:william.mackie@js.pentagon.mil).

A handwritten signature in cursive script that reads "Bruce E. Grooms".

B. E. GROOMS  
RADM, USN  
Vice Director, Joint Staff

Enclosure

Reference:

- 1 Congressional Hearings and Reporting Requirements Tracking System, 23 February 2010, "Sec 317(b), Prohibition on disposing of waste in open-air burn pits"



## Look for Classification Marking in Message Body

**Mackie, William A CIV JCS J4 ED**

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**From:** Mackie, William A CIV JCS J4 ED  
**Sent:** Thursday, April 15, 2010 7:49 AM  
**To:** Bowling, Curtis M Mr Civilian Dir, Force Protection (@osd.smil.mil) [Bowling, Curtis, Mr, OSD-ATL]  
**Cc:** Haight, William H COL JCS J4; Nicholls, William R Dep Dir, Developmental Test & Evaluation (@osd.smil.mil) [Nicholls, William, Mr, OSD-ATL]  
**Subject:** 136 BurnPitRpt Mar10.doc  
**Attachments:** 136 BurnPitRpt Mar10.doc



136 BurnPitRpt  
Mar10.doc (417 ...)

Classification: UNCLASSIFIED

Curtis,

Hope the attached 136 provides the coordination top cover you need. The 136 indicates:

- \* That all four Services coordinated on, and concur in, the report. The four Service Planners listed on the 136 speak for their respective Services. My understanding of Service and Service Secretariat protocol is that Service review and concurrence suffices for actions of this nature.
- \* The Geographic COCOMs reviewed and concurred in the report
- \* With respect to CENTCOM, we requested and received GO/FO concurrence because the very reason for the report originated in their AOR
- \* The Joint Staff surgeon personally reviewed the report and his value-added changes are incorporated.
- \* Although not required OSD(OGC) and ASD(HA) not only reviewed the report, they provided value-added input. OSD(LA) reviewed the report and is aware of its content and progress.

I will scan and send the attached 136 to you via unclassified e-mail.



Hope this helps.

V/r,

Bill M, 697-4443

# JOINT STAFF ACTION PROCESSING FORM

CLASSIFICATION UNCLASSIFIED//FOR OFFICIAL USE ONLY

EXTERNAL SUSPENSE 16 Apr 10	INTERNAL SUSPENSE 16 Apr 10	ACTION NUMBER 10-01357
TO VDJS 	THRU DJ-4 	THRU

SUBJECT /O-LA-RRR/ Prohibition on Disposing of Waste in Open-Air Burn Pits

## EXECUTIVE SUMMARY

1. Purpose. Respond to USD(AT&L)'s request<sup>1</sup> to provide the subject congressional report.
2. Issue. In response to public health and environmental concerns associated with use of burn pits for waste disposal in military operational areas, congressional legislation now places limits on burn pit usage during military operations. The legislation also requires a report on progress in complying with Section 317 of the NDAA of 2010.
3. Bottom Line. The memorandum at TAB forwards the report (Enclosure) to USD(AT&L). USCENTCOM and its Service components took strong positive action to ensure the health and safety of deployed forces as well as to comply with Section 317 requirements and supporting DOD guidance. Recognizing the need to ensure health and safety at forward operating bases, Section 317 allows for some use of burn pits, but only under strict, enforceable guidelines. The congressional report summarizes actions taken to remediate past practices and prevent recurrences. Appendix 2 includes references a through k and will be forwarded by USD(AT&L) in its final release to Congress.
4. Background. With no other viable alternatives for eliminating large quantities of waste, burn pits have been used at base camps throughout USCENTCOM to eliminate health hazards associated with accumulated trash. Due to longer than expected in-theater deployment and associated funding authority for incinerators, challenges to viable trash disposal increased with attendant problems for deployed personnel and command leadership.
5. Recommendation. VDJS sign the memorandum at TAB.

## COORDINATION

NAME	AGENCY	DATE	NAME	AGENCY	DATE
RADM Smith	OCJCS/JSS	9 Apr 10	COL Chmura	USA	8 Apr 10
COL Lamb	J-4/HSSD	9 Apr 10	CAPT Peck	USN	31 May 10
MG Dowd	USCENTCOM	9 Apr 10	Col Muller	USMC	8 Apr 10
CAPT Kiwus	USAFRICOM	1 Apr 10	Col Matusiewicz	USAF	9 Apr 10
CAPT Nickle	USEUCOM	9 Apr 10	Col Blackman	OCJCS/LA	7 Apr 10
COL Cintron	USSOUTHCOM	2 Apr 10	CAPT Laurer	OCJCS/LC	6 Apr 10
CAPT Cook	USPACOM	6 Apr 10	COL Lawler	JS/PACC	7 Apr 10

AO/JDIV/EXT Mr. William Mackie; J-4/ED; 703-697-4443

Date Prepared: 29 Mar 10

CLASSIFICATION	CLASSIFICATION/DECLASSIFICATION INSTRUCTIONS
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## ENDNOTE

<sup>1</sup> 10-01357

COORDINATION					
NAME (Rank or Grade)	AGENCY	DATE	NAME	AGENCY	DATE
Copy provided	USD(AT&L)	29 Mar 10			
Copy provided	ASD(HA)	29 Mar 10			
Copy provided	DLA	29 Mar 10			
Copy provided	DCMA	29 Mar 10			
Copy provided	USNORTHCOM	29 Mar 10			
Copy provided	OSD(GC)	29 Mar 10			
Copy provided	OSD(LA)	29 Mar 10			

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**Office of the Under Secretary of Defense for  
Acquisition, Technology and Logistics  
Correspondence Cover Sheet**

**Tasked Org:**

ODUSD(I&amp;E)/ERS

**Action Type:**

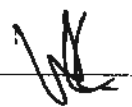
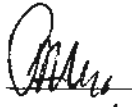

USD(AT&amp;L) signature

**Action Number:**

USA001804-10

**Subject:**

Joint Staff Report "Burn Pits in Context of the Contemporary Operating Environment"

	Initials	Date	Comments
<input type="checkbox"/> Dr. Carter:	_____	_____	
<input type="checkbox"/> Col Said:	_____	_____	
<input type="checkbox"/> CAPT Knudson:		5/4	
<input type="checkbox"/> DDES:		MAY 10 2010	
<input type="checkbox"/> Editor:		10 May	
<b>Notes:</b>			
<b>Disposition Instructions:</b>			
THIS TASK RESIDES ON THE <b>NIPRNET</b> VERSION OF SACCP.			

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