November 23, 2005

Acquisition

Contract Award and Administration of Coupling Half Quick Disconnect (D-2006-027)

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Acronyms

ATSD(NCB)	Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
CHQD	Coupling Half Quick Disconnect
Cr6	Hexavalent Chromium
DCMA	Defense Contract Management Agency
DLA	Defense Logistics Agency
ECBC	Edgewood Chemical and Biological Center
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
JPEO-CBD	Joint Program Executive Office for Chemical and Biological Defense
JSGPM	Joint Service General Purpose Mask
TACOM	Tank-automotive and Armaments Command
TDP	Technical Data Package
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine

INSPECTOR GENERAL
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ARLINGTON, VIRGINIA 22202-4704

November 23, 2005

MEMORANDUM FOR AUDITOR GENERAL, DEPARTMENT OF THE ARMY
JOINT PROGRAM EXECUTIVE OFFICER, JOINT PROGRAM OFFICE FOR CHEMICAL AND BIOLOGICAL DEFENSE

SUBJECT: Report on Contract Award and Administration for Coupling Half Quick Disconnect (Report No. D-2006-027)

We are providing this report for review and comment. We performed the audit in response to a congressional request. We considered comments from the Joint Program Executive Office for Chemical and Biological Defense, Edgewood Chemical and Biological Center, and the Tank-automotive and Armaments Command when preparing the final report.

DoD Directive 7650.3 requires that all recommendations be resolved promptly. Comments from the Tank-automotive and Armaments Command were responsive to the recommendations. The Joint Program Executive Office for Chemical and Biological Defense and Edgewood Chemical and Biological Command comments were partially responsive. We request additional comments on Recommendations 1.a. and 2.a. by January 6, 2006.

If possible, please send management comments in electronic format (Adobe Acrobat file only) to Audcm@dodig.mil. Copies of the management comments must contain the actual signature of the authorizing official. We cannot accept the / Signed / symbol in place of the actual signature. If you arrange to send classified comments electronically, they must be sent over the SECRET Internet Protocol Router Network (SIPRNET).

We appreciate the courtesies extended to the staff. Questions should be directed to Ms. Kimberley A. Caprio at (703) 604-9202 (DSN 664-9202) or Ms. Rhonda L. Ragsdale at (703) 604-9347 (DSN 664-9347). See Appendix D for the report distribution. The audit team members are listed inside the back cover.

Richard B. Dolff

Francis E. Reardon
for Deputy Inspector General
for Auditing

Department of Defense Office of Inspector General

Report No. D-2006-027 **November 23, 2005**
(Project No. D2005-D000CB-0035)

Contract Award and Administration for Coupling Half Quick Disconnect

Executive Summary

Who Should Read This Report and Why? The program office and users of the M40, M42, M45, and MCU-2AP series protective masks should read this report. The report discusses the use of chromium VI (Cr6) in the drinking assembly of the protective masks and any potential associated health risks.

Background. This audit was performed in response to a congressional request by Senator Charles E. Grassley to determine whether the Army properly awarded and administered contracts for the coupling half quick disconnect (CHQD), and to determine whether the Army contracted for a replacement to the CHQD with knowledge that it is made with hexavalent chromium, the toxic substance commonly known as Cr6. In addition, Senator Grassley asked if a prior incident with BondCote Corporation, a fabric manufacturer that used Cr6, showed a pattern of abuse in contracting authority. BondCote Corporation was not involved in CHQD replacements.

The CHQD is a critical component of the drinking assembly on the M40, M42, and M45 series protective masks used by the Army and the Marines as a part of their chemical and biological protective suits. The Navy and Air Force also use approximately 112,000 M40, M42, and M45 series protective masks, but primarily use the MCU-2AP series protective masks.[*] Each Military Service has a program management office that manages the acquisition and distribution of the Services' selected protective mask. The Joint Program Executive Office for Chemical and Biological Defense operates as coordinator between the Military Services to provide technical and functional integration across the chemical and biological defense programs.

In fall 2003, the Army Chemical School, Fort Leonard Wood, Missouri, identified leaks in several new M40 series protective masks. The U.S. Army Edgewood Chemical and Biological Center, Edgewood, Maryland, evaluated and determined that the leaks were a result of cracks in the CHQD that occurred because the subcontractor did not fully comply with the technical data package when manufacturing the CHQD. In November 2003, the U.S. Army Deputy Chief of Staff (Logistics), based on the recommendation of the Director, Edgewood Chemical and Biological Center, determined the cracks and leaks could potentially be harmful to the soldiers by subjecting them to chemical and biological substances and decided the Military Services should replace all 1.25 million CHQDs in use on the M40, M42, and M45 series protective masks. In response to that decision, the Tank-automotive and Armaments Command, responsible

[*] The MCU-2AP series protective masks have a drinking assembly similar to the CHQD and use a sealant that has Cr6.

for mask procurements, awarded three contracts from January 2004 through July 2004 to ILC Dover, Frederica, Delaware, for the procurement of the CHQD replacements for a total cost of $4.8 million.

Results. The Tank-automotive and Armaments Command properly awarded and the Defense Contract Management Agency properly administered three contracts for the coupling half quick disconnect replacements. The Tank-automotive Armaments Command required the contractor to manufacture the CHQD replacements with Cr6 sealant, which the Army has identified as durable and resistant to corrosion. However, Cr6 is a toxic substance. The Edgewood Chemical and Biological Center conducted tests and the U.S. Army Center of Preventative Medicine evaluated the test data on the CHQD replacements. They determined the use of Cr6 did not create an adverse health risk to the soldier. In addition, an independent Environmental Protection Agency evaluation concluded that exposure to Cr6 through ingestion would not cause adverse health risks. However, contractor employees producing the CHQD could be at potential risk from inhaling Cr6 during the production process. Using an alternative product, such as the Joint Service General Purpose Mask, would eliminate that risk, as well as comply with the Pollution Prevention Act of 1990 which mandates the reduction of toxins in manufacturing. See the Finding section for a discussion of tests performed on the CHQD replacements. See Appendix C for discussion of the contracts with BondCote Corporation and the contracts awarded to ILC Dover for the CHQD replacement.

The Director, Edgewood Chemical and Biological Center needs to identify a non-sodium-dichromate alternative to replace the Cr6 sealant in the CHQD. The Joint Program Executive Officer for Chemical and Biological Defense, in coordination with Edgewood Chemical and Biological Center, Naval Surface Warfare Center, and Air Force Materiel Command, needs to develop and implement a plan to expedite the replacement of the M40, M42, M45, and MCU-2AP series protective masks with the Joint Service General Purpose Mask. Until the replacement plan can be developed and implemented, the Joint Program Executive Officer for Chemical and Biological Defense needs to coordinate with the Edgewood Chemical and Biological Center, Naval Surface Warfare Center, and Air Force Materiel Command to identify a non-sodium-dichromate alternative to replace the Cr6 sealant in the drinking assembly of the M40, M42, M45, and MCU-2AP series protective masks.

Finally, ILC Dover provided the Army with defective CHQDs, but Tank-automotive and Armaments Command has not yet sought reimbursement or restitution for the defective CHQDs. Therefore, the Tank-automotive and Armaments Command needs to pursue obtaining reimbursement from ILC Dover for the cost to replace the defective CHQDs from the original contract. The potential reimbursement from ILC Dover for the cost of the defective CHQDs is approximately $3.3 million. See Finding section of the report for the detailed finding and recommendations.

Management Comments and Audit Response. The Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs provided comments for the Joint Program Executive Office for Chemical and Biological Defense and the Director, Edgewood Chemical and Biological Center. He partially concurred with the recommendation for the Joint Program Executive Office for Chemical and Biological Defense to work with Director, Edgewood Chemical and Biological Center to expedite replacing the M40, M42, and M45 series protective masks with the Joint Service General Purpose Mask. He also partially concurred with the recommendation for the Joint Program Executive Office for Chemical and Biological Defense to work with Chemical

and Biological Support at the Naval Surface Warfare Center and the Air Force Materiel Command to expedite the replacement of the MCU-2AP series protective mask with the Joint Service General Purpose Mask. He stated that because of operational testing requirements of the CHQD, the production schedule could not be compressed. We request that when the Joint Service General Purpose Mask has undergone operational testing requirements and received the approval to move into full rate production, the Joint Program Executive Office for Chemical and Biological Defense and Edgewood Chemical and Biological Center evaluate whether the estimated production rates can be increased.

The Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs partially concurred with the recommendation to conduct research into a nontoxic sealant alternative and, if a viable alternative is identified, to revise the technical data package to reflect the alternative. He stated that the current technical data package did not result in either toxicity problems or health risks to the soldier, but agreed that if research identifies a viable alternative to the sodium dichromate coating, the technical data package will be revised.

The Chief of Staff, Tank-automotive and Armaments Command concurred with the recommendation to pursue an equitable replacement or reimbursement of the defective CHQDs and on September 9, 2005 issued a letter to ILC Dover requesting reimbursement of approximately $3.3 million for the defective CHQDs. The Chief of Staff, Tank-automotive and Armaments Command nonconcurred with the recommendation to evaluate the contracting officer's decision to not take immediate action to seek restitution for the defective CHQDs, stating that management had already evaluated the actions of the contracting officer and found them to be appropriate.

