USACHPPM TODAY

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A U.S. Army Center for Health Promotion and Preventive Medicine News Bulletin

Army Reserve Blackhawk helicopter gets ready to t ransport water, Meals Ready to Eat, medical supplies, and equipment for deployment.

(See story on page 38)

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June 2003
Volume 10, No. 1

LET US KNOW

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A Message From The Deputy For Technical Services

USACHPPM: Planning for the Future

Many government agencies continue to work toward reducing the bureaucracy and increasing the flexibility of employees to meet their organization's strategic goals. Government agencies are also facing the challenges of an "aging" workforce. With approximately 30 percent of the CHPPM workforce eligible for retirement within the next 5 years, it is imperative that we maintain a well-trained, responsive workforce capable of meeting our future challenges. In addition, it is critical to develop future leaders within the Center to carry us well into the 21st Century. An essential planning tool is a needs assessment to assist in prioritizing the performance needs of our organization and to direct the necessary resources to these areas.

Why is it important for CHPPM to conduct a needs assessment? We are trying to be proactive to avoid any future skills and leadership gaps as our senior workforce begins retiring. A wealth of institutional knowledge will be walking out the door, and we need to recruit, train, and develop our future leaders and subject matter experts now. As part of our strategic planning, the Center has organized a Needs Assessment Workgroup to identify what performance requirements currently exist within the Center and what performance requirements we will need for our future mission. The workgroup must determine if the identified needs are real, if these needs are worth addressing, and specify their importance in view of our future organizational needs and requirements. Performing a needs assessment will be quite involved and will require the help of all CHPPM management, to include the subordinate commands.

Step One - Perform Gap Analysis

The first step in the needs assessment process is performing a skills gap analysis. The workgroup will assess the following:

- Current situation: Management must determine the competencies of our current employees. The workgroup will need to examine our organizational goals, climate, and internal and external constraints.
- Desired situation: Management must identify the necessary conditions for organizational success as well as personal success. The workgroup will need to identify the necessary critical tasks as well as the skills needed to accomplish these tasks successfully.

There are several techniques the workgroup may use in performing this gap analysis--

- Questionnaires/surveys
- One-on-one interviews with key personnel and technical experts
- Focus groups
- Direct observation
- Review of existing documentation
- Work samples

Step Two - Identify Priorities

After the workgroup has gathered the assessment data, they must examine this information in relation to its importance to our Center's goals and limitations. The workgroup must consider--

- Cost effectiveness
- Legal mandates
- Number of people involved
- Customer expectations

Step Three - Identify Causes of Performance Problems

The workgroup must also identify specific problem areas. It is very important for management to be able to distinguish between training needs and performance needs. We may have employees who know how to do their job but are not doing their job effectively. These employees do not need training on how to do their job; they need training on how to do their job better.

Step Four - Identify Solutions to Performance Problems

If there is a knowledge problem, then employees will need the proper training. However, when the problem is not based on a lack of knowledge, organizational development activities such as strategic planning, restructuring, performance management and/or team building may provide the appropriate solutions.

Step Five - Prioritization

Finally, the workgroup will prioritize the organization's needs by reviewing the existing expertise that may be retiring and what new initiatives need to be developed for the future expertise of the organization. The prioritizations will include--

- The future direction(s) of the organization.
- What occupational group(s) within the organization will be affected by this new direction(s).
- What will be the future specialized occupational group(s), and how many will be required to meet the new direction(s) of the organization.
- What other resources (such as, facilities, special equipment, new technology) will be required to meet the new direction(s) of the organization.

The workgroup developed the following outline as to how they will conduct the needs assessment and submit their findings and recommendations to the Commander.

Outline for the
Conduct of a Needs Assessment

I. Purpose. To identify and assess performance requirements and human resource capabilities and needs within the organization in order to direct current and future resources to areas of greatest priority.

II. Scope. This assessment will address all technical and administrative positions at CHPPM-Main and all Subordinate Commands.

III. Background.

a. Strategic Plan--

(1) Goals/Objectives
(2) Mission
(3) Vision

b. CHPPM's Core Competencies--

(1) Prevent and control diseases and injuries of military significance.
(2) Promote health and well being in military populations.
(3) Anticipate, identify, assess, and control occupational and environmental health hazards.
(4) Conduct advanced and sustainment preventive medicine training.
(5) Disseminate and communicate targeted health information.

c. Current Human Resource Skills Inventory (supply)

d. Projected Human Resource Skills Inventory (demand)

IV. Methodology.

a. Supply Analysis--

(1) What are the strategic objectives of the Center?
(2) What functional requirements are linked to meeting the Center's objectives?
(3) What are the present work products?
(4) What are the skills in the current workforce?

b. Demand Analysis--

(1) How will the ways of doing business change?
(2) What is the nature of the work in terms of volume, location, and duration?
(3) Will strategic objectives change?
(4) What skills will be needed in the future workforce?
(5) Will the size of the workforce increase? Decrease?

c. Gap Analysis--

(1) How is the workforce going to change?
(2) What skills will the current workforce need to contribute over the next 5 years?
(3) What skills will be needed that are not present now in the workforce?

d. Solution Analysis--

(1) How can training be beneficial in this transition?
(2) What will be the sources of new hires?
(3) What attrition and retirement can be expected?
(4) What kinds of positions will need to be filled?
(5) Are new hires going to replace old employees or will the new hires go into new positions?

V. Recommended Actions. The workgroup will develop their findings and recommendations and forward to the senior leadership for review. The workgroup will need the senior leadership's good ideas and valued opinions to determine the best overall courses of action. The workgroup will then prepare the recommended actions and present this information to the Commander.

In summary, the Center must continue to look at the recruitment, development, and retention of our workforce as a necessary investment. The workgroup is committed to having the needs assessment completed by the end of fiscal year 2003. As stated earlier, for this assessment process to be successful, the workgroup will need the cooperation of the Command group, Subordinate Commanders, Directors, Deputy Chiefs of Staff, Program Managers, Division Chiefs, and Branch Chiefs. It is crucial for the Center to explore the way things currently are, and maybe more importantly, the way they should be for the future success of this Center.

(Source: Rouda, Robert H., Kush, Mitchell E., Needs Assessment the First Step, Tappi Journal, 1995-1996).

FORCE HEALTH PROTECTION – A MILITARY IMPERATIVE

Conference to be held in Albuquerque, New Mexico

The Sixth Annual Force Health Protection Conference will be held 11 – 17 August 2003, at the Convention Center in Albuquerque, New Mexico. The theme for the conference is Force Health Protection – A Military Imperative. The USACHPPM will host this premier preventive medicine conference.

The conference will provide the multidisciplinary military and civilian force health protection community with the opportunity to increase knowledge and awareness of current issues, attend short courses for professional development, mentor, network, and earn CEUs or CMEs.

The core conference will begin with a morning plenary session on Monday, 11 August. Beginning on Monday afternoon and running through Thursday afternoon, breakout sessions will be available in all tracks. Several one, two and three-day post-conference training courses will be held beginning on Friday, 15 August. Pre-registration is recommended for these post-conference courses. This year, the Veteran's Administration will play a vital role by providing speakers and sessions in a special VA Veterans' Health track that will provide a training course for Preventive Medicine Program Coordinators and other clinical staff in VA and Department of Defense facilities. Participants will learn the basics of prevention, behavioral change counseling, how to overcome barriers to preventive services, and other practical information for health promotion and education for the Primary/Ambulatory Care staff and their patients. Consultants will present "real world" experiences in delivering preventive services in a VA Medical Center, and an open-forum setting will present the opportunity to discuss specific problems.

Another innovation at this year's conference is the participation of the DOD Ergonomics Working Group that will host the Ergonomics track. This track will serve as the Annual DOD Ergonomics Conference for DOD, Federal, industry, and university safety and health professionals. The sessions will provide practical, user-friendly information on program development, implementation, and management; best practices; self assessments; cost benefits and return on investments; marketing and communication; intranet programs; workstation design; and research initiatives.

The other seven conference tracks will consist of:

The Environmental Sciences track will focus on topics concerned with health hazard/risk assessment skills that support the commander's risk management efforts across the operational spectrum.

The Advanced Sciences track relates to the emerging technological and molecular epidemiological practices of prevention/detection as a continuous process from accession, deployment, and beyond.

The Occupational and Preventive Medicine track will focus on topics related to the science and delivery of preventive, occupational, and environmental medicine services integral to protecting warfighter health.

The Health Physics and Radiological Sciences track provides continuing education, scientific updates, and professional development for military and DOD civilian health physics professionals, and DOD preventive medicine professionals.

The Industrial Hygiene track will provide updates on corporate initiatives, training on technical topics, and pragmatic guidance on current issues relevant to DOD Industrial Hygiene such as exposure assessment, emergency preparedness and response, and resource management.

The Population Health and Well-being track will include both plenary and breakout sessions designed to provide an exchange of information that has a wide application within the military community in the areas of population health, complimentary and alternative medicine, injury prevention, nutrition, and spiritual health.

The Behavioral Health track recognizes the behavioral factors inherent in preventive medicine and health promotion. It affords conference attendees the opportunity to integrate state-of-the-art behavior change strategies with more traditional health promotion and preventive medicine efforts.

The conference will include both plenary and breakout sessions designed to provide an exchange of hands-on information that has a wide application within the DOD community in the areas of homeland security/homeland defense, environmental health, population health, behavioral health, injury prevention and other areas of preventive medicine. This is the broadest based conference we have developed, and it is hoped that all specialties will benefit from the wide range of topics and courses being presented.

Technical presentations or papers and technical posters are being solicited through a link on the conference website. The focus will be on topics that provide hands-on information and training to assist those who support preventive medicine in garrison and in the field.

Commercial and military exhibits will be an integral part of this conference providing state-of-the-art materials to assist professionals with their jobs at installations and units. To ensure that attendees have an opportunity to benefit from these important exhibits, they will be open for viewing from 1100-1400 on both Tuesday and Wednesday. Military and commercial exhibitors are encouraged to apply for exhibit spaces in the conference center exhibit hall.

Information on the conference including the call for papers, call for posters, and exhibitor prospectus will be found on the FHP website at: http://chppm-www.apgea.army.mil/fhp. The website is currently available for registration. For additional information you may contact: LTC (P) Michael Custer, Conference Director, DSN 584-6250/COMM 410-436-6250 or Ms. Jane Gervasoni, Deputy Director, DSN 584-5091/COMM 410-436-5091.

HELPING EASE THE BURDEN OF HOMELAND SECURITY

The past 16 months have brought us all a heightened sense of our vulnerability as a nation and as individuals. There has been an increase of security at our borders, seaports, airfields, and points of entry to sensitive facilities.

A large part of the daunting task of controlling who and what enters our country and its vital activities is the inspection of large cargo containers, truck trailers, vehicles, and vessels. It is virtually impossible to unpack and repack every container that is moved through the myriad of inspection points that have been established to safeguard us.

A growing number of manufacturers have thrown their hats into the ring in the competition to produce the most viable means to quickly and accurately identify the contents of large shipments of goods and materials.

The USACHPPM is currently conducting a Health Hazard Assessment on several imaging systems that employ either x-ray producing devices or radioactive sources to facilitate digital imaging of the contents of large cargo containers.

The Health Physics Program is just one of the programs involved in the HHA process that calls on the expertise of many USACHPPM assets.

In anticipation of the approval of this type of security detection system, the Health Physics Program is establishing program guidelines for possible users of these imaging systems. The future users will have to comply with regulatory standards with which their military commands may not be familiar. Some of the standards are set by the U.S. Army and, in some cases, the U.S. Nuclear Regulatory Commission. Many organizations will be able to incorporate their new safety Standing Operating Procedures for these imaging systems with existing programs at their facilities because they already use radioactive commodities or radiation-producing devices for other purposes.

Initial acceptance surveys, including radiation safety tests, will have to be performed on each of the machines upon receipt at the using facility. Program reviews, training, and assistance visits are projected as part of the fielding of this technology.

