

CHARRTS No.: HEC-01-001

Hearing Date: April 25, 2007

Committee: HEC

Member: Congressman Barton, Congressman Shimkus

Witness: Mr. Beehler

Question: #1

Question: You state in your testimony that DOD has been working with the States and will continue to comply with applicable Federal or state standards regarding perchlorate. How have the States reacted to the risk assessments conducted under the Defense Environmental Restoration Program?

Answer: We'd like to reiterate that DoD complies with Applicable or Relevant and Appropriate Requirements. Risk assessments conducted by DoD are done in consultation with States and, for National Priorities List (NPL) sites, EPA. DoD makes every attempt to reach consensus with regulators on risk assessments. For the most part, DoD has been able to reach consensus with regulators on risk assessments.

CHARRTS No.: HEC-01-002  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Barton  
Witness: Mr. Beehler  
Question: #2

Question: As was stated in the hearing, perchlorate has been a particular concern in California. What is the California Perchlorate Sampling Prioritization Protocol and what were the results?

Answer: Generally, California has been a success story regarding DoD's response to perchlorate issues. Representatives from the State of California's Environmental Protection Agency, Department of Toxic Substances Control, State Water Resources Control Board, Regional Water Quality Control Boards, and the DoD Regional Environmental Coordinator for Federal Region IX jointly produced the *Prioritization Protocol for Perchlorate Impacts to Drinking Water from Department of Defense Facilities in California (Protocol)* dated 25 August 2004. A training workshop was held in July 2004 to explain the Protocol to the users.

The Protocol was designed as an initial screening tool to identify and prioritize sites for sampling based on proximity to drinking water supply sources. A primary component of the Protocol is the Relative Priorities Table, used to assign relative priorities to individual sites. The relative priority for a site is dependent on the distance from the site to a drinking water supply source, whether or not the drinking water supply has been impacted, and whether or not perchlorate was released at the site. The Protocol considers sites that are within one mile or between one and five miles from a drinking water supply source. The Relative Priorities Table assigns the highest priority to sites where perchlorate releases have impacted drinking water sources, and the lowest priority to sites for which existing information indicates no evidence of a release.

In summary, the Protocol is used for initial screening of DoD sites that may have used perchlorate to determine if there could be *potential* perchlorate contamination, and a possible pathway of exposure. We emphasize the word potential -- 924 sites were jointly reviewed by the State and DoD technical personnel. So far, 97 percent do not appear to pose a current threat to drinking water based on the screening criteria used in the protocol. The remaining 3 percent either have some type of response action or confirmation sampling underway or the assessments are being reviewed by Californian regulatory agencies.

Despite the fact that DoD installations do not appear to be a major source of perchlorate contamination in California, DoD has invested over \$18 million in water treatment and remediation technologies for perchlorate in Southern California. Working closely with local water purveyors, approximately 5000 GPM new treatment capacity has been added and the technologies have reduced estimated capital and operation/ maintenance costs.

CHARRTS No.: HEC-01-003  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Barton  
Witness: Mr. Beehler  
Question: #3

Question: In your oral statement and in questions, you seemed to indicate that there were some common misperceptions about the Defense Department's activities related to perchlorate. What are these misperceptions?

Answer: There are two common misperceptions about DoD and perchlorate. First, while it is sometimes stated that DoD will not initiate response actions for perchlorate without the promulgation of a Maximum Contaminant Level (MCL), this is not true. Examples are provided in answers below. Second, while DoD is a major *purchaser* of perchlorate, it is not the sole user of perchlorate, nor, does it appear from the data examined (such as the California prioritization protocol), that DoD facilities are a major source of perchlorate *detections* in public drinking water supplies.

