THE ASSISTANT SECRETARY OF DEFENSE

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HEALTH AFFAIRS

NOV 28 2006

The Honorable Duncan Hunter
Chairman, Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515-6035

Dear Mr. Chairman:

This letter provides the 2006 Report to Congress on the requirement for a Department of Defense (DoD) report on Force Health Protection Quality Assurance (FHPQA), as directed by 10 U.S.C. section 1073b(a), as added by section 739 of the Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005.

The enclosed report addresses specific FHPQA activities during calendar year 2005, including four deployment health quality assurance visits to military installations, review of over 500 medical records of redeployed service members, and information maintained in the central DoD database. Data on post-deployment health concerns of over 200,000 service members are also provided, along with synopses of 10 deployment environmental exposure events, details on nearly 500 operational health risk assessment reports, and information on more than 2,000 service members monitored under the DoD Depleted Uranium Bioassay Program. I am pleased to report that 92 percent of service members redeploying in 2005 rated their overall health from good to excellent, while 55 percent indicated no health concerns at the time of their post-deployment health assessment. These rates represent modest but tangible improvements over those reported last year.

I remain strongly committed to ensuring that our service members receive the quality health care and force health protection they so richly deserve—before, during, and after deployment. Thank you for your continued support of the Military Health System.

Sincerely,

William Winkenwerder, Jr., MD

Enclosure:
As stated

cc:
The Honorable Ike Skelton
Ranking Member

Report on the

Department of Defense Force Health Protection Quality Assurance Program

(July 2006)

Prepared by the

Office of the Assistant Secretary of Defense

for Health Affairs
(Force Health Protection and Readiness)

In Response to the

Ronald Reagan National Defense Authorization Act for Fiscal Year 2005 (Section 739)

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DoD Force Health Protection Quality Assurance
Annual Report to Congress
2006

BACKGROUND

The Department of Defense (DoD) is required to report annually to Congress on Force Health Protection Quality Assurance. per 10 U.S.C. section 1073b(a), as added by section 739 of the Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005. The report covers the calendar year preceding the year in which the report is submitted. Topics include maintenance of deployment health assessments in the Defense Medical Surveillance System. storage of blood samples in the DoD Blood Serum Repository. and recording of health assessment data in military health records. as well as actions taken in response to post-deployment health concerns and deployment-related exposures to occupational or environmental hazards. This is the Department's 2006 report. which covers calendar year (CY) 2005 activities and builds upon our initial (two-part) report submitted in April and September 2005.

DEPLOYMENT HEALTH QUALITY ASSURANCE PROGRAM

The Department of Defense Force Health Protection Quality Assurance Program was formally initiated in January 2004. Developed under the direction of the Deputy Assistant Secretary of Defense for Force Health Protection and Readiness. and overseen by the Deployment Health Support Directorate (DHSD). the program supports force health protection and surveillance requirements associated with current deployments. The DoD Deployment Health QA Program encompasses three key elements in addition to an annual report: (1) periodic joint visits to military installations to assess compliance with deployment health requirements: (2) periodic reports from the military Services on their specific deployment health QA programs: and (3) periodic reports from the Army Medical Surveillance Activity (AMSA) on various deployment health assessment data maintained centrally in the Defense Medical Surveillance System (DMSS).

VISITS TO MILITARY INSTALLATIONS

In 2005. staff from DHSD and the Services' medical departments jointly planned. coordinated. and conducted visits to four military installations. Each visit typically included in- and out-briefings with senior line and medical leadership. discussions of deployment health processing activities and issues. and reviews of individual health records for documentation of deployment health-related information (including pre- and post-deployment health assessments. immunizations. deployment medical record forms. care received in-theater. and recommended follow-up referral care). Reviews of both the

DMSS and DoD Serum Repository databases for centrally maintained documentation of pre- and post-deployment deployment health assessments and serum specimens were also conducted in conjunction with each visit. Significant findings from the visits (including health record and centralized database reviews) are displayed in the following table:

2005 **DHSD Joint Installation Visits** **Deployment Health Quality Assurance Program**				
Installation & Visit Dates	Camp Pendleton 26-27 Apr	Hurlburt Field 15-16 Nov	Fort Lewis 29-30 Nov	USS Bataan* 14 Dec
Service Members	140	125	155	146
Health Record:				
Abbrev/Dep Med Rcd	100%	99%	98%	85%
Pre-Dep Health Assmt	80%	97%	93%	**
Post-Dep Health Assmt	99%	94%	97%	100%
Immunizations***	86%	94%	89%	75%
In-Theater Health Care	72%	45%	43%	89%
Referral Care	90%	63%	14%	40%
DMSS & DoDSR:				
Pre-Dep Health Assmt	24%	79%	99%	**
Post-Dep Health Assmt	59%	94%	95%	79%
Pre-Dep Blood Serum	88%	98%	100%	97%
Post-Dep Blood Serum	93%	95%	97%	92%

* Deployed to the US Gulf Coast in support of Joint Task Force Katrina.
** Pre-deployment health assessments not required for shipboard deployments.
*** Service-specific. including Typhoid. Influenza. Smallpox. and PPD Test.