The deployment and use of these systems are foreseen as a significant enhancement to security and force protection worldwide. The USACHPPM's participation in the approval process is hastening the fielding of a substantial addition to Homeland Security.

Digital imaging of truck trailer contents

"A" PROFICIENCY DESIGNATOR

LTC Mark A. Melanson is originally from Peabody, Massachusetts. He graduated from Dickinson College, in Carlisle, Pennsylvania in 1983 with a B.S. in Physics. An Army ROTC Distinguished Military Graduate, he was commissioned as a Regular Army Officer in the Medical Service Corps as a Second Lieutenant. His Area of Concentration is 72A, Nuclear Medical Science Officer, and he has served as a uniformed health physicist for 19-1/2 years.

Melanson has had a diversity of assignments in his career. He served as the Radiation Protection Officer at the Landstuhl Army Regional Medical Center in West Germany and as a Survey Officer in the Health Physics Division of the U.S. Army Environmental Hygiene Agency. At Walter Reed Army Medical Center he served as the Chief, Operations Branch, Health Physics Office and as the Chief of the Health Physics Office. He completed a tour in the Pacific as the Project Engineer for the Plutonium Remediation Project on Johnston Atoll for the Defense Nuclear Agency. More recently, Melanson served as the Radiation Health Consultant to the U.S. Army Materiel Command. Currently, he is the Program Manager for the Health Physics Program at the U.S. Army Center for Health Promotion and Preventive Medicine.

Melanson has both a Master's Degree and Doctorate in Radiation Health Sciences from the Johns Hopkins University School of Hygiene and Public Health and has been a Certified Health Physicist for over a decade. He is a plenary member of both the Health Physics Society and the Society for Risk Analysis.

His involvement with depleted uranium began in 1991 while stationed at Walter Reed Army Medical Center where he encountered one of the first "friendly fire fratricide" survivors of Desert Storm who had DU fragments. While assigned to U.S. Army Materiel Command, Melanson was actively involved in developing DU awareness training for U.S. soldiers and health oversight of the testing and development of DU armor and munitions. As the Health Physics Program Manager, he has led the team of scientific experts in completing the DU Health Risk Characterization of Gulf War Veterans for the Office of the Special Assistant for Gulf War Illnesses, Directorate of Deployment Health Surveillance. His staff has also been consulting to the DHS and Army-sponsored DU Capstone Tests designed to better estimate retrospective and prospective intakes of DU during combat scenarios. Since coming to USACHPPM, Melanson has served as a technical consultant to the World Health Organization and International Atomic Energy Agency on the health and environmental effects of DU. He has also participated as the U.S. member of the United Nations Environmental Programme team that conducted surveys in Kosovo, Serbia, Montenegro, and Bosnia for DU stemming from its use by NATO in 1999.

Since September 11th, 2001, Melanson has also been active in preparing USACHPPM to respond to terrorist attacks involving nuclear weapons or radiological dispersal devices ("dirty bombs"). He has led his program in updating and preparing equipment and in the conduct of readiness exercises with the Special Medical Augmentation Response Team – Preventive Medicine.

Melanson currently lives in Joppa, Maryland with his wife, Debbie Parker, a nurse-attorney at Kirk Army Health Clinic, and their two sled dogs, Kita and Mishka. His hobbies include cooking (especially BBQ), downhill and cross-country skiing, writing, military history, and military diecast model collecting.

AMERICAN COLLEGE OF OCCUPATIONAL AND ENVIRONMENTAL FELLOWSHIP

LTC Timothy M. Mallon, M.D., M.P.H., Director, Occupational and Environmental Medicine, was elevated to Fellowship in the American College of Occupational and Environmental Medicine at the College's 88th annual membership meeting held May 7 at the Georgia World Congress Center in Atlanta, Georgia. The meeting was held in conjunction with the annual American Occupational Health Conference, the nation's largest conference of occupational and environmental health professionals.

Dr. Mallon practices occupational and environmental medicine at the USACHPPM. He is also on the Board of Directors for the Maryland component, one of ACOEM's 30 component medical societies.

Fellow is the highest class of membership within ACOEM. It recognizes physicians who have been engaged in the full-time practice of occupational and environmental medicine and who have exhibited significant leadership in ACOEM – at both the component society and national level. Fellows have also demonstrated their expertise within the specialty by achieving certification in occupational medicine or in another medical specialty by a Board acceptable to the ACOEM Board of Directors. Fellows are eligible to serve as officers and directors of the college.

Occupational and environmental medicine is the medical specialty devoted to prevention and management of occupational and environmental injury, illness, and disability, and promotion of health and productivity of workers, their families and communities. Created in 1916, ACOEM is an international medical society with more than 6,000 members. The College provides leadership to promote optimal health and safety of workers, workplaces, and environments. It is headquartered in Arlington Heights, Illiniois.

SMITH BECOMES A MASTER CONSULTANT

Thomas J. Smith, Certified Occupational Health Nurse Specialist, Directorate of Occupational and Environmental Medicine, is recognized throughout the Army Medical Command as the pre-eminent expert on Occupational Health Nursing. No other nurse in the field of Occupational Health has his combination of technical expertise, administrative skills, interpersonal skills, vision, and dedication to duty.

These qualities make him a highly sought after consultant both within USACHPPM and with outside agencies such as the Office of the Surgeon General, Health Affairs, and the American Association of Occupational Health Nurses.

Smith has made outstanding contributions to USACHPPM over the past 10 years and to the field of Occupational Health (OH) over the past two decades. He is responsible for providing leadership, continual assessment, planning, and managerial direction for OH at Department of the Army installations in CONUS and OCONUS. His visionary leadership is moving Army Occupational Health Nursing into the 21st century with innovative programs such as web-based assessment of clinics, population and workload-based staffing models, and evidence based performance metrics. He is improving the quality of care delivered at Army Occupational Health clinics by developing uniform credentialing standards for Occupational Health Nurses and Physicians and skillfully formulating and implementing policy and objectives that ensure OH services are within appropriate legal and regulatory requirements.

Smith functions as the Department of the Army's OH Nurse Subject Matter Expert regarding OH Nursing, and is responsible for providing leadership, continual assessment, planning, and managerial direction in OH for Department of the Army installations CONUS and OCONUS. He provides OH information used to brief the Assistant Deputy Under Secretary of Defense for Safety and Occupational Health (ADUSD), the Deputy Assistant Secretary of the Army and Environment for Safety and Occupational Health (DASA), the Proponent Office for Preventive Medicine (POPM) and the Office of the Surgeon General (OTSG)/MEDCOM and major subordinate commands, the Director and Program Manager in strategic planning and OEH nursing policies and issues. He serves as consultant to the Chief, Army Nurse Corps for OEH nursing and prepares presentations for the ADUSD for Safety and Occupational Health, DASA Environmental Safety and OH, POPM, OTSG, the USACHPPM, MEDCOM, and other Major Commands. These presentations provide background information and recommendations for policy and procedure changes designed to effect high standards of occupational health and optimum utilization of nursing skills and knowledge.

OH Nursing has become a specialized field due to its complexity, qualifications, knowledge requirements, variety of work, and understanding of statutory and regulatory requirements. Smith is widely recognized for his excellence in this area and serves as consultant to installations worldwide. He is highly valued for his prompt, practical and well-researched responses to the many questions that arise in areas where policy is lacking or unclear. He has an amazing fund of knowledge of regulations and requirements. Beyond that, he has excellent communication skills and is widely known for his good humor and sense of fun in all of his interactions with our clients.

DAVID PACKARD AWARD

David Packard Excellence in Acquisition Award Recipients: (L to R: BG William Bester, Mr. Mike McDevitt, Mr. Bob Gross, Mr. Felix Sachs, and COL John Ciesla

Each year the Department of Defense recognizes DOD civilian and/or military organizations, groups and teams who have demonstrated exemplary innovation and best acquisition practices reflecting goals and objectives furthering life cycle cost reduction and/or acquisition excellence. The DOD's highest acquisition award, The Packard Award, is named in honor of the late David Packard, a former Deputy Secretary of Defense during the Nixon Administration. Mr. Packard was also co-founder and chairman of Hewlitt-Packard Co. and chairman of the President's Blue Ribbon Commission on Defense Management chartered by President Ronald Reagan in 1985. He was a strong advocate of excellence in defense acquisition practices.

The Packard Award's primary judging criteria include: 1) Reducing life cycle cost (e.g., achieving best value for the government, balancing risk of fraud, waste or abuse against cost of preventive measures); 2) Making the acquisition system more efficient, responsive, and timely (e.g., managing risk vs avoiding it, meeting warfighter needs faster, better, cheaper); 3) Integrating defense with commercial base and practices; 4) Promoting continuous improvement of the acquisition process (e.g., simplifying the process, training workers, providing incentives); 5) Accomplishing specific goals of Acquisition Reform Initiatives.

This past June, Mr. Pete Aldridge, the Under Secretary of Defense for Acquisition, Technology and Logistics presented the 2002 David Packard Excellence in Acquisition Award to six DOD teams at a Pentagon ceremony. Framed certificates are provided to organizations and individual certificates are provided to team members. One of the teams receiving the Packard Award was the U.S. Special Operations Command Program Executive Office-Special Programs Multi-role Anti-armor Anti-personnel Weapon System and AT4-CS Shoulder-Fired Team. The USSOCOM received the award for its implementation of innovative acquisition approaches in developing the MAAWS.

The MAAWS is a lightweight, shoulder-fired recoilless rifle system with an extensive family of ammunition, used by U.S. Army and U.S. Navy Special Operations Forces. The MAAWS allows direct fire defeat of light armor, fortifications and personnel, along with smoke and illumination capabilities.

Members of the Army Health Hazard Assessment Program team provided significant support to the PEO-Special Programs MAAWS and AT4-CS Shoulder-Fired Team and recently received their individual certificates. Individual Packard Award certificates were presented to Mr. Mike McDevitt, Mr. Bob Gross, and Mr. Felix Sachs by BG William Bester, CG, and LTC John Ciesla, HHA Program Manager. (POC: Mr. Bob Gross, DSN 584-2925 or Commercial 410-436-2925).

THE CYANIC THREAT TO DRINKING WATER

Cyanic compounds have proven to be some of the most lethal and rapidly acting poisons known to man. Ingestion of water containing cyanide could result in the onset of cyanide poisoning symptoms within minutes and could be fatal. In addition, many cyanic compounds completely dissolve in water and do not change watercolor. Because of cyanide's lethal toxicity, debilitating effects, and relative ease of acquisition by terrorist groups, recent discussion has focused on its use as an intentional drinking water contaminant.

Unfortunately, recent events have revealed that cyanide-containing compounds are easy to obtain by villainous individuals and terrorist groups. On January 8, 2003, an 18-year-old Maryland High School Senior was arrested after purchasing a simple form of cyanide over the Internet and lethally poisoning his friend's Coca Cola drink. In another example, four Moroccans were arrested February 4, 2002 while plotting to contaminate the U.S. Embassy drinking water system in Rome, Italy with 10 pounds of cyanide. Earlier in the mid-1980s, the U.S. Federal Bureau of Investigation uncovered and foiled a plot to poison water supplies with cyanide in major U.S. cities. Even as far back as the ancient Romans, people eliminated their enemies by providing them water spiked with cyanide.

Shortly after the poisoning incident was thwarted in Italy, the USACHPPM Water Supply Management Program discovered that more research was needed to scrutinize cyanide as a terroristic drinking water contaminant. As a result, the USACHPPM WSMP conducted its own extensive literature research of commercial-ready technologies. The results of this research have been accepted for publication in several national defense and water industry journals. This research revealed useful cyanide detection equipment and showed how existing drinking water treatment processes are effective at removing this poisonous agent. In addition, the USACHPPM WSMP has presented study findings and recommendations to U.S. Forces stationed both CONUS and OCONUS.