Irrespective of MCL promulgation, DoD has been taking appropriate *response* actions for perchlorate, and for contaminated sites that include perchlorate, under a number of statutory authorities and in coordination with EPA and State regulators. "Response action" is a comprehensive term under CERCLA that includes site investigations, risk assessments, treatability studies, removal actions, and remedial actions. In many cases, the Department has conducted expeditious soil cleanups as removal actions in accordance with the National Contingency Plan. Removal actions can be taken before formal Records of Decision (RODs) are completed and these responses are coordinated with regulators. Likewise, pilot treatment projects – such as the treatment unit at Edwards Air Force Base -- can be constructed and placed into service as part of the investigation stage even before RODs are signed. These pilot treatment projects often remove substantial contamination as part of the feasibility and verification process conducted prior to deploying the technology full scale. *Thus, RODs alone are not an effective or complete measure of an agency's response or cleanup activities.*

Prior to the National Academy of Sciences review of perchlorate science in January of 2005 and EPA's subsequent posting of a reference dose, no final federal peer-reviewed toxicity values for perchlorate had been adopted. Yet, before 2005, while the risks to human health related to low levels of perchlorate were being determined, DoD initiated responses at sites determined by risk assessments to pose a potential risk to the public and the environment, using best available toxicity information at the time.

DoD has worked hard to dispel the myth that action cannot be taken until an MCL exists; in fact, we have been developing with EPA and the Environmental Council of States (ECOS) a series of white papers to provide further interagency advice on how to respond to emerging contaminants and how to select toxicity values when there are no toxicity values in the EPA Integrated Risk Information System (IRIS). The Department has also established a process within DoD to identify emerging contaminants at an early stage, determine if they are used by DoD, assess the impacts to DoD of potential changes in regulatory status, and develop proactive

risk management options for DoD program managers to respond to these chemicals.

Initial reactions by the public and regulators are often that DoD must be the source of perchlorate contamination because of the portrayal of perchlorate releases almost singularly from rocket fuel. As States and local authorities examine the evidence closer, they are coming to different conclusions as in the results thus far for the California prioritization protocol for perchlorate sites. Other specific examples are:

On April 10, 2007 the California House Natural Resources Committee, Subcommittee on Water and Power, led by Rep. Grace F. Napolitano (D-CA), held an oversight field hearing on “Sustainable Water Supplies for the West: Part 1 – Protecting Groundwater Resources.” At the hearing, Mr. Robert E. Martin, General Manager, East Valley Water District, Highland, CA provided the following testimony:

“Based upon research conducted by our regional water quality control board (Santa Ana Region), we have concluded that our perchlorate problem can be traced back to fertilizer brought in from South America in the early 20th century and used on orange groves that are now part of our service area. Since these deliveries were made generations ago and land ownership has changed, often many times, there is little hope of our securing funding help from principal responsible parties. This means that the customers of the East Valley Water District will have to bear the cost of building and operating complex perchlorate treatment systems.”

In a March 14, 2005 letter to EPA Assistant Administrator Ben Grumbles, Mr. Robert Gollodge, Commissioner, Massachusetts Department of Environmental Protection stated the following:

“In March 2004, the Department initiated the process to establish a drinking water maximum contaminant level (MCL) for perchlorate by promulgating regulations requiring all public water supplies to test for perchlorate. Several rounds of sampling have been completed statewide. Nine public water supplies have detected perchlorate, seven of the nine have perchlorate ranging from just below 1 ppb to slightly above 3 ppb. However, two water supplies had greater than 45 ppb, one as high as 1300 ppb. When confronted with the perchlorate plume at Massachusetts Military Reservation in 2001, most thought the primary source of perchlorate contamination was the result of military training activities. None of the nine water supplies that have tested positive for perchlorate in Massachusetts appear to have any connection to military bases or activities.”

CHARRTS No.: HEC-01-004  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Barton  
Witness: Mr. Beehler  
Question: #4

Question: You stated that of the 146 installations that reported assessments in FY 2006, only 9 reported detection above 4 ppb in any media. Is this trend a result of increased monitoring and assessment and does it demonstrate a turning point in perchlorate detections at DOD installations?

Answer: The actual testimony states that: "...only nine installations reported a detection between 4 ppb and 24 ppb in any media: drinking water, surface water, groundwater, or soil. Eight installations indicated detection above 24 ppb in any of these media."