Following are some general observations concerning the four visits in 2005:

- Pre-deployment health assessments (DD Form 2795) were likewise found in a very high percentage of the records reviewed. and to a somewhat lower level in the centralized DMSS database—most likely caused by the (then) reliance on paper forms by many Marines at Camp Pendleton and some special forces Airmen at Hurlburt Field.

- Generally excellent results were also demonstrated across-the-board for the post-deployment health assessments (DD Form 2796). with the possible exception of the paper-based forms from Camp Pendleton and the USS Bataan

not always being available in the centralized DMSS database. Subsequent initiatives by the Marine Corps and the Navy to automate their deployment health assessment forms will greatly facilitate compliance in this regard.

- Documentation of required immunizations was generally quite good.

- The vast majority of required blood serum samples were on file centrally.

- Documentation of in-theater care in the permanent medical record was varied and often driven by the availability of paper records (taken with deploying Sailors and Marines) as well as the transfer of health encounter information that is captured electronically in theater (primarily for Soldiers and Airmen).

- Documentation of post-deployment referral care was likewise fairly varied and somewhat disappointing. Full-scale implementation of the post-deployment health reassessment process will further help ensure that health concerns emerging over time after a deployment are identified and addressed.

SERVICES' REPORTS ON THEIR DHQA PROGRAMS

All four military Services continued to conduct deployment health quality assurance (DHQA) programs that are tailored in scope, focus, and methodology to each particular organizational structure and operational environment. Common program elements generally tracked by all Services include identification of deployed and redeployed personnel; documentation of deployment health assessments (in individual health records and the central DMSS database); drawing of deployment blood serum samples; and completion of post-deployment referrals for follow-up care. Highlights from the Services' quarterly reports for 2005 include the following:

Army:

- The Army's Deployment Health Quality Assurance Program was developed and has been overseen by the US Army Center for Health Promotion and Preventive Medicine (USACHPPM). The Army Medical Command Inspector General (MEDCOM IG) office also conducts periodic assessments of pre- and post-deployment activity (through medical records reviews) during the IG's scheduled visits to Army installations.

- DHQA site visits were not conducted in 2005 by teams from USACHPPM, nor were there any specific DHQA reviews of the central Defense Medical Surveillance System (DMSS) database. Throughout 2005, MEDCOM IG

teams audited samples of medical records from over 500 soldiers who had deployed/redeployed in support of Operations Iraqi Freedom and Enduring Freedom. Their findings indicated that 91% of the records contained a copy of the pre-deployment health assessment and 94% contained a copy of the post-deployment health assessment.

- The Army noted that the major root cause for non-compliance with having copies of the DD Forms 2795 and 2796 in the medical records is the lack of quality control processes at Soldier Readiness Centers. Appropriately, the Army's leadership in automating these two forms has led to exceptionally strong compliance with ensuring that copies are available in both the medical records and the central database (see Fort Lewis visit results above).

Navy:

- The Navy's Fleet Post-Deployment Health Quality Assurance Program is operated under the aegis of the Combined Fleet Forces Command (CFFC) and is monitored by the Navy Environmental Health Center (NEHC). Operational units collect deployment health QA data following redeployment and forward the data through CFFC to NEHC for analysis and subsequent reporting to Navy staff at the Bureau of Medicine and Surgery (BUMED). The Navy is pursuing fleet-wide automation of pre- and post-deployment health assessment forms under an initiative sponsored by NEHC.

- The Navy reported the following deployment health QA data for 2005, focusing primarily on the post-deployment health assessments since pre-deployment assessments are not required for strictly shipboard deployments:

NAVY DEPLOYMENT HEALTH QA DATA--2005		
CATEGORY	**NUMBER**	**PERCENTAGE**
Personnel Redeployed	27,451	
DD Form 2796, Post-Deployment Health Assessment, in Record	22,767	83%
Post-Deployment Blood Draw	22,846	83%
Personnel Requiring Referral	337	01%
Initial Referral Completed*	350	104%
DD Form 2796 Sent to DMSS	25,917	94%

* Includes completion of outstanding referrals from prior reporting periods.

Air Force:

- The Air Force Deployment Health QA Program incorporates reporting to the Air Force Surgeon General's Office through Major Command channels with deployment health surveillance checks by Health Services Inspection teams.

- In mid-year, the Air Force transitioned from reporting deployment data solely through medical tracking systems to the reporting of such data from personnel systems, and also integrated Reserve Command data with active duty data.

- Deployment health data reported by the Air Force in 2005 are as follows:

AIR FORCE DEPLOYMENT HEALTH QA DATA--2005		
1st and 2nd Quarters*		
CATEGORY	**NUMBER**	**PERCENTAGE**
Airmen Deployed	47.694	
DD Form 2795 Completed	46.069	97%
Airmen Redeployed	42.322	
DD Form 2796 Sent to DMSS**	43.671	103%
Clinical Referral Indicated	4.010	09%
Initial Referral Visit Completed	3.568	89%
Post-Dep Serum Samples Collected**	42.996	102%
3rd and 4th Quarters* **		
CATEGORY	**NUMBER**	**PERCENTAGE**
Airmen Deployed	33.023	
DD Form 2795 Completed	26.137	79%
Pre-Deployment Serum Completed	22.726	69%
Airmen Redeployed	25.617	
DD Form 2796 Completed	19.446	76%
Post-Deployment Serum Completed	16.843	66%

* Data derived from PIMR medical surveillance system (1st and 2nd Quarters).

