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Navy Environmental Health Center

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Our mission: Protect the Force

At the end of the movie *Saving Private Ryan*, Army Captain Miller's (Tom Hanks) dying admonition to Private Ryan is a whispered, "earn it." Working daily at the Pearl Harbor Navy Base I cannot help but be emotionally impacted by the vivid memories of our nation's past and those who faithfully stood the watch before us. When I glance across the harbor at the silent USS Arizona Memorial I can easily imagine a collective chorus rising.....shouting, "earn it".

What have the men and women of our four global NEPMUs been doing lately to "earn it"? What have we been doing to address the challenges facing our generation of Sailors and Marines?

Chemical / Biological Threat

In a recent *Washington Post* article Secretary of Defense William S.

From the OIC, NEPMU-6

...Striving to "Earn it"

Cohen stated that the threat of a chemical or biological "terror weapon" being deployed on American soil "is reality" and "is not hyperbole." We know that the members of the Japanese cult, *Aum Shinrikyo*, who in 1995 deployed sarin nerve gas in the subway system in Tokyo, had also experimented with anthrax releases and had plans for an anthrax attack against US Forces stationed in Japan. While the Secretary somberly welcomes us to the "grave New World of terrorism", he also exhorts us by stating that "preparation is itself a deterrent" and that "there is not a moment to lose."

To counter these real-world threats the staffs at each of the four Navy Environmental and Preventive Medicine Units are conducting training courses in the Medical Management of Biological and Chemical Casualties.

(Continued on page 3)

NEPMU-7 Supports Latvia MEDCEUR Exercise

L T JG Daron Patton and HM1 Michael Richardson of NEPMU-7 provided direct preventive medicine support to MEDCEUR 99-2, a Partnership for Peace Exercise held in Adazi, Latvia from 28 June to 9 July. European participants included medical

personnel from Latvia, Lithuania, and Estonia and a team of observers from the nation of Georgia. U.S. participants included surgical response team members from U.S. Naval Hospitals Rota, Naples, and Sigonella, representatives

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Navy Environmental and Preventive Medicine

Unit No. 2, Norfolk, VA – Unit No. 5, San Diego, CA – Unit No. 6, Pearl Harbor, HI – Unit No. 7, Sigonella, IT



First of all let me congratulate all the newly selected Chief Petty Officers out there. By now you have completed initiation and are wearing those new anchors ... Best of luck to all of you.

This will be my final "From the SEL" commentary, as I will transfer to the USS John F. Kennedy on the first of October and fulfill my final dream in the Navy, to serve aboard my own ship. As I wrap up fourteen years in the preventive medicine community, I can not help but feel that I am leaving behind my family to once again strike out into the world as a 0000 - Basic Corpsman. If there were a way to retain my 8432 PMT NEC and still go to sea, I would do so. But as we all know, there are no sea jobs for Senior Chief PMT. So I had to "archive" the NEC, and go to sea.

Being a PMT has offered me many great opportunities. I have always said that one of the greatest things about being a PMT is that you can never get bored. If you tire of one aspect of the job, you can always move on to something else. industrial hygiene, food safety, water, teaching, pest control, communicable diseases, you name it - the list goes on and on. I have never been bored as a PMT ... well except for that one year at Joint Coordinated Preventive Medicine Service Camp Pendleton, when all I did was sanitation inspections... but then that wasn't really so bad after all.

Many things have changed since I went to PMT School in 1985. Let me take a little walk down memory lane ... come with me if you choose: we used typewriters, there were no

computers at the school, the "big" computer at Camp Pendleton was a Zenith 100, we knew only 3 types of viral hepatitis A, B and Non-A, Non-B, most malaria was preventable with chloroquine, DARS were done on "speed letters," messages were typed on those forms with the red lines that could make any sane person insane, and "high tech" was a jet injector gun for mass immunizations. Now, fourteen years later, PMT school is in San Diego, NAVMEDCOM has changed their name back to BUMED, DARs are now MERs, jet injector guns have been banned, DISRAPs no longer exist, typewriters are hard to find, and the internet and e-mail are how we talk to each other. Then again, some things never change. Most diseases are still preventable, CDR Ken Ocker-mann is still hanging around Navy preventive medicine, NEHC is still NEHC, and Preventive Medicine Technicians are still some of the finest sailors that I know, and oh in case you were wondering -- the phrase "another day in paradise" still applies to a tour at NEPMU-6.