DoD has a few installations with some large concentrations of perchlorate from past weapons related activities that are being addressed satisfactorily under the Defense Environmental Restoration Program (DERP) (e.g., Edwards Air Force Base, Naval Weapons Industrial Reserve Plant (NWIRP) McGregor, Redstone Arsenal). The remaining installations, for the most part, have low levels of perchlorate detections under the screening levels in soils and the Drinking Water Equivalent Level (24 ppb). Overall, from the data we have examined, we believe that most DoD perchlorate releases are contained on DoD installations and are not contaminating public drinking water supplies. The apparent reduction in sites with perchlorate detections may be a result of several factors:

- Installations have eliminated discharges by installing closed-loop systems to contain and treat water from "hog-out" operations where expired propellant/oxidizer is removed and replaced.
- Increased reductions in wastewater discharges.
- Greater awareness of the risks associated with perchlorate releases.
- Better management practices for munitions deactivation.
- Completion of response actions.

CHARRTS No.: HEC-01-005  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Barton  
Witness: Mr. Beehler  
Question: #5

Question: You mentioned that alternatives to potentially replace ammonium perchlorate in solid rocket propellants are undergoing testing and evaluation. The alternatives must meet high performance specifications and have a low environmental burden. Do performance or environmental externality issues exist with these alternatives? Will you have these on line by 2008?

Answer: Two parallel programs are underway to develop alternatives for ammonium perchlorate (AP) in solid rocket propellants. One is sponsored by the Strategic Environmental Research and Development Program (SERDP), managed by the Office of the Secretary of Defense. The other program is sponsored by the Army Environmental Quality Technology Program, managed by the Department of the Army and coordinated with rocket and missile Program Managers. Although testing is being performed in both the SERDP and Army programs, programmatically these efforts support only Research and Development (i.e., current work is developing new chemicals and performing in-laboratory testing, *not* field-testing full-scale rocket motors). The SERDP effort is working on an AP alternative solid-rocket propellant based on chemicals such as ammonium dinitramide and hydroxyl ammonium nitrate. The Army effort is developing a completely new hybrid-rocket motor concept to replace solid rocket motors that is a combination of gelled and solid materials.

Perchlorate replacements will not be implemented unless they are able to meet all performance criteria, safety *and* known or reasonably anticipated environmental requirements. Performance requirements and methods of evaluating them are both well established in the rocket propellant community. Safety and environmental performance evaluation are also well-established by Acquisition Policy. Environment, safety and occupational health (ESOH) considerations are documented in the program acquisition strategy, the Programmatic Environment, Safety and Occupational Health Evaluation, Environmental Assessments (in accordance with the National Environmental Policy Act), and Toxicity Clearances. Program Executive Officers and Program/Project/Product Managers have traditionally used these documents to assess the risks of using hazardous materials versus substitutes.

Recently, the U.S. Army Research, Development and Engineering Command initiated the Environmental Health Assessment (EHA) as a pilot program to evaluate energetic materials prior to acquisition – during research and development. EHAs evaluate persistence, fate and transport, and health criteria (human and environmental) in a comprehensive framework. These EHAs are based on the available data consistent with the Research, Development, Test and Evaluation level of effort, and use a proposed American Society for Testing and Materials (ASTM) guideline, WK9121 “New Assessment of Environmental Health Impacts in the Research, Development, Testing, and Engineering of New Munitions” that identifies what data are needed at specific technology stages. The EHA has been established as an iterative means of

communication between the rocket scientists and the environmental health professionals. This use of the EHA is coordinated with the Assistant Secretary of the Army for Acquisition, Logistics and Technology's Environmental Support Office. SERDP is developing a similar protocol for use within their program.

We will not have the rocket propellant substitutes for perchlorate on line by 2008. As mentioned above, alternatives for rocket propellants are still in early research and development. Research and Development monies are programmed in the Army to develop these alternatives; however, there will still be requirements for additional funding to mature this program through Applied Research by FY2012. SERDP funding is at a similar level. In order to find a replacement for perchlorate or an alternative design for heavy lift rocket motors *and* then implement it for *all* systems in acquisition, a substantial investment will be required – estimated on the order of hundreds of millions of dollars. Regardless of funding level, it is considered a high-risk research program -- meaning that a solution is not readily apparent. It will take time to develop, demonstrate, and implement alternatives to perchlorate depending on the system in which perchlorate is now used.

