

**USACHPPM
DEPUTY CHIEF OF STAFF FOR OPERATIONS
HEALTH INFORMATION OPERATIONS (HIO)
WEEKLY UPDATE**

2 January 2002

The HIO Weekly Update provides information regarding global medical and veterinary issues of interest to the United States (US) Army. The weekly update does not attempt to analyze the information regarding potential strategic or tactical impact to the US Army and as such, should not be regarded as a medical intelligence product. The information should provide an increased awareness of current and emerging health-related issues.

HOT ISSUES	2
Afghanistan Healthcare – World Health Organization (WHO)	2
Afghanistan Refugees – United Nations High Commissioner For Refugees (UNHCR).....	2
Anthrax / Biohazard Clean-Up Training Curriculum – Occupational Safety and Health Administration (OSHA).....	3
Anthrax Decontamination – Environmental Protection Agency (EPA).....	3
Anthrax Environmental Sampling Results – CDC	3
Anthrax Exposures – Centers For Disease Control And Prevention (CDC)	3
Anthrax Vaccine – NO Mycoplasma Contamination.....	4
Bioport Facility Inspection – Food and Drug Administration (FDA).....	4
Bioterrorism Agents – Public Health Assessment.....	4
Foot And Mouth Disease (FMD) – World Organisation [sic] for Animal Health (OIE).....	5
Gulf War Syndrome – Department Of Defense (DoD) And Veterans Affairs (VA)	5
Influenza Surveillance – Global.....	5
Influenza Surveillance – DoD	5
Influenza Surveillance – USA.....	6
CENTCOM	6
Meningococcal Meningitis – Ethiopia	6
EUCOM	6
Antimicrobial Resistance – Croatia.....	6
Bovine Spongiform Encephalopathy (BSE) Surveillance – Europe	7
Ebola / Viral Hemorrhagic Fever – Gabon and Republic of the Congo.....	7
European Food Safety Authority (EFSA) – European Parliament.....	7
Influenza Surveillance – Europe	8
Tularemia Outbreak 1999-2000 – Kosovo	8
JFCOM	8
Antibiotic Resistance – Community Acquired Methicillin-Resistant Staphylococcus Aureus (MRSA) in Foodborne Illness Outbreak	8
Automated External Defibrillators (AEDs) – OSHA.....	9

Childhood Vaccination Recommendations – CDC	9
Handwashing In Healthcare Settings – CDC	9
Occupational Illness and Injury Reporting – OSHA	9
Pesticide Illness And Injury Surveillance – National Institute For Occupational Health And Safety (NIOSH)	10
Women’s Occupational Health Issues – NIOSH	10
PACOM.....	10
Influenza Surveillance – Japan	10
SOUTHCOM.....	10
Drought And Food Insecurity – Central America.....	10
Medical Readiness Exercises – Joint Task Force (JTF) – Bravo, Honduras	11
STRATCOM.....	11
Nuclear Study Results – Defense Threat Reduction Agency (DTRA) Advanced Systems And Concepts Office (ASCO).....	11
RESEARCH.....	11
Research Initiatives – Defense Advanced Research Projects Agency (DARPA)....	12
Malaria Vaccine – National Institutes of Health (NIH)	12

HOT ISSUES

Afghanistan Healthcare – World Health Organization (WHO)

On 20 December, the WHO reported continued concern regarding the health situation in Afghanistan. The report is at <http://www.who.int/disasters/repo/7478.html>. Major diseases reported continue to be malaria, tuberculosis (TB), and diarrheal diseases. The WHO will soon undertake a TB assessment in the region. Some reports of rabies were received from Ghazni.

Afghanistan Refugees – United Nations High Commissioner For Refugees (UNHCR)

On 28 December, the UNHCR reported the following numbers for Afghan refugees: 2 million in Pakistan; 1.5 million in Iran; 15,400 in Tajikistan; 8,800 in Uzbekistan; and 1,500 in Turkmenistan. Refugee return is steadily increasing with up to 5,000 refugees crossing the borders daily. However, there remains a continuing small exodus of several hundred persons per day into Pakistan. The UNHCR is not encouraging return of refugee families at this time due to millions of mines that remain a threat and insecure roads especially in the south and east. The UNHCR is recommending springtime repatriation for the estimated 3.5 million Afghan refugees in Pakistan and Iran based on the anticipation of a more stable political and military situation.