The Joint Program Executive Office for Chemical and Biological Defense and Edgewood Chemical and Biological Center comments were generally responsive; however, we are requesting both organizations to consider evaluating the production rates for potential increases once they complete operational testing requirements and receive a full rate production decision for the Joint Service General Purpose Mask. Comments on all other recommendations were responsive. We request that the Joint Program Executive Office for Chemical and Biological Defense and Edgewood Chemical and Biological Command provide comments on the final report by January 6, 2006. A discussion of management comments is in the Finding section of the report and the complete text is in the Management Comments section.

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Background

We performed this audit in response to a congressional request from Senator Charles E. Grassley. Senator Grassley requested that the DoD Office of Inspector General determine whether the Army properly awarded and administered contracts for the coupling half quick disconnect (CHQD). Senator Grassley also requested that the DoD Office of Inspector General determine whether the Army contracted for CHQD replacements knowing they are made with hexavalent chromium, a toxic substance commonly called chromium VI (Cr6). In addition, Senator Grassley asked if a prior incident with another manufacturer of products using Cr6, BondCote Corporation,[1] showed a pattern of abuse in contracting authority. BondCote Corporation was not involved in CHQD replacements. See Appendix B for a copy of Senator Grassley's request. See Appendix C for discussion of the relationship between contracts with BondCote Corporation and the contracts awarded to ILC Dover for the CHQD replacement.

Coupling Half Quick Disconnect. The CHQD is a critical component of the drinking assembly on the M40, M42, and M45 series protective masks. The CHQD allows soldiers to drink fluids from a canteen while wearing the protective mask. As of March 2004, DoD had approximately 1.4 million M40, M42, and M45 series protective masks in service. Both the Army and the Marine Corps exclusively used the M40, M42, and M45 series protective masks as a part of their chemical and biological protective suits. The Navy and Air Force primarily use the MCU-2AP series protective masks, but also use approximately 113,000 M40, M42, and M45 series protective masks. Figure 1 shows an M40 series protective mask, the CHQD, and where the CHQD fits into the protective mask.

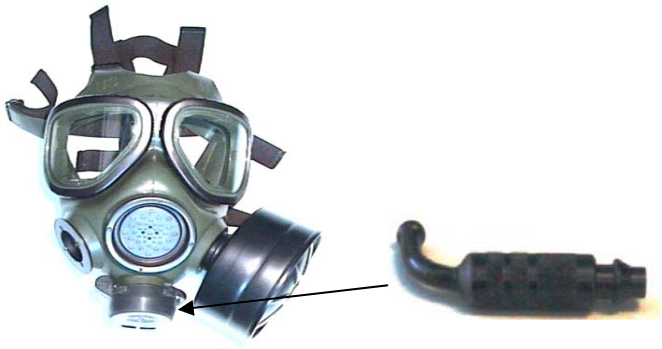

Figure 1. M40 Series Protective Mask and CHQD

The Army operates as the executive agent responsible for the acquisition and distribution for the M40, M42, and M45 series protective masks within DoD. Specifically, the U.S. Army Edgewood Chemical Biological Center (ECBC), Edgewood, Maryland is the program management office for the M40, M42, and M45 series protective masks including the CHQD. As the program management

[1] BondCote Corporation, a defense contractor, made false certifications about the use of Cr6 in the production of fabrics used to manufacture tents and vehicle covers used by soldiers.

office, ECBC is responsible for providing development, test, logistical, and life-cycle support for the M40, M42, and M45 series protective masks and CHQD replacements. The contracting team located at the United States Army Tank-automotive and Armaments Command (TACOM), Rock Island Arsenal, Illinois, is responsible for providing contracting support for the M40, M42, and M45 series protective masks and CHQD. The Defense Contract Management Agency (DCMA) is the contract administrator responsible for the quality assurance and quality control processes for the M40, M42, and M45 series protective masks, as well as the CHQD replacements. DCMA responsibilities also included conducting the Government acceptance tests for the protective masks and the CHQD. ILC Dover, Incorporated (ILC Dover), Frederica, Delaware, is the contractor for the M40 and M42 series protective masks as well as the CHQD. As the prime contractor to produce the original masks, ILC Dover subcontracted to Age King to manufacture the CHQD for the M40 and M42 series protective masks (contract DAAE20-01-D-0085).

Senator Grassley's request did not include the Navy and Air Force protective mask programs; however, the Navy and Air Force use the M40, M42, and M45 series protective masks and ECBC procured the protective masks for the Navy and Air Force. The Navy and Air Force program management offices are the Chemical and Biological Support, Naval Surface Warfare and the Air Force Materiel Command, Warner Robins Air Logistics Center, respectively. These program management offices manage the acquisition and distribution of MCU-2AP series protective masks within the Navy and Air Force.

In September 2002, the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) was established as the single point for research, development, acquisition, fielding, and life-cycle support for chemical and biological defense equipment within DoD. The JPEO-CBD coordinates with ECBC, Chemical and Biological Support, Naval Surface Warfare and the Air Force Materiel Command, Warner Robins Air Logistics Center to provide technical and functional integration across the chemical and biological defense programs.

CHQD Replacements. In fall 2003, while conducting quality tests, the Army Chemical School, Fort Leonard Wood, Missouri, identified leaks in several new M40 series protective masks. The Army Chemical School notified ECBC, which performed tests on the defective M40 series protective masks and determined the leaks were a result of cracks in the CHQD. ECBC determined the leaks and cracks occurred because Age King did not comply with the requirements of the technical data package (TDP) in manufacturing the CHQDs. Subsequently, ECBC required all personnel with M40, M42, or M45 series protective masks to perform a field test to determine whether their CHQDs showed signs of leaks.

The Director, ECBC determined that the cracks in the CHQD could potentially be harmful to the soldiers by subjecting them to chemical and biological agents. Based on the ECBC Director's recommendation, the Army Deputy Chief of Staff (Logistics) decided that rather than try to identify the defective CHQDs, the Military Services should replace all 1.4 million CHQDs in use on the M40, M42, and M45 series protective masks. In response to the decision of the Army Deputy Chief of Staff (Logistics), TACOM awarded three contracts from January 2004

through July 2004 for the procurement of 1.25 million[2] CHQD replacements for $4.8 million. TACOM awarded all three contracts to ILC Dover. ILC Dover manufactured all CHQD replacements in-house and did not use Age King as a subcontractor.

For each contract, the TDP required the use of sodium dichromate (which contains Cr6) to seal the aluminum parts of the CHQD replacements because of its hardness and anticorrosive properties. According to ECBC engineers, the anticorrosive properties of Cr6 reduce the risk of the CHQD developing cracks and leaks that could expose personnel to chemical or biological agents. The Army approved the TDP in 1983 and had not revised or updated the requirement to use Cr6.

Cr6 Concerns. In May 2004, TACOM received a letter from a contractor bidding on the third contract regarding the TDP requirement to use Cr6 as the sealant on the CHQD replacements. Specifically, the contractor stated that Cr6 was a toxic substance and its use would pose a health risk to the soldier. TACOM notified ECBC of the concern and ECBC designed and performed tests to determine whether the use of Cr6 on the CHQD replacement posed a health risk to the soldier. United States Army Center for Health Promotion and Preventive Medicine (USACHPPM)[3] evaluated the data from the ECBC test and concluded that the level of Cr6 exposure was minimal and not a health risk to the soldiers.

Cr6. Cr6, a component of sodium dichromate, is used to coat and seal materials to reduce corrosion. In 1986, the Environment Protection Agency (EPA) defined Cr6 as a carcinogen that can be harmful to humans in some cases. The EPA indicated that Cr6 may cause cancer when inhaled but may not be harmful when ingested. As of July 2005, the EPA had not made a firm determination of whether Cr6 ingested through food or drinking water may cause cancer; however, the EPA has established acceptable consumption levels of Cr6 in drinking water as part of the Drinking Water Standards.

Objectives

Our objective was to determine whether the contracting officials at TACOM properly awarded and administered contracts for the CHQD replacement manufactured with Cr6. Specifically, we determined whether the contracting officials complied with DoD policies and regulations. In addition, we evaluated whether the use of Cr6 in the CHQD would pose a health risk to the soldiers. We also determined whether the contracts awarded to ILC Dover and previous contracts awarded to BondCote show a pattern of abuse of contract authority. See

[2] The three contracts reviewed as a part of this audit accounted for 1.25 million of the total 1.4 million inventories of CHQDs being replaced. The remaining CHQDs were procured from the Pine Bluff Arsenal, Arkansas.

[3] USACHPPM provides worldwide scientific expertise and services and related laboratory and toxicology services.

Appendix A for a discussion of the scope and methodology. See Appendix C for discussion of the relationship between contracts with BondCote Corporation and the contracts awarded to ILC Dover for the CHQD replacement.

We did not review the management control program because the audit scope was limited to the congressional request on the award of the FY 2004 CHQD replacement contracts and whether DoD was approving contracts for products made with Cr6.