We do expect to have substitutes for perchlorate for the Army's ground burst and grenade simulators on line in 2008. The testing is complete, and we are now preparing production capability to manufacture the new simulators. The Army estimates that no more perchlorate-containing ground burst and grenade simulators will be used within a matter of about 12 months. The DoD is currently developing propellant and pyrotechnic compositions to meet performance requirements and reduce safety and environmental impacts, which will eventually be made into perchlorate substitutes in next-generation weapons systems. It should be noted that the introduction of perchlorate-free ground burst and grenade simulators after mid- FY2008 will eliminate the largest single source (35-70 percent) of the expended potassium perchlorate on Army training ranges.

The DoD is currently developing perchlorate alternatives for five additional simulators/training items as well as pyrotechnic delays, incendiaries, and primers, and a perchlorate alternative in a handheld smoke and obscurant device (SOD), with a long-term plan to leverage these results on other systems. Initial implementation of these items is expected to range from 2009-2011 based on successful product development.

CHARRTS No.: HEC-01-006  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Barton  
Witness: Mr. Beehler  
Question: #6

Question: Your testimony talks about the research work that the Defense Department has sponsored on various sources of perchlorate. Has the Department examined forensic techniques as part of this work? What is the nature of this research and any results?

Answer: Yes, DoD contributed to the larger body of forensic techniques, including sponsoring research to prove that existing methods such as isotopic ratios are robust enough to differentiate perchlorate sources. For example, using these established isotopic analysis techniques, we are now able to distinguish between naturally occurring perchlorate and that which is manufactured. NASA has used this technique to differentiate perchlorate releases from its Jet Propulsion Laboratory in California from other sources, such as fertilizers. On-going research shows promise in using the same techniques to distinguish between various types of manufactured perchlorate. Also, there were no cost-effective methods for getting and concentrating groundwater samples for laboratory analysis. DoD funded the development of a cost-effective sampling process.

CHARRTS No.: HEC-01-007  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Wynn  
Witness: Mr. Beehler  
Question: #7

Question: Is it correct that there is no appreciable difference in the cost of remediating incremental levels of perchlorate in groundwater? If not, please explain why not.

Answer: From an engineering perspective, there is little difference in treating 1,000 gallons of groundwater to a level of 4 ppb versus 10 ppb. The same technology is used. There will be a relatively small incremental difference in operating cost for the same amount of groundwater. However, a large cost differential may arise depending on how much groundwater needs to be treated to achieve a cleanup level of 4 ppb versus 10 ppb for example. Costs could rise considerably if 100,000 gallons needed to be treated vice 1,000 gallons.

CHARRTS No.: HEC-01-008  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Wynn  
Witness: Mr. Beehler  
Question: #8

Question: At the April 25, 2007, hearing before the Subcommittee on Environment and Hazardous Materials, when asked if any Department of Defense (DOD) Federal facility that has perchlorate contaminated groundwater had completed a record of decision under CERCLA, you responded that you would "take that for the record." Is it correct that DOD has not completed a Record of Decision addressing the remediation of perchlorate contaminated groundwater at any of DOD's 34 Superfund National Priorities List (NPL) facilities that have perchlorate contaminated groundwater? If DOD has completed a Record of Decision addressing the remediation of perchlorate contaminated groundwater at any of DOD's 34 Superfund NPL facilities that has perchlorate contaminated groundwater, please provide the name of the facility, and a copy of a fully executed Record of Decision.

Answer: The attached Table A provides data for the DoD National Priority List (NPL) sites provided in Appendix 1 to your letter. Non-NPL installations including the Naval Weapons Industrial Reserve Plant (NWIRP) in McGregor, TX, and the former Naval Service Warfare Center (NSWC) in White Oak, MD, have Records of Decision (RODs). It is important to note that certain forms of cleanup actions can be initiated before a ROD. For example, "removal actions" (e.g., soil excavation/disposal) can often be completed prior to a formal ROD. Likewise, pilot treatment projects can be constructed and placed into service as part of the Feasibility Study stage. In fact, this is often the case for emerging contaminants with no proven treatment technology. These pilot treatment projects often remove substantial contamination before they are validated and scaled up. Thus, RODs alone are not an effective or complete measure of an agency's response or cleanup activities. The attached table reinforces the Department's belief that either appropriate response actions are being taken or that perchlorate levels are below levels of concern or applicable regulatory levels.

