DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY MEDICAL COMMAND
2050 WORTH ROAD
FORT SAM HOUSTON, TEXAS 78234-6000

REPLY TO
ATTENTION OF

MCPO-SA

OTSG/MEDCOM Policy Memo 07-022

26 JUN 2007

Expires 26 June 2009

MEMORANDUM FOR Commanders, MEDCOM Major Subordinate Commands

SUBJECT: Medical Management of Army Personnel Exposed to Depleted Uranium (DU)

1. References. See Annex 1 to the enclosure.

2. Purpose. To clarify established policy, expand responsibilities and procedures, and provide additional guidance for the medical management of Army personnel exposed to DU (enclosure).

3. Proponent. Proponency Office for Preventive Medicine-San Antonio.

4. Details.

a. This policy supersedes OTSG/MEDCOM Policy Memo 05-003, 04 March 2005, subject: Medical Management of Army Personnel Exposed to Depleted Uranium (DU) (reference 4, Annex 1).

b. This policy directs the implementation of the 09 April 2004 Department of Defense Health Affairs memorandum and the 30 May 2003 Department of Defense Health Affairs Policy 03-012, for Operation Iraqi Freedom Depleted Uranium (DU) Medical Management (references 1 and 2, respectively, Annex 1), supports the 6 February 2004 Department of Defense Health Affairs Policy 04-004 for Biomonitoring Policy and Approved Bioassays for Depleted Uranium and Lead (reference 3, Annex 1), and provides further policy, responsibilities, procedures, and guidance for the medical management of patients exposed to DU.

c. Healthcare Providers will identify, assess, and treat (if needed) all personnel with actual or potential exposures to DU who are assigned a potential exposure level (I, II, or III). They will monitor and track these personnel according to the responsibilities, procedures, and guidance provided in the enclosure. Treat personnel exposed to DU, as confirmed by DOD bio-monitoring, and enter them into the Joint Theater Trauma Registry (JTTR), AHLTA, or current medical record in existence.

d. Do not delay required medical treatment or evaluations because of the possible presence of DU on skin or clothing, for the determination of the presence of DU on a patient or for DU bioassay specimen collection.

e. Perform DU bioassays on all personnel with imbedded metal fragments that might include DU or who were in, on, or near (less than 50 meters) an armored vehicle at the time (or shortly after) it was struck with a DU munition (Level 1 exposure category).

f. Perform DU bioassays on all personnel who routinely enter damaged vehicles as part of their military occupation or who fight fires involving DU munitions (Level II exposure category).

g. DU bioassays are not required for personnel with incidental exposure to DU, although a physician may choose to perform one based on medical indications or on the potentially exposed individual's request (Level III exposure category).

h. This policy eliminates the requirement to collect urine specimens in Theater for DU bioassay.

i. The case management process has worked well to provide potentially exposed Soldiers with one-on-one health risk communication and information related to any results from DU bioassays. Annex 2 to the enclosure recommends the assignment of a case manager for Soldiers submitting urine specimens for DU bioassay.

FOR THE COMMANDER:

Encl
as

WILLIAM H. THRESHER
Chief of Staff

CF (w/encl):
Assistant Secretary of Defense (Health Affairs), Pentagon, Room 3E1082, Washington, DC 20301-1200
Assistant Secretary of the Army (Manpower and Reserve Affairs), Pentagon, Room 2E468, Washington, DC 20310-0111
Assistant Chief for Operational Medicine and Fleet Support, Bureau of Medicine and Surgery, 2300 E Street, NW, Washington, DC 20372-5300

MCPO-SA
SUBJECT: Medical Management of Army Personnel Exposed to Depleted Uranium (DU)

Commander, Air Force Medical Operations Agency, AFMOA/CC, 110 Luke Avenue, Room 400, Bolling Air Force Base, DC 20332-7050
HQDA (DACS-SF), 200 Army Pentagon, Washington, DC 20310-0200
HQDA (DAMO-TRC), 400 Army Pentagon, Washington, DC 20310-0400
Director, National Guard Bureau, ATTN: Surgeon, 111 South George Mason Drive, Arlington, VA 22204-1382
Commander, US Army Reserve Command, ATTN: Surgeon, 1401 Deshler St, SW, Fort McPherson, GA 30330-5000
Commander, 18th Medical Command, ATTN: Surgeon, APO, AP 96205-0054
Commander, US Army Training and Doctrine Command, ATTN: Surgeon, Fort Monroe, VA 23651-5000
Commander, US Army Forces Command, ATTN: Surgeon, 1777 Hardee Avenue, SW, Fort McPherson, GA 30330-6000
Commander, US Army Materiel Command, ATTN: Surgeon, 9301 Chapek Road, Fort Belvoir, VA 22060-5527
Commander, US Army Special Operations Command, ATTN: Surgeon, Fort Bragg, NC 28307-5200
Uniformed Services University of the Health Sciences, ATTN: Chair, Department of Military and
Emergency Medicine, 4301 Jones Bridge Road, Bethesda, MD 20814
Director, Armed Forces Radiobiology Research Institute, 8901 Wisconsin Avenue, Bethesda, MD 20889-5603
Commander, Defense Medical Readiness Training Institute, 1706 Stanley Road, Suite 91, Fort Sam Houston, TX 78234
Commandant, US Army Chemical School, Fort Leonard Wood, MO 65473