Procurement and Manufacture of the Coupling Half Quick Disconnect

TACOM properly awarded and DCMA properly administered three contracts for the CHQD replacements for M40, M42, and M45 series protective masks. The CHQD replacements were manufactured with Cr6, a toxic substance. The CHQDs were manufactured with Cr6 because:

- the ECBC technical specification included in the TDP required its use, and
- Army testing determined that the level of Cr6 exposure would not cause adverse health risks.

Army testing and an independent EPA evaluation indicated that exposure to Cr6 from the CHQD would not cause adverse health risks to the soldier; however, the masks do expose the soldier to limited quantities of Cr6. Further, the workers producing the CHQD could potentially be at risk from exposure to Cr6, which is inconsistent of the Pollution Prevention Act of 1990.

Criteria

To evaluate the TACOM contract award and DCMA's administration process, we used the following criteria from the Federal Acquisition Regulation (FAR).

- FAR 7.104, "General Procedures," provides the general procedures the contracting officials should follow to ensure they plan the acquisition in the most effective, economical, and timely manner possible. FAR 7.104 states acquisition planning should begin as soon as the agency need is identified.
- FAR 6.302-2, "Unusual and Compelling Urgency," states that when an agency's need for the supplies or services is of such an unusual and compelling urgency that the Government would be seriously injured unless the agency is permitted to limit the number of sources from which it solicits bids or proposals, full and open competition need not be provided for. FAR 6.302-2 allows agencies to preclude using full and open competition if a delay in award of a contract would result in serious injury, financial or other, to the Government. Contracts awarded using the unusual and compelling urgency authority should be supported by written justification and approval prior to the award of the contract.
- FAR 6.303, "Justifications," states that a contracting officer shall not commence negotiations or award any contract without providing for full and open competition unless the contracting officer justifies the use of

such actions in writing. The justification should contain sufficient facts and rationale to justify the use of the specific authority being used for other than full and open competition.

- FAR 6.304, "Approval and Justification," requires the justification for other than full and open competition be approved and signed by the contracting officer for proposed contracts not exceeding $500,000 and by the competition advocate for proposed contracts not exceeding $10 million.

- FAR 15.3, "Source Selection," states that the award decision is based on evaluation factors and significant subfactors that are tailored to the acquisition.

- FAR 52.246, "Inspections," requires contractors to perform inspections and tests to substantiate that the manufactured part is produced correctly.

Contract Award and Administration

Contract Award and Administration. TACOM properly awarded and DCMA properly administered three contracts for CHQD in accordance with DoD policies and regulations. TACOM awarded three contracts from January 2004 through July 2004 for 1.25 million CHQD replacements for $4.8 million. Specifically, TACOM awarded the following three firm-fixed-price contracts for the CHQD replacements to ILC Dover.[4]

- On January 16, 2004, contract W52H09-04-C-0055 was awarded for 100,000 CHQD replacements for $394,000, under limited competition, to meet the initial urgent need.

- On April 7, 2004, contract W52H09-04-C-0113 was awarded for 250,000 CHQD replacements for $985,000, under a sole-source selection, to continue meeting the urgent need while providing lead time to plan a fully competitive solicitation.

- On July 7, 2004, contract W52H09-04-C-0165 was awarded for 900,000 CHQD replacements for $3,456,000, under full and open competition.

Appropriateness of Contract Award. TACOM properly awarded the three contracts for the CHQD replacements. In November 2003, ECBC notified TACOM of the critical and urgent need to replace the defective CHQDs to preclude potential serious harm to soldiers in a chemical or biological environment because of the leaks. TACOM immediately began planning a procurement strategy to procure 1.25 million CHQD replacements. As required

[4] Under the replacement contracts, ILC Dover manufactured the CHQDs and did not subcontract the work as occurred under the original CHQD contracts.

by FAR 7.104, TACOM developed an acquisition plan that fully identified the ECBC requirements and identified appropriate methods of procurement to meet the requirement.

TACOM awarded two CHQD replacement contracts, one in January 2004 and one in April 2004, using other than full and open competition. TACOM justified the procurements in accordance with FAR 6.302 and FAR 6.303. The Director, ECBC declared the need for CHQD replacements as critical and urgent because failure to replace cracking and leaking CHQDs could result in serious harm or injury to the soldiers by subjecting them to chemical and biological agents. TACOM justified the use of other than full and open competition in writing, certified the accuracy and completeness of the justification, and obtained the approval of the both the contracting officer and competition advocate as required by FAR 6.304.

TACOM awarded the July 2004 contract for 900,000 CHQD replacements in accordance with FAR 15.3. TACOM received eight proposals in response to the solicitation for the CHQD replacements. TACOM defined the source selection criteria in the solicitation, stating that the proposals would be rated on the following three factors, in order of importance: past performance, price, and small business participation, with past performance and price combined to be more important than small business participation. Based on a review of the source selection authority decision documents, TACOM consistently applied the source selection criteria as defined in awarding the contract to ILC Dover.

Appropriateness of Contract Administration. DCMA properly administered the three CHQD replacement contracts in accordance with FAR 52.246 by ensuring ILC Dover performed required inspections and tests. Specifically, DCMA:

- established quality assurance and quality control processes for ILC Dover to perform;
- conducted daily inspections prior to Government acceptance;
- monitored the ILC Dover test results; and
- verified that the tested CHQD replacements did not leak and would function properly when used.

Based on a review of inspections reports and observations of the quality assurance and quality control processes, the testing, monitoring, and verifying performed by DCMA demonstrated that ILC Dover performed the testing in accordance with agreed upon procedures.

Use of Cr6 in CHQD

Since 1983, the TACOM TDP has required the use of Cr6 as a sealant to prevent corrosion in the CHQD. Specifically, the TDP required the manufacturer to dip

the aluminum components in a sodium dichromate bath, which contains Cr6. The Cr6 provides durability and resistance to corrosion; this protection was vital to preventing leaks that would have exposed users to harmful chemical and biological agents that would jeopardize the life of the user. In 1983, USACHPPM gave the original CHQD design a toxicology clearance that declared it safe for the intended use. The Army did not perform any additional toxicology tests on the CHQD until 2004.

Acceptable Levels of Cr6 in Drinking Water. The EPA designated Cr6 as a carcinogen in 1986. Specifically, EPA determined that when inhaled, Cr6 may cause cancer. However, the EPA determined that when Cr6 is ingested, which is the type of exposure possible for users of CHQDs, it is reduced to chromium III, which is a naturally occurring element in the body. Given this evidence, the EPA established acceptable levels of Cr6 as part of drinking water standards. The EPA "Drinking Water Standards and Health Advisories," winter 2004, outlines the amount of chemicals allowed in drinking water in terms of recommended daily consumption based on an average weight[5] of an individual over a period of seventy years. EPA drinking water standards state a person of average weight can drink up to 0.003 milligrams of Cr6 per day for a lifetime with no health risks.

ECBC Testing and USACHPPM Evaluation of the CHQD. From May 2004 through December 2004, after concerns arose about potential health risks associated with the use of Cr6 on the CHQD replacement, ECBC performed a series of tests on the CHQD replacement. USACHPPM analyzed the results of the tests and prepared the report outlining the tests results and conclusions. USACHPPM used the EPA Drinking Water Standards for Cr6 as the baseline to evaluate the following test results.

- ECBC performed the first test in May 2004 to determine whether the CHQD released Cr6 when submerged in water for seven continuous days. Because the CHQD did release Cr6, ECBC performed two additional tests to more closely simulate how a soldier would use the CHQD replacement in the field.

- ECBC performed the second test in August 2004 to simulate actual field conditions by drawing approximately five liters of room temperature water of different acidity levels through the CHQD replacement each day for seven days.

- ECBC performed the third test in December 2004 to simulate worst-case scenario field conditions. This test drew approximately five liters of extremely hot water (120 °F) through the CHQD replacement each day for three days.

Summary of Tests. On December 7, 2004, USACHPPM issued a combined test report. USACHPPM concluded from the first test that the CHQD replacement did release Cr6 when submerged in water; however, the soldier's exposure to Cr6 would be brief and intermittent. The second and third tests showed the Cr6 released from the CHQD replacement during simulated field conditions was well

[5] The EPA defined an average weight as 154.3 pounds.

below the amount allowed under EPA Drinking Water Standards. The amount of Cr6 released from the CHQD during tests ranged from 17 percent to 33 percent[6] of the levels of Cr6 allowed by the EPA Drinking Water Standards. Based on the test results, ECBC determined the amount of Cr6 released did not present a health risk and decided to continue manufacturing the CHQD with Cr6. Figure 2 shows the results from the second and third ECBC tests and the EPA Drinking Water Standards established for Cr6.