**DOD NPL FACILITIES WITH KNOWN  
PERCHLORATE CONTAMINATION  
(List Provided by House Energy & Commerce Committee)**

AL	Reg. 4	ANNISTON ARMY DEPOT
AL	Reg. 4	REDSTONE ARMY ARSENAL
CA	Reg. 4	EDWARDS AFB RESEARCH LAB
CA	Reg. 9	MATHER AFB
CA	Reg. 9	FORMER MCAS EL TORO
IL	Reg. 5	SANGAMO/CRAB ORCHARD
KS	Reg. 7	FORT RILEY
MA	Reg. 1	MASS MILITARY RESERVATION
MD	Reg. 3	FT. MEADE
MD	Reg. 3	NAVAL SURFACE WELFARE – INDIAN HEAD
MD	Reg. 3	ABERDEEN PROVING GROUND
MO	Reg. 7	LAKE CITY ARMY AMMUNITION PLANT
NJ	Reg. 2	PICATINNY ARSENAL
TN	Reg. 4	ARNOLD ENGINEERING DEVELOPMENT CENTER
TX	Reg. 6	LONE STAR AMMUNITION
TX	Reg. 6	LONGHORN SITE 4
TX	Reg. 6	LONGHORN SITE 12
TX	Reg. 6	LONGHORN AAP SITE 16
TX	Reg. 6	LONGHORN SITE 17
TX	Reg. 6	LONGHORN SITE 18/24
TX	Reg. 6	LONGHORN SITE 29
TX	Reg. 6	LONGHORN SITE 46
TX	Reg. 6	LONGHORN SITE 47
TX	Reg. 6	LONGHORN SITE 47A
TX	Reg. 6	LONGHORN SITE 47B
TX	Reg. 6	LONGHORN SITE 50
VA	Reg. 3	DAHLGREN
WV	Reg. 3	ALLEGHANY BALLISTICS LAB
AZ	Reg. 9	YUMA MARINE CORPS
CA	Reg. 9	NAVY WEAPON STATION SEAL BEACH
CO	Reg. 8	ROCKY MOUNTAIN ARSENAL
IA	Reg. 8	IOWA ARMY AMMUNITION
MA	Reg. 1	DEVENS RESERVE FORCES
OR	Reg. 10	UMATTILLA ARMY DEPOT

CHARRTS No.: HEC-01-009  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Wynn  
Witness: Mr. Beehler  
Question: #9

Question: Section 120 of CERCLA requires that not later than six months after the inclusion of any Federal facility on the NPL, any agency of the United States, in consultation with EPA, must commence a remedial investigation and feasibility study (RIFS) for such facility (42 U.S.C. § 9620(e)(1)). Based upon information provided to the Committee by EPA, there are at least 34 DOD facilities with perchlorate contamination on the NPL. (See Appendix 1, DOD NPL Facilities with Known Perchlorate Contamination). For each facility, please provide the date it was listed on the NPL and whether an RIFS has been commenced. For each DOD facility where an RIFS was commenced, please indicate the date it was commenced, and if applicable, completed, and a description of the scope of work of the RIFS and whether it addresses perchlorate contaminated groundwater.

Answer: The attached Table A provides data for the DoD National Priority List (NPL) sites provided in Appendix 1 to your letter. It is important to note that perchlorate may not have been considered a "contaminant of concern" by either DoD or regulators at the time the RI/FS was initiated or completed. Perchlorate response actions may have been initiated subsequent to the initial RI/FS. For example, a remedial action selected for another contaminant may also be addressing perchlorate. To portray an accurate picture of DoD's perchlorate response, we have provided additional information in the attached table to show these subsequent perchlorate related actions. We interpret the "scope of the RI/FS" to mean what were the contaminants of concern. We have added a column to show the primary contaminants of concern. There may be multiple RI/FSs at the installation with different start and completion dates. We have provided the date of the initial RI/FS, then focused on any RI/FSs related to perchlorate. Note that in a number of cases, the initial RI/FS was started before NPL listing.