** Includes assessments and samples for non-JCS sponsored redeployers.

*** Data derived from DCAPES personnel tracking system (3rd and 4th Quarters).

- The Air Force indicated that lower completion rates in the 3rd and 4th Quarters may be attributable to Airmen not always processing through base medical facilities prior to deploying and following redeployment. Efforts are ongoing to resolve apparent disconnects between the medical and personnel tracking systems. The Air Force in 2005 implemented virtually 100% usage of electronically formatted pre- and post-deployment health assessment forms.

Marine Corps:

- The Marine Corps Deployment Health Assessment QA Program places responsibility for compliance with commanders and command medical personnel. Units incorporate deployment health data elements into their overall quality assurance programs. Similar to the Navy's program, USMC deployment health data is reported within 90 days of redeployment through the chain of command to NEHC and HQ Marine Corps Health Services.

- The following USMC deployment health QA data were reported in 2005:

MARINE CORPS DEPLOYMENT HEALTH QA DATA--2005		
CATEGORY	NUMBER	PERCENTAGE
Personnel Deployed	81,983	
DD Forms 2795 Completed	53,354	65%
DD Forms 2795 Sent to DMSS	40,079	49%
Pre-Dep Serum Samples Collected	40,830	50%
Personnel Redeployed	51,317	
DD Forms 2796 Completed	49,268	96%
DD Forms 2796 Sent to DMSS	38,703	75%
Post-Dep Serum Samples Collected	46,575	91%
Personnel Requiring Referral	4,716	09%
Personnel Completing Referral	2,529	54%

- The Marine Corps is placing increased emphasis on completion of required pre-deployment health assessments, as well as identifying deployments that were short notice (such as tsunami relief) or not expected to extend beyond 30 days, for which DD Forms 2795 are not required. A November 2005 Marine Corps policy directed the use of electronic systems (as they become available) for completing pre- and post-deployment health assessments, recognizing that improvements are needed in the automated systems infrastructure. Also in late 2005, an HQMC-directed assessment of post-deployment referrals found that over 90% were completed within 30 days for each of the three Marine Expeditionary Forces.

DEFENSE MEDICAL SURVEILLANCE SYSTEM DHQA REPORTS

Throughout CY2005. the military Services continued to submit copies of pre-deployment health assessment forms (DD 2795) and post-deployment health assessment forms (DD 2796) in electronic or (decreasingly) paper format to the Army Medical Surveillance Activity (AMSA). where the data are entered into the Defense Medical Surveillance System (DMSS). AMSA provides weekly reports on a variety of post-deployment health assessment data. and also prepares more extensive periodic analyses on both pre- and post-deployment health assessments. Data from the CY2005 AMSA summary report on DD Forms 2796 on file in the DMSS from service members returning from any military deployment are provided in the following tables:

TOTAL FORCE POST-DEPLOYMENT HEALTH ASSESSMENTS: 2005--ALL					
	ARMY	**NAVY**	**USAF**	**USMC**	**TOTAL**
Members with DD 2796	221.782	27.144	65.773	38.530	**353,229 ***
Electronic DD 2796 **	94%	12%	100%	22%	**81%**
Health "Good...Excellent"	90%	96%	98%	94%	**92%**
Medical/Dental Problems	39%	16%	11%	24%	**31%**
Currently on Profile	12%	01%	02%	02%	**08%**
Mental Health Concerns	08%	03%	01%	03%	**06%**
Exposure Concerns	22%	08%	03%	11%	**16%**
Health Concerns	17%	08%	06%	11%	**13%**
Referral Indicated	27%	10%	10%	15%	**21%**
Follow-up Med Visit ***	96%	70%	82%	61%	**91%**
Post-Deployment Serum	95%	83%	84%	90%	**92%**

* Service members with DD 2796 on file from all deployments in 2005.

** Calculated for DD Forms 2796 completed since June 1. 2005.

*** An inpatient or outpatient visit within 6 months after referral.

Source: AMSA CY2005 DD Form 2796 summary report dated April 30. 2006.

ACTIVE DUTY POST-DEPLOYMENT HEALTH ASSESSMENTS: 2005--ALL					
	ARMY	**NAVY**	**USAF**	**USMC**	**TOTAL**
Members with DD 2796	106.008	23.483	48.607	31.588	**209,686**
Electronic DD 2796 *	99%	08%	100%	19%	**77%**
Health "Good...Excellent"	91%	96%	98%	94%	**94%**
Medical/Dental Problems	31%	12%	11%	22%	**23%**
Currently on Profile	10%	01%	02%	02%	**06%**
Mental Health Concerns	08%	03%	01%	03%	**05%**
Exposure Concerns	16%	04%	03%	09%	**11%**
Health Concerns	11%	06%	05%	09%	**09%**
Referral Indicated	26%	07%	10%	14%	**18%**
Follow-up Medical Visit **	98%	74%	93%	65%	**92%**
Post-Deployment Serum	96%	82%	89%	90%	**92%**