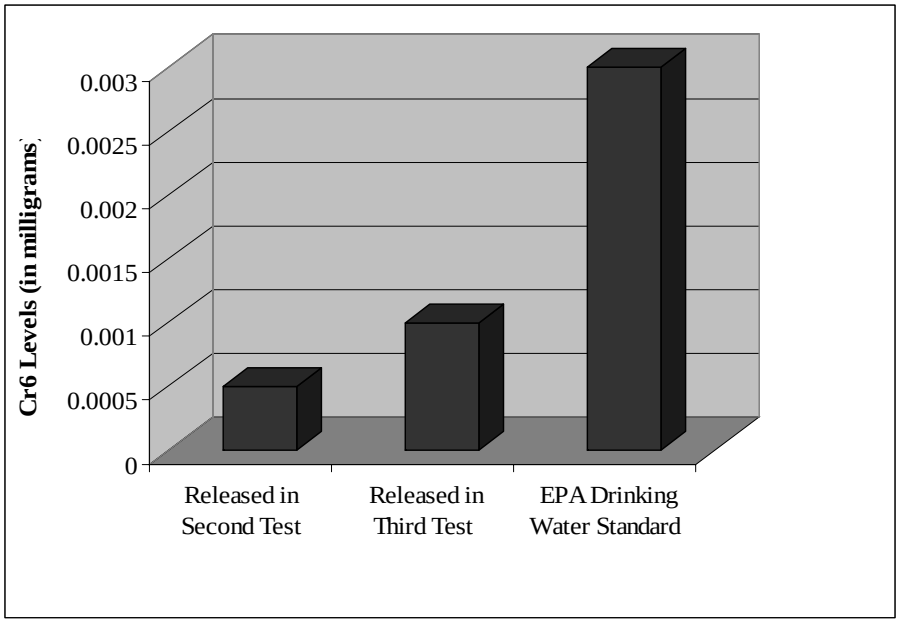

Figure 2. Results of Testing on the CHQD

Independent Evaluation of USACHPPM Test on CHQD. We obtained an independent evaluation of the tests performed by ECBC from an EPA Office of Inspector General Environmental Scientist (Environmental Scientist). The Environmental Scientist evaluated the human health risk posed by ingesting Cr6 through drinking water from the CHQD replacement. The Environmental Scientist concluded the following:

> the observed hexavalent chromium drinking water concentrations generated by the use of the CHQD assembly do not pose a significant cancerous or non-cancerous health risk to the user. Furthermore, the immediate replacement in the field of the CHQD assembly is not required based on health considerations. The CHQD assembly can be used by the Army for the life-cycle of the device. However, any future Army procurements of the CHQD assembly should be re-engineered to replace the current dichromate coating with a less toxic or non-toxic coating that would protect the health of the workers by eliminating the well known cancerous hazard of inhaling hexavalent chromium during extraction of the ore and/or manufacturing of the part.

[6] The amount of Cr6 released during the second and third test was 0.00050 (0.00050/0.003 = 17%) and 0.0010 (0.0010/0.003 = 33%), respectively.

In addition to the Environmental Scientist evaluation, DoD Office of Inspector General, Technical Assessment Division, Mechanical Engineering Division, Engineer, concurred with the methodology, test procedures, results, and conclusions derived from the ECBC testing and USACHPPM analysis of the CHQD replacement.

The independent evaluations concurred with the ECBC test results that the soldiers' exposure to Cr6 when using the CHQD replacement would not cause adverse health risks. However, the Environmental Scientist stated that the CHQD assembly poses a human health risk to the workers who obtained the Cr6 from the ore and the workers who coat the part because Cr6 can cause cancer when inhaled.

Navy and Air Force Protective Masks

Although Senator Grassley's request did not include the Air Force and Navy protective mask programs, the Navy and Air Force use approximately 113,000 M40, M42, and M45 series protective masks. Therefore, we conducted limited audit work to determine whether the Navy and Air Force were made aware of the potential for cracks in the CHQD and to determine whether the Navy and Air Force CHQD inventories were replaced as part of the CHQD replacement efforts conducted by ECBC. The CHQDs for the 113,000 M40, M42, and M45 series protective masks were replaced as part of the Army's procurement of 1.25 million CHQD replacements.

The Navy and Air Force primarily use the MCU-2AP series protective mask. According to the Chemical and Biological Support at the Naval Surface Warfare Center and the Air Force Materiel Command at Warner Robins Air Logistic Center, the drinking assembly on the MCU-2AP is similar to the CHQD. The TDP for the MCU-2AP shows that the drinking assembly on the MCU-2AP series protective mask requires the use of a sealant that contains Cr6. We did not evaluate whether the Navy and the Air Force tested the drinking assembly, but we did identify that the Navy and Air Force did not plan on replacing the drinking assembly on the MCU-2AP series protective masks.

Alternative to Using Cr6 Mask

As part of its efforts to modernize and integrate the nuclear, biological, and chemical protective equipment, the Military Services are planning to transition from the M40, M42, M45, and MCU-2AP series protective masks to the Joint Service General Purpose Mask (JSGPM). The JSGPM does not use Cr6 in the drinking assembly. The JSGPM is a lightweight protective mask system incorporating state-of-the-art technology to protect U.S. forces from anticipated threats. According to the JPEO-CBD, the JSGPM is made of heavy rubber and plastic and provides a 50 percent performance improvement over the M40, M42, M45, and MCU-2AP series protective masks in key areas such as breathing resistance, weight, field of view, comfort, and protection. Because the JSGPM

and its drinking assembly are made of heavy rubber and plastic, the drinking assembly does not require the use of a sealant such as the one used on the CHQD replacement; thus, the JSGPM is a viable alternative to the masks that use the CHQD.

The JPEO-CBD manages the design, acquisition, and fielding of the JSGPM. In March 2005, the JPEO-CBD received approval to start low rate initial production. Starting in January 2006, the contractor, Avon Rubber, will produce the JSGPM at a rate of 8,000 to 10,000 per month. As of June 2004, the fielding schedule shows initial JSGPM fielding will begin in September 2006, with final fielding in 2018. After the initial fielding, the JPEO-CBD plans to field the JSGPM at a rate of 100,000 to 200,000 per year depending on program funding levels. The JSGPM offers a viable alternative to the M40, M42, M45, and CU-2AP series protective masks used by the Military Services.

Opportunity to Transition From Cr6

As of July 2005, the Army continues to procure M40 and M42 series protective masks with the CHQD that contains Cr6. The current protective mask contract with ILC Dover provides for the procurement of up to approximately 141,000 protective masks through 2006, depending on the demand from the Military Services. The Environmental Scientist recommended that the Army reengineer the CHQD for current and future procurements to protect the health of the manufacturing workers of the CHQD by eliminating the well-known cancerous hazard of inhaling Cr6. The MCU-2AP series protective mask (used by the Navy and Air Force) poses the same concerns.

Reengineering the CHQD to use a non-sodium-dichromate sealant not only will reduce the potential health risk to the workers who obtain the ore or coat the parts, but also will assist the Military Services in addressing the provisions of Public Law 101-508, "Pollution Prevention Act of 1990." The Pollution Prevention Act of 1990, section 6602(b), "Policy," mandates the reduction of toxins in the manufacturing processes when feasible. Identifying a non-sodium-dichromate sealant for the CHQD would allow the Military Departments to adhere to the provisions of the Pollution Prevention Act of 1990 when procuring the CHQD.

ECBC, Chemical and Biological Support, and Air Force Materiel Command should research opportunities to reengineer the drinking assemblies of the protective mask to eliminate the sodium dichromate coating in the drinking assemblies. This should occur before future procurements are done. As of April 2005, the ECBC, Navy Chemical and Biological Support, and Air Force Materiel Command had not developed a plan to identify an alternative sealant on the drinking assemblies for the M40, M42, M45, or MCU-2AP series protective masks because they did not consider the use of the drinking assemblies to have adverse health risks to the military users. In addition to pursuing a sealant that does not contain Cr6, the ECBC, Navy Chemical and Biological Support, and Air Force Materiel Command should coordinate with the JPEO-CBD to expedite the replacement of the M40, M42, M45, and MCU-2AP series protective masks with the JSGPM.

Recouping of Cost for CHQD Replacements

In addition to the areas we reviewed in response to Senator Grassley's request, we reviewed the steps taken by TACOM to receive an equitable settlement from ILC Dover on the original M40 and M42 series protective mask contract. On September 25, 2001, TACOM awarded contract DAAE20-01-D-0085, an indefinite-delivery, indefinite-quantity contract with five 1-year ordering periods, to ILC Dover to manufacture M40 and M42 series protective masks. Under the contract, Age King was the subcontractor responsible for producing the CHQD components of the masks. Age King produced approximately 894,000 CHQDs over the life of contract DAAE20-01-D-0085 and prior protective mask contracts. Currently, contract DAAE20-01-D-0085 has one option year remaining.

ECBC identified why the CHQDs were cracking, but they did not determine why Age King did not fully comply with the TDP. Age King is no longer in business. When ECBC determined that the CHQDs were defective, the Army determined there was an urgent and critical need to replace 1.25 million CHQDs. Although the contracting officer awarded the three new contracts to ILC Dover at a cost of $4.8 million, the Government did not waive its contractual and legal rights to seek reimbursement under the original contract (DAAE20-01-D-0085). As of April 2005, TACOM had not taken any further action to seek reimbursement for the defective CHQDs.