**DOD NPL FACILITIES WITH KNOWN  
PERCHLORATE CONTAMINATION**

AL	Reg. 4	ANNISTON ARMY DEPOT
AL	Reg. 4	REDSTONE ARMY ARSENAL
CA	Reg. 4	EDWARDS AFB RESEARCH LAB
CA	Reg. 9	MATHER AFB
CA	Reg. 9	FORMER MCAS EL TORO
IL	Reg. 5	SANGAMO/CRAB ORCHARD
KS	Reg. 7	FORT RILEY
MA	Reg. 1	MASS MILITARY RESERVATION
MD	Reg. 3	FT. MEADE
MD	Reg. 3	NAVAL SURFACE WELFARE – INDIAN HEAD
MD	Reg. 3	ABERDEEN PROVING GROUND
MO	Reg. 7	LAKE CITY ARMY AMMUNITION PLANT
NJ	Reg. 2	PICATINNY ARSENAL
TN	Reg. 4	ARNOLD ENGINEERING DEVELOPMENT CENTER
TX	Reg. 6	LONE STAR AMMUNITION
TX	Reg. 6	LONGHORN SITE 4
TX	Reg. 6	LONGHORN SITE 12
TX	Reg. 6	LONGHORN AAP SITE 16
TX	Reg. 6	LONGHORN SITE 17
TX	Reg. 6	LONGHORN SITE 18/24
TX	Reg. 6	LONGHORN SITE 29
TX	Reg. 6	LONGHORN SITE 46
TX	Reg. 6	LONGHORN SITE 47
TX	Reg. 6	LONGHORN SITE 47A
TX	Reg. 6	LONGHORN SITE 47B
TX	Reg. 6	LONGHORN SITE 50
VA	Reg. 3	DAHLGREN
WV	Reg. 3	ALLEGHANY BALLISTICS LAB
AZ	Reg. 9	YUMA MARINE CORPS
CA	Reg. 9	NAVY WEAPON STATION SEAL BEACH
CO	Reg. 8	ROCKY MOUNTAIN ARSENAL
IA	Reg. 8	IOWA ARMY AMMUNITION
MA	Reg. 1	DEVENS RESERVE FORCES
OR	Reg. 10	UMATTILLA ARMY DEPOT

CHARRTS No.: HEC-01-010  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Wynn  
Witness: Mr. Beehler  
Question: #10

Question: By letter dated July 16, 2003, EPA notified the Department of Defense that it was discontinuing involvement at the Camp Bonneville Base Realignment and Closure (BRAC) Site in Vancouver, Washington, citing a lack of collaboration by DOD. (See Appendix 2, Letter from EPA Region 10 to Col. Richard Conte, Director of Public Works, Ft. Lewis Washington). In the letter EPA states that "the site lacks the necessary level of site characterization information on which to base long-term remedial decisions." EPA further states that "[t]here is only a limited understanding about the nature and extent of contamination primarily from munitions and unexploded ordnance (UXO) but also limited areas related to chemical releases." At the April 25th hearing, you were asked "why the Army was not responsive to Region 10's comments?"

Answer: Camp Bonneville, Washington, was recommended for closure by the 1995 Base Realignment and Closure (BRAC) commission. The Army established a BRAC Cleanup Team (BCT) which included the U.S. EPA Region 10, the Washington Department of Ecology (WDOE), and Camp Bonneville to achieve consensus on efforts to arrive at accelerated cleanup and installation transfer. The lead regulator for cleanup issues prior to Camp Bonneville being listed on BRAC was WDOE and they continue to be the lead regulator post BRAC.