Other organizations also have been focusing on the cyanic threat in drinking water. The U.S. Environmental Protection Agency formally allocated research funds in December 2002 to begin assessing drinking water cyanide detection technology. This effort includes the collaboration of the U.S. Army Center for Environmental Health Research, U.S. Army Medical Research and Materiel Command, in conjunction with the USEPA, U.S. Centers for Disease Control and Prevention, American Water Works Association, and several water utilities. The goal of this project is to provide performance data on commercial-ready technologies for environmental sampling and measurement.

As cyanide contamination research grows, the USACHPPM WSMP continues to evaluate and participate in cyanide research. At the present time, the WSMP is advising Army garrison medical and engineer staffs as well as deployable units on how to effectively detect and handle cyanide-contaminated drinking water. Copies of publications related to cyanide in drinking water can be obtained by contacting the USACHPPM WSMP. Additional support on either installation or field drinking water system performance or on vulnerability assessments can also be obtained by contacting the WSMP. [POC: Mr. Andrew Whelton, DSN 584-3919 or (410) 436-3919, e: mail – Andrew.Whelton@apg.amedd.army.mil].

MERCURY WASTEWATER PROBLEM AT ARMY MEDICAL TREATMENT FACILITIES

During the last few decades, mercury contamination of streams, lakes, and wetlands has become widespread. The problem is so endemic that 41 states have issued fish consumption advisories for mercury contamination in one or more bodies of water. The source for much of this contamination is air deposition. When scientists attempt to measure mercury levels in air and surface waters, they find the concentrations to be very low. So why are fish concentrations so high? The answer is bioaccumulation – that is, the organism (in this case, the fish) absorbs the contaminant more rapidly than the body eliminates it, producing a cumulative effect.

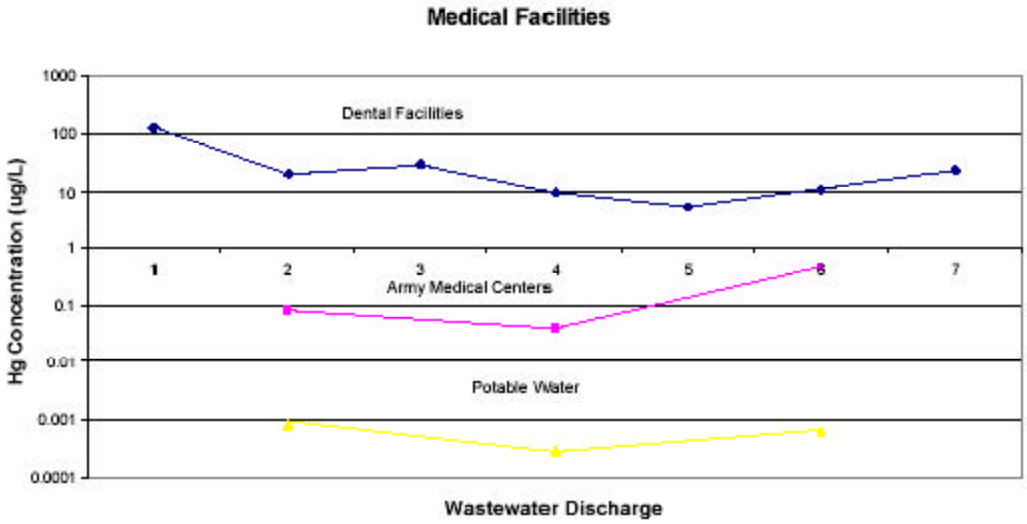
It would appear that wastewater discharges from industrial activities are a small part of the overall environmental mercury problem. Nonetheless, because wastewater discharges are easy to identify and control, regulators are relying on more stringent discharge limits to achieve their mercury reduction goals in surface water.

MEDCOM is concerned that stringent wastewater discharge limits for mercury could result in noncompliance for Army installations and possibly impact the operation of its medical treatment facilities. This concern is based in part on the events that occurred at Walter Reed Army Medical Center in the late 90's. As a requirement of its pretreatment permit, WRAMC had to notify the District of Columbia Water and Sewer Authority that it had routinely exceeded its 1 mg/L mercury limit at two sewer discharge manholes. The end result was a Notice of Violation from the regulator.

MEDCOM felt that it needed a comprehensive evaluation of the mercury problem at its medical treatment facilities. As part of this total effort, we were asked to monitor wastewater discharges for mercury concentrations and to evaluate the responsible activities and processes.

Our initial effort was restricted to a representative sampling of MEDCOM facilities. It covered three installations and included three medical centers, one former medical center, six dental clinics or combination dental/health clinics, and one health clinic.

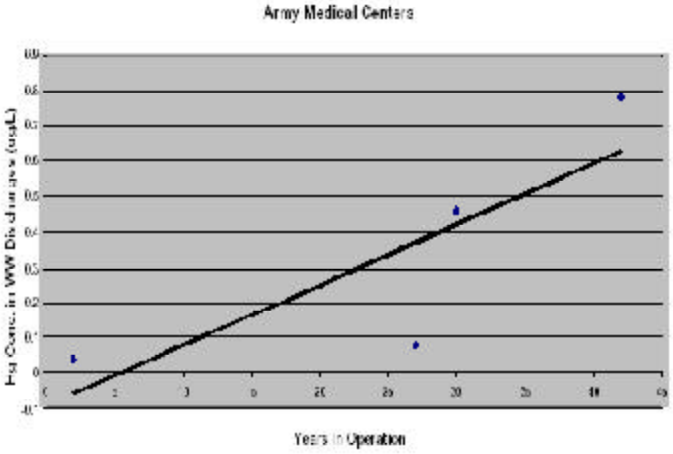
A summary of the analytical data is shown below. The graph illustrates that medical centers and dental facilities are distinct sources of mercury contamination. The elevated concentrations in the dental facility discharges are ascribed to the use of dental amalgams and the restoration of teeth. Although medical centers do have limited dental capabilities, other sources are contributing to the measured mercury contamination.



How do we address this problem? The traditional approach is to treat the waste after it is generated. However, since mercury is an element and cannot be broken down, treatment processes simply transfer the mercury from one media to another. Our goal should be to stop producing the waste, rather than developing treatment and disposal techniques to manage it. Source reduction strategies focus on changing existing processes and replacing hazardous chemicals with alternatives to reduce the total amount of mercury waste that is being generated.

To bring about this source reduction within the Army's medical treatment facilities, the Hazardous and Medical Waste Program at USACHPPM is developing a MEDCOM Mercury Reduction Plan. The plan provides information about identifying sources of mercury contamination, evaluating handling and disposal techniques, eliminating mercury containing products, and establishing purchasing policies.

This second graph is somewhat interesting. It plots the mercury wastewater discharge concentration from the four medical centers against the number of years that each of the facilities has been in operation. There appears to be a correlation. As the years of operation increase, the mercury concentration in the wastewater discharge also increases.



It should be noted that the highest mercury concentration was measured at a closed medical center that no longer has medical treatment activities. We encountered a similar situation at WRAMC about two years ago. Building 1, the current administration building and former hospital, was also found to be discharging elevated concentrations of mercury.

This second problem is the result of residual plumbing contamination. Whether by breakage, spillage, or disposal, significant quantities of mercury have historically entered medical treatment facilities' piping systems. This mercury tends to settle in low points, such as sumps or traps or remain in the piping itself for many years. Often the slow dissolution of this mercury is sufficient to cause wastewater discharge violations long after the active sources have been eliminated. Once the contamination has been identified, plumbing traps, sumps, and piping can be cleaned or replaced, and downstream manholes pressure washed.

The end results from such efforts have been mixed. The literature has reported some success with relatively new facilities, showing appreciable decreases in mercury wastewater concentrations. In older facilities, where we are more likely to see gross contamination, the cleaning efforts have not been so successful. An example of this latter case is Natick Labs, Massachusetts, where after extensive efforts to clean and replace plumbing, pretreatment systems were required on the wastewater discharges from two laboratory buildings.

USACHPPM's Surface Water and Wastewater Program and Hazardous and Medical Waste Program are working with MEDCOM to address the mercury problem at medical treatment facilities. If you have any questions about these efforts or would like to consult on a mercury related issue, you can contact the SWWP at 410-436-3816. (POC: Mr. William Fifty, 410-436-3816 or email: William.Fifty@apg.amedd.army.mil).

BRAC INVESTIGATION - CAMP BONNEVILLE, WASHINGTON

During fall 2002 through winter 2003, the USACHPPM Ground Water and Solid Waste Program conducted a quick-response ground-water survey to support a high-profile Base Realignment and Closure transfer of Camp Bonneville, Washington. Camp Bonneville is approximately 3,840 acres in size, and is located east of Vancouver, Washington. The Army used Camp Bonneville for live fire of small arms, assault weapons, artillery, and field and air defense artillery between 1910 and 1995. The facility was used for weekend and summer training by the U.S. Army Reserve units of southern Washington and northern Oregon and is currently a sub-installation of Fort Lewis, Washington. Camp Bonneville was included on the 1995 BRAC list, and the majority of the property was slated for transfer to Clark County under a public benefit conveyance for education, law

enforcement training, and parks. The Washington State Department of Ecology and U.S. Environmental Protection Agency expressed concern that potential soil contamination due to training at Camp Bonneville may have leached to local ground water. The Camp Bonneville BRAC coordinator requested that USACHPPM conduct the ground-water investigation because no one else was available under the short response time. The sites investigated were considered to be UXO hazard areas.

The GWSWP installed 16 monitoring wells, collected soil samples from selected boreholes, and collected ground-water samples from each of the monitoring wells. Sample results indicated the presence of an explosives compound and perchlorate in ground water. Fortunately, the results indicated that contaminants that may be associated with ranges and demolition areas at Camp Bonneville were not detected in shallow ground water leaving the installation. The GWSWP successfully submitted a draft report summarizing field observations and analytical results to the Camp Bonneville BRAC within the very short suspense time requested. The BRAC office will use USACHPPM's initial results and recommendations to focus further environmental investigations at the site, with the ultimate goal of assessing cleanup or monitoring needs to protect human health at and near Camp Bonneville.

USACHPPM's crews were not disappointed by Washington's legendary wet winter weather—after the drill rig arrived, it rained every day, and the mud grew deeper and deeper as crews worked in the chilling downpour. Despite the rain, Camp Bonneville was beautiful in early winter. Especially during time-consuming well purging, there was ample time to enjoy the quiet winter sounds and views, and to imagine what a beautiful public resource the Camp may become. Throughout the day, early morning mists melted in fleeting sunshine and reappeared with afternoon rainstorms, then frost turned seemingly featureless meadows into fantastic, though ephemeral, works of overnight art. Vivid evergreen trees towered over thickets of blackberry brambles, ferns, and abandoned apple trees along winding gravel roads. The apple trees attracted bears, which left evidence of their visits to individual trees every other night. Many deer and elk tracks were observed, and one afternoon a young black-tailed deer curiously approached the noisy drill rig. Hawks soared overhead, and fox and other small animals could be counted upon for brief appearances in the evenings.

Local residents appreciate the natural resources that exist at Camp Bonneville and anticipate the County's use of the land as a park. The USACHPPM team is proud to have taken part in the BRAC process that may lead to the Army releasing this beautifully preserved parcel of the Pacific Northwest for public use. (POC: Ms. Mary Grez, DSN 584-8549, commercial 410-436-8549).

AQSP RECOMMENDED DESIGN MODIFICATIONS FOR DEMILITARIZATION FACILITY RESULT IN MEETING MORE STRINGENT USEPA REQUIREMENTS

The Air Quality Surveillance Program was awarded a 5-year, multi-million dollar contract by the Operations Support Command to provide air permitting and testing support for their conventional demilitarization program. The conventional demilitarization program is of critical importance to today's Army. Storage bunkers at ammunition depots are filled to over capacity with obsolete and out-of-spec munitions. Without an efficient demilitarization program, there will not be sufficient storage for the munitions that today's Army requires.