As the prime contractor, ILC Dover was responsible for providing to the Army a product that met the contract specification. Contract DAAE20-01-D-0085 contained FAR 52.246-2, which states:

> the Government has the right either to reject or to require correction of nonconforming supplies. Supplies are nonconforming when they are defective in material or workmanship or are otherwise not in conformity with contract requirements. The Government may reject nonconforming supplies with or without disposition instructions…
>
> If the Contractor fails to promptly remove, replace, or correct rejected supplies that are required to be removed or to be replaced or corrected, the Government may either by contract or otherwise, remove, replace, or correct the supplies and charge the cost to the Contractor.

Under the original contract, ILC Dover provided the Army a product that did not meet contract specifications; therefore, ILC Dover should reach an equitable settlement with the Army to appropriately address the defective CHQDs. FAR Clause 52.246f provides the Government the right to request restitution from ILC Dover for the defective CHQDs. Contract DAAE20-01-D-0085 has one ordering period remaining and the Army anticipates placing the order and purchasing additional masks that include the CHQD. Thus both recoupment of funds and restitution of the product are options.

The contracting officer should have worked to protect the Army's interest and should have documented the actions taken. While it was appropriate to rapidly award three contracts for CHQD replacements to ensure defective CHQDs were

not in use by the soldiers, the contracting officer should not abandon measures to request restitution for the original defective parts. Therefore, TACOM should initiate action to reach an equitable settlement with ILC Dover to appropriately address of the cost of the CHQD replacements. If TACOM initiates and completes actions to reach an equitable settlement with ILC Dover, TACOM could generate approximately $3.3 million of funds put to better use.

Conclusion

The continued use of the drinking assemblies manufactured with Cr6 has not been shown to cause adverse health risks to soldiers; however, the Pollution Prevention Act of 1990 requires the reduction of toxins in manufacturing processes. The Military Services should pursue viable alternatives to the Cr6 sealant used in drinking assemblies on the M40, M42, M45, and MCU-2AP series protective masks. Furthermore, the JPEO-CBD has developed a viable alternative mask that does not use Cr6 and has additional advantages. The Military Services should coordinate with the JPEO-CBD to expedite a timely and cost-effective transition to the alternate protective mask.

Management Comments on the Finding and Audit Response

Joint Program Executive Office for Chemical and Biological Defense Comments. The Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs [ATSD(NCB)] provided combined comments for the JPEO-CBD and the Director, ECBC. The ATSD(NCB) indicated that it was inappropriate to associate toxicity with the CHQD currently being used by the Army, Navy, Air Force, and Marine Corps. The ATSD(NCB) reiterated that the EPA Environmental Scientist stated that the CHQD does not pose a significant health risk to the users and that the CHQD does not require immediate replacement in the field and could be used for the life cycle of the device; therefore, the current CHQD does not have a toxicity problem. However, if a suitable alternative is identified, DoD welcomes the opportunity to incorporate it into future procurements of the CHQD. Furthermore, ATSD(NCB) indicated that the Occupational Safety and Hazards Agency monitors and approves the manufacturing plant safety procedures and equipment to ensure the work environment is acceptable. Finally, the ATSD(NCB) stated that any concurrence to the recommendations is based on the commonsense notion of continuing to look for improved technologies, applications, and manufacturing processes and does not relate to the safety status of the current CHQD.

Audit Response. Although the EPA Environmental Scientist stated that the CHQD does not pose a significant health risk to the users, he did indicate that any future Army procurements of the CHQD should be re-engineered to replace the current sodium dichromate (Cr6) coating with a less toxic or nontoxic coating that would protect the health of the workers by eliminating the well-known health hazard of inhaling Cr6 during extraction of the ore and manufacturing of the CHQD. The CHQD does not pose a health risk to the soldier but the CHQD is

toxic. As required by the TDP, the CHQD is coated in a substance that contains Cr6. The coating is toxic because Cr6 is a toxic substance, which is affirmed by the EPA Scientist. Furthermore, reengineering the CHQD would assist the Army in meeting the requirement of the Pollution Prevention Act of 1990, which encourages the use of nontoxic materials in the manufacturing processes, when feasible. We acknowledge that the Occupational Safety and Hazards Agency may monitor and approve the manufacturing plant safety procedures and equipment to ensure the work environment is acceptable; however, DoD should continue to evaluate alternatives to the sodium dichromate coating to comply with the Pollution Prevention Act of 1990.

Recommendations, Management Comments, and Audit Response

The ATSD(NCB) provided combined comments for the JPEO-CBD and the Director, ECBC. The management comments and the audit response to Recommendations 2.a. and 2.b. are reflected in the management comments and audit responses to Recommendation 1.a. and 1.b.

1. We recommend the Director, Edgewood Chemical and Biological Center:

a. In conjunction with the Joint Program Executive Office for Chemical and Biological Defense, identify a plan and delivery milestones to expedite the replacement of M40, M42, and M45 series protective masks with the Joint Service General Purpose Mask.

Management Comments. The ATSD(NCB) partially concurred stating the JSGPM will replace the current protective masks used by the Military Services and the JSGPM reflects the current technology to provide improved protection to the soldiers. The JSGPM is currently in low rate initial production and is on track for full rate production decision in the third quarter of FY 2006. The ATSD(NCB) stated the current production schedule for the JSGPM cannot be compressed because of the operational testing requirements.

Audit Response. Management comments were partially responsive. Notwithstanding the operational testing requirements of the JSGPM and the full rate production decision being received in the third quarter of FY 2006, we ask the ATSD(NCB) to evaluate whether the protective masks can be replaced at a more aggressive rate than currently planned. Accordingly, we request the ATSD(NCB) to provide comments addressing whether the JPEO-CBD will evaluate the estimated production rates for potential increases once the full rate production decision is obtained.

b. Until replacement masks are available, research a nontoxic sealant alternative to replace the hexavalent chromium sealant on the coupling half quick disconnect.

Management Comments. The ATSD(NCB) partially concurred, stating that the protective masks (M40, M42, M45, and MCU-2AP) will remain in the DoD inventory for at least 10 more years. The ATSD(NCB) agreed that research into an alternative was wise, research will be initiated, and if the research identifies an alternative, the alternative will be incorporated into future procurements.

c. Revise the technical data package to require the manufacturing of the coupling half quick disconnect with a nontoxic sealant alternative.

Management Comments. The ATSD(NCB) partially concurred and stated that the current technical data package did not have a toxicity problem or health hazard to the soldiers using the protective masks. However, if a suitable alternative coating is identified through research, the technical data package will be updated and used for future procurements of the CHQD.

Audit Response. Management comments were responsive. The current technical data package for the CHQD specifically calls for components to be dipped in a sodium dichromate bath, which contains Cr6, a toxic substance. Even though tests of the CHQDs have shown the level of Cr6 should not cause any health risk for the soldiers, the CHQD is manufactured with a toxic substance. We agree that research should be conducted to identify other viable alternatives to the Cr6 coating and the current technical data package updated accordingly. No further comments are necessary.

2. We recommend the Joint Program Executive Officer for Chemical and Biological Defense:

a. Develop and implement a plan to expedite the replacement of M40, M42, M45, and MCU-2AP series protective masks with the Joint Service General Purpose Mask.

Management Comments. See the management comments for Recommendation 1.a.

Audit Response. See the audit response for Recommendation 1.a.

b. In conjunction with the Chemical and Biological Support at the Naval Surface Warfare Center and the Air Force Materiel Command, identify a nontoxic sealant alternative to replace the hexavalent chromium sealant on the drinking assembly of the MCU-2AP.

Management Comments. See the management comments for Recommendation 1.b.

3. We recommend the Commander, Tank-automotive and Armaments Command:

a. Identify and implement immediate actions to obtain an equitable replacement or reimbursement of the defective coupling half quick disconnects procured under contract DAAE20-01-D-0085.

Management Comment. The Chief of Staff, Tank-automotive and Armaments Command concurred with the recommendation. TACOM issued a letter to ILC Dover on September 9, 2005, requesting reimbursement of approximately $3.3 million for the defective CHQDs. The Chief of Staff also reiterated that in July 2004, TACOM issued a letter to ILC Dover expressing that the Government continued to retain its legal and contractual rights to pursue a claim for the defective CHQDs. The Chief of Staff indicated that additional actions beyond the July 2004 could not be taken because there were too many unknown facts to immediately seek a reimbursement for the defective CHQDs.

Audit Response. We recognize that once the problem was identified, the contracting officer immediately froze shipments of the CHQD by ILC Dover and worked with ILC Dover to identify and implement corrective action to replace the defective CHQDs. The contracting officer worked to rapidly replace the CHQDs to ensure that the soldiers did not have defective CHQDs. However, none of these actions required ILC Dover to provide restitution to the Army for the originally defective parts. We commend TACOM for responding to our audit recommendations by taking definitive action to have ILC Dover provide financial restitution to the Army for the defective parts, which may result in a return of approximately $3.3 million to the Army. No further comments are necessary.

b. Determine the reason why ILC Dover and its subcontractor provided coupling half quick disconnects that were not manufactured in full compliance with the technical data package and take appropriate action, if necessary.