RESERVE COMPO POST-DEPLOYMENT HEALTH ASSESSMENTS: 2005--ALL					
	ARMY	**NAVY**	**USAF**	**USMC**	**TOTAL**
Members with DD 2796	115,774	3,661	17,166	6,942	**143,543**
Electronic DD 2796 *	89%	40%	100%	35%	**86%**
Health "Good...Excellent"	89%	93%	98%	93%	**90%**
Medical/Dental Problems	47%	40%	11%	35%	**42%**
Currently on Profile	13%	04%	01%	02%	**11%**
Mental Health Concerns	08%	05%	01%	04%	**07%**
Exposure Concerns	28%	30%	04%	19%	**25%**
Health Concerns	22%	22%	10%	19%	**20%**
Referral Indicated	28%	26%	09%	20%	**25%**
Follow-up Medical Visit **	94%	62%	49%	49%	**89%**
Post-Deployment Serum	95%	89%	69%	90%	**92%**

Based on the post-deployment health assessment data in the above tables for service members redeploying in the 12 months from January through December 2005:

- Approximately 92% of redeploying service members reported their health as good. very good. or excellent.

- Approximately 13% of redeploying service members reported having some health concerns or questions.

- Approximately 6% of redeploying service members reported they had sought or intended to seek mental health counseling or care.

- Health referrals were indicated for approximately 21% of redeploying service members. with approximately 91% of those individuals having an inpatient or outpatient visit within six months after referral.

- Army and Marine Corps personnel typically demonstrated higher rates of post-deployment health and exposure concerns. which quite possibly reflect their more direct roles in combat and combat-related operations.

- Reserve component service members generally expressed more concerns about their post-deployment health than did active duty personnel.

DEPLOYMENT HEALTH QA PROGRAM SUMMARY

The DoD Deployment Health Quality Assurance Program continues to be a critical component of the Department's commitment to comprehensive force health protection. In 2005. we were encouraged by the generally high quality of deployment

documentation in medical records. while noting continuing improvement opportunities in the use of automated information and documentation of in-theater health care. For visits in 2006. we envision incorporating the post-deployment health reassessments along with Reserve Component service members. DoD civilians. and deployment personnel rosters maintained by the DMDC. The military Services' deployment health quality assurance reports continue to provide snapshots of both progress made and challenges encountered. As the individual programs and various associated information systems continue to mature, it is possible that reporting frequency could change from quarterly to semi-annually. while the focus would shift toward monitoring of automated data. The routine and ad hoc deployment health reports prepared from the DMSS have been instrumental in documenting trends for key deployment health indicators and differentiating results among the military services. their active and reserve components. and use of electronic versus paper-based assessment forms. We anticipate incorporation of the various deployment health QA elements into the more comprehensive Force Health Protection Quality Assurance Program. following publication of the DoD Instruction in mid-2006.

POST-DEPLOYMENT HEALTH CONCERNS

Responsiveness to post-deployment health concerns was determined through analysis of information on the four-page Post-Deployment Health Assessment. copies of which are maintained in the DMSS electronic database. During the post-deployment health assessment process. health care providers conduct face-to-face interviews with all returning service members and document their responses to the following questions:

- Do you currently have any questions or concerns about your health? *(General)*
- During this deployment have you sought. or do you now intend to seek. counseling or care for your mental health? *(Mental Health Concerns)*
- Do you have concerns about possible exposures or events during this deployment that you feel may affect your health? *(Exposure Health Concerns)*

Positive responses to any of the above three deployment health questions were identified. along with responses to four specific mental health-related questions. DMSS data was also checked for provider-recommended referrals. as well as the number and timeliness of service members seen for follow-up care in the military health system. The following tables depict DMSS database results for post-deployment health assessments accomplished by over 205.000 Service members returning from deployments directly in support of Operation Iraqi Freedom or Operation Enduring Freedom in CY2005.

Summary of OIF/OEF Post-Deployment Health Assessments in CY2005			
205,645 Post-Deployment Health Assessments	**General Health Concerns**	**Mental Health Concerns**	**Exposure Concerns**
Health Concerns Indicated	43,344 (21%)	70,262 (34%)	45,817 (22%)
Follow-up Referrals Indicated	31,416 (15%)	34,537 (17%)	31,109 (15%)
Individuals Seen < 90 Days	91%	84%	92%

General Health Concerns (OIF/OEF CY2005)				
Branch of Service	**Health Assessments**	**General Health Concerns**	**Referred for Care**	**Seen within 90 Days**
Army	138,666	38,278	29,302	93%
Navy	4,195	720	453	62%
Air Force	45,239	2,663	825	74%
Marines	17,545	1,683	836	51%
Total	205,645	43,344 (21%)	31,416 (15%)	91%

Mental Health Concerns (OIF/OEF CY2005)				
Branch of Service	**Health Assessments**	**Mental Health Concerns**	**Referred for Care**	**Seen within 90 Days**
Army	138,666	57,031	31,020	89%
Navy	4,195	1,356	440	41%
Air Force	45,239	5,045	1,443	71%
Marines	17,545	6,830	1,634	14%
Total	205,645	70,262 (34%)	34,537 (17%)	84%

Exposure Health Concerns (OIF/OEF CY2005)				
Branch of Service	**Health Assessments**	**Exposure Concerns**	**Referred for Care**	**Seen within 90 Days**
Army	138,666	41,599	29,193	93%
Navy	4,195	807	309	61%
Air Force	45,239	1,693	1,021	78%
Marines	17,545	1,718	586	47%
Total	205,645	45,817 (22%)	31,109 (15%)	92%

Following are some key findings regarding post-deployment health concerns:

- Approximately 55% (112,626) of the 205,645 service members indicated no post-deployment health concerns, per their negative responses to the seven questions.