Procedures/Guidance for the Medical Management of Army Personnel Exposed to Depleted Uranium (DU)

1. References. See Annex 1 to this enclosure.

2. Responsibilities. Annex 2 to this enclosure defines the responsibilities for Army medical personnel.

3. General.

a. The procedures in this document will identify, assign a potential exposure level (I, II, or III), assess, and treat (if needed) all personnel with actual or potential exposure to DU regardless of the source. In addition, these procedures detail required monitoring and tracking of all Army personnel with retained metal fragments and/or suspected inhalation or incidental exposure to DU. Level III exposures are annotated in the Soldier's medical record. Upon the Soldier's departure from Federal service, the medical record is archived in the National Personnel Records Center for future access.

b. The following procedures will also be used to ensure the appropriate use of urine bioassay for DU exposure assessment and biomonitoring.

c. Annex 3 to this enclosure contains a short questionnaire to assist the healthcare provider in assessing potential DU exposure. Annex 4 to this enclosure provides the Department of Defense (DD) Form 2872 Test DU Questionnaire and DD Form 2872-1 Test, Health Survey, which is completed for all personnel submitting specimens for DU bioassays. Annex 5 provides packing and shipping requirements for DU bioassay and fragment specimens. Annex 6 to this enclosure summarizes these procedures in a checklist format for healthcare providers (HCP). Annex 7 summarizes these procedures in a flow chart format. Annex 8 is a copy of the Deployment Health Clinical Center provider flow chart used in the Clinical Practice Guidelines for post-deployment health.

d. Medical units located in a Theater of Operations and higher echelon medical facilities, acting as enroute processing points for redeploying Soldiers, should not collect the 24 hour urine specimen for the DU bioassay. The collection requirements are documented on the Soldier's DD Form 2796, Post-Deployment Health Assessment, and other medical records (e.g., DD Form 2766, sections 5 and 7 (block 20) ensuring collection of the 24 hour urine specimen and documentation by the Soldier's home station MTF.

4. Definitions of potential DU exposure levels.

a. Level I. Personnel struck by DU munitions or who were in, on or near (less than 50 Meters) a combat vehicle at the time (or shortly after) it was struck with DU munitions.

(1) Personnel in this Level may exceed occupational safety levels when a sufficient amount of DU is taken into an individual's body. This level includes personnel who were struck by DU munitions or who were in, on or near (less than 50 meters) a combat vehicle struck by DU munitions or DU armor when it is breached by any munitions and to first responders who entered these vehicles to render aid to the crewman, or to those with retained fragments that contain DU.

(2) DU bioassays are administered to all personnel within this Level. After more than a decade of medical surveillance of the 1991 Gulf War survivors of DU-related injuries, no adverse toxicological effects related to the presence of DU have been identified (McDiarmid et al., 2004, reference 23, Annex 1 to this enclosure).

(3) Bioassays are performed as soon as medical condition permits a urine collection at the Soldier's home station MTF. Non-hospitalized Level I personnel will have their medical records annotated that a 24-hour urine collection is required and these bioassays will be performed as soon as possible (e.g., upon return to home station).

b. Level II. Personnel who routinely enter DU damaged vehicles as a part of their military occupation or who fight fires involving DU munitions.

(1) Personnel in this Level may exceed occupational safety levels when a sufficient amount of DU is taken into an individual's body. This Level includes personnel who routinely enter vehicles containing DU dust to perform maintenance and recovery operations (other than first responder), intelligence operations, or battle damage assessment. This level also includes personnel whose occupation involves fire fighting involving DU munitions.

(2) DU bioassays are administered to all personnel within this Level. Specimen collection should be done as soon as possible when the Soldier returns to his/her home station MTF. The type of personal protective equipment worn during potential DU exposure situations should be annotated in the remarks section of the DoD DU questionnaire.

(3) Medical records are annotated (e.g., DD Form 2766, sections 5 and 7 (block 20) with the requirement to collect a 24-hour urine specimen for DU bioassay.

c. Level III. Personnel with "incidental" exposures to DU.

(1) Examples of personnel in this level include individuals who have driven through smoke from a fire involving DU munitions or who have entered or climbed on or in a battle damaged vehicle on an infrequent basis (not as a first responder and not as a job requirement to enter vehicles that may have been contaminated with DU) or Soldiers, DoD Civilians and Contractors that may have been exposed to buried DU.