Since 2003, the Army has been negotiating with WDOE and Clark County concerning the transfer of Camp Bonneville and the cleanup actions necessary to transfer the facility to Clark County via a deed for Conservation Conveyance. The level of clean up at Camp Bonneville is dependent upon the proposed land use and any land use restrictions needed; in 2003 these had not been determined by Clark County. At the time of the Region 10 EPA letter, the Army was conducting multiple studies and investigations to identify what contamination remained on Camp Bonneville. Early in the negotiation for the transfer of Camp Bonneville, WDOE asserted its regulatory role as lead regulatory agency and requested that EPA provide a supporting regulatory role. The Army has been responding to WDOE concerning cleanup requirements at Camp Bonneville since 2003.

In late 2006, the Army and WDOE reached agreement for the transfer of Camp Bonneville to Clark County. On October 3, 2006, the Governor of the State of Washington approved the transfer of Camp Bonneville to Clark County via a deed for Conservation Conveyance. In addition, the Army and Clark County agreed to an Environmental Services Cooperative Agreement (ESCA) in which the Army provides funds to Clark County so that it will achieve regulatory closure at Camp Bonneville. Subsequently, Clark County transferred ownership and responsibility for environmental remediation of Camp Bonneville to the Bonneville Conservation Restoration and Renewal Team, Inc (BCRRT). In addition, Clark County, the BCRRT, the WDOE, and the Attorney General's Office for the State of Washington entered into an enforceable agreement, Prospective Purchase Consent Decree, on October 13, 2006, to ensure Clark County and the BCRRT appropriately addressed and achieved regulatory

closure for the environmental contamination and the known or suspected presence of UXO and other munitions and explosives of concern on the property. Environmental remediation activities are underway in accordance with the Environmental Services Cooperative Agreement (ESCA) and the Prospective Purchase Consent Decree (PPCD). Upon completion of cleanup by BCRRT and approval by the WDOE, the BCRRT will transfer Camp Bonneville back to Clark County and Camp Bonneville will be used as park lands in accordance with the Conservation Conveyance.

CHARRTS No.: HEC-01-011  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Wynn  
Witness: Mr. Beehler  
Question: #11

Question: Has DOD completed a remedial action, as opposed to a removal action, at any DOD facility where perchlorate in groundwater is present? If so, please provide the name of the facility, a description of the remedial action and include supporting documentation.

Answer: Some remedial actions for groundwater are underway but not completed (see examples below and the attached Table A for documentation). Groundwater treatment often requires many years to achieve the site-specific remediation goal and thus completion of the remedial action. When a treatment system has been constructed and put into operation, this is called “remedy in place.” When the remedial objectives have finally been achieved, this is called “response complete.” Viewing only “completed” remedial actions would not provide an accurate picture of DoD’s actual perchlorate responses. The Department believes the Committee is seeking to ascertain if DoD is responding appropriately to perchlorate releases. To do so, *all* response actions must be considered in a temporal context (e.g., when a toxicity value was established; when regulators considered perchlorate as a contaminant of concern). “Removal actions” (e.g., soil excavation/disposal), in effect, often achieve the same level of cleanup as a final remedial action. Even before EPA promulgated a toxicity value for use in site-specific risk assessments, DoD began response actions at a number of bases with perchlorate detections. Examples of installations with response actions underway include the following:

- Massachusetts Military Reservation (MMR). Removal actions have been completed for contaminated soils. Groundwater contaminated with RDX and perchlorate is being remediated through a groundwater treatment system in place and operating. All investigations and actions were fully coordinated with EPA Region 1 and Massachusetts.
- Longhorn Army Ammunition Plant, TX. A fluidized bed reactor was added to a TCE groundwater treatment system in 2001 to remove perchlorate from an effluent. There is no groundwater use and actions were taken to protect Caddo Lake (drinking water supply). Soil covers were placed over two soil sites which contained high perchlorate concentrations to prevent runoff into streams. Final RODs are being developed to address remaining soil contamination through soil removal and disposal. All actions have been fully coordinated with EPA Region 6 and Texas.
- Naval Weapons Industrial Reserve Plant (NWIRP), McGregor, TX. At McGregor, the Navy completed a Record of Decision (ROD). An in-situ biological treatment system is treating perchlorate in groundwater and soil; this is the first – and world’s largest – full-scale bio-wall application for groundwater remediation of perchlorate and volatile organic compounds. Recent groundwater data shows a marked decrease in the amount of perchlorate in groundwater. In fact, last October, the NWIRP McGregor became the very first U.S. Navy facility to receive a Ready for Reuse determination from EPA. This

verifies that environmental conditions at the property are protective of human health and the environment for its current and future commercial, industrial and agricultural uses. (See attached EPA press release.)