- Service members were more likely to indicate post-deployment concerns about their mental health (34%) than about general health (21%) or exposures (22%).

- Service members for whom referrals were indicated received follow-up care within 90 days in the military health system at a slightly greater rate for general health or exposure concerns (91-92%) than for mental health concerns (84%).

DEPLOYMENT-RELATED EXPOSURES

Occupational and Environmental Health Deployment Surveillance

The Department of Defense continues to support our deployed forces with comprehensive occupational and environmental health (OEH) monitoring to identify, control, and document potentially hazardous exposures. Progress is being made to standardize occupational and environmental sampling and reporting procedures, and to improve the quality and consistency of the environmental data being collected.

- During the pre-deployment period, OEH risk assessments are performed to identify possible hazards or threats at planned or existing locations of US force. These assessments use information from previous deployments, the Armed Forces Medical Intelligence Center, and other sources to identify potential hazards that must be closely considered from the standpoint of exposure prevention and mitigation. The completed assessments are fully coordinated with various intelligence agencies and DoD elements.

- The military Services train preventive medicine team members, including environmental health personnel, on surveillance procedures and methods that enable characterization of hazards found in deployed settings. The US Army Center for Health Promotion and Preventive Medicine (USACHPPM) provides additional sampling equipment and training to Air Force and Navy personnel performing various types of environmental and occupational assessments, since standardization of in-theater sampling techniques and procedures is essential for continuity of operations at those locations where the Services sequentially staff the same locations.

- The USACHPPM is the DoD lead agency for archiving deployment surveillance data, and maintains separate classified and unclassified archives. The Services provide their OEH surveillance records to the DoD deployment data archives maintained by the USACHPPM. Long-term projects are underway to facilitate document retrieval from internet-based portals. Some samples are collected and analyzed in theater in near real-time and may not be included in the USACHPPM database. Most samples, however, require more sophisticated analytic methods and are shipped out of theater to Service laboratories, including the USACHPPM.

- Potential risks from environmental exposures are estimated through the accomplishment of operational health risk assessments. These assessments use the laboratory results from specific sample media taken from specific locations on specific dates and times. along with operational information. to estimate the risk to the mission and to individuals. When contaminants are found at levels above health guidelines. the results are communicated to personnel in the field so that any additional countermeasures indicated may be implemented to limit or prevent exposures. Within the deployed command. these risk estimates are considered in overall force protection and mission decision-making. Over time, individual operational health risk assessments that are performed at specific base camp locations are consolidated in annual/biannual base camp summary assessments.

Deployment Health Risk Assessments and Findings

USACHPPM produced and disseminated over 35 pre-deployment health risk assessments for specific locations around the world in 2005. The hazards and potential health risks assessed were associated with industrial chemicals. radiation, infectious disease. insect disease vectors. weapons of mass destruction. unexploded ordnance. and other threats identified through operational pre-deployment planning.

During 2005. the USACHPPM also completed 492 operation-specific health risk assessment reports (see Table 1. attached). including 136 operational health risk assessments accomplished in support of Hurricane Katrina. These reports involved analyses of thousands of air. water. and soil samples from deployments in over 30 countries world-wide. Over 76 percent of the health risk assessment reports were categorized as "Low Risk" to personnel. The designation of "Low Risk" indicates no operational impact is anticipated. only the possibility of very limited or temporary health effects requiring no medical treatment. The 111 "Moderate Risk" health assessments (including 92 on air quality and 19 on water potablity) and 3 "High Risk" assessments (including 2 on particulate matter and 1 on water potability) were due primarily to anticipated temporary health effects from small (less than 10 microns in diameter) airborne particulate matter (PM_{10}) or to nonpotability of water. In all of these cases. the health effects associated with these exposures may be observed during or soon after the exposure. but quickly subside thereafter. The water supplies assessed were primarily used for personal hygiene and not for drinking. and are typically treatable with field systems that include filtration and chlorination. The actions to address these identified hazards. their health impacts. and the care and treatment of those exposed requiring follow-up medical diagnostics or care are discussed below.

The potential for long-term delayed health effects is also evaluated. If there is a significant possibility of long-term adverse health effects. the risk level would be raised. Though the possibility of temporary health effects has been identified in some specific events (see below). there have been no occupational or environmental exposures reported to the USACHPPM for 2005 that are believed to significantly increase the risk of long-term health effects. including cancer. in deployed personnel. However. this is caveated by the fact that there are significant limitations with making correlations from estimated environmental exposures to individual service member's actual exposures and health outcomes.