The Ammunition Peculiar Equipment 1236M2 Deactivation Furnace was developed by the Ammunition Equipment Directorate for the demilitarization, by incineration, of small arms ammunition and explosive components. Since DFs thermally treat obsolete munitions considered hazardous waste either by the reactivity or toxicity characteristic, the DFs have been permitted under the Resource Conservation and Recovery Act as hazardous waste incinerators. With the advent of the U.S. Environmental Protection Agency's Clean Air Act Amendments of 1990, these incinerators now fall under National Emission Standards for Hazardous Air Pollutants requiring more stringent Maximum Achievable Control Technology emission limits. The USEPA recently promulgated interim NESHAP Hazardous Waste Combustor MACT standards and set a compliance deadline of September 30, 2003.

The AQSP conducted a study in August 2002 to measure and evaluate the air emissions of semivolatile metals, consisting of cadmium and lead, from the APE 1236M2 test DF while feeding the .50 caliber M17 and 20 millimeter M220 tracer rounds. The APE 1236M2, in its current configuration, has a duct to bypass the baghouse in order to prevent moisture buildup in the bags during normal start-up and shutdown procedures. Prior testing had shown that the current configuration failed to meet the newly promulgated USEPA HWC MACT interim standards for SVMs. The HWC MACT interim standard for SVMs is 240 micrograms per dry standard cubic meter. Based on institutional knowledge of the system and an extensive pool of previous APE 1236 emissions data, members of the AQSP hypothesized that these elevated emissions were due to a leakage of the baghouse bypass damper. Thus, during this study, the baghouse bypass damper was operated at "normal" (i.e., damper in normal operating configuration) and "hard-plated" (i.e., damper removed and blocked off) conditions.

During the "normal" test, the APE 1236M2 failed the HWC MACT SVM interim standard for both the .50 caliber M17 and 20 millimeter M220 tracers, with average stack gas concentrations of 3,382.09 µg/dscm and 253.98 µg/dscm, respectively. However, with the baghouse bypass "hard-plated", the average stack gas concentration of SVMs passed the

HWC MACT interim standards for both the .50 caliber M17 and 20 millimeter M220, 9.81 µg/dscm and 8.82 µg/dscm, respectively. Thus, the removal of the baghouse bypass damper from the system decreased the SVM concentration by 99.7 percent for the .50 cal M17 and 96.5 percent for the 20 mm M220.

The data collected from this study has already been used to make a design modification to the APE 1236M2 air pollution control system, insuring that these furnaces will meet the USEPA HWC MACT standards. Subsequent studies by AED have indicated that the moisture in the baghouse does not pose a problem. As a result, the baghouse bypass dampers will be removed from all APE 1236M2 units in the Army. (POCs, Mr. Michael Pattison, Section Chief, AQSP, 410-436-8146, DSN 584-8146 or Mr. Timothy Hilyard, Environmental Protection Specialist, 410-436-2927, DSN 584-2927).

COMMUNITY RESPONSE TO GUN NOISE – THE HUMAN SUBJECTS WILL TELL THE STORY

For over 25 years, USACHPPM's Environmental Noise has been predicting community response to the noise of large guns by using an acoustic measure known as the C-weighted day-night level. The "C" refers to a scale on the sound level meter that incorporates the low-frequency sound energy responsible for house vibration, and the DNL refers to a procedure for adding up the cumulative impact of multiple blasts on a logarithmic scale. In this procedure, one daytime blast at 100 decibels, for example, contributes as much to the 24-hour dose as do 10 blasts at 90 dB. The procedure also requires the addition of a 10 dB nighttime penalty. This means that a 90 dB blast between 2200 and 0700 contributes as much to the 24-hour dose as the 100 dB blast during the day.

The Department of Defense uses the CDNL because the Committee of Hearing, Bio-Acoustics and Biomechanics of the National Academy of Sciences recommended this measure for all kinds of military explosions. However, when CHABA made this recommendation in 1977, the primary experimental data used to justify the measure came from a 1964 experiment in which residents were surveyed after supersonic aircraft flew over their homes in Oklahoma City, Oklahoma. From the beginning, Program 52's experts had some misgivings. After using the CDNL for assessing Training and Doctrine Command and Army Materiel Command installations, Program 52's experts concluded that the measure underestimated community response to AMC demolition grounds but overestimated community response to tank and artillery ranges. In a 1979 paper given at the Acoustical Society of America, they hypothesized that very intense

blasts were more annoying and just audible blasts were less annoying than represented in the calculation of CDNL.

At that time, a research program to test this hypothesis would have been prohibitively expensive, because measurements of blast noise were made with calibrated tape recorders and/or sound level meters. In the 1990's, however, improvements in automated noise measurement equipment made such research affordable. USACHPPM's first opportunity to study the question came in 1994 when Aberdeen Proving Ground asked the Program 52 team to instrument the homes of eight complainants who lived opposite APG on the Eastern Shore. Homes were instrumented with a vibration sensor on a window, wall and corner along with a sound level analyzer in front of the house, overlooking the bay and APG. Four of the homeowners were willing and available to rate the individual blasts on a five-point scale (not annoying to extremely annoying). On average, these interviewees rated a blast at 115 dB linear peak as "moderately annoying." This finding was consistent with the blast noise complaint guidelines developed at the Naval Surface Weapons Laboratory, Dahlgren, Virginia, in 1976. According to the Navy guidelines, people are unlikely to complain if the level of a blast is below 115 dBP. Yet, in the calculation of CDNL, the acoustic energy from blasts at levels below 115 dBP were included as part of the 24-hour cumulative exposure. If these blasts were not annoying, they should not be included in the CDNL.

The next opportunity for investigation came in 2000 when APG provided USACHPPM access to five years of noise complaints along with five years of noise monitoring data from the set of 18 permanent blast noise monitors located along the shore of the upper Chesapeake Bay. Noise complainants living within 1 kilometer of a monitor were identified, and the times of complaint were matched against the highest proximal event picked up by the noise monitor. Again, the data pointed to the utility of looking at the highest levels of blast. Most of the complaints could be linked to blast levels between 115 and 130 dBP.

During FY02, Program 52 worked with the Acoustics Research team at the Army Construction Engineering Laboratories to look at the 10-decibel nighttime penalty. This 10 dB penalty dates back to the 1950's, when engineers hired to assess the annoyance of military airfields, chose the value on the basis of limited information. Through the years, environmental noise scientists have used the 10 dB night penalty, because the value was "traditional." When CHABA applied the same penalty to high-energy impulsive sounds, no one had data to show whether it was appropriate for gun noise. For tank and artillery training, which must take place under darkness as well as daylight, sleep disturbance is particularly critical for maintaining good relations with an installation's neighbors. Because of complaints about sleep disturbance, some installation commanders have instituted a nighttime curfew on blast noise. Using a facility provided by the Army Research Laboratory, sleeping subjects were exposed to electronically-reproduced blast noise levels at the same level as blasts measured in neighborhoods near Army tank gunnery ranges. To determine whether the

blasts were disturbing, subjects wore motion detectors on their wrists. The motion detectors look like a wrist watch without a dial. Every time the subject moves, the detector registers the amount of movement and stores the information in 15 second blocks. The internal clocks in the detectors are synchronized with the clocks in sound level meters located near their cots. The amount of motion within the 15 seconds after the blast is used to quantify the amount of sleep disturbance from the blast. In addition, there is a marker button on the motion detecting unit, and subjects are asked to push that button if they are consciously awakened by the blast.

There were three findings from this first study:

1. The conclusions of a German researcher, Dr. Barbara Griefahn, who found that sleepers were least disturbed by tape recordings of tank blasts around 0200, were confirmed.
2. Movement is a more sensitive measure of sleep disturbance than button pushes.
3. Use of a 15 second interval for integrating movement is perfectly adequate for quantifying sleep disturbance from blasts.

The laboratory study was a necessary first step to any field study to determine the waking threshold for people living near firing ranges. It is well known that subjects sleeping in a laboratory are far more likely to be awakened by a noise than people hearing that noise in their own home. Thus, if blasts above 115 dBP do not wake the laboratory subjects, then there is every reason to believe that these levels would not wake people living near Army firing ranges. When coupled with a real-time blast noise monitor located in a community and feeding back information to a Range Control Office, the "threshold of awakening" could give an installation commander some objective data on whether to lift a nighttime curfew when a unit's training schedule is running late.

The field study is planned for June 2003 with ten subjects living in homes near the Multi-Purpose Range Complex at Fort Hunter Liggett, California. The Commander and Public Affairs Office at Fort Hunter Liggett have authorized contact with their neighbors, and interviews with the potential subjects will be conducted on 26 March. There are two hypotheses:

1. People who are used to living near a tank gunnery range will not be as sensitive to awakening as the laboratory subjects.
2. The pattern of sleep disturbance in the field study will be identical to the pattern found in the German and in the USACHPPM laboratory studies.

(POCs: Dr. George A. Luz, DSN 584-3829 or Commercial 410-436-3829, or Ms. Catherine Stewart).

LATAM COOP SMEE IN GUATEMALA

l to r: COL Kotu K. Phull, COL John Ciesla, LTC Sharon Reese, Dr. William Russell, Mr. Jim Sheehy, and BG William Bester

Under the SECARMY's LATAM COOP (Secretary of Army's Latin American Cooperative Program), a nine-person USACHPPM-Main Subject Matter Expert Exchange Team, led by COL Kotu K. Phull, Director of Environmental Health Engineering, visited Guatemala City from 10-14 February. The Team members represented four of the eight technical directorates at USACHPPM - Directorate of Environmental Health Engineering - COL Phull, Mr. Jim Wood, Dr. Bill Russell, and Ms. Jennifer Keetley); Directorate of Occupational Health Sciences - COL John Ciesla and Ms. Vicky Belfit); Directorate of Health Risk Management - Mr. Jim Sheehy and Ms. Jackie Howard); and the Directorate of Health Promotion and Wellness - LTC Sharon Reese). The visit was initiated by USACHPPM last year, was approved by OTSG, is included in the Army International Activities Plan for FY 03-04, and was funded by DA (G3) under the SECARMY LATAM COOP Program.

This was the first medical SMEE with Guatemala under USACHPPM's leadership. The visit was coordinated with OTSG Current Ops (Mr. Steve Lemon/COL Gerber) and DA (G3/Ms. Elizabeth Detrick), as well as with the U.S. MILGP in Guatemala (LTC Linda Gould) and our Guatemala Armed Services counterparts. The purpose of the visit was to further the standing and prestige of the United States and the U.S. Army with Latin American Armies, as stated in the 9 September 2002 Letter of Instruction issued by the Director of

Strategy, Plans, and Policy, Office of the Deputy Chief of Staff, G-3, as well as to remain engaged and exert leadership abroad in order to shape the international security environment in ways to protect and advance U.S. interests as stated by the Defense Secretary in the late 1990's, and to shape health promotion and preventive medicine's role in international activities in consonance with USACHPPM's Strategic Plan.

The Guatemalan Armed Forces Medical Department attendees included the equivalents of the Chief and Deputy Chief (Commander) of our Medical Service Corps (a Military Nurse and an Infantry Officer, respectively), physicians, an epidemiologist, a dentist, a lab officer, nurses, and technicians - 29 in all. Some of the attendees had received education and/or training in the United States. The areas of information exchange included familiarization with the organization of USACHPPM and that of the Guatemala Armed Forces Medical Department, and Occupational and Environmental Health Services in Garrison and field in both the U.S. and Guatemala Armies, Health Promotion and Wellness Programs, basic hazardous waste and medical waste management, Health Risk Assessment and Communication, Health Hazard Assessment, Homeland Defense, Installation Sustainability, military noise, and sustainment training. In addition to a considerable participation by the Guatemalan attendees on the presentations made by the U.S. Team members, the Guatemalan attendees made six presentations regarding their medical organization and the various PM services and products provided by their medical departments.