- Former NSWC, White Oak, MD. White Oak has a number of completed RODs. The RODs primarily address other key contaminants, but the treatment systems put in place under the RODs are also addressing perchlorate. All actions have been coordinated with EPA Region 3 and Maryland, and both agencies concurred with the remediation goal for perchlorate.
- Redstone Arsenal, AL. Perchlorate was detected in soil and groundwater. A Remedial Investigation report was completed in July 2005. A Feasibility Study is underway to analyze remedial options. A health risk evaluation was conducted for surface water off-base, which concluded that there was no health risk to recreational users and residents. Sampling showed non-detectable levels in the Tennessee River. Drinking water is supplied by the municipal water system. There is no human consumption of groundwater either on-base or off-base, and thus no threat to human health. The Arsenal is working closely with EPA and the Alabama Department of Environmental Management (ADEM). Based on evaluations so far, there does not appear to be a threat to public health.
- Vandenberg AFB, CA. Perchlorate was detected in groundwater, but drinking water supplies have not been affected. The Air Force initiated a pilot treatment process that uses injections of lactate and a dechlorinating agent to groundwater. The pilot study was successful, and both trichloroethylene (TCE) and perchlorate were removed to non-detectable levels in one month. Planning is underway to scale up the pilot treatment process to complete TCE and perchlorate removal at this site.
- Edwards AFB, CA. Perchlorate was detected in soil and groundwater at Edwards AFB. Drinking water supplies have not been affected. In May 2003, Edwards AFB implemented a pilot project/treatability study to evaluate the effectiveness of using ion-exchange technology for removing perchlorate from groundwater. As of January 2007, the system has treated 32.1 million gallons and removed 133.7 pounds of perchlorate from the groundwater. This pilot treatment system continues to operate. Also, a treatability study that examined the effectiveness of flushing to remove perchlorate from soil at Edwards AFB demonstrated almost complete removal of perchlorate from the soil column.

CHARRTS No.: HEC-01-012  
Hearing Date: April 25, 2007  
Committee: HEC  
Member: Congressman Wynn  
Witness: Mr. Beehler  
Question: #12

Question: Was there a time when DOD did not consider perchlorate to be a contaminant? If the answer is "yes," was that a basis for DOD's choosing not to undertake remedial actions at federal facilities with perchlorate contamination in the groundwater? When did DOD agree that perchlorate was a contaminant?

Answer: In the past, it may not have been clear whether perchlorate was considered a "pollutant and contaminant" in the context of the Comprehensive Environmental Response, Compensation, and Liability Act and whether a response was required. This was especially true since there was no peer-reviewed toxicity level in EPA's Integrated Risk Information System (IRIS) until early 2005. However, as noted above, even before EPA promulgated a toxicity value for use in site-specific risk assessments, DoD began response actions at a number of bases with perchlorate detections. Starting in September of 2003, DoD issued a series of specific policies aimed at ensuring appropriate perchlorate response actions as the science and understanding of perchlorate evolved. On January 26, 2006, DoD issued the "Policy on DoD Required Actions Related to Perchlorate" which clarified sampling and response requirements and superseded the September, 2003, DoD perchlorate sampling policy.

To resolve a number of issues involving perchlorate and other emerging contaminants, DoD sponsored an emerging contaminants forum in November 2005 with States and EPA and other federal agencies. As a result, DoD and the Environmental Council of States formed a work group on emerging contaminants. The work group has developed a number of products aimed at clarifying risk communication, risk assessment and risk management for emerging contaminants. One of the products, called the *Identification and Selection of Toxicity Values/Criteria for CERCLA and Hazardous Waste Site Risk Assessments in the Absence of IRIS Values*, has been particularly valuable in helping determine toxicity values for use in human health risk assessments for emerging contaminants like perchlorate.