Specific Occupational and Environmental Health Deployment Events

The following summaries describe some of the OEH events that have been reported and monitored since the 2005 Report to Congress and that potentially involved hazardous exposures for deployed US personnel. Location-specific as well as regional or theater-wide summaries are included. Some events are currently being evaluated as part of ongoing missions.

Bagram Airbase, Afghanistan: Construction/Barrier Material Storage Yard (Nov 2004–Jan 2005). Yellow-stained soil was observed in the construction and barrier material yard. and in areas between the Kellogg. Brown and Root (KBR) contractor and infantry villages. Soil. air. and water sample results indicated the presence of chromium in varying concentrations. Total chromium concentrations in stained soil were above protective screening levels. so the contaminated areas were cordoned off and the soil covered with plastics to prevent airborne suspension of contaminated dusts. Total chromium concentrations in water samples were below levels of concern. Although there were no health complaints. in December 2005 the two soldiers working in the yard were medically evaluated. All findings were within normal limits. KBR screened its eight workers present at the construction and barrier material yard. Since none had any health complaints. no further evaluations were performed. Health risk communication efforts included town hall meetings and distribution of fact sheets provided to airbase personnel. No long-term health consequences were expected in troops deployed to this location.

Ash Shuaiba Port, Kuwait (April 2004–2006. The Ash Shuaiba Port area has been monitored for several years and continues to be monitored environmentally due to repeated peaks in particulate matter (PM_{10}) concentrations that are considered to represent moderate health risks. In addition to particulate matter. there are occasionally other pollutant emission releases from nearby industrial plants.

On April 2. 2004. service members reported strong sulfur odors along with isolated complaints of headaches and nausea. Smoke-like plumes were observed emanating from the refinery north of Camp Spearhead. the Life Support Area established near the port to support Operation Iraqi Freedom. The health and safety contractor for the camp used a hand-held sensor to measure sulfur dioxide (SO_2) concentrations, and then instructed outdoor and non-mission critical personnel to seek temporary refuge inside air conditioned structures. Concentrations were reportedly at levels that would represent an acute health hazard. The contractor asked the Kuwait Port Authority to cease the operations causing the emissions. Within hours. the emissions were no longer affecting the camp. and all personnel returned to normal duties.

On February 6. 2006. some service members again reported headaches and throat irritations from suspected exposures to ammonia and/or other unspecified volatile organic compounds. Limited field monitoring capabilities reported concentrations of ammonia. which represented a temporary health concern and a moderate operational risk. In March 2006. a revised Standard Form 600 Environmental/Occupational Exposure Data Summary was prepared by the USACHPPM for US Central Command for inclusion in the medical records of individuals deployed to this location. The form covered the period from January 2003 through December 2005. and summarized the presence of particulate matter as well as possible intermittent exposure to industrial releases of sulfur dioxide. ammonia. or chlorine. While general medical consensus is that the exposures to airborne particulate matter will not result in any long term adverse health effects. this issue continues to be evaluated. Recent studies in the US have suggested some respiratory and cardiovascular effects. primarily in the elderly and immune compromised. Because of the limited data available. the concern over exposures to extremely high concentrations of PM_{10} has not been adequately assessed yet. Additional evaluation and research on PM_{10} exposure in theater is ongoing. including medical evaluations of selected units at those locations where additional environmental data is being collected.

Baghdad Industrial Complex, Iraq (February 2005). Coalition forces and local civilians became ill from a chlorine gas release that occurred on the morning of February 5. 2005. The release occurred in an industrial complex where US troops were patrolling. Odors were detectable. and units and civilians were moved away from the site. Eleven soldiers were washed down at the clinic. placed on oxygen. and observed for several hours. Because the effects of a one-time chlorine gas exposure are generally temporary and no long-term adverse health effects are anticipated. further follow-up of these individuals was not clinically indicated.

Camp Ramadi, Iraq (May 2004-2005). A former KBR employee stationed at Camp Ramadi wrote a report stating that water that was being used for personal hygiene at the camp over the previous year had been inadequately chlorinated. (Proper

chlorination is necessary to ensure that the water that may be ingested is properly disinfected to prevent the possibility of waterborne gastrointestinal illness in exposed personnel.) Follow-up evaluations by US Army preventive medicine personnel and the USACHPPM identified military sanitary inspection reports from 2004 and water test data from March 2005. While, in retrospect, it is difficult to be certain that appropriate chlorine levels were maintained in the water during the entire time interval in question, there was no evidence of exposure to non-disinfected water at Camp Ramadi. As part of the Army investigation, the preventive medicine team evaluated rates of gastrointestinal disease for that time period, and found no increase. Any adverse effects would have occurred during the deployment. No long-term adverse health effects are anticipated.