Anthrax / Biohazard Clean-Up Training Curriculum – Occupational Safety and Health Administration (OSHA)

On 19 December, the OSHA announced a new training partnership with the Laborers International Union to develop an anthrax/biohazard training curriculum. The course material will be developed and tested through the combined expertise of the OSHA, the Laborers International Union, and other appropriate government entities. The final training curriculum for distribution across the country will include training manuals, CD-ROM, and web-based curriculum with PowerPoint presentation and other training tools. The release is at <http://www.osha.gov/media/oshnews/dec01/national-20011219.html>.

Anthrax Decontamination – Environmental Protection Agency (EPA)

The EPA began the third decontamination attempt for the Hart building in Washington DC over the New Years holiday weekend. Final laboratory results regarding decontamination will take one to two weeks.

Anthrax Environmental Sampling Results – CDC

On 21 December, the CDC published a report on the sampling techniques and results for the Brentwood postal facility in Washington DC. The results indicated that wipe samples and high efficiency particulate air (HEPA) vacuum samples complement each other in assessing contamination. Wipe samples were more likely to produce negative results when spores were detected using the HEPA vacuum technique; however, moistened sterile cotton gauze pads were used for the sampling, which were subsequently found to decrease spore recoveries. CDC investigators now use rayon-tipped swabs or rayon wipes moistened with sterile water for sampling. Limitations for the surface wipes include the possibility of missing either minimally contaminated surfaces or small, discretely contaminated areas. The HEPA vacuum technique maximizes surface evaluation when it is not feasible to wipe-sample all surfaces within a building. A potential limitation of the HEPA vacuum technique is cross-contamination between vacuum samples; however, pre-cleaning the nozzle before each sample and use of a high-efficiency filter appeared to be effective because negative samples were interspersed amongst heavily contaminated samples. All air-sampling results were negative. However, air sampling was conducted after the facility was closed and the ventilation system shut down and thus, did not mimic actual use conditions. Current guidelines for collecting environmental samples are at <http://www.bt.cdc.gov/DocumentsApp/Anthrax/11132001/final42.asp>.

Anthrax Exposures – Centers For Disease Control And Prevention (CDC)

On 21 December, the CDC updated recommendations regarding post-exposure anthrax prophylaxis. The current recommendation remains as 60 days of antibiotic treatment accompanied by careful monitoring for illness. The CDC added two additional options that can be made available at the end of 60 days. The first option is 40 additional days of antibiotic treatment to protect against spores that may become activated up to 100

days after exposure. The second option is 40 additional days of antibiotics plus three doses of anthrax vaccine given over a four-week period to provide protection for a longer period of time. The Department of Health and Human Services (DHHS) statement is at

<http://www.bt.cdc.gov/DocumentsApp/Anthrax/12182001/hhs12182001.asp>.

Because the vaccine is not licensed for post-exposure use, this usage constitutes that of an experimental new drug, and the vaccine must be given under informed consent. CDC has provided forms for adult (<http://www.cdc.gov/od/oc/media/adult.pdf>), adolescent (<http://www.cdc.gov/od/oc/media/adolescent.pdf>), and parental (<http://www.cdc.gov/od/oc/media/parental.pdf>) informed consent. Five CDC teams are deployed to Florida, the DC metro area, New York City, New Jersey, and Connecticut to provide vaccination under informed consent, record adverse events, and answer questions. The CDC provided two live satellite broadcasts on the revised treatment options, both of which are available on the Internet. The broadcast for public health officials and clinicians is at http://www.sph.unc.edu/about/webcasts/2001-12-21_vaccine/ and the broadcast for postal workers and other workers is at http://www.sph.unc.edu/about/webcasts/2001-12-21_post/.

Anthrax Vaccine – NO Mycoplasma Contamination

In the January 2002 issue of CDC's Emerging Infectious Diseases Journal, authors reported that two non-military laboratories tested lots of the anthrax vaccine adsorbed (AVA) for mycoplasma by culture and polymerase chain reaction (PCR) assay and found no evidence of contamination. The report is at <http://www.cdc.gov/ncidod/eid/vol8no1/01-0091.htm>.