There was visible enthusiasm among the attendees and the U.S. MILGP regarding future engagements, e.g., members of the Guatemala Armed Forces visiting the United States to include attendance at our next Force Health Protection Conference in August 2003 and a U.S. Team returning to Guatemala next year to discuss in more details the areas of mutual interest. The Guatemalan Armed Forces personnel hosted an excellent evening event for the Team at the conclusion of the seminar on Thursday, and the host (Commander of the Central Medical Hospital) echoed the comments made earlier by the Deputy Chief of the Medical Service Corps at the closing ceremony at noon on Thursday, i.e., he was very appreciative of our initiative; he had received very positive feedback from the attendees; he was looking forward to continuing the engagement; etc. The recipients of the USACHPPM Commander's Coins, given by COL Phull on BG Bester's behalf to the senior Guatemalan Army Officer in attendance, LTC Gould from U.S. MILGP, the seven briefers, two most active participants, and the senior enlisted person in attendance, really enjoyed the gesture. They also appreciated the variety of materials about USACHPPM that the US SMEE Team left behind for them.
[POC: COL Kotu K. Phull (retired), DSN 584-2306].

INFECTIOUS SUBSTANCE TRANSPORT TRAINING

In the aftermath of September 11, 2001, the issue of transporting infectious substances safely has merited much attention. The use of biological warfare agents, such as anthrax, smallpox, tularemia, pneumonic plague, and ricin threaten innocent populations. These threat agents coupled with global emerging infectious diseases pose a significant threat to man if the samples and specimens containing them are not safely and properly packaged and transported.

In an effort to protect our citizens and the Nation against our current biological threat, personnel from the Hazardous and Medical Waste Program educate and train Department of Defense personnel around the world to package and safely transport infectious samples and specimens. The Program's one-week DOD-approved Transport of Biomedical Material Course certifies DOD personnel to package and ship samples, specimens, materials, and wastes containing infectious substances in accordance with transport regulations of the United Nations, the United States and the DOD.

Ms. Annjanette Ellison, the Program's Training Team Leader researched and developed the course between 1992 and 1994 in response to a training need identified by the U.S. Army Medical Command. Ms. Ellison stated, "The course is quite detailed. It explains requirements for identifying, marking, labeling and packaging infectious substances; describes identification of select agents and transportation requirements; explains import and export requirements for infectious substances (including Centers for Disease Control and Prevention permit requirements); clarifies international air, water and mail transport concerns; discusses fines and penalties for noncompliance; and addresses safety considerations for biomedical material transport both inside and outside a facility." Student comprehension is measured by final examination. Students who pass the course become certified shippers of infectious substances. Ms. Ellison commented, "We try to make the training informative yet fun." To motivate students to do their best, the Program recognizes those students achieving a perfect score on the final exam with a special letter of recognition signed by the Commanding General of USACHPPM, BG William T. Bester.

Currently, the TBM Course is the only DOD-approved transportation certification course for medical facility personnel who package and ship infectious samples and wastes. The course, which was reviewed and approved by the DOD Interservice Training Review Organization on transportation and the Military Traffic Management Command in 1994, is recognized as a DOD-approved certification course in DOD Regulation 4500.9-R, the Defense Transportation Regulations, Part II, Chapter 204 and Air Force Manual 24-204, Preparing Hazardous Materials for Military Air Shipments.

Since the inception of the TBM Course in 1994, the Program has successfully trained and certified over 800 DOD civilian and Army, Navy, Air Force and VA medical personnel with its TBM course. The first iteration of the course was conducted August 1995 in San Antonio, Texas. Since then, the Program's Training Team (with support from USACHPPM-South) has presented the training at several convenient locations throughout the United States including commercial locations in Atlanta, Georgia; Washington, D.C.; Orlando, Florida; San Diego, California and Tampa, Florida. The Team has conducted on-base training at military installations, including Aberdeen Proving Ground, Maryland; Fort Campbell, Kentucky; Fort Gordon, Georgia; Fort Hood, Texas; Fort

Knox, Kentucky; Tripler Army Medical Center, Hawaii, Eglin Air Force Base, Florida and Yokosuka Naval Station, Japan. Questions such as, *"How do we safely transport suspected anthrax or smallpox samples? Are there any specific packaging and transport standards? What laws and regulations must I follow?"* are all answered through the Hazardous and Medical Waste Program's TBM instructional staff. In addition to Ms. Ellison, instructional staff members from CHPPM-Main are Mr. Michael Diem, Ms. Diane Roberts [Henry M. Jackson Foundation(HMJ)], Ms. Debbie Hursh, and CPT Gayle E. Davis. Supporting instructional staff from CHPPM-South are Ms. Heather Queen, LT Paul McBride, and CPT Kimberlee Short.

Training in Kenya

Overseas medical facilities have requested the course often. The HMWP Training Team teaches the course biennially at the Armed Forces Research Institute of Medical Sciences in Bangkok, Thailand; to personnel in Landstuhl and Heidelberg, Germany; at Camp Zama, Japan; and at Yongsan Army Base in Seoul, Korea. Most recently, Ms. Annjanette Ellison, Training Team Leader for the Program and Ms. Diane Roberts, a HMJ Training Team Member, traveled abroad to the Kenya Medical Research Institute (KEMRI) in Nairobi, Kenya to train 25 laboratory personnel.

The Kenya training which was conducted 28 October to 1 November 2002 taught research personnel from Cameroon, Tanzania, Uganda, Nairobi, Kisian, Kericho, Kombewa, Nyanza, the Centers for Disease Control and Prevention and the Global Emerging Infectious Disease Research program in Africa to properly package and transport infectious substances to minimize the threat. Training was sponsored by the Walter Reed Clinical Research Project at KEMRI and supported by the Director, Environmental Health Engineering at USACHPPM.

From left to right – Front row: CPT Veda Kennedy (sponsor KEMRI), Joseph Osoga (Nyanza), Vincent Osewe (Kericho), Weston Assisya (Tanzania), James Gitonga (Kisian), Julius Andove (KEMRI Kisian), Diane Roberts (USACHPPM Instructor); Second row: Titus Apindi (Kisian), Martha W. Maina (KEMRI Nairobi), Pamela Pande (Kericho), Sengiyumva Kandusi (Tanzania), Christine Nansubuga Korsah (Uganda), Sandra Muhanuka (Uganda), Modi Nelson Daniel (Uganda), Bonaventure Juma (Nairobi), COL Samuel Martin (sponsor KEMRI), Annjanette Ellison (USACHPPM Instructor); Third row: Anne Mbuthia (GEIS-Kijabe), Evans Apondi (CDC Kisian), Kennedy Obonyo (Kombewa), Cyrille Djoko (Cameroon), Benedict Kayuh Jikong (Cameroon), Hoseah Akala (Nairobi), Ruth Mupa (GEIS-Malinda), Simon Erima (Uganda), Finnley Osuna (Nairobi); Not shown: Agnes Ng'ang'a (Nairobi), Clayton Onyango (Nairobi VHF), Victor Otieno Ofula (Nairobi VHF)

Ms. Ellison commented, "The training and the travel experience were truly wonderful! Everyone was very welcoming and friendly. You could tell the students truly appreciated our training. The students were eager to learn and anxious to receive any and all information we had to share. They came to class loaded with tough questions about their transport challenges. They presented concerns about the shipment of liquid nitrogen, radiobioassay samples, low-level radioactive materials/ waste, biological product packaging and shipment, and regulated medical waste determination and management. We answered their questions and offered USACHPPM's continued assistance for their future needs."

Ms. Roberts commented, "Traveling to Kenya was one of the greatest experiences of my life! It was very rewarding for the students and for us." Ms. Roberts, who joined the HMWP in November 2001 from active duty, is currently exploring possible partnering opportunities with select colleges and universities in the United States as well as with the researchers in Africa, and hopes that USACHPPM can begin an exchange program with the researchers in Africa to broaden the horizons of all.

Ms. Ellison stated, "I can't emphasize enough how important it is for us to continue our relationship with KEMRI and the folks from the Walter Reed Project in Kenya, additional training and partnering programs abound in Kenya and throughout Africa. Our students and the researchers at KEMRI are involved in intensive research with HIV, Malaria, hemorrhagic fevers and more. The results of their research will greatly impact the world and it would be wonderful for USACHPPM to participate in that research through training and partnering programs."

Partnering with the Navy

In addition to traveling to Kenya to teach packaging this year, Ms. Ellison also spent time with the Navy at sea teaching packaging and transport requirements. Representing both USACHPPM and the U.S. Army Soldier and Biological Chemical Command's Army Reserve Unit for Consequence Management, Ms. Ellison worked with the Navy Medical Research Center Biological Defense Research Directorate to develop a Shipboard Biological Warfare Response Course.

The goal of the shipboard training was to provide Tier I DOD level packaging and transport training to allow for timely and accurate sample management in response to a biological attack. A two-day SBWRC was conducted 10-11 September 2002 aboard the USS Constellation and 17-18 October 2002 aboard the USS Harry S. Truman by a five-person instructional staff (three from NMRCBDRD, one from USACHPPM/ USASBCCOM and one from the Naval Surface Warfare Center-Dahlgren Division).

Shipboard Biological Warfare Response Course Instructional Staff (From left to right: Mr. Ed Lustig, NAVSEA-Dahlgren Division (DFUs), LCDR Michael Boehm (NMRC BDRD), Chief Petty Officer Rich Gotautas (NMRC BDRD), MAJ Annjanette Ellison (ARU-CM/USACHPPM), HM1 Angel Lorenzo (NMRC BDRD); Not shown: LT Timothy Stello (NMRC BDRD)

In September, the five-person instructional staff successfully trained 19 personnel from the USS Constellation, USS Higgins, USS Kinkaid, USS Milius, USS Rainier, USS Thach, and the USS Valley Forge to detect, collect, package and properly transport suspected biological warfare specimens. The training took place at sea aboard the USS Constellation ("America's Flagship") during flight maneuvers and daily operations on the carrier. Training was paused on September 11, 2002 for a 30-minute shipboard memorial. It resumed with a "hands-on" simulated response exercise on the Ship's Hangar Deck. The "hands-on" exercise required students to collect and package suspected biological agents while wearing the proper personal protective equipment and following proper sampling and packaging techniques. The use of handheld assays and dry filter units was also emphasized in the training.

Training aboard the USS Harry S. Truman in October was similar to the USS Constellation training. Personnel from seven ships in the USS Harry S. Truman Battle Group were trained to detect, collect, package and properly ship suspected biological warfare specimens. Each training group received a fully-loaded Shipboard Biological Warfare Response Kit containing all the sampling and packaging equipment needed to effectively package and transport biological warfare agents from their ship forward if attacked. Damage control, environmental health and medical personnel throughout both fleets participated in the training.

The biological warfare response posture of both the USS Constellation Battle Group and USS Harry S. Truman Battle Group was enhanced through the training. The training prepared the carriers and their Battle Groups to respond to a biological attack. It also increased the diagnostic capability of the carriers and their entire Battle Group. Training assessed the feasibility of using advanced biological warfare identification test capabilities, such as DNA testing (PCR), immunochemical and microbiological culture capabilities aboard the warships. The training resulted in uniform biological warfare operational guidance throughout the Navy and greatly enhanced the reach back capabilities of the fleets while deployed.

Chief Petty Officer Rich Gotautas evaluates a response team's use of dry filter unit.

HM1 Lorenzo explains the various components of the Shipboard Biological Warfare Response Kit.

A sailor uses a handheld assay prior to packaging the sample for transport.

Currently, both the USS Constellation Battle Group and the USS Harry S. Truman Battle Group are deployed supporting operations in the Persian Gulf. LCDR Michael Boehm, Training Staff Leader and member of the NMRC BDRD commented, "Thanks to everyone - either directly or indirectly - that has helped move this effort along. What began as a videoteleconference in December 2001 has blossomed into a great story and shows just how much we can accomplish when everyone works together. Thus far we've had input from individuals from many organizations including the sailors of the ships with which we've worked. This is truly a team effort."