Management Comment. The Chief of Staff, TACOM concurred and agreed that ILC Dover had not manufactured the CHQDs in compliance with the technical data package. Through continual communication with ILC Dover, TACOM believes that neither ILC Dover, nor the subcontractor (Age King) intentionally manufactured defective CHQDs; however, TACOM will review the quality assurance procedures and ILC Dover's management of subcontractors and make changes if needed. The TACOM expects to have this review completed by December 31, 2005.

c. Evaluate the contracting officer's decision to not immediately seek an equitable replacement or reimbursement for the defective coupling half quick disconnects from ILC.

Management Comment. The Chief of Staff, TACOM nonconcurred and stated that TACOM management had evaluated the actions and decisions of the contracting officer and determined the actions to be appropriate. The Chief of Staff disagreed that the contracting officer did not work to protect the Army's interest. The contracting officer immediately froze shipments of the CHQD by

ILC Dover required ILC Dover to take corrective action to replace the defective CHQDs, and sent a letter July 2004 to ILC Dover noting that the Army retained legal and contractual rights to pursue a claim for the defective CHQDs. The Chief of Staff stated that these were the actions to protect the Army's interest.

Audit Response. We recognize that TACOM management deemed the actions and decisions of the contracting officer appropriate; however, TACOM management appears to be basing this decision on the July 2004 letter sent to ILC Dover stating that the Army retained its legal rights to pursue a claim for the defective CHQDs. The July 2004 letter to ILC Dover, by itself, had no legal effect and did not in itself preserve the Army's rights. We commend the contracting officer for the actions taken to rapidly replace the CHQDs to ensure the safety of the soldier; however, those actions did not require ILC Dover to make restitution for the defective for the CHQDs. Because TACOM has now taken definitive action with its September 2005 letter to ILC Dover requesting restitution for the defective CHQDs, no further comments are necessary.

Appendix A. Scope and Methodology

We performed this audit in response to a September 9, 2004, request from Senator Charles E. Grassley to determine whether three contracts awarded by the Army for CHQD replacements were awarded and administered properly. We also evaluated whether TACOM awarded the CHQD replacement contracts with the knowledge that it is made with Cr6. We also determined whether there were any similarities between contracts awarded to ILC Dover and contract awarded to BondCote Corporation also involving Cr6. We collected, reviewed, and analyzed documents dated from January 1983 through May 2005. Specifically, we evaluated contracts, technical data packages, source selection criteria, first article test plans and results, and other contract documentation related to the three CHQD replacement contracts. We interviewed TACOM, ECBC, and USACHPPM personnel to gain a better understanding of the history, mission, purpose, and health risks of the CHQD.

We reviewed the quality assurance and control procedures at DCMA and ILC Dover. Specifically, we interviewed DCMA and ILC Dover personnel and reviewed documentation to determine whether adequate procedures were in place during the assembly of the CHQD replacements and whether those procedures were effective.

We reviewed the CHQD replacement toxicity tests performed by ECBC and the analysis performed by USACHPPM to determine whether the testing procedures were appropriate to assess the amount of Cr6 that the CHQD replacement would release when used by the soldier.

We interviewed Naval Surface Warfare Center, Air Force Materiel Command, and JPEO-CBD personnel to gain an understanding of the protective mask used by the Navy and Air Force and determine whether the drinking assembly on the protective mask was manufactured with Cr6. In addition, we obtained and reviewed program acquisition documentation on the JSGPM from the Program JPEO-CBD.

We performed this audit from October 2004 through July 2005 in accordance with generally accepted government auditing standards.

Use of Computer-Processed Data. We did not use computer-processed data to perform the audit.

Use of Technical Assistance. We obtained assistance from an engineer of the Mechanical Engineering Branch, Technical Assessment Division, DoD Office of Inspector General. The engineer assisted the auditors in understanding the test procedures performed by USACHPPM to determine whether the amount of Cr6 released from the CHQD replacement was harmful to users.

We also obtained assistance from an Environmental Scientist from the EPA Office of the Inspector General. The Environmental Scientist provided us with an independent assessment and opinion on the design of the tests performed by USACHPPM on the toxicity of the CHQD replacement. The Environmental

Scientist assisted us in understanding USACHPPM testing procedures and whether those procedures were appropriate to determine the level of Cr6 released from the CHQD replacement. The Environmental Scientist also provided a conclusion on whether the amount of Cr6 released from the CHQD would result in any health risk to users.

Government Accountability Office High-Risk Area. The Government Accountability Office has identified several high-risk areas in DoD. This report provides coverage of the DoD Contract Management high-risk area.

Prior Coverage

No prior coverage has been conducted in the last five years.

Appendix B. Congressional Request

United States Senate

COMMITTEE ON FINANCE

WASHINGTON, DC 20510–6200

September 9, 2004

Via mail and telefax: 703-604-8325

The Honorable Joseph E. Schmitz
Inspector General
Department of Defense
400 Army Navy Drive
Arlington, VA 22202

Dear Mr. Schmitz:

The purpose of this letter is to request an audit/investigation into allegations that the Department of Defense (DOD) has been approving contracts for a piece of equipment called a "coupling half, quick disconnect (quick disconnect)," knowing that it is manufactured with a toxic substance called Chromium VI.

The quick disconnect is a piece of the drinking tube apparatus which is part of gas masks issued to military personnel. This tube allows soldiers to drink fluids from a canteen while wearing the gas mask. Chromium VI is described as a toxic substance and carcinogen by numerous agencies, including the Environmental Protection Agency (EPA), the World Health Organization, and the U.S. Department of Labor, Occupational Safety & Health Administration (OSHA). Also, it is important to know that Chromium VI is water soluble.

One of the companies involved in the manufacturing of the quick disconnect claims to have found a way to produce the part using a method that does not require the use of Chromium VI. When that company bid on a recent contract for the quick disconnect, it was rejected for not meeting the requirements of the Technical Data Package (TDP). Contracting officials were informed at that time in written correspondence that the TDP allowed the use of the alleged toxic substance. DOD still rejected the bidder's proposal and awarded the contract to a company that met the TDP – which includes the use of the toxic substance Chromium VI. DOD advised this bidder that tests done by the U.S. Army Center for Health Promotion and Preventive Medicine suggested "adverse health effects are not expected," so DOD decided that the original contract solicitation would remain.

It appears that at least three contracts have since been issued for a total of 1.25 million quick disconnects. It also appears that all of these quick disconnects will be manufactured using a water soluble toxic substance through which service personnel will drink fluids.

This situation seems unusually similar to the one I described in a letter I wrote to Secretary of Defense Donald Rumsfeld on March 30, 2004. You were provided with a copy of that letter. In that letter, I expressed grave concern over Chromium VI being used in the production of fabric used to manufacture tents, tarpaulins, and vehicle covers used by our troops. DOD regulations specifically prohibit the use of toxins in that manufacturing process. However, a letter from an Associate Legal Counsel for the Defense Logistics Agency to the manufacturer stated, "I will not recommend BondCote Corporation for debarment should it plead guilty to or be convicted of the crimes, including a felony..." I still have not received an answer to my letter that satisfactorily explains DOD's actions.

It appears from these two cases that DOD officials may be making contracting decisions based on long-standing and potentially improper relationships with contractors that appear to show a pattern of disregard for departmental regulations and policy. The safety of our troops must never be compromised for any reason.

I ask that you conduct an in-depth examination of all contracts for the quick disconnect device. Were these contracts administered properly? Are they fully consistent with all applicable DOD policies and regulations? If not, who is responsible, and what is being done to correct the situation? Do the BondCote and quick disconnect cases suggest some kind of pattern of abuse in contracting authority?

I am confident that you are as concerned as I am about possible contracting irregularities. I ask that you leave "no stone unturned" to protect our service men and women from potential hazards of toxic materials in military equipment. I appreciate your attention to this matter.

Sincerely,

Chuck Grassley

Charles E. Grassley
Chairman

Appendix C. Other Matters of Interest

Senator Grassley also requested that we determine whether the contracts awarded to ILC Dover were similar to the contracts awarded to BondCote Corporation also involving Cr6.

BondCote Corporation Use of Cr6. BondCote Corporation was a defense contractor that provided fabric for tents, tarps, and vehicle covers. In 2003, the Defense Criminal Investigative Service, United States Army Criminal Investigation Command Division, and the Department of Justice investigated BondCote Corporation for making false certifications about the use of Cr6 in fabric used to manufacture tents and vehicle covers that contain Cr6. The investigation determined that BondCote Corporation provided fabric to the Defense Logistic Agency (DLA), Defense Supply Center-Philadelphia. BondCote Corporation erroneously certified that the fabric complied with the contract toxicity requirements.

In March 2004, the United States District Court, Roanoke, VA, found BondCote Corporation guilty of making false certifications to DLA about the use of Cr6 in the fabric used to make tents and vehicle covers. The court fined BondCote Corporation $1.7 million and placed the company on probation for three years. DLA reached an administrative agreement with BondCote Corporation, dated December 24, 2004, which outlined the measures taken or to be taken by BondCote Corporation to show that the company is presently responsible. If at any time during the 2 and ½-year agreement period BondCote Corporation does not abide by the conditions, DLA has the right to initiate debarment or suspension procedures against the corporation.