Bioport Facility Inspection – Food and Drug Administration (FDA)

On 19 December, the FDA announced that it had completed the pre-approval inspection of the BioPort facility in Lansing, Michigan. An inspection report was issued to the firm with seven observations – many of which were addressed during the course of the inspection. The FDA is expected to make a decision soon regarding the approvability of the BioPort supplemental Biologics License Application (BLA). However, before any new anthrax vaccine adsorbed can be lot released and available for routine shipment, the FDA must also approve a supplemental BLA for BioPort's contact filling facility, Hollister-Stier Laboratories; the pre-approval inspection is scheduled for early January. The report is at <http://www.fda.gov/bbs/topics/news/2001/new00787.html>.

Bioterrorism Agents – Public Health Assessment

On 15 December, the Centers for Disease Control and Prevention (CDC) released a report entitled "Public Health Assessment of Potential Biological Terrorism Agents" in advance of publication in the February 2002 issue of *Emerging Infectious Diseases*. The report details the process of categorizing biological agents into priority categories for public health preparedness efforts. Category A agents are given highest priority for preparedness and contain six biological agents of greatest concern: (1) smallpox; (2)

anthrax; (3) plague; (4) botulism; (5) tularemia; and (6) viral hemorrhagic fevers (VHFs). For category B agents, public health preparedness efforts will focus on identified deficiencies, e.g., improving laboratory response and enhancing awareness and surveillance. For category C agents, the focus is on further study while maintaining epidemiological and laboratory surge capacities to respond to an event involving these agents. The full report is at <http://www.cdc.gov/ncidod/EID/vol8no2/01-0164.htm>.

Foot And Mouth Disease (FMD) – World Organisation [sic] for Animal Health (OIE)

On 20 December, the OIE published online the *Standards, Guidelines, and Recommendations of the OIE Relating to FMD*. The document was compiled by the International Conference on Prevention and Control of Food and Mouth Disease that met in Brussels from 12-13 December. This document is binding for World Trade Organization (WTO) members and is designed for use when member nations establish animal health conditions governing import and export of animals and animal products. The report is at http://www.oie.int/eng/publicat/Rapports/a_FMD%20Bruxelles.pdf.

Gulf War Syndrome – Department Of Defense (DoD) And Veterans Affairs (VA)

On 21 December, the DoD and VA announced preliminary evidence from an epidemiological study that indicates Persian Gulf War veterans are nearly twice as likely as their non-deployed counterparts to develop Lou Gehrig's disease. The disease is a fatal neurological disease that destroys nerve cells that control muscle movement. The cause is unknown, and there is no treatment. Death usually follows diagnosis within three to five years. The disease is rare occurring in the general population at the rate of one in 25,000 people and among Gulf War Veterans at about one in 17,500 people. The VA is providing free medical care and disability compensation for veterans who have the disease. Survivors of veterans who died from the disease are eligible for dependency and indemnity compensation, enrollment in VA's healthcare program for survivors, and other benefits.

Influenza Surveillance – Global

The WHO reports on global influenza activity; a map-based report is at http://oms.b3e.jussieu.fr/flunet/f_recent_activity.html.

Influenza Surveillance – DoD

The DoD Worldwide Influenza Surveillance Program is a laboratory-based influenza surveillance program managed by the Air Force. As of 27 December, 70 (7%) of 1,000 submitted specimens have been identified as positive for influenza since the start of the influenza season. Of the 70 isolates, 19 (27%) have been subtyped, and all were influenza A (H3N2). Complete information, including a map-based view of data, is available at <https://pestilence.brooks.af.mil/Influenza/>.