LCDR Michael Boehm was called on active duty from the Navy Reserve's Chemical Biological Research Unit 106 located at APG, Maryland. When mobilized, LCDR Boehm had to leave his position as a professor of Plant Pathology at The Ohio State University and report to the NMRC BDRD in Silver Spring, Maryland. Once assigned to the NMRC BDRD, LCDR Boehm immediately assumed leadership responsibilities for training and biological warfare agent re-

sponse. With the help of LT Timothy Stello, HMC Rich Gotautas and HM1 Angel Lorenzo, LCDR Boehm and his staff (including Ms. Annjanette Ellison, USACHPPM and Mr. Ed Lustig, NAVSEA-Dahlgren Division), successfully trained two Battle Groups and several Navy elements in biological warfare response. These battle groups have deployed to the Middle East to support current operations.

Other Training Opportunities

In addition to training abroad and partnering with the Navy, the HMWP has conducted mini-training sessions in biomedical material transport for the American Society of Clinical Pathologists, the Society of Armed Forces Military Laboratory Science, and the Defense Intelligence Agency.

The DIA training was conducted this past December at the USASBCCOM Conference Center. Because of multi-faceted operations, Dr. Jack Heller of the USACHPPM Deployment Environmental Surveillance Program; MAJ Matthew Schofield, Executive Officer for the 520th Theater Army Medical Laboratory and CPT Edens of the U.S. Army Technical Escort Unit also supported the DIA training.

The HMWP has worked hard to prepare personnel for our global biological warfare threat. Through training, the Program has offered quality support to both field and clinical laboratories and promoted a more conscientious, better prepared force for the millennium. Our training team deserves kudos for the effort they put forth to design, develop and deliver quality training throughout the services and the world. Quality training leads to a knowledgeable force ready to meet the challenges of the world. The HMWP is prepared to meet these challenges and the ever-changing needs of the world. (POC: Ms. Linda Baetz, DSN 584-3234 or Commercial 410-436-3234; e:mail – Linda.Baetz@apg.amedd.army.mil, Ms. Ellison or Ms. Diane Roberts at DSN 584-3651).

DOEM

"AND WE THOUGHT SMALLPOX WAS GONE"

The dark side of medicine includes using infectious diseases as weapons of war. Bioweapons have never been very militarily useful, and it was hoped that when the USA offensive bioweapons program ended in the late 1960's, that such nightmare scenarios would eventually disappear. Unfortunately the greatest public health accomplishment of the 20th century in the eradication of smallpox produced a new threat during the 21st century. It is now known that the Soviet Union saw the elimination of natural smallpox as a market opportunity. Large stocks of smallpox were grown and developed as a weapon of mass destruction. Although it is said that all of the Soviet Union's military smallpox stocks were subsequently destroyed, the administrative disintegration of the Soviet Union in 1989 did not inspire confidence that this was entirely true. The rise of international terrorist organizations seeking access to weapons of mass destruction made a smallpox attack a possibility almost too terrible to consider.

Non-immune populations are especially susceptible to smallpox since the infection can spread from person to person by direct contact. Nearly 30 percent of the infected persons die and the survivors are often badly scarred. The presence of such a lethal disfiguring disease was thought to be of only historical interest. During the 1970's a concerted effort of vaccination eliminated all natural smallpox infections from the world. Thereafter, smallpox vaccination was discontinued as it represented a small risk without any benefit. The general vaccination of the USA civilian population ended in the 1970's with the U.S. military ending smallpox vaccination in the 1980's. Since smallpox vaccination is effective for no more than 5-10 years, the entire population of the United States gradually became susceptible to smallpox. This was tolerable if all the remaining smallpox stocks were carefully controlled, but the possibility that undocumented militarized smallpox left over from the Soviet Union's bioweapons program might reach the hands of international terrorists changed the calculation. We could no longer pretend that smallpox was dead.

A National Smallpox Response Plan was developed which reintroduced smallpox vaccination for selected health care workers and U.S. military members going to areas thought to be at increased risk. Although this provided substantial protection for the U.S. Army, it did not address the consequences of smallpox epidemic in a theater of operations. The ability of smallpox to panic civilian populations, lower military morale, restrict logistics and quarantine personnel made smallpox a threat to even a vaccinated military population. In 2002, the Office of the Assistant Secretary of Defense (Health Affairs) directed the military to form several deployable Smallpox Epidemic Response Teams to manage the initial consequences of a smallpox attack. Due to the SERT's resemblance to the previously formed SMART-Preventive Medicine teams and the presence of the relevant preventive medicine personnel within USACHPPM, the U.S. Army SERT's are centered at USACHPPM at Aberdeen Proving Ground with forward personnel at USACHPPM-Europe and USACHPPM-Pacific.

A SERT has a preventive or occupational medicine physician as a team leader with about 10 other personnel consisting of a varying number of public health nurses, infectious disease and dermatology physicians, medical operations officers, epidemiologists, laboratory officers, risk communication specialists, vaccination and preventive medicine technicians. This capable team was faced with an obvious problem during their initial training in October 2002. They had to prepare to deal with a disease none of them had ever seen. A few older physicians who had been part of the Global Smallpox Eradication Program in the 1970's brought another generation's view of a deadly and disfiguring disease to the SERT during the training sessions. In recounting the accomplishments of the Smallpox Eradication Era, there was a strong resemblance to old soldiers recalling past campaigns. Unfortunately, the enemy they thought had been defeated might be getting ready to stage a long-delayed counter-attack.

The daunting task of stopping a possible smallpox epidemic draws heavily from the experience of the Global Smallpox Eradication Program. The desired train of events is to identify, trace, isolate and vaccinate in order to stop the chain of smallpox infection. When an infected person no longer infects a new person, the epidemic dies. How these simple and robust principles would be applied to a bioweapon attack is not entirely clear. If a few cases of anthrax in the mail could cause Washington to grind to a fearful halt, how much more would be the effect of a smallpox release? Would health care workers stage a "sick-out" if they knew their hospital now contained smallpox patients? Would citizens calmly stand in line to receive their smallpox vaccinations or would panic result in martial law? How could one trace the chain of smallpox infection in a foreign country where no one spoke English and the rule of law extended only as far as one could throw a vaccination needle? None of these questions had good answers and even imagining such situations made brave men wonder how they would cope with such a bioweapon attack.

SERTs stand ready to deploy worldwide on short notice when given a validated mission from the Office of the U.S. Army Surgeon General. Each team is nominally aligned with a geographic region and a Combatant Command. Should a smallpox emergency occur, the plan would be a rapid deployment of a small initial team to set up an operations cell at the smallpox attack site to ascertain the priority of actions. Further SERT personnel would be deployed forward as needed to define the extent of the smallpox epidemic and plan a response. Any response would involve a large number of civilian, public health and military groups in a mass casualty event generated by a weapon of mass destruction. The potential difficulties can only be imagined as there has been no analogous smallpox epidemic since the Spanish invasion of Peru nearly 500 years ago. We pray such a smallpox eventuality will never occur but as with many military units, SERTs prepares for the worst case knowing that the defense of the American people is non-negotiable. (POC: COL Dennis Shanks, DSN 584-2486 or Commercial 410-436-2486).

Hearing Conservation Program Evaluation Profile (HCPEP)

The HCPEP is a web-based self-assessment tool specifically developed to help installation and local hearing conservation managers obtain a reality check on their hearing conservation programs.

In accordance with Subpart J of the Code of Federal Employees Regulations 1960.79, "Agency heads shall develop and implement programs of self-evaluation to determine the effectiveness of the occupational safety and health programs." Look for possible changes and additions to this citation as the Federal sector migrates toward the implementation of CFR 1904, the new Occupational Safety and Health Administration recordkeeping regulation.

Prior to October 1998, the Army had the Hearing Evaluation Automated Registry System to measure program participation, quality assurance issues and program effectiveness. These capabilities are being restored under the Defense Occupational and Environmental Health Readiness System. These outcome data, however, do not directly assess program processes.

Current Federal requirements recognize that self-evaluations are to include qualitative assessments of program processes. The Federal requirement goes further to include provisions for the development and activity level implementation of self-evaluation procedures in accordance with the requirements set forth in Executive Order 12196 and CFR 1960.68. Note that EO 12196 exempts military personnel and uniquely military equipment, and operations from OSHA provisions but not from DOD safety and health program requirements.

Even when the Army's Hearing Conservation Program had the benefit of an extensive reporting capability under the old HEARS, these measures did not directly assess program processes. For example, how many and how well different hearing conservation program elements had been implemented could not be assessed from HEARS data alone. The onsite survey (friendly inspections) at one time provided better insight to these questions and came closest to meeting the Federal assessment requirement. These visits, however, only evaluated the program for a "snapshot in time." In addition, they were not always welcomed by local action officers who were already well aware of existing problems but lacked the resources and/or command support to rectify them. The outsider's visit could sometimes gain the appropriate support; however, resources are so depleted these days that only direct assistance visits are feasible.

Given our current climate of marginal program support, more painless and cost effective means of program evaluation were explored, namely the self-assessment approach. A needs assessment for an evaluation tool indicated the following: The tool should -

- Include military requirements;
- Be reproducible with limited intra-user variability;
- Be able to track issues to closure;

- Provide real-time qualitative and quantitative assessment with access to results/reports/analysis for all sites and all affected personnel; and
- Be user-friendly, requiring minimal advanced software product training.

A website-based product addressed several of these needs. An existing commercial product only included OSHA requirements and was limited to a checklist for hearing conservation. This checklist was in a yes or no format without provisions for levels of compliance. A customized product was going to be required.

The format of the commercial product with levels of compliance for other OSHA programs was adopted. Five levels of Hearing Conservation Program compliance were constructed. See Table 1.

Table 1. Hearing Conservation Program Levels.

Level	Percent	Level of Compliance
1	20	No program or Ineffective Program
2	40	Developmental Program
3	60	Basic Program
4	80	Superior Program
5	100	Outstanding Program

Scoring procedures were instituted such that each level would contain all positive factors of the level below it. For example, at level 3 the program was at least as good as level 2. Customer feedback from prototype testing indicated that local managers wanted some way for the tool to credit them for implementation strategies above the assessed level. A comment column was added to annotate additional implementation strategies.

Space limitations preclude the inclusion of the entire program evaluation profile. Titles of the 16 areas evaluated include:

Program Initiation
1. Exposure Criteria

Noise Hazard Identification
2. Survey Frequency
3. Survey Equipment and Calibration
4. Post Survey Procedures
5. Posting

Engineering Controls
6. Control Measures for Existing Equipment and Facilities
7. Control Measures for New Equipment and Facilities

Hearing Protection
8. Exposure Requirements
9. Availability
10. Fitting and Maintenance

Monitoring Audiometry
11. Testing, Referral and Diagnostic Requirements
12. Testing Equipment
13. Recordkeeping
14. Health Education
15. Enforcement (Leadership)
16. Program Evaluation

An example of all five levels of compliance for one program area is included in Table 2. Given the program deterioration resulting from the loss of over 67 percent of our Army military audiologists over the last decade, the Enforcement (Leadership) program element is probably the most relevant example to include in its entirety.

Table 2. Enforcement (Leadership) Element

1. No Program or Ineffective Program

   - Enforcement of hearing protection is nonexistent.
   - Command/Supervisors do not ensure personnel report for scheduled audiometric testing or for required health education briefings.
   - Command concerns reflect cultural biases rather than medical concerns for troops and employees, e.g., hearing conservation is limited to lowering rock and rap music levels.
   - Command displays or condones blatant disregard for hearing conservation measures and creates a culture that views such measures as an impediment to the mission.

2. Developmental Program

   - Command sets and communicates hearing conservation policy and goals but remains detached from program implementation efforts.
   - Some civilian supervisors have in their performance standards the enforcement of personal protective equipment (hearing protectors) and that their employees report for scheduled medical surveillance (hearing tests).
   - Some military officer evaluation reports and enlisted evaluation reports included similar requirements.
   - Safety and/or Industrial Hygiene conduct announced annual inspections of noise hazardous but submit ineffective or no after action reports on noncompliance.