Balad Airbase and Camp Anaconda, Iraq (2004 to present). This large airbase north of Baghdad has undergone repeated OEH assessments by both the Army and the US Air Force. Like other sites in the Middle East, dust/particulate matter has been an ongoing operational problem, with symptoms of eye, nose, throat irritation, sneezing, coughing, sinus congestion, and potential aggravation of existing asthma. There is also smoke associated with routine outdoor trash burning pit operations, which has been noted as a potential cause of eye and nose irritation. Pollutants such as dioxins (a carcinogen) may be associated with such burning operations. Enhanced monitoring of the site has been underway and methods for controlling emissions are being evaluated. The Air Force prepared an Environmental/Occupational Health Workplace Exposure Data Standard Form (SF) 600 for placement in medical records of Air Force personnel stationed there. The form describes the environmental conditions and the absence of increased respiratory problems in personnel. It also indicates that long term health risk from either dust or chemical hazards was minimal. The form indicated that follow-up for hearing loss may be warranted due to the presence of noise hazards. More recent environmental and medical evaluations confirm the past findings and conclusions that long-term health effects from particulates are not expected.

Camp War Eagle, Iraq (2005 to present). As described in the 2005 DoD Force Health Protection Quality Assurance Annual Report to Congress, OEH monitoring at this location identified levels of lead in the air above military exposure guidelines. This resulted in medical screening and biomonitoring for lead in service members. The results indicated no evidence of lead toxicity associated with their deployment to Camp War Eagle. Since this event, additional air monitoring at the site has been ongoing, but has not identified elevated levels of lead as noted in the October 2004 findings. The level of small particulates represents an ongoing "Moderate Risk."

Particulate Matter (Iraq and Afghanistan). As described in the 2005 DoD Force Health Protection Quality Assurance Annual Report, small particulate matter less than 10 microns (diameter) in size (PM_{10}) is the most significant environmental exposure

throughout the US Central Command area of responsibility. It is significant because it is a widespread problem. and also because of its impact on operations. Shuaiba Port and Camp War Eagle are prime examples. although PM_{10} concentrations are elevated at many locations throughout the theater (Table 1). Airborne PM_{10} levels in these locations are in the "elevated range" where the US Environmental Protection Agency (EPA) indicates that even relatively healthy individuals should limit outdoor activities and strenuous exercises. Repeated exposure to concentrations in this range cause the health risk for military personnel to be considered "Moderate Risk" due to the anticipated eye and throat irritation. coughing. and possible increase in upper respiratory infections that could impact individual job performance. The scientific data available to the EPA and military do not provide evidence of long-term health consequences associated with PM_{10} exposures in otherwise healthy adults. However. this is an ongoing area of study in both the public and military sectors. Monitoring for PM_{10} continues at various deployment sites in theater. and evaluation of health outcomes is ongoing.

Water Potability (Iraq and Afghanistan). Lack of water potability has been identified as constituting a "Moderate Risk" at various deployed locations (Table 1). The non-potability is attributable primarily to well water that has neither been passed through a water purification unit nor been chlorinated. Water analyses include testing for a broad range of chemical pollutants only rarely detected at concentrations of concern. Instead. it was typically the cloudiness (or turbidity) of the water. or the results of basic field tests for bacteria. that indicated that the water was not potable and. if consumed. could cause certain types of gastrointestinal illness. Analyses of health outcome data from the theater have not identified gastrointestinal illness rates above expected background rates. thus indicating that water potablity issues are not a significant problem in theater. Bottled water is being supplied for drinking in most locations.

Updates on Events from the 2005 Report

Al Mishraq Sulfur Plant, Iraq (2003). Of the events included in our previous report. only the 2003 Al Mishraq Sulfur Plant fire was identified as an exposure that may result in health consequences of concern. There were two different exposure groups described: 1) service members who were directly involved in the firefighting operations: and 2) those in the surrounding area within a 5-mile radius. Analysis of this event and any associated long-term health outcomes is on-going. All military units involved with this fire have been identified. USACHPPM is reviewing the medical surveillance data and working closely with active and reserve components to identify any personnel who may have adverse health outcomes that might be associated with this exposure event.

As Samawah Rail Depot, Iraq (Oct 2004–Apr 2005). As follow-on to the As Samawah Rail Depot biomonitoring and risk communication efforts described in our 2005 report. in October 2004 the USACHPPM deployed a radiological survey team to provide a detailed radiological site characterization of the buildings and surrounding areas used by the 442nd Military Police Company. The survey report concluded that radiological contamination did not pose a health risk to personnel living or working at the rail depot. One small area of radioactive contamination was discovered on a disabled armored vehicle on a flatbed train car in the depot. far removed from all occupied areas. Results of air. wipe. and soil samples of the area immediately surrounding the vehicle indicated that the DU discovered on the disabled armored vehicle was confined to the vehicle itself. had not migrated. and did not present a DU exposure hazard to personnel.

Depleted Uranium Bioassay Results

A comprehensive and highly effective DoD depleted uranium (DU) exposure monitoring program has continued in accordance with the Assistant Secretary of Defense for Health Affairs 2003 and 2004 policy for addressing the medical management of personnel possibly exposed to DU while deployed in support of Operation Iraqi Freedom. DoD categorizes DU exposures into three levels: Level I—personnel in or near combat vehicles struck by DU munitions or who entered vehicles immediately afterward to attempt rescue: Level II—personnel who routinely entered DU-damaged vehicles or fought fires involving DU munitions: and Level III—personnel involved in all other DU-related events (incidental exposures). Bioassays are required for all personnel with Level I and II DU exposures. and may be ordered for personnel with Level III exposures as part of appropriate medical management or to address concerns of service members.