Influenza Surveillance – USA

The CDC conducts surveillance for influenza in the USA each year from October through mid-May. The latest report for 16-22 December indicates that during this week overall national visits to physicians for influenza-like illness (ILI) were 1.5%, which is below the national baseline of 1.9% and deaths attributed to pneumonia and influenza were 6.4%, which is below the epidemic threshold of 7.8% for this week. During this week, the CDC classified influenza in the following state and territorial health departments: widespread activity in Alaska; regional activity in Colorado and Vermont; no activity in Idaho, Illinois, New Hampshire, Pennsylvania, and Rhode Island; no report submitted from Arkansas, Delaware, and New Jersey; and sporadic activity in the remaining 39 states, New York City, and Washington, DC. Laboratory reports indicated 18 of 756 respiratory specimens tested were positive for influenza: six influenza A (H3N2) viruses, one influenza A (H1N1) virus, and 11 influenza A viruses with unspecified subtype. Since 30 September, 306 (2%) of 15,389 submitted specimens were positive for influenza: 296 (97%) were influenza A and 10 (3%) were influenza B. Of the 296 influenza A viruses, 192 (63%) were subtyped with the following results: 185 were influenza A (H3N2) and five were influenza A (H1N1). Isolates from Alaska account for the majority of positive specimens. All viruses were similar to the vaccine strains A/Panama/2007/99 (H3N2), A/New Caledonia/20/99 (H1N1), and B/Sichuan/379/99, respectively. Further information, including a map-based view is available at <http://www.cdc.gov/ncidod/diseases/flu/weekly.htm>.

CENTCOM

Meningococcal Meningitis – Ethiopia

On 18 December, the WHO reported an outbreak of meningococcal meningitis in Ethiopia involving 391 cases and 37 deaths occurring between 10 September and 10 December. The country is preparing for a mass vaccination campaign in the affected areas, which will be carried out with assistance from Holland. No information is provided on the type of vaccine or the serogroup associated with the outbreak. The vaccination campaign suggests that the serogroup is covered in the vaccine. Ethiopia is included in the African Meningitis Belt, a region of 18 countries that contains the highest number of cases of meningococcal meningitis in the world. Epidemics generally occur in seasonal cycles between the end of November and the end of June and decline rapidly with the arrival of the rainy season. The report is at <http://www.who.int/disease-outbreak-news/n2002/january/02january2002.html>.

EUCOM

Antimicrobial Resistance – Croatia

In the January 2002 issue of CDC's Emerging Infectious Diseases Journal, authors reported antibiotic resistance surveillance results in Croatia for 1999. The article reports the following trends indicate major resistance problems, especially in large hospitals: (1)

penicillin resistance in pneumococci, a major community-acquired pathogen (38%); (2) methicillin resistance in *Staphylococcus aureus*, common in large hospitals and on trauma wards (22%); production of extended spectrum beta-lactamases (ESBL) by *Klebsiella pneumoniae* (21%); and imipenem resistance in *Pseudomonas aeruginosa* (11%). The article reports that ESBL-producing salmonellas, which caused outbreaks both in the community and in hospitals, were first identified in Croatia during 2000. Lastly, the article states that Croatia has a low incidence of multidrug-resistant TB with only 0.6% of multidrug-resistance in new cases. The full article is available at <http://www.cdc.gov/ncidod/eid/vol8no1/01-0143.htm>.

Bovine Spongiform Encephalopathy (BSE) Surveillance – Europe

On 20 December, Eurosurveillance Weekly reported that Sweden is now the only country in the European Union to have no reports of BSE. This comes after initial reports of BSE in Austria and Finland during the past month. Epidemiological investigations are continuing in both Austria and Finland regarding the source of the infections. Austria banned feeding meat and bonemeal (MBM) to cattle more than 10 years ago. In Finland, MBM had not been used on the farm of origin for more than 20 years. This investigation is pursuing the possibility of MBM contamination of plant-derived protein concentrate fed as a milk replacement in 1995. In 1995, milk replacements contained bovine fat and have therefore not been excluded as a possible source. The report is available at <http://www.eurosurv.org/update/news.html>.

Ebola / Viral Hemorrhagic Fever – Gabon and Republic of the Congo

On 2 January, the WHO reported that as of 1 January, 32 confirmed cases of Ebola (20 in Gabon and 12 in the Republic of the Congo), with 23 deaths (CFR = 72 percent). An additional 9 suspected cases (7 in Gabon and 2 in the Republic of the Congo) and 191 contacts (96 in Gabon and 95 in the Republic of the Congo) are under active follow up for 21 days. More cases are expected in the contacts. Outbreak control interventions are continuing. The report is at <http://www.who.int/disease-outbreak-news/n2001/december/28december2001.html>.