(2) Bioassays are not required for personnel in this level, though a physician may choose to perform one based on medical indications or on the potentially exposed individual's request. If the individual indicates that he was cut, scraped, or sustained a puncture type wound while in, on or around a potentially contaminated vehicle, then it is strongly recommended that a urine bioassay is ordered. The individual may have an embedded fragment that contains DU. NOTE: Paradoxically, this group may require more health risk communication than those in Levels I and II. Level I personnel may know they have retained fragments or were potentially exposed to a relatively high level of DU while those in Level III may have various signs and symptoms not attributable to a single cause and so feel that DU may be the causative agent.

5. Treatment considerations for wounded personnel with suspected DU exposure.

a. Follow these standard procedures when treating wounded personnel.

(1) Embedded fragments should be removed using standard surgical criteria (reference 10, Annex 1, provides guidance) except that large fragments (greater than 1 cm) should be more aggressively removed unless the medical risk to the patient is too great. The short-term consequence of retained DU fragments does not justify an aggressive approach during the early treatment of wounds. Appropriate treatment of the wound with removal of any easily accessible fragments is performed. In the care of acute wounds, surgical judgment is used to avoid the risk of harm in removal of other fragments, even when known to be DU. DU fragments may always be removed at a later date.

(2) Monitoring of the kidney function is recommended for patients who have contaminated wounds, embedded depleted uranium fragments, or who are acutely wounded. Monitoring should follow the current protocol in use by the Baltimore Veterans Affairs (VA) Depleted Uranium Program.

(a) The kidney is one of the organs most sensitive to uranium exposure. The VA protocol recommends the following kidney function tests: urinalysis, 24-hour urine for uranium bioassay, blood urea nitrogen (BUN), creatinine, beta-2-microglobulin, and creatinine clearance.

(b) Chelation therapy is not recommended based upon current estimates of depleted uranium exposure health effects.

b. Medical treatment or evaluations immediately required shall not be delayed because of the possible presence of DU on skin or clothing, for the determination of the presence of DU on a patient, or for DU bioassay specimen collection.

c. The presence of DU fragments in a patient's body presents no risks to healthcare providers (HCP) or other individuals. As with other heavy metals retained in the body, DU in all body fluids (urine, blood, sweat, saliva, and semen), tissues, and excrement

(feces) is not categorized as hazardous material waste and no special precautions related to DU are required for handling or disposal.

d. Specimens for urine DU bioassays or fragment collection are potentially obtained in a Theater of Operations in emergency situations or under medical orders even though not required by this policy. Specimens are potentially collected during redeployment/demobilization in CONUS when feasible and when the patient's clinical condition permits; however, specimen collection must occur at home station if not accomplished and documented during redeployment/demobilization.

6. Identifying personnel with potential exposure to DU during deployments. Assistant Secretary of Defense, Health Affairs (ASD (HA) guidance (reference 1, Annex 1 to this enclosure) reminds all Services of the requirement to identify potential DU exposures in various ways including unit personnel mission and post-deployment assessments. Tier 1, DU awareness training (reference 8, Annex 1) requires notification of DU-related incidents through command channels. HCPs, too, have a major role in the identification process.

a. Identifying personnel with potential exposure to DU during deployments becomes critical when potentially exposed personnel are deploying longer than when practicable after a suspected exposure. Urine specimens collected more than practicable after exposure remain valid for Level I exposures but may not support the documentation of Level II and Level III exposures to DU; however, urine specimens are collected on all Level I and Level II personnel potentially exposed to DU regardless of the length of time since exposure. A Level III potentially exposed Soldier does not require DU bioassay; however, a physician may choose to perform one based on medical indications or on the potentially exposed individual's request.

b. Indicators of potential exposure. There are several indicators of potential exposure to DU above the current peacetime occupational levels.

(1) Indicators of DU exposure that are obtained directly from the patient or the patient's field medical card include:

(a) Patient's vehicle was struck by a Kinetic Energy (KE) munition. (KE munitions are made from either tungsten or DU.)

(b) Patient's vehicle was struck by DU munitions either from US tanks or aircraft.

(c) Patient reports he saw burning fragments (like a Fourth of July sparkler) while the vehicle was being penetrated (DU is pyrophoric [i.e., may ignite spontaneously in air] and can ignite when fine particles are formed).

(d) Patient was a first responder and entered the vehicle to rescue or evacuate personnel, or retrieve sensitive material, immediately after the vehicle was struck.

(e) Patient was wounded by DU munitions. Similar to lead, tungsten, and steel, DU fragments are readily visible on x-ray. Radiography alone, however, is not sufficient to determine the presence or absence of DU. If readily available, a RADIAC meter (ANVDR-2) with the beta shield open or equivalent) may potentially monitor surgically removed fragments, wounds, burns, surfaces, or sites with suspected DU contamination or embedded fragments. This will indicate the likely presence of DU and can assist in wound cleaning or surface decontamination. Under no circumstances should medical treatment be delayed to obtain an ANVDR-2.

(2) It is unlikely that environmental measurements or dose assessments will be available in all situations, especially in combat. However, if field survey monitoring indicates the presence of radioactive material on the patient, or in the vicinity of his activities when injured, then include the survey results, the time and date of the survey, and the type and serial number of the RADIAC meter and detection probe on the field medical card or other patient records. The clinician should alert preventive medicine if other individuals have been exposed so that an exposure assessment can be performed.

c. Suspected DU exposure.

(1) If DU exposure is suspected at Health Service Support (HSS) Echelons I and II, medical personnel should annotate the Field Medical Card (DD Form 1380), Block 13 (Diagnosis) or patient's clinical record (SF 504 or other) with the statement: "SUSPECTED DEPLETED URANIUM (DU) EXPOSURE", and the time, date, and other pertinent information (e.g., in Block 9 state the circumstances of 'What was he doing when injured?"). Designated individuals or elements organic to combat and combat support units provide medical care at HSS Echelon I. This may include self-aid or buddy aid, the combat lifesaver, the combat medic, and the battalion aid station. Echelon II, for non-wounded personnel, provides medical care at the division or corps clearing station.

(2) If DU exposure is suspected at HSS Echelons III and IV, medical personnel should record the information in the medical record on the DD Form 2766 and code the information into the Ambulatory Data Management (ADM) (previously called Ambulatory Data System (ADS)) and the Composite Healthcare System (CHCS) or AHLTA (Electronic Health Record). A hospital staffed and equipped to provide resuscitation, initial wound surgery, and post-operative treatment provides the care at Echelon III. A hospital staffed for general and specialized medical and surgical care and rehabilitation for RTD provides the care at Echelon IV.

(3) For personnel who are suspected of having exposure to DU and who are not expected to re-deploy when practicable after a suspected exposure, DU exposure levels (I-III) are assigned and documented and bioassay procedures should begin for Level I and II personnel. While bioassay procedures need not be instituted in-Theater or at intermediate stops enroute to CONUS (e.g., Landstuhl, Germany, or redeployment/demobilization stations), medical records must document the need for

follow-up bioassay. Annotations in medical records must be sufficiently clear so that subsequent reviews (e.g., home station) will produce the necessary bioassay.

(4) The HCP or Primary Care Manager (PCM) at the echelon of care at which fragment and/or urine specimens are collected from Level I and II personnel will complete the DD Form 2872, DU Questionnaire and DD Form 2872-1, Health Survey or overprinted SF 600, when made available from ASD(HA). The original DU Questionnaire is placed in the individual medical record and a copy is sent along with any fragment or urine specimens going to the USACHPPM for analysis.

d. Specimens for urine DU bioassays should be obtained when operationally feasible and when the patient's clinical condition permits; however, such delays should not prevent eventual specimen collection.

e. Exposure situations include both known DU exposure, as well as potential DU exposure, based upon proximity to a blast, fire or historical incident involving a DU projectile or DU armor.

7. Post-deployment screening for actual or potential exposure to DU.

a. The initial HCP will identify Army personnel with retained metal fragments and suspected inhalation or incidental exposure to DU. The initial HCP does this by:

(1) Reviewing and ensuring the completion of the DD Form 2796 for all redeploying/demobilizing Soldiers.

(2) Identifying wounded individuals and individuals with suspected DU exposure who provided a positive response on the DD Form 2796 (Apr 03), Post-Deployment Health Assessment, to Questions 14, 17 or 18 regarding potential DU exposure.

(3) Using the short exposure assessment questionnaire provided in Annex 3 to complete the potential exposure assessment; assigning a DU potential exposure level (I, II, or III); and determining the need for bioassay for potentially exposed Soldiers. Note: If for some extenuating circumstance a DU Exposure Category is not provided by the requesting HCP nor is a Post-Deployment DU Exposure Questionnaire provided for a patient, USACHPPM is required to administratively place the patient into an exposure category (I, II, or III) based upon the results of the laboratory analysis of the submitted specimen. If additional information regarding the patient is later obtained, the administrative exposure category may be updated. The ASD (HA) is requiring this information for all patients under evaluation for DU exposure.

(4) Documenting the assigned level (Level I-III) of potential DU exposure on the DD Form 2796.

(5) Referring all individuals assigned a Level I or II potential DU exposure to their PCM at the Medical Treatment Facility (MTF) for further assessment and a 24-hour

urine uranium analysis as soon as possible. The level of exposure and referral, if indicated, will be documented on the DD Form 2796 and in the individual health record on the DD Form 2766 and transferred into the permanent medical record during reconciliation/update.

b. The HCP or PCM at the MTF at which fragment and/or urine specimens are collected from Level I and II personnel will complete the DD Form 2872, DU Questionnaire and DD Form 2872-1, Health Survey or overprinted SF 600, when made available from ASD (HA). The original DU Questionnaire is placed in the individual medical record and a copy is sent along with any fragment or urine specimens going to the USACHPPM for analysis. USACHPPM requires the DD Form 2872 and DD Form 2872-1 for each specimen (fragment or urine).

8. DU Bioassay specimen collections and management.

a. Metal fragments removed from Level 1 patients.

(1) Metal fragments, suspected to contain DU; removed from Level I patients will be considered clinical laboratory specimens and forwarded to USACHPPM for composition analysis. Information provided with the fragment specimen shall include: a completed Standard Form 557, Miscellaneous, with the ordering physician's contact information; the injury date; and the date the fragment was removed from the patient. A copy of the completed DoD DU Questionnaire will accompany all metal fragments sent to USACHPPM for analysis. USACHPPM requires the DD Form 2872 and DD Form 2872-1 for each specimen (fragment or urine).

(2) Documentation accompanying each metal fragment specimen should indicate if it is suspected that similar fragments remain embedded in the patient. Also helpful would be to know if any urine bioassays were collected from the Soldier (in an out-of-theater Medical Treatment Facility), before or after fragment removal. If urine bioassay were collected, then the dates and times of collection need to be provided.

(3) The local medical laboratory will maintain a roster of metal fragment specimens shipped with patient identification. The local medical laboratory will receive the results and is responsible for ensuring that results are entered into the individual's medical record and into the local automated clinical information system (e.g., CHCS or AHLTA). Non-DU fragments can be returned to the requesting MTF upon request. Upon completion of that action, requests for DU bioassay may be submitted on line and the results will be posted similar to current standard medical tests.

b. Urine specimens.

(1) The HCP or PCM at the supporting MTF will refer all Army personnel assigned a Level I or II DU potential exposure category to the clinical laboratory for 24-hour urine specimen collection.

(a) A 24-hour urine specimen results in a more accurate dose estimate than would result from a spot urine specimen and will provide sufficient volume for additional analyses when required.

(b) A 24-hour urine specimen is required for subsequent AMEDD and Department of Veterans Affairs (DVA) follow-up for all Level I and II exposure category personnel who are in-patients.

(c) Post-exposure urine specimens should be collected when practicable after suspected DU exposure. In accordance with DoD policy, an identified Level II Soldier will have a urine specimen collected; a Level III potentially exposed Soldier does not require DU bioassay; however, a physician may choose to perform one based on medical indications or on the potentially exposed individual's request.

(2) The local clinical laboratory will collect and manage 24-hour urine specimens according to the following procedures:

(a) The specimens will be collected using the containers specified in Annex 5.

(b) Instruct the patient to collect urine beginning after first morning void of Day 1 and end collection after first morning void of Day 2 (the next day). Document the beginning time, the ending time and the total volume of this 24-hour collection.

(c) After an aliquot is taken from it for a creatinine test, the 24-hour urine specimen will be packaged for shipment to USACHPPM.

(d) All 24-hour urine specimens for DU bioassay will be forwarded to USACHPPM following the guidance in Annex 5. Each urine specimen will be shipped with a completed Standard Form 557, Miscellaneous, a copy of the completed DOD DU Questionnaire, a copy of the Health Survey, and results of the urine creatinine analysis. Information on the patient's age, sex, height, weight, and potential exposure level (I, II or III) should also be furnished. USACHPPM requires the DD Form 2872 and DD Form 2872-1 for each specimen (fragment or urine).

(3) The laboratory will also complete a urine creatinine analysis on an aliquot from each 24-hour specimen. For measurement of urine creatinine level, the patient's age, sex, height, weight, and potential exposure Levels (I, II or III) must be provided on the laboratory request, Standard Form 557, Miscellaneous.

c. All laboratories that collect or receive specimens will maintain a registry of specimens (fragments and urine).

d. The USACHPPM will continue to provide DU bioassay and fragment analysis results and interpretations to the requesting MTFs and copies with all related documents to the DHCC and the U.S. Army Ionizing Radiation Dosimetry Center. For

Electronic Patient Records input and retrieval, the use of the Composite Health Care System I and II (CHCS I and II) has not been feasible for USACHPPM.

9. Other Heavy Metals/Alloys fragment specimen collection and management.

a. The packing and shipping requirements and instructions are contained in Annex 5. The fragment should be clearly identified as a metal fragment and NOT as a DU fragment.

b. The shipper, Level Three or higher MTF, is responsible for entering into CHCS or AHLTA the patient data, circumstances of injury, and other relevant data as prescribed by CHCS or AHLTA.

c. USACHPPM, upon receipt of the metal fragment, will record the receipt of the fragment, the shipper's organization, points of contact, and enter the data into CHCS or AHLTA.

(1) USACHPPM Directorate of Laboratory Sciences will analyze the fragment for tungsten alloy.

(2) If the fragment contains a tungsten alloy, the USACHPPM Directorate of Laboratory Sciences will forward the data to the requesting MTF for entry into the CHCS or AHLTA and archive the fragment.

d. The MEDCOM Health Policy and Services Directorate, Ancillary Health Services Division, will provide staff oversight of the clinical laboratory support for the collection, identification, and processing of extracted fragments for proper identification of the metal.

10. Laboratory procedures.

a. The USACHPPM Directorate of Laboratory Sciences (DLS) will provide Army bioassay and metal fragment identification services. All specimens (metal fragments and urine) will be sent to USACHPPM.

(1) All analyses performed by DLS are within a Quality System that is certified as compliant to ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration." All elements of the DLS Quality System are documented and conformance ensured by external audits.

(2) The DLS meets all of the requirements for and maintains the following technical certifications: Commission on Laboratory Accreditation (COLA) and Clinical Laboratory Improvement Program (CLIP) for all radiobioassay measurements for uranium. These certifications provide validation of the DLS quality processes through external third party review by trained auditors.

(3) All analytical certifications require laboratory participation in a proficiency evaluation (PE) study, if available. To meet this requirement for uranium bioassay work, DLS participates in the Oak Ridge PE program for uranium concentration in natural urine matrix.

(4) Continual improvement is an integral part of the DLS Quality System requiring periodic actions to identify trends and areas requiring improvement.

b. The USACHPPM Directorate of Laboratory Sciences will provide Army bioassay and metal fragment identification services. All specimens (metal fragments and urine) will be sent to USACHPPM.

(1) When briefed by a healthcare provider, the patient also needs to be told that the laboratory result may not be available until after the patient leaves the MTF. The patient should be given contact information for the DoD Deployment Health Clinical Center (DHCC), which he or his future healthcare provider may contact to obtain a copy of his laboratory results and interpretation.

(2) The MTFs need to maintain contact information on their patients when they leave the MTF and go to another military installation or who have left Active Duty. Use the DU Exposure Questionnaire for the patient to provide a permanent Home of Record/address, and telephone number. This information is especially important for patients who test positive for DU exposure.

c. The MEDCOM Health Policy and Services Directorate, Ancillary Health Services Division, will provide staff oversight of the clinical laboratory support for the collection, identification, and processing of urine specimens for DU bioassay, extracted fragments for proper identification of the metal, and measurement of creatinine in urine as part of the DU bioassay effort.

d. USACHPPM will report results of fragment analysis and urine bioassay results to the MTF laboratory that submitted the sample with interpretation and comparison to referent norms as appropriate. All urine bioassay results will be reported normalized to creatinine (e.g., micrograms of. uranium per nanogram creatinine) and normalized to the volume of the urine specimen (e.g., micrograms uranium per liter of urine). In addition, USACHPPM will send all remaining urine from USACHPPM analyzed specimens to Armed Forces Institute of Pathology (AFIP) for archiving. Upon closure of AFIP (BRAC recommendation) a decision on archiving samples will be made by USACHPPM.

(1) This action is completed expeditiously using USACHPPM approved internal procedures; however, if there is an unexpected increase in submitted specimens for DU bioassay, then USACHPPM may coordinate with the AFIP or the Centers for Disease Control and Prevention (CDC) for assistance.

(2) Records are maintained that support not only the analytical results but also the transmittal of those results to the requesting MTF.

e. The laboratory receiving the results from USACHPPM will ensure that the results are routed appropriately in order to be placed in the affected individual's medical record. The interpretation of laboratory results by USACHPPM Health Physics Program (with Occupational Environmental Medicine Programs assistance) accompanies the laboratory results back to the MTF including the MTF laboratory and the HCP.

f. The USACHPPM Radiologic, Classic and Clinical Laboratory Division, provides consultations on DU bioassay specimen collection, preservation, shipment; and laboratory support, contact number is (410) 436-3983 or DSN 584-3983. The USACHPPM Health Physics Program interprets laboratory results and provides bioassay interpretation reports, with assistance from the Occupational Medicine physicians in the Directorate of Occupational and Environmental Medicine. Current methodology, accepted by international and national consensus organizations [e.g., International Commission on Radiological Protection (ICRP dosimetry models)], is used by the Health Physics Program to perform internal radiation dose assessments. Health risk interpretations for both radiological and chemical health risk are provided based on the internal dose assessments and current health risk assessment guidance (e.g., Health Physics Society Position Paper). The USACHPPM Health Physics Program may be reached at (410) 436-3502 or DSN 584-3502. During non-duty hours, USACHPPM assistance may be obtained using the USACHPPM Emergency Contact Numbers at (800) 222-9698 or (888) 786-8633.

11. Health risk communication.

a. A critical component of the DoD strategy for the medical management of DU exposures is health risk communication. The HCP is the key individual in this activity. The HCP must inform the patient about the results of the DU bioassay, and ensure that this communication and the health risk assessment and its interpretation are documented in the medical record. The HCP must also discuss any need for additional medical follow-up.

b. Information is available to help the HCP effectively communicate the DU exposure assessment and its interpretation to the patient.

(1) Fact sheets for HCPs and Soldiers which explain potential DU exposure and health implications can be found at USACHPPM's web site. (NOTE: The DU Fact Sheet numbers are 65-050-0503 for the individual and 65-051-0503 for the HCP.) Other useful information includes the USACHPPM Fact Sheet entitled Urine Testing for Depleted Uranium, May 2004 and DHCC web page on DU which contains DU policies, forms, fact sheets, and clinical guidance which can be accessed at *www.pdhealth.mil/du.asp.*

(2) The DoD Health Affairs Policy 03-012 (reference 2, Annex 1) also contains information and references for HCP to help in communication with patients.

(3) Information and consultation on ionizing radiation dosimetry, dose estimation, and ionizing radiation health risk implications of DU exposure are available from the, USACHPPM Health Physics Program at (410) 436-3502 or DSN 584-3502. During non-duty hours, contact USACHPPM at (800) 222-9698 or (888) 786-8633.

(4) Information and consultation on potential chemical and radiological health risks of DU; need for medical treatment, long-term medical surveillance, and follow-up are available from the USACHPPM Environmental Medicine Program at (410) 436-2714. or DSN 584-2714.

c. Normal values.

(1) There are no current US population reference values for DU in urine. There are current US population reference levels for natural uranium.

(2) The United States Nuclear Regulatory Commission (NRC) has set an action level for uranium in urine to protect workers occupationally exposed to uranium. This urine uranium level is 15 micrograms/liter (238U), which is well above the 95th percentiles for urine uranium levels given in Centers for Disease Control and Prevention, National Center for Environmental Health, Third National Report on Human Exposure to Environmental Chemicals, National Health and Nutrition Examination Surveys (NHANES), July 2005.

(3) The NHANES III report notes that it is unknown if the population urine uranium levels reported in the NHANES 2005 data represent cause for health concern and state that more research is needed. The NHANES 2005 geometric mean is 0.009 micrograms/liter urine in the sample of the US population of 2690 individuals 6 years and older. The 95th percentile is 0.046 micrograms/liter urine in the same sub sample of the US population. If a urine specimen is found to have urine uranium levels higher that the reference population norms, or if there are other questions that might help the interpretation process, then USACHPPM may contact the ordering physician for further guidance and instruction.

(4) The National Report on Human Exposure to Environmental Chemicals is an ongoing assessment of the exposure of the US population to environmental chemicals using biomonitoring. The first national report on 27 chemicals was issued in March 2001. A second report released in January 2003 presented blood and urine levels of 116 environmental chemicals from a sample of people that represent the non-institutionalized, civilian US population during the 2-year period 1999-2000. The third report, for 148 chemicals, released in July 2005 presents updated information for uranium for the years 2001-2002. The section of this report that presents the results of uranium in urine analyses is found at http://www.cdc.gov/exposurereport/3rd/pdf/results_01.pdf.

(5) As of September 2006 USACHPPM had evaluated approximately 1747 urine uranium bioassay results from Operation Iraqi Freedom (OIF) Soldiers. The majority of these results (92.5%) have been < 50 nanograms (ng) of uranium (U) per liter (L). There were approximately 100 specimens (7.4%) with an initial value >50 ng U/L; however, only 2 (0.1%) have been confirmed as DU at that level. A value of 46 ng U/L urine is the 95th percentile for the US population aged 6 years and older as reported in the Centers for Disease Control and Prevention, National Center for Environmental Health, Second National Report on Human Exposure to Environmental Chemicals, National Health and Nutrition Examination Surveys, Jan 03 with Mar 03 revisions (NHANES). The values reported in the NHANES Report have no prognostic value; they are not associated with any adverse health effects (reference 5, Annex 1 to this enclosure).

12. Medical and other records.

a. HCP must clearly document all cases of wounded personnel with embedded metal fragments.

b. The MEDCOM Patient Administration Division (PAD) is responsible for identifying coding requirements to ensure that patients with retained fragments, post-conflict, have their medical records coded appropriately (See Annex 8 for ICD-9 codes effective date 1 October 2006). Coders will input as accurately as possible the ICD-9-CM diagnosis that best fits the patient's condition, but ensuring that the coded diagnosis indicates "retained shrapnel." PAD will provide quality assurance of coding patient encounters to ensure accuracy and completeness.

c. Patient care entries:

(1) If a Soldier, either inpatient or outpatient, has any retained fragments, the medical record, DD Form 2766 (Adult Preventive and Chronic Care Flow Sheet), item 20, will be annotated with an appropriate entry. Entries may include; embedded metal fragment, retained metal fragment, or suspected retained shrapnel. If the metal type (e.g., DU) is known at the time, this is annotated.

(2) Patients medically evacuated (both in and outpatient) require a TRACES entry in the Patient Movement Request type injury code.

(3) Patients followed up or evaluated per treatment guidelines at all MTFs must have the appropriate Standard Ambulatory Data Record entry. When the health encounter is post-deployment, the V70.5_6 is used as the primary code and the code for the deployment-related presenting problem should be placed in the secondary position. (V 70.5_6 is appropriate to use on both active duty and non-active duty records.)

d. There is no specific code for suspected inhalation exposure to DU, but this diagnosis should be annotated on the medical record, DD Form 2766, item 20. When the health encounter is post-deployment, the V70.5_6 must be used as the primary code and the code for the deployment-related presenting problem should be placed in the secondary position (V 70.5_6 is appropriate to use on both active duty and non-active duty records.)

e. The Standard Form 557, Miscellaneous, will identify whether the patient is Level I, II or 111 for suspected DU exposure, and whether the patient has a retained fragment or suspected inhalation exposure. All Standard Form 557, Miscellaneous, will have the name and contact information for the ordering physician.

f. The MTF clinical laboratory will retain a registry of all specimens (fragments and urine) sent to USACHPPM for DU analysis. The MTF requesting laboratory and the requesting HCP will receive the results in hardcopy. The local medical laboratory is responsible for ensuring that results are entered into the individual's medical record and into the local automated clinical information system (e.g., CHCS or AHLTA).

g. A DoD DU Questionnaire and Health Survey will be completed for all personnel who will provide either fragment or urine specimens for bioassays. The original completed DoD DU Questionnaire and Health Survey will be placed in the individual medical record and a copy will accompany any specimens sent to USACHPPM for analysis.

13. Medical follow-up. The need for subsequent DU bioassays for medical follow-up is based upon uranium levels found in the initial and subsequent specimen(s). Follow-up exams and bioassay are the responsibility of the PCM. This care is provided in accordance with the Post-Deployment Health Clinical Practice Guideline (reference 17, Annex 1. In addition, consultation with USACHPPM is obtained during the course of patient assessment.

14. Reporting and archiving.

a. The USACHPPM will archive and will report results of fragment analysis and urine bioassay results to the MTF laboratory that submitted the specimen with interpretation and comparison to referent norms as appropriate.

b. The USACHPPM will send dose interpretation and laboratory results to the US Army Radiation Standards and Dosimetry Laboratory, Ionizing Radiation Dosimetry Branch, TMDE, Redstone Arsenal, AL, for archiving. Copies for members of the other Military Services will also be furnished, if identified, to their appropriate Dosimetry Center, for archiving.

c. The USACHPPM will forward a copy of all DU assessment and testing results to the DoD Deployment Health Clinical Center (DHCC) at Walter Reed Army Medical Center. The DHCC serves as the central archive for all DoD patient information related

to DU exposure. testing, and follow-up for active duty and reserve personnel. PCMs will forward copies of all referrals and narrative summaries from DU follow-up care to the DHCC for archiving.

D. DoD requires a semi-annual progress report for Operation Iraqi Freedom. This report provides cumulative data on both urinalyses and fragment analyses and is a composite of input from USACHPPM and the Regional Medical Commands (RMC). For example, the RMC may be asked:

(1) How many personnel have been categorized as potentially exposed by Level?

(2) How many 24-hour urine specimens did you collect? Were they all sent to CHPPM?

(3) How many results have you received?

(4) How many results have been placed in the medical records?

(5) How many patients have received the results?

There is every reason to believe that DU summary reports will be required in future operations.

15. Training.

a. All HCPs (Physicians, Physician Assistants, Nurse Anesthetists, and Nurse Practitioners) will complete the Tier 1 DU General Awareness Training and the AMEDD Center and School's developed training on procedures to implement this policy. Newly assigned providers will complete the Army one-time DU Awareness Training and the AMEDD Center and School's training on procedures to implement this policy within three months of assignment to the first duty station. References 6 thru 8, Annex 1 to this enclosure provide information on how to obtain support materials for DU Awareness Training. Training on procedures to implement this policy will be made available once developed by the AMEDD Center and School.

b. HCPs will repeat the training on procedures to implement this policy at least biennially.

c. The US Army Medical Command's Directorate/Assistant Chief of Staff, Operations will track the training of HCP and provide an annual report on the status of training within the US Army Medical Command.

Annex 1 - REFERENCES
Annex 2 - RESPONSIBILITIES FOR ARMY MEDICAL PERSONNEL
Annex 3 - SHORT QUESTIONNAIRE TO ASSESS POTENTIAL DU EXPOSURE

Annex 4 - DOD DU QUESTIONNAIRE AND DOD HEALTH SURVEY QUESTIONNAIRE
Annex 5 - PACKING AND SHIPPING REQUIREMENTS FOR DU BIOASSAY SPECIMENS
Annex 6 - HEALTHCARE PROVIDER CHECKLIST AND PROCEDURES FOR DU MEDICAL MANAGEMENT
Annex 7 - USE OF BIOASSAY IN SUSPECTED DU EXPOSURE SITUATIONS
Annex 8 - DEPLETED URANIUM EXPOSURE MEDICAL MANAGEMENT PROCESS FLOW