As shown in the following chart. a total of 2.174 service members had undergone depleted uranium urine bioassays. Only four individuals have confirmed elevations in total urine uranium. and only seven members have confirmed detections of depleted uranium in their urine. all of whom either have had depleted uranium fragments removed or were thought to have had retained depleted uranium fragments at the time of testing. None of the individuals have total urine uranium levels or depleted uranium levels that have caused or are expected to cause adverse health effects.

Operation Iraqi Freedom Depleted Uranium Bioassay Results **June 1, 2003 – March 31, 2006**							
Level	**Army**	**Navy/ Marines**	**Air Force**	**Total**	**Elevated Total Uranium**	**Detected DU**	**Retained Fragments or Fragment-Type Injury**
I	197	48	2	247	4	6	17
II	298	220	8	526	0	0	1
III	214	43	7	264	0	0	7
Uncat	1126	11	0	1137	0	1	29
Total	1835	322	17	2174	4	7	54

The weight of evidence associated with a very large body of scientific and medical research accomplished over many years continues to clearly indicate the absence of any short-term (acute) health effects associated with the inhalation of DU dust particulates or with embedded DU fragments from munitions or armor. The scientific and medical literature also fails to identify any long-term (chronic) health effects due to DU in exposed personnel. although research in this area continues. Extensive literature reviews by the RAND Corporation (1999). the US Department of Health and Human Services' Agency for Toxic Substances and Disease Registry (1999). the National Academy of Science's Institute of Medicine (2000). and the British Royal Society (2001, 2002) all support these conclusions. In addition. the Department of Veteran Affairs' long-term medical follow-up studies on veterans with DU exposures from the 1991 Gulf War (and some from Operation Iraqi Freedom) provide further evidence supporting these conclusions. Nevertheless. because of the public's concerns about DU exposure and long-term health effects. the Department believes it is prudent and in the best interest of military service members to continue the Depleted Uranium Urine Bioassay Program.

FORCE HEALTH PROTECTION QA PROGRAM SUMMARY

As described in our initial report(s) last year as well as this year's report. the Department has implemented comprehensive deployment health QA programs focused on pre- and post-deployment health assessments (in individual medical records as well as central databases). immunizations. serum samples. care in-theater and follow-up referral care. and deployment-related hazardous exposures. Our Deployment Health Support Directorate has partnered effectively with the military Services and several DoD centers of excellence to monitor key elements prior to. during. and following deployment. For 2006. we have completed an expanded DoD Instruction on Deployment Health and are well on the way toward publication of a new DoD Instruction on Force Health Protection Quality Assurance. We are also this year fully implementing the Post-Deployment Health Reassessment (PDHRA) program. with over 75.000 military service members having completed reassessments through mid-July 2006. The PDHRA is a logical health assessment progression and educational tool for identifying and facilitating access to care for deployment-related physical and mental health concerns. Each of these significant activities for 2006 will be addressed in detail in the Department's 2007 report. and each represents our ongoing commitment to protecting the health of military service members before. during. and following deployment.

2005 USACHPPM Deployment Operational Health Risk Assessments

COCOM/ Country	# of Assessments	Low Risk	Moderate Risk	High Risk
CENTCOM				
Afghanistan	60	50	8 - Ambient Air Based on PM_{10} 2 - Treated Water Potability	
Djibouti	6	4	2 - Ambient Air Based on PM_{10} ;	
Egypt	1	0	1 - Treated Water Potability	
Ethiopia	2	2		
Iraq	195	125	57 - Ambient Air Based on PM_{10} & metals 9 - Treated Water Potability 2 - Raw Water Potability	2 - PM_{10} & Lead
Kenya	4	3	1 - Treated Water Potability	
Kuwait	37	20	16 - Ambient Air Based on PM_{10}	1 - Treated Water Quality
Kyrgyzstan	4	4		
Qatar	11	9	2 - Ambient Air Based on PM_{10}	
Saudi Arabia	4	3	1 - Ambient Air Based on PM_{10}	
Uzbekistan	7	5	2 - Ambient Air Based on PM_{10}	
United Arab Emirates	2	2		
Yemen	1	1		
EUCOM				
Bosnia	1	1		
Georgia	1	1		
Kosovo (Serbia)	2	2		
Morocco	1	0	1 - Raw Water Potability	
SOUTHCOM				
Antigua	1	1		
Belize	1	1		
Dominican Republic	1	1		
Columbia	1	1		
Grenada	1	0	1 - Water Potability	
Guatemala	1	1		
Haiti	3	2	1 - Bottled Water -Potability	
Honduras	2	2		
Netherlands Antilles	2	1	1 - Ambient Air Based on PM_{10}	
Nicaragua	2	1	1 - Ambient Air Based on PM_{10}	
Panama	2	2		
NORTHCOM - JTF KATRINA				
USA	136	133	2 - Ambient Air Based on PM_{10} 1 - Treated Water Potability	
TOTAL HEALTH RISK ASSESSMENTS	**492**	**Total LOW Risk: 378**	**Total MODERATE Risk: 92 - Ambient Air Quality 19 - Water Potability**	**Total HIGH Risk: 2 - Ambient Air Quality 1 - Water Potability**