European Food Safety Authority (EFSA) – European Parliament

The Eurosurveillance Weekly reported that on 11 December, the European Parliament approved the creation of an independent EFSA that will start operating the first half of 2002. The EFSA will have a broad mandate, including a wide range of scientific and technical support tasks on all matters having a direct or indirect impact on food safety. The EFSA mission includes the provision of scientific opinions on all issues in relation to animal health and welfare, plant health, and genetically modified organisms. The Weekly further reports that EFSA will have the daunting task of informing the public about its activities in light of a chronology of outbreaks of food-borne disease and food scares, notably BSE and dioxins in animal feed that has damaged consumer confidence in the safety of the food supply and the ability and commitment of the regulatory

agencies to ensure that food is safe. The report is available at <http://www.eurosurv.org/update/news.html>.

Influenza Surveillance – Europe

For the week 17-23 December, the European Influenza Surveillance Scheme (EISS) and EuroGROG reported the following influenza activity: sporadic influenza A in Belgium, northern France, and the Czech Republic and sporadic influenza B in southern France. In England regionally increased influenza activity above baseline was reported in the north. Italy reported the first case this season of influenza B from Milano (northern Italy). Reports of respiratory syncytial virus were increased in England, France, and Scotland. EISS reports that this data should be interpreted with caution as the holidays interfered with proper reporting and analyses for this week. EuroGROG reported that influenza A (H3N2) and B viruses are “neck to neck making it impossible to forecast which one will be predominant in Europe.” The reports are available at <http://www.eiss.org/>.

Tularemia Outbreak 1999-2000 – Kosovo

An outbreak of tularemia occurred in Kosovo during the postwar period 1999-2000, which led to early suspicions on the use of bioterrorism. These suspicions were quickly allayed though as the outbreak was determined to be natural in origin. In the January 2002 issue of CDC’s Emerging Infectious Diseases Journal, authors reported on the case-control study involving this outbreak, which concluded the cause was due to rodent contamination of food and that unprotected and unboiled water was a contributing factor. The authors report that returning refugees in 1999 reported destroyed homes; damaged and contaminated food storage areas and wells; fallow fields; unharvested crops; and a population explosion of rodents in fields, gardens, homes, and outbuildings that peaked in fall 1999 and continued throughout the winter. The WHO initially reported the outbreak on 20 April 2000 as affecting 90 percent of Kosovo with most cases in the western area. The WHO reported the first cases dated back to August 1999 and symptoms included high fever, body aches, swollen lymph nodes, and difficulty swallowing, which continued for approximately two weeks. The case-control study is at <http://www.cdc.gov/ncidod/eid/vol8no1/01-0131.htm>, and the WHO report is at <http://www.who.int/disease-outbreak-news/n2000/april/21apr2000.html> and <http://www.who.int/disease-outbreak-news/n2000/april/21apr2000.html>.

JFCOM

Antibiotic Resistance – Community Acquired Methicillin-Resistant Staphylococcus Aureus (MRSA) in Foodborne Illness Outbreak

In the January 2002 issue of CDC’s Emerging Infectious Diseases Journal, authors proclaimed the first report of a community-acquired outbreak of acute gastroenteritis caused by MRSA. The outbreak involved a convenience-market delicatessen in

Tennessee, and lab results indicated identical isolates from three patients stool cultures, coleslaw, and the nasal swab of a food handler. The authors report that the food handler prepared the coleslaw but had no recent gastrointestinal illness nor chronic health problems, hospital admissions, or use of antibiotics in the past six months and no close contact with persons who lived or worked in health-care facilities; however, the food handler did report several visits to an elderly relative that had succumbed to a staphylococcal infection in a nursing home. The population at risk for MRSA will likely broaden as this microorganism continues to be an increased source of community-acquired infections.

Automated External Defibrillators (AEDs) – OSHA

On 17 December, the OSHA released a statement supporting the use of AEDs in workplaces. The OSHA has issued a fact card (<http://www.osha-slc.gov/Publications/AED-card.pdf>) and a technical information bulletin (http://www.osha-slc.gov/dts/tib/tib_data/tib20011217.pdf) of the use of AEDs. The OSHA reports that as many as 120 lives could be saved each year if AEDs are in the workplace. Workers involved in shift work, holding high stress jobs, or exposed to certain chemicals or electrical hazards face a higher risk of heart disease and cardiac arrest.

Childhood Vaccination Recommendations – CDC

The childhood vaccination recommendations initially released by the CDC on 10 December and reported in the 18 December HIO Weekly Update have been published and are available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5050a4.htm>.