3. Basic Program

   - Current Commander has issued a command emphasis letter for hearing conservation and requires earplugs and carrying case on Battle Dress Uniform.
   - Command supervisors set consistent example for use of hearing protection and medical surveillance testing.
   - Requirements for enforcing hearing protection use and for ensuring employee reports for scheduled medical surveillance are included in civilian supervisor performance standards, officer evaluation reports and enlisted evaulation reports.
   - Noise-exposed personnel (military and civilian) have use of personal protective equipment, as required and requirements to report for scheduled medical surveillance in their performance standards.
   - Safety and Industrial Hygiene conduct unannounced and announced annual inspections for noise-hazardous areas for compliance and, if necessary, submit after-action reports through appropriate channels that facilitate improved compliance.

4. Superior Program

   - There are documented instances of disciplinary action taken against personnel who do not use hearing protection when required.
   - Civilian performance standards, OER's and EER's also include requirements to report for scheduled health education briefings.

- Inspection results are made available to employees and soldiers. Incentive programs encourage the reporting of undetected noise hazards, hearing loss or inadequate engineering controls or hearing protection.

5. Outstanding Program

- Command/supervisors actively promote hearing conservation measures.
- Civilian supervisors, officer and/or enlisted noncommissioned officer's have had performance evaluations, OER's or EER's downgraded because of failure to enforce hearing conservation requirements.
- The command has issued a decree, such as, range officer will be relieved (on the spot) for failure to enforce the use of hearing protection.
- Noise hazard abatement is an element in senior civilian and military personnel performance standards.
- Command emphasis is consistent and sustained or has improved over time.

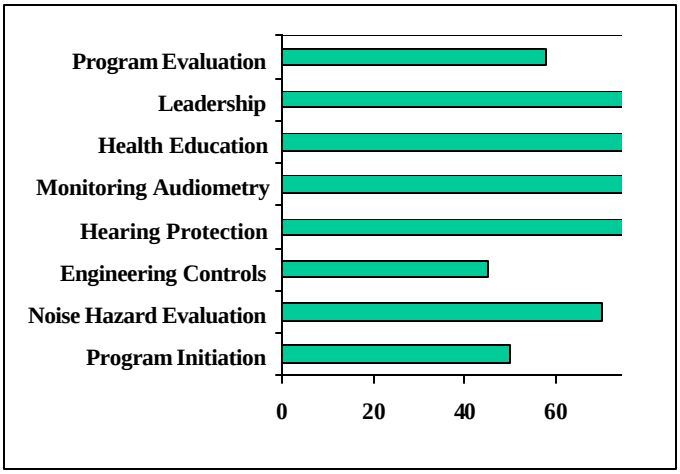
The 16 evaluated areas can be combined under the eight program elements then graphed for a comparative analysis and to chart progress. See Figure.

This Program Manager has envisioned this self-evaluation tool as a source for:

- Educating field action officers on program requirements;
- Providing implementation strategies;
- Collecting and publishing proven field strategies; and
- Evaluating program areas not directly assessed by audiometric or industrial hygiene data.

Note that OSHA does not recognize these informal assessments as compliance judgments and will not hold them against you.

Figure. Comparative Analysis of Hearing Conservation Program



MAJ Cheryl Cameron, the USACHPPM military audiologist, coordinated with our Information Management support personnel to activate the HCPEP. A draft has been field tested and suggested improvements are being incorporated. Notification of availability will be posted at the USACHPPM Hearing Conservation Website under "What We Do"/ "Occupational and Environmental Medicine"/ "Hearing Conservation." (POC: Dr. Doug Ohlin, DSN 584-3797 or Commercial 410-436-3797).

OPERATION ARCTIC CARE 2003

Deployable Optometric Team Completes Mission In Alaska

MAJ Emery Fehl, Deputy Program Manager, Vision Conservation and Readiness Program, recently returned from a Humanitarian Civic Assistance mission to Alaska. This year's Innovative Readiness Training exercise was conducted in cooperation with the Tanana Chiefs Conference in the Norton Sound and Upper Yukon areas from 19 April to 2 May 2003. The Commander, Marine Forces Reserve has established a continuing mission to provide primary medical and dental care to remote areas of Alaska. "This was an excellent opportunity to provide high quality eye care and to test the Army's new deployable optometric equipment," reported MAJ Fehl.

MAJ Fehl provides an eye exam

The DOD Deployable Optometric Team concept is responsive to today's changing readiness missions. The only way in or out of these villages is by air. Lightweight, self-contained and highly trained optometric teams were flown in to provide comprehensive primary eye care. The stand-alone capability of the DOT was developed to deliver prevention, acute intervention, and primary eye care services. It is ready to support the requirements of deployed medical commanders in wartime, small-scale contingencies, humanitarian assistance, and domestic disaster response.

The DOT utilizes commercially available, state-of-the art diagnostic equipment that can be placed in backpacks or easily carried in wheeled shipping cases. The portable diagnostic equipment brought to the field is capable of delivering the same standard of care that is found in a military medical treatment facility. The DOT is cost-effective and is quickly assembled in less than one hour.

Village of Kaltag, Alaska

In addition to optometric teams, the mission includes dentists, dental technicians, physicians, physician assistants, medical corpsmen, and veterinarians. Five Optometric Teams (2-4 individuals) and supplies were assembled at Fort Wainwright, and then transported via Army Reserve Blackhawk/ UH60 helicopters or Coast Guard C-130 to villages in an area spread over approximately 235,000 square miles.

"The opportunity to serve this region is a win-win for Alaskan natives and the medical service. The remote location offers a unique training platform for our medical teams," said Fehl. His team reported that during the two-week period they provided comprehensive eye care to 210 Alaskan natives. More than 90 percent of patients examined needed, and were able to get, prescription glasses. Five percent of patients were identified and referred for advanced medical care. "This is outstanding deployment training for optometrists and optometry technicians," declared MAJ Fehl. "The experience taught us that we can arrive lighter (less equipment), thereby creating a smaller footprint without sacrificing quality of care. Mobility with capability is the key to successful deployments." According to Fehl, learning about cultural differences and dealing with native traditions also play major roles in daily operations. "We were well received and quickly learned how to relate to our patients," he said. "We provided care for Alaskans who have not had an eye exam more than 4 years. They were very enthusiastic about our visit and looked forward to seeing better with their new glasses." (POC: MAJ Emery B. Fehl, DSN 584-1005, 410-436-1005, or 1-800-222-9698).

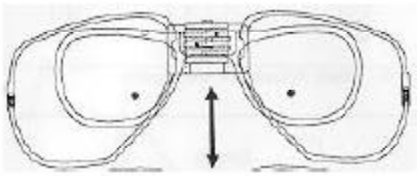
PROTECTIVE MASK PRESCRIPTION OPTICAL INSERTS

Over 40 percent of military servicemen/women wear prescription eyewear. Those individuals that have a visual acuity of less that 20/40, with their spectacles removed (20/20 for some jobs such as pilots), are required to use prescription inserts when using their protective masks per Ophthalmic Services Regulation/Instruction (AR 40-63). This article describes the prescription optical inserts for protective masks currently in use, insert installation instructions, and insert procurement information.

1. M-40/M-42 Series: The M-40 is the general purpose protective mask for U.S. Army and US Marine Corps infantry and civilian workers replacing the M-9 and M-17 mask series. It is also used by U.S. Marine Corps aircrew and some helicopter pilots. The M-42 is the Combat vehicle mask used by U.S. Army and U.S. Marine Corps replacing the M-25 series. Sizes for the mask are small, medium, and large.


M40/M42 Series

Optical Insert: The prescription lenses are mounted inside the clear plastic prescription lens carrier (PLC) frame. This PLC is attached to the black plastic mount and placed behind the lenses of the mask. The clear frame front has a 52mm eye size for the corrective lenses and has a spring-hinged bridge. The black plastic mount has a 73mm frame size for mounting in the mask and it has a grooved bridge to receive the clear PLC frame front.

Prescription Lens Carrier/Optical Insert
(seen separately and mounted together)

Insert Installation: Insert the black plastic mount in the groove at the back edge of the mask eye-ring with the PLC mounting keyway facing back. Snap the mounting ends (tooth grip molded in) together and spread them to allow the mounting frame to expand fully into the mask eye-ring. Slide the PLC into the nosepiece keyway in the mounting frame. Have the servicemember don the mask. Note the position of the PLC. Remove the mask and adjust the height of the PLC to center the lenses over the servicemember's pupils. Once the PLC is in the proper position, remove the mask and gently fold the two lenses together to expose two small brass set screws. Gently tighten the set screws to fix the setting of the PLC.

Insert Procurement: Each military unit is responsible for ordering the black plastic mount. It is a supply item and not a medical device. Ordering information for unit supply personnel is: NSN 4240-01-389-7152, Black Plastic Mount. Individuals requiring optical correction will order the PLC from military optical laboratories through their military eye clinics.

2. M-43 Series: U.S. Army Aircrews use this mask series. The Type I mask is used by Apache helicopter pilots and has a notched right eyepiece to accommodate the Apache Helicopter Helmet Sighting System. All other U.S. Army aircrews use the Type II mask. Sizes for the mask are small, medium, large, and extra large.

M-43 Series

Optical Inserts: None. Pilots requiring correction are provided contact lenses.

3. M-45 Series: This mask is currently being deployed (started in FY00/01) and replaces the M-24/M-42/M-43/M-49 aviation series. It will be used by All Army aircrew, except AH-64 (Apache) pilots. Sizes for the mask are extra small, small, medium, and large.

M-45 Series

Optical inserts: The insert is a plastic frame front with a flexible plastic or titanium alloy bridge wire.

Optical Insert **Optical Insert in Place**

Insert Installation**: Snap the insert into the eye-ring grooves behind the mask lens.**

Insert Procurement**: Order military optical laboratories through military eye clinics.**

4. M-48: The M-48 mask is used by Apache helicopter pilots. This type has a notched right eyepiece to accommodate the Apache Helicopter Helmet Sighting System. The M-49 mask is used by all other U.S. Army aircrew. NOTE: These masks have the same mask front as M-43 series, but use a different blower system. Sizes for the mask are small, medium, large and extra large.

48 Series

Optical Inserts: None. Pilots requiring correction are provided contact lenses.

5. MCU-2/P Series: The MCU-2/P is a general purpose mask used by the US Navy, U.S. Air Force, U.S. Marine Corps, U.S. Coast Guard, FBI, DEA, DOE, and Secret Service. Sizes for the mask are small, medium, and large.

MCU-2/P Series

Optical Inserts: The insert is the MAG-1 combat spectacles. It is a black nylon frame front and bridle with a black neoprene adjustable strap headband that is worn like regular spectacles. The front comes in three eye sizes (46, 48, 50mm) and the bridge comes in two sizes (22 and 25mm).

MAG-1 Combat Spectacle

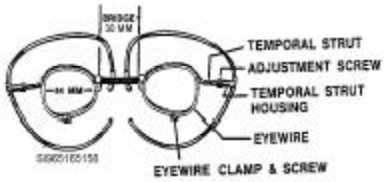
Insert installation: The user wears the mask over the MAG-1 combat spectacles (worn as regular eyeglasses).

Insert Procurement: Order from military optical laboratories through military eye clinics.

6. M-17 Series: This mask has been phased out of most inventories. Since there may still be some individuals using this mask while waiting for final phase-out, instructions for optical insert procurement is included.

M-17 Series

Optical Inserts: All three versions of the mask can use the nickel silver metal insert mounting device with temple rings that insert into the eye-ring of the mask. The M17 can only use this insert mount. The front is a 44mm eye size for the optical correction, 74mm frame size, and a spring bridge.



Optical Insert

Insert installation: Hold the insert temples by the plastic tabs and swivel them in front of frame front. Insert the lower section of one temple in the lower groove of mask eye-ring just behind the mask's lens and continue around entire temple until it springs into place. Repeat for the other side. Make final adjustments to align the inserts as needed.