These past three years have been challenging. After spending three years teaching at Independent Duty Corpsman school in Portsmouth, Virginia, I returned to Hawaii and NEPMU-6 with fond memories of my previous tour here and "rose colored glasses." This tour ended up being more challenging than I would have ever predicted. But in the end the fine sailors and professionals at NEPMU-6 have risen up to provide the Pacific Fleet with expert Preventive Medicine Service. The highlight was when we were awarded the Meri-

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From the OIC...Striving to “Earn it”

These courses initially will be directed towards Medical Department personnel and will include an introductory 1-day course, or a more comprehensive 3-day course. Interested personnel should contact the closest NEPMU to determine course schedules.

NEPMU-6 personnel await “gassing” with CS (tear gas) inside the “confidence” chamber at Marine Corps Base, Hawaii-Kaneohe Bay



Additionally, all four NEPMU staffs are in the process of developing biologic warfare agent and chemical detection / surveillance and response capabilities. Because of this recent initiative NEPMU-6 was able to assist the State of Hawaii and the FBI in the evaluation of a bio-terrorist threat sent to a state government office containing an unknown substance said to be anthrax. NEPMU-6 laboratory personnel were able to quickly defuse an escalating situation and proved the threat a hoax, due to their recent specialized training, diagnostic materials and equipment.



NEPMU-6 laboratory technicians analyze unknown substance from bioterrorist's package under bio-safety hood.

Addressing Other Interesting Challenges... Emerging and Re-emerging Infectious Diseases

In 1918 a worldwide flu epidemic known as the

From the SEL

(Continued from page 2)

torious Unit Commendation just a few months ago, there is not a more deserving crew for such an honor.

So, as I prepare to move forward to my new job on board the USS John F. Kennedy (CV-67), I can look around and say with certainty that Navy Preventive Medicine is doing very well. We have superior

"Great Influenza Pandemic" killed thousands of young American Sailors and Soldiers. It is estimated that the attack rate of influenza among American Navy personnel during 1918 was close to 250 per 1000, or 1 in 4 American sailors. The hallmark of the 1918 Influenza pandemic was the virus' ability to kill healthy young adults. During this infamous epidemic there were a total of 675,000 American deaths and over 20 million influenza deaths worldwide.

We need to be ever vigilant in our disease surveillance. To this end NEPMU-6 is extending its respiratory disease surveillance to more military installations throughout the Western Pacific and Asia. All medical personnel should educate themselves thoroughly about the positive preventive impact of the annual influenza vaccine and become the strongest proponents of this classic intervention.

Recently tuberculosis, a re-emerging disease spread by close person to person respiratory droplet contact, has returned to impact our shipboard community. This old but preventable disease keeps popping up and continues to threaten to degrade our operational readiness. We can never afford to get the least bit cavalier about our “routine” prevention programs.

In his retirement speech at 31 years VADM Lyle Bien in referring to our Sailors and Marines, challenged us as military leaders at all levels, to “know that you hold in your hands America’s greatest treasure.”

That’s why I go to work each day and that is what we at the NEPMUs are about...protecting the Force... protecting America’s greatest treasure: our nation’s young men and women. That is why we must continually strive to “earn it.”

**Captain Jim Beecham MC, NEPMU-6
Pearl Harbor, HI**

technology, as well as the finest young sailors that I have ever seen - who will take us proudly and strongly into the next millennium. Yes, Navy Preventive Medicine is in good hands.

Thanks for having me along for the ride.... I'll see you in the Fleet.

SEL, NEPMU-6

Viral Gastroenteritis Outbreak Study Underway at NEPMU-5

Viral Gastroenteritis (VGE) outbreaks can cause huge problems on Navy and civilian ships. The symptoms consist of nausea and vomiting, often with diarrhea, and last for 24-36 hours. As many as 1000 Sailors may become ill on a large ship over a period of weeks to months. Although the clinical symptoms and presumed viral etiology were long known, the first strain was not detected until the early 1970s. It came from an outbreak in Norwalk, Ohio, in 1969 and the term Norwalk virus has been used to describe all the etiological agents of VGE. Other strains, however, were soon found which did not cross-react with antibodies to Norwalk virus and were named after each outbreak site. More recently, all these agents were included in the calicivirus family, which has several members that cause illness in animals. The new term for the Norwalk and Norwalk-like viruses, which cause VGE in man, is human calicivirus (HuCV).

NEPMUs are occasionally requested to assist a ship having a large outbreak, most recently in 1997 when NEPMU-6 personnel went to the USS INDEPENDENCE (CV-62) and NEPMU-2 