Handwashing In Healthcare Settings – CDC

Comments on CDC's "*Draft Guidelines for Hand Hygiene in Healthcare Settings*" closed on 24 December. It is reasonable to expect final guidelines will be published during the upcoming calendar year. Some of the recommendations included promoting the use of alcohol-based handrubs when hands are not visibly soiled; providing healthcare workers with hand lotions or creams to minimize irritant contact dermatitis; and ensuring that natural fingernails are less than ¼ inch long and no artificial fingernails or extenders are worn when providing patient care. The draft guidelines are at <http://www.cdc.gov/ncidod/hip/hand/hhfedreg.htm>.

Occupational Illness and Injury Reporting – OSHA

On 1 January the new recording-keeping system for tracking workplace injuries and illnesses became effective. The OSHA reports that as employers switch from the old record-keeping system to the new one, they will need to post their 2001 summary of injuries and illnesses during the month of February. A web version of a satellite-training broadcast that was aired on 12 December is available at <http://www.osha-slc.gov/recordkeeping/RKsatellite.html>.

Pesticide Illness And Injury Surveillance – National Institute For Occupational Health And Safety (NIOSH)

On 6 December, NIOSH established a pesticide illness and injury surveillance website, which provides hyperlinks to resources concerning occupational pesticide-related illness and injury. NIOSH advocates that surveillance will serve as an early warning system to detect any harmful effects of pesticides not detected by manufacturer testing of pesticides. Documents on the website were developed to aid state surveillance efforts and include a case definition for acute pesticide-related illness and injury and guidance for assigning case severity. The EPA estimates that over 10-20,000 physician-diagnosed pesticide poisonings occur each year with the following occupations at highest risk: agricultural workers, groundskeepers, pet groomers, and fumigators. The website is at <http://www.cdc.gov/niosh/pestsurv/default.html>.

Women's Occupational Health Issues – NIOSH

NIOSH has an expanding research program to address occupational safety and health issues in women and has recently added a website devoted to this topic. The website may be useful as a reference for occupational health programs and is at <http://www.cdc.gov/niosh/womsaft.html>.

PACOM

Influenza Surveillance – Japan

The monthly Infectious Agents Surveillance Report indicates that as of 6 December, a strain of type B virus was isolated on 26 September in Nagoya City. A strain of type A (H3N2) virus was isolated on 5 October in Sendai City and four strains during 19-23 October in Okinawa Prefecture. The report is at <http://idsc.nih.go.jp/iasr/22/262/tpc262.html>.

SOUTHCOM

Drought And Food Insecurity – Central America

On 21 December, the International Federation of Red Cross and Red Crescent Societies reported that El Salvador, Guatemala, Honduras, and Nicaragua are experiencing the third consecutive year of drought. The World Food Programme estimates that 1.5 million people are affected by the drought and 695,00 are facing critical food security problems. Drought is a regular occurrence in these countries, but Hurricanes Iris and Michelle aggravated this issue with extensive crop damage and severe flooding. Additionally, a dramatic drop in the price of coffee has worsened the plight of those affected. Several aid agencies are employed in distributing food rations to the most vulnerable populations. Severe malnutrition coupled with the relatively recent flooding could result in increased food-borne, water-borne, and vector-borne disease threats in this region.

Medical Readiness Exercises – Joint Task Force (JTF) – Bravo, Honduras

According to *The Iguana*, joint Army and Air Force newspaper for JTF- Bravo, MEDEL has projected 24 MEDRETEs for 2002, up seven from 2001. The focus of the exercises will be preventive medicine, general medicine, nutritional surveys, optometry, dentistry, pediatric consultations, and multiple types of surgeries. Humanitarian assistance missions are scheduled for El Salvador and Nicaragua in January, while planning is scheduled for May 2002 to discuss humanitarian assistance missions slated for 2003 in Panama and Belize.

STRATCOM

Nuclear Study Results – Defense Threat Reduction Agency (DTRA) Advanced Systems And Concepts Office (ASCO)

On 10 December the DTRA posted the following report on its website: *Twenty-first Century Threat Reduction: Nuclear Study Results from DTRA/ASCO*. The paper summarizes results from ASCO-sponsored studies in the nuclear area for fiscal year 2000-2001 and lists the objectives of studies due to be completed between November 2001 and May 2002. Completed ASCO studies focused on three major areas: prospects for nuclear proliferation, deterrence, and preventive threat reduction. The full report is at <http://www.dtra.mil/about/organization/nuclearstudies.pdf>.