The **M-17A1/A2 Series** may also use the Universal Insert. The universal insert has a plastic frame front (gray or white) with metal temple prongs. The front is a 38mm eye size for the optical correction and 66mm frame size.

Universal Insert

Installation Instructions: Spread the metal prongs about 15 degrees apart in a fishtail fashion to secure in the mask. Bend inserts at the bridge to induce a 5-10 degree face form angle and insert the prongs in the holes molded into the mask along the edges of the mask. Select the holes that center the lenses over the pupils.

Insert Procurement: Order from military optical laboratories through military eye clinics.

7. Joint Service General Purpose Mask: The JSGPM is currently in development at the U.S. Army's Soldier And Biological and Chemical Command, Aberdeen Proving Ground, Maryland. Goals of the project include making it lighter than the M-40, interfacing capabilities with night vision and weapon systems, and containing a single eyepiece for better field of view. In addition, it hopes to be Occcupational Safety and Health Administration and National Institute for Occupational Safety and Health certified for use in homeland defense.

Joint Service General Purpose Mask (prototype)

Optical Insert: Projected to be a frame mount compatible with the Prescription Lens Carrier now used by the Ballistic-Laser Protective System.

Insert procurement: Projected to be ordered from the military optical laboratories.

(POC: Major Emery Fehl, DSN 584-1006 or Commercial 410-436-1006)

New Industrial Hygiene Intern Training Program

Six new industrial hygiene interns reported to the U.S. Army Safety Center on 30 December 2002 for the first phase of their training. The revival of the IH Intern Program is a benefit of the recent merger of industrial hygiene into Career Program-12, Safety and Occupational Health Management. USACHPPM manages the interns, who are carried on the HQDA Table of Distribution Allowances for their 2-year internship. The interns enter as GS-07 and advance non-competitively to the GS-11 level by completion of the program. The CP-12 pays intern salaries, travel and training for the two years.

During their first 18 weeks at the Safety Center, the interns will cover myriad topics from the safety, industrial hygiene and environmental disciplines. Following this intensive training, which has been likened to "drinking from a fire hose", the interns report to their permanent duty locations to begin their On-The-Job Training. In 2004, the interns will receive their IH specific training, including the Basic IH Course at the AMEDD Center and School and the Intermediate IH Topics course sponsored by Industrial Hygiene and Medical Safety Management Program at USACHPPM. Upon completion of the intern program, these well-trained industrial hygienists are transferred to the TDA of their PDL. (POC: Pat Cowin at 410-436-2439, or email her at: Patricia.Cowin@apg.amedd.army.mil).

Nucleic acid-based RT-PCR/PCR Diagnostics Modeled for Detection of Pathogens from Arthropods

Rapid identification of military-relevant arthropod-borne diseases and detemination potential health risks, especially in hostile environments, is a primary concern to Commanders and deployed personnel. As military preventive medicine specialists, we are acutely aware of the importance for early detection of the potential diseases transmitted by mosquitoes, ticks, sandflies and other insects. Understanding basic factors of vector biology, to include host pathogen relationships through vector competence testing, factors of vector bionomics like breeding habitat, host feeding preference, vector proximity to host, and seasonal distribution, allows an educated health risk assessment to be made for personnel on the ground.

Figure 1

We have an arsenal of historically compiled regional disease summaries available through Disease Vector Ecology Profiles and the Armed Forces Medical Intelligence Center databases that provide this and other helpful information to Commanders, Preventive Medicine Specialists, and Health care providers. Augmenting these information databases with diagnostic technology designed to detect and identify pathogens from arthropods in real-time, allows relative disease risks for personnel in urban, peri-urban and field environments to be determined.

Immunochromatographic, "dipstick" assays are currently available for the detection of a few pathogens (i.e., West Nile virus, St. Louis encephalitis virus, malaria and shortly, dengue virus).[1] A more sensitive and specific identification procedure, namely, polymerase chain reaction or PCR and reverse transcription – polymerase chain reaction or RT-PCR, can be used to identify any number of selected pathogens in the field. Advances in these techniques, and the integration of "Ready-To-Go" products and modifications to conventional molecular biology equipment has provided the foundation for the development of standardized nucleic acid-based diagnostic assays.

Collections of arthropods using a variety of methods (sentinal animal, human landing, building aspiration, and light traps),

Figure 2

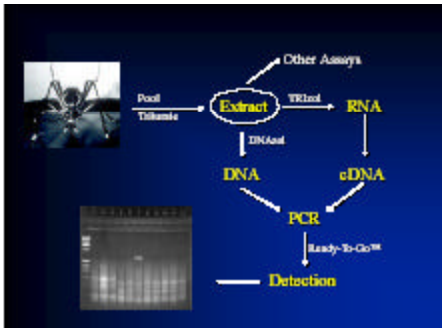


Figure 3

Figure 5

allows for the widest diversity of species to be obtained for testing purposes. Although this task is easier said than done in areas of **conflict, basic collection methods (CO$_2$** light

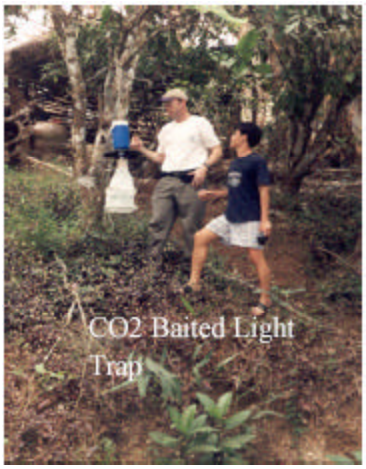


Figure 6

traps) are better than doing nothing at all. Mosquitoes, ticks and sand flies can be collected, anaesthetized with triethylamine, which eliminates the need for freezing[2], identified down to the lowest taxonomic level possible, pooled into groups of 25-50, triturated in phosphate buffered saline or media and processed for PCR when looking for a DNA-based pathogen (i.e., malaria, leishmaniasis) or for RT-PCR when looking for an RNA based pathogen (i.e. , Japanese encephalitis, Crimean Congo Hemorrhagic Fever). The use of degenerate primers targeting families of viruses (i.e., Togaviridae, [alphavirus genus]), Flaviviridae and Bunyaviridae) allows a sample to be screened for the presence of many viruses at the same time.

Figure 4

Upon detection of a pathogen with screening primers, specific primers are used to confirm the identification of the viral species. For example, if a pathogen is detected within the Flaviviridae family, one could test the sample for viruses like dengue, West Nile virus, Japanese encephalitis, and Kunjin. By referring to the DVEPs and AFMIC databases, a list of potential arthropod-borne diseases endemic to the area focuses the "differential diagnosis". PCR identifications are generally available within the same day. Some may argue that standard PCR is antiquated and the gold standard is moving towards light-cycler technology. Conventional PCR is well established with unlimited primer sequences for pathogens representing innumerable phylogenicities. Forward deployed laboratories, at least within the Army, have conventional molecular diagnostic equipment within their equipment inventory. Assays discussed here were tailored to these existing systems. Civilian and government facilities are currently focusing on a faster, light-cycler technology, which presents results on a computer screen as the system cycles. The development of primers and probes for arthropod-borne pathogens and other human diseases and reducing the inhibitory factors which can cause false positives and false negatives, are the focus of on-going research.

Future joint evaluations of conventional PCR and real-time, light-cycler PCR, will test one system against the other to determine which system is faster and more reliable, while maintaining sensitivity and specificity towards the detection of arthropod-borne pathogens. Until then, conventional PCR and RT-PCR has been demonstrated over the last 3 years, that it is a highly sensitive, employable system capable of detecting arthropod-borne pathogens under the most optimal laboratory conditions and under the most extreme environmental field conditions. The

information gained from real-time, far-forward diagnostic testing, will enable Commanders and Preventive Medicine Specialists to make accurate health risk assessments to deployed military personnel.

*The views in this report are those of the authors and should not be considered as Department of the Army positions.

[1]Ryan JR, K Dave, E Emmerich, B Fernandez, MJ Turell, J Johnson, KL Gottfried, KL Burkhalter, A Kerst, A Hunt, RA Wirtz, RS Nasci, 2003. Wicking Assays for the rapid detection of West Nile and St. Louis Encephalitis viral antigens in mosquitoes (Diptera: Culicidae). J Med Entomol In press.

[2] O'Guinn, ML and MJ Turell. 2002. The effect of triethylamine on the recovery of selected South American alphaviruses, flaviviruses and bunyaviruses from mosquito (Diptera: Culicidae) pools. J Med Entomol. 39 (5): 806-808.

[POCs: MAJ Monica L. O'Guinn, OCONUS 81-3117-63-4478, MAJ John S. Lee (Commercial, 310-619-4912), and SGT Marshall L. James, OCONUS 81-2117-63-8509)].

Field Laboratory

"One-On-One TUC? – A Personalized Approach to Tobacco Use Cessation"

Quitting tobacco usage is very difficult; however, attempts are made to facilitate the process as much as possible. People may say they use tobacco for a variety of reasons; but chemical addiction, the habit, and psychological dependency are basically the three reasons people use tobacco. After getting a low turnout for the Tobacco Use Cessation Classes, USACHPPM-PAC realized that besides the typical reasons, it was mainly convenient for individuals to find an excuse to not attend the classes. They were embarrassed to attend a group class; they felt they didn't want to commiserate with other people and hear others' problems when they had to deal with their own issues; too little time, too much work; erratic work schedules; remote locations; traveling in Japanese traffic; too much stress to think about it; tried before, failed before. For convenience, privacy, and capturing 'the teachable moment;' individual classes can be scheduled at USACHPPM-PAC to help in tobacco cessation efforts.

From October 2001 to October 2002, there were 56 participants in the 'personalized' plan. Thirty-six participants quit for over 6 months for a quit rate of 69.6 percent. There were three recidivists. A good standard is having a quit rate of over 25 percent.

A person must be ready to quit and recognize that the numerous benefits would outweigh the negatives as indicated by Prochaska's Stages of Behavior Change model. When a person indicates they're ready to quit, they are seen as soon as possible. A positive, pro-active approach is now taken to allow the individual to become personally vested in what is meaningful and most beneficial to them. They're assessed for their readiness to quit, the reasons they want to quit, and what support they have to help them. If they indicate they will be "policed," attempts are made to establish a means for them to be supported.

They are congratulated on their attempts to stop using tobacco. They are asked what bad affects they have personally experienced from using tobacco or if they know of the health risks of tobacco use. They are encouraged to express that by quitting tobacco use. They will save money, save their health, save relationships, be more socially acceptable, and won't have anxious moments from wanting nicotine in inconvenient times.

They determine the strategies to quit, but based on the American Lung Association's "Freedom from Smoking" and the DOD/VA guidelines, the recommended three part approach of Zyban + Nicoderm + behavior modification education is the most effective. If someone is serious about quitting, the drugs alone won't do it. Some strategies for quitting include tracking and focusing on triggers, using relaxation techniques, making more "I" statements, thinking constructively, appreciating the positive changes of quitting, finding other things to do, exercising, eating right, getting support, and rewarding themselves.

There are powerful psychological habits formed that need to be worked on, not only in the first few days, but it may be months before the urges go away. Most people who abstain from tobacco for three months will have a greater chance to be tobacco free for the rest of their lives. The rewards of non-smoking and the behavior change process are extremely

important so a person doesn't relapse. For example, after a year of non-smoking, a woman "saw a cigarette in the glove box and didn't think just one would hurt." Within two days, she was back to a pack- a- day habit. There is no going back to "just one puff/dip."

"Tobacco use is not just some bad habit but a powerful addiction that warrants appropriate medical treatment," says Michael Fiore, M.D., director of the Tobacco Research and Intervention at the University of Wisconsin Medical School. "As a rule, people who smoke more than 10 cigarettes a day and want to quit should use an FDA-approved smoking cessation product."

When a person tries to quit, they must keep the rewards in mind and not be discouraged if an attempt doesn't succeed. They need to refocus on what helped and what didn't during past attempts to have a better chance of success now. (POC: Marjorie Warhurst, OCONUS 81-3117-63-8504).