Our comparison of the BondCote Corporation contracts and the contracts used to procure 1.25 million CHQDs did not show a pattern of abuse of contract authority. In the BondCote case, BondCote falsified certifications relating to its use of Cr6 in the use of tent fabrics. For the procurement of the CHQDs, the Government's TDP required the manufacturer to make the CHQDs with Cr6 sealant. Although both the BondCote Corporation contract and the ILC Dover CHQD contracts involved Cr6, the procurement of the CHQDs did not involve any false certifications by the contractor.

Appendix D. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense (Acquisition, Technology, and Logistics)
    Program Executive Officer, Joint Program Executive Office of Chemical and Biological Defense
Under Secretary of Defense (Comptroller)/Chief Financial Officer
    Deputy Chief Financial Officer
    Deputy Comptroller (Program/Budget)
Director, Program Analysis and Evaluation

Department of the Army

Auditor General, Department of the Army
Commander, U.S. Army Tank-automotive and Armaments Command
Commanding Officer, U.S. Army Research, Development, and Engineering Command
Commander, U.S. Army Center for Health Promotion and Preventive Medicine
Director, Edgewood Chemical Biological Center

Department of the Navy

Naval Inspector General
Auditor General, Department of the Navy

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force

Combatant Commands

Inspector General, U.S. Joint Forces Command

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Intelligence Agency
Director, Defense Contract Management Agency
Director, Defense Logistics Agency
Director, National Security Agency

Non-Defense Federal Organization

Office of Management and Budget

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Finance
Senate Committee on Homeland Security and Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Finance
House Committee on Government Reform
House Subcommittee on Government Efficiency and Financial Management, Committee on Government Reform
House Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform
House Subcommittee on Technology, Information Policy, Intergovernmental Relations, and the Census, Committee on Government Reform

Secretary of Department for Nuclear and Chemical and Biological Defense Programs Comments

NUCLEAR AND CHEMICAL AND BIOLOGICAL DEFENSE PROGRAMS

ASSISTANT TO THE SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

OCT 14 2005

MEMORANDUM FOR PROGRAM DIRECTOR, CONTRACT MANAGEMENT DIRECTORATE, OFFICE OF THE INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

THROUGH: DIRECTOR, ACQUISITION RESOURCES AND ANALYSIS CWR 10/14/05

SUBJECT: IG/GAO Action – Report on Audit of Contract Award and Administration for Coupling Half Quick Disconnect (Project No. D2005-D000CB-0035)

As requested, the Department of Defense (DoD) provides the below response to the subject DoD Office of the Inspector General (DoD OIG) review report.

RECOMMENDATION 1a: The OIG recommends that the Director, Edgewood Chemical and Biological Command, in conjunction with the Joint Program Executive Office for Chemical and Biological Defense, identify a plan and delivery milestones to expedite the replacement of M40, M42, and M45 series protective masks with the Joint Service General Purpose Mask.

RESPONSE: Partially concur. The Joint Service General Purpose Mask (JSGPM) is in Low Rate Initial Production and is on track for an Acquisition Milestone C (MS C) for a full rate production (FRP) decision during 3QFY06. This schedule cannot be compressed due to Operational Testing requirements. The JSGPM will replace current legacy masks in the DoD inventory. The JSGPM reflects the current state of technology and will provide improved protection to the warfighter.

RECOMMENDATION 1b: The OIG recommends the Director, Edgewood Chemical and Biological Command, research a nontoxic sealant alternative to replace the hexavalent chromium (Cr6) sealant on the coupling half quick disconnect, until replacement masks are available.

RESPONSE: Partially concur. The DoD-OIG independent environmental scientist stated in the report (page 9, last paragraph) that "replacement in the field of the CHQD assembly is not required based on health considerations." These

masks will be in the Military Services' inventory for at least 10 years. We agree that research into a suitable alternative is prudent and we will initiate same. If the results of this research are positive, we will incorporate the alternative in future buys of this part.

RECOMMENDATION 1c: The OIG recommends the Director, Edgewood Chemical and Biological Command, revise the technical data package to require the manufacturing of the coupling half quick disconnect with a nontoxic sealant alternative.

RESPONSE: Partially concur. The current technical data package does not result in a toxicity problem or health hazard for any user. If research into a suitable alternative coating is positive, we will update the technical data package for use in future buys of this part.

RECOMMENDATION 2a: The OIG recommends the Joint Program Executive Officer for Chemical and Biological Defense develop and implement a plan to expedite the replacement of M40, M42, M45, and MCU-2AP series protective masks with the Joint Service General Purpose Mask.

RESPONSE: Partially concur. JSGPM is in Low Rate Initial Production and is on track for a MS C and FRP decision during 3QFY06. This schedule cannot be compressed due to Operational Testing requirements. The JSGPM will replace current legacy masks in the DoD inventory. The JSGPM reflects the current state of technology and will provide improved protection to the warfighter.

RECOMMENDATION 2b. The OIG recommends the Joint Program Executive Officer for Chemical and Biological Defense, in conjunction with the Chemical and Biological Support at the Naval Surface Warfare Center and the Air Force Materiel Command, identify a nontoxic sealant alternative to replace the hexavalent chromium sealant on the drinking assembly of the MCU-2AP.

RESPONSE: Partially concur. The DoD-OIG independent environmental scientist stated in the report (page 9, last paragraph) that "replacement in the field of the CHQD assembly is not required based on health considerations." These masks will be in the Joint Services' inventory for at least 10 years. We agree that research into a suitable alternative is prudent and we will initiate same. If the results of this research are positive, we will incorporate the alternative in future buys of this part.

RECOMMENDATION 3a. The OIG recommends the Commander, Tank-automotive and Armaments Command, identify and implement immediate actions

to obtain an equitable replacement or reimbursement of the defective coupling half quick disconnects procured under contract DAAE20-01-D-0085.

RESPONSE: Concur. On September 9, 2005, the Tank-automotive and Armaments Command (TACOM) issued the position letter to ILC Dover seeking reimbursement or restitution for the nonconforming CHQD's and for the additional Government resources which were expended related to this effort.

RECOMMENDATION 3b. The OIG recommends the Commander, Tank-automotive and Armaments Command, determine the reason why ILC Dover and its subcontractor provided coupling half quick disconnects that were not manufactured in full compliance with the technical data package and take appropriate action, if necessary.

RESPONSE: Concur. The CHQD's were not produced in compliance with the Technical Data Package (TDP); however, we communicate continuously with ILC Dover and believe that neither they, nor their subcontractor, intentionally delivered this nonconforming product to the Government. However, TACOM will review the quality assurance procedures and ILC Dover's subcontractor management processes to determine if changes are warranted. The target date for completion is December 31, 2005.

RECOMMENDATION 3c. The OIG recommends the Commander, Tank-automotive and Armaments Command, evaluate the contracting officer's decision to not immediately seek an equitable replacement or reimbursement for the defective coupling half quick disconnects from ILC Dover.

RESPONSE: Nonconcur. There is no corrective action to perform. TACOM has already reviewed both the contracting officer's decisions and actions, and has determined them to be appropriate.

GENERAL COMMENTS:

1. Overall, the most significant issue with respect to the Draft Copy is it inappropriately associates toxicity with current equipment in use today by our soldiers, sailors, airmen, and marines. Several times in the Draft Copy the term "nontoxic alternative" is used in reference to follow-on systems to the M40, M42, and M45 series protective masks. This directly implies a toxicity problem with current equipment which the report itself confirms simply does not exist. In the Draft Copy, the Environmental Scientist tasked by DoD-OIG stated the following:

"The observed hexavalent chromium drinking water concentrations generated by the use of the CHQD assembly do not pose a significant cancerous or non-

cancerous health risk to the user. Furthermore, the immediate replacement in the field of the CHQD assembly is not required based on health considerations. The CHQD assembly can be used by the Army for the life-cycle of the device. However, any future Army procurements of the CHQD assembly should be re-engineered to replace the current dichromate coating with a less toxic or non-toxic coating that would protect the health of the workers by eliminating the well known cancerous hazard of inhaling hexavalent chromium during extraction of the ore and/or manufacturing of the part."

With respect to the health of the workers, the Occupational Safety and Health Administration (OSHA) monitors and approves plant safety procedures and equipment for the workers involved. Nonetheless, if a suitable alternative to the current sealant used on the CHQD emerges, DoD would welcome the opportunity to incorporate it into future buys of this part. Accordingly, any concurrence on our part with the Draft Copy's recommendations has nothing to do with the safety status of current equipment, not only in use but also being manufactured for future use. Such equipment is neither toxic nor otherwise dangerous to the user. The Draft Copy affirms this conclusion. Any concurrence is based on the commonsense notion of continuing to look for improved technologies, applications, and manufacturing processes for any system within our acquisition management jurisdiction.

2. In the second paragraph of the report, page 5, OIG states that the use of Cr6 is inconsistent with the Pollution Prevention Act of 1990. This statement is misleading in that the Act does not prohibit the use of Cr6.