- Proliferation. Analytical surveys looking out ten to twenty years found that while the absolute number of nuclear weapons in the world is going down, Chinese forces are modernizing and perhaps growing, and that India and Pakistan may weaponize their forces to a greater degree than they have to date. The report further states that the risk of nuclear use in South Asia may grow as a result. ASCO predicts that while most proliferation concerns focus on the risks of terrestrial conflict, the spread of nuclear weapons and ballistic missiles means that low earth orbit (LEO) will likely be targetable by more “rogue” regimes in coming decades, even as military and commercial use of LEO increases.
- Deterrence and other tools of coercive threat management. The report emphatically states that terrorist acquisition of WMD presents the most stressing case for deterrence.
- Preventive threat reduction. The Cooperative Threat Reduction (CTR) program between the US and Russia is a good “business model” to apply to other states that possess fissile materials, WMD, and/or delivery systems.
- Sparta, Inc., conducted a study, classified as secret, to compare the lethality of ballistic missile-delivered nuclear, chemical, and biological munitions, which was scheduled for completion no later than 31 December 2001. The study was in response to a request from the Ballistic Missile Defense Organization.

RESEARCH

Research Initiatives – Defense Advanced Research Projects Agency (DARPA)

DARPA is seeking solicitations through 29 August 2002 for a number of innovative research proposals that potentially have global impact on the Preventive Defense and Environmental Security policies of the Department of Defense.

- **Water Harvesting.** The overall goal is to develop and demonstrate technologies to potentially eliminate more than 50 percent of the minimum daily water supply requirements (7 quarts/day) of the Special Forces, Marine Expeditionary Units, and Army Medium-Weight Brigades. Special emphasis is placed on technologies that extract water on demand from non-traditional sources such as atmospheric moisture, breath, sweat or urine, wet earth and mud of various soil compositions, combusted hydrocarbons, etc. <http://www.darpa.mil/baa/baa01-42mod6.htm>
- **Persistence in Combat (PIC).** The overall goal is to develop technologies that will enable the warfighter to administer self-aid for minor to moderate injuries without relying on outside support. The specific objectives include: 1) a tenfold increase in the number of warfighters using self aid techniques on the battlefield; 2) a fivefold increase in the rate of tissue repair; 3) a major reduction in the number of minor injury evacuations from the battlefield; 4) a physically functional warfighter 96 hours post-injury; 5) control of pain by initiating treatment within five minutes of injury. Focus is on the following three areas: 1) non-invasive therapy for acute incapacitating minor tissue injury such as low level energy therapy (including electromagnetic, near-IR, visible, thermal, acoustic, and vibratory fields); 2) solutions for acute non-compressible hemorrhage such as nervous system control of bleeding, new classes of fluids that explore non-invasive delivery routes (oral, transdermal, mucous membrane, etc.); and 3) managing acute pain on the battlefield that are free of side effects such as acupuncture, acupressure employing electromagnetic stimulation to release pain-relieving biomolecules, biofeedback, training and meditation. <http://www.darpa.mil/baa/baa01-42mod7.htm>
- **Brain Machine Interfaces.** This is a new program area that operates on the basic principle that the brain takes inputs and generates outputs through the electrical activity of neurons. DARPA is seeking new technologies for augmenting human performance through the ability to non-invasively access these codes in the brain in real time and integrate them into peripheral device or system operations. <http://www.darpa.mil/baa/baa01-42mod1.htm>

Malaria Vaccine – National Institutes of Health (NIH)

On 17 December, the NIH announced that researchers have developed mice that secreted an experimental malaria vaccine into their milk. When the purified candidate vaccine was injected into monkeys, it protected four out of five animals from a lethal dose of the malaria parasite. Early experiments indicate that the process can be scaled up to larger animals such as goats. The news release is at <http://www.nih.gov/news/pr/dec2001/niaid-17.htm>.

POC KEVIN DELANEY/MCHB-CS-OHI/584-5217
<mailto:Kevin.Delaney@APG.amedd.army.mil>