3. On page 12, first paragraph, line 5, OIG states that the contract has "one base year and four 1-year options." This is incorrect. The contract has "five ordering periods."

4. Also on page 12, second paragraph, line 2, OIG states that the contractor, Age King, ceased business operations as of "fall 2004." This is incorrect. Age King's business operations ended in November 2003.

5. Further, on page 12, fourth paragraph, line 6, OIG refers to both "option years" and "exercising options." To be correct, there are "ordering periods" where DoD places "orders."

6. In addition, on page 12, second paragraph, last sentence, the report states that "As of April 2005, TACOM had neither taken nor planned any further action to seek reimbursement for the defective CHQD's."

This is incorrect. At that time, there were too many unknowns for the Government to immediately seek an equitable replacement or reimbursement for the defective CHQD's. In July 2004, TACOM issued a letter notifying ILC Dover that the Government continues to retain its legal and contractual rights to pursue a claim for the defective CHQD's. It states that the Government will be issuing a position letter concerning its right to reimbursement or compensation. At the time the noncompliance became known, the Government did not have all of the facts or data. In addition, the testing of the CHQD's had not been completed. We were not certain of the extent of the problem or the quantities involved. However, now that TACOM has the facts, a position letter to ILC was issued September 9, 2005.

7. On page 13, first paragraph, first sentence, the report states "The contracting officer should have worked to protect the Army's interest and should have documented the actions taken."

DoD disagrees with these statements. The contracting officer has protected the Army's interest and has documented the actions taken. In November 2003, the Government immediately froze shipments at ILC Dover and required ILC Dover to take corrective action to replace defective material that was at its facility. ILC brought production of the CHQD in house to replace the nonconforming product prior to any further shipments. The contracting officer issued a letter in July 2004 specifically reserving the Government's right to go back to ILC Dover for restitution for the nonconforming product. At the time, the Government did not have all the facts and data.

8. Lastly, on pages ii and 13, the report states that reimbursement could result in "approximately $3.2 million of funds put to better use." As of this time, the amount of reimbursement to the Government is unknown.

If you have questions regarding this memorandum, please contact my point of contact Mr. Anthony Lee, (703) 693-9410.

Dale Klein

Tank-automotive and Armaments Command Comments

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY MATERIEL COMMAND
9301 CHAPEK ROAD
FORT BELVOIR, VA 22060-5527

AMCIR (36-2)

7 November 2005

MEMORANDUM FOR Mr. David Lawson, Chief, The Army Audit Liaison Office, U.S. Army Audit Agency, 3101 Park Center Drive, Alexandria, VA 22302-1596

SUBJECT: DODIG Draft Report, Audit of Contract Award and Administration of Coupling Half Quick Disconnects, D2005CB-0035, AMC No. D0503

1. The Headquarters, U.S. Army Materiel Command (HQ AMC) has reviewed the subject draft report and the U.S. Army Tank-automotive and Armaments Command (TACOM) comments. HQ AMC endorses the TACOM comments to the draft report for the HQDA's consideration in developing the Army's position to the report.

2. Point of contact for this action is Mr. Tilden Jio, (703) 806-9021, tjio@hqamc.army.mil.

FOR THE COMMANDER:

for Tilden A. Jio
SUSAN C. McCOY
Director, Internal Review and
Audit Compliance Office

DEPARTMENT OF THE ARMY
UNITED STATES ARMY TACOM LIFE CYCLE MANAGEMENT COMMAND
6501 EAST 11 MILE ROAD
WARREN, MICHIGAN 48397-5000

REPLY TO ATTENTION OF: AMSTA-CS-CJ September 14, 2005

MEMORANDUM FOR Commander, Headquarters Army Materiel Command, Office of Internal Review and Audit Compliance (AMCIR-IA), 9301 Chapek Road, Fort Belvoir, VA 22060-5527

SUBJECT: Department of Defense, Office of the Inspector General, Audit of Contract Award and Administration for Coupling Half Quick Disconnect, dated August 10, 2005

1. Reference the Inspector General's memorandum, dated August 10, 2005, SAB.

2. We have reviewed the draft report and our reply is attached. The TACOM, Internal Review and Audit Compliance Office will track our proposed corrective actions through completion.

4. TACOM's point of contact for this reply is Chuck Krulic, AMSTA-CS-CJ, Comm: 586-574-6158, DSN: 786-6158, or by email at: chuck.krulic@us.army.mil.

Atch

//signed//
PHILLIP B. OWENS
Colonel, GS
Chief of Staff

Final Report Reference

Command Reply
DoDIG Draft Report
Audit of Contract Award and Administration for Coupling Half Disconnect
U.S. Army Tank-automotive and Armaments Command

FINDING: Procurement and Manufacture of the Coupling Half Quick Disconnect

TACOM properly awarded and DCMA properly administered three contracts for the CHQD replacements for M40, M42, and M45 series protective masks. The CHQD replacements were manufactured with Cr6, a toxic substance. The CHQDs were manufactured with Cr6 because:

- the ECBC technical specification included in the TDP required its use, and
- Army testing determined that the level of Cr6 exposure would not cause adverse health risks.

Army testing and an independent EPA evaluation indicated that exposure to Cr6 from the CHQD would not cause adverse health risks to the soldier; however, the masks do expose the solider to limited quantities of Cr6. Further, the workers producing the CHQD are potentially at risk from exposure to Cr6, which is inconsistent of the Pollution Prevention Act of 1990.

Comments/Additional facts:

1. In the second paragraph of your finding, page 5, you state that the use of Cr6 is inconsistent with the Pollution Prevention Act of 1990. This statement is misleading in that the Pollution Prevention Act of 1990 does not prohibit the use of Cr6.

2. On page 12, your 1st paragraph, line 5, you state that the contract has "one base year and four 1-year options". This is incorrect. The contract has "five ordering periods." Revised

3. Also on page 12, 2nd paragraph, line 2, you state that the contractor, Age King, ceased business operations as of "fall 2004." This is incorrect. Age King's business operations ended in November 2003. Revised

4. In addition, on page 12, 2nd paragraph, last sentence: The report states that "As of April 2005, TACOM had neither taken nor planned any further action to seek reimbursement for the defective CHQD's." This is not true.

At that time, there were too many unknowns for the Government to immediately seek an equitable replacement or reimbursement for the defective CHQD's.

In July 2004, TACOM issued a letter notifying ILC that the Government continues to retain its legal and contractual rights to pursue a claim for the defective CHQD's. That

Final Report Reference

letter also states that the Government will be issuing a position regarding reimbursement or compensation.

When the noncompliance became known, the Government did not have all of the facts or data. In addition, the testing of the CHQD's had not been completed. We were not certain of either the extent of the problem or the quantities involved. However, now that we have the facts, our position letter to ILC was issued September 9, 2005.

Revised

5. Further on page 12, 4th paragraph, line 6, you refer to both "option years" and "exercising options". To be correct, there are "ordering periods" where we place "orders."

Page 12

6. On page 13, 1st paragraph, the 1st sentence of your report states "The contracting officer should have worked to protect the Army's interest and should have documented the actions taken." We disagree with this statement.

The contracting officer has protected the Army's interest and has documented the actions taken.

In November 2003, the Government immediately froze shipments at ILC and required ILC to take corrective action to replace defective material that was at its facility. ILC brought production of the CHQD in house to replace the nonconforming product prior to any further shipments.

The contracting officer issued a letter in July 2004 specifically reserving the Government's right to go back to ILC for restitution for the nonconforming product.

7. Lastly, on pages ii and 13, your report states that reimbursement could result in "approximately $3.2 million of funds put to better use." As of this time, the amount of reimbursement to the Government is unknown.

RECOMMENDATIONS:

We recommend the Commander, Tank-automotive and Armaments Command:

Recommendation 3a. Identify and implement immediate actions to obtain an equitable replacement or reimbursement of the defective coupling half quick disconnects procured under contract DAAE20-01-D-0085.

Action Taken: Concur. On September 9, 2005, TACOM issued a position letter to ILC seeking reimbursement or restitution for the nonconforming CHQD's and for the additional Government resources which were expended related to this effort.

Recommendation 3b. Determine the reason why ILC Dover and its subcontractor provided coupling half quick disconnects that were not manufactured in full compliance with the technical data package and take appropriate action, if necessary.

Action Taken: Concur. We agree that the CHQD's were not produced in compliance with the TDP, however, we have continuously been communicating with the ILC and we believe that neither they, nor their subcontractor, intentionally delivered this nonconforming product to the Government. However, we will review our quality assurance procedures and ILC's subcontractor management processes to determine if changes are warranted. The target date for completion of this review is December 31, 2005.

Recommendation 3c. Evaluate the contracting officer's decision to not immediately seek an equitable replacement or reimbursement for the defective coupling half quick disconnects from ILC.

Action Taken: Nonconcur. There is no corrective action to perform. TACOM has already reviewed both the contracting officer's decisions and actions, and has determined them to be appropriate.

Team Members

The Department of Defense Office of the Deputy Inspector General for Auditing, Contract Management prepared this report. Personnel of the Department of Defense Office of Inspector General who contributed to the report are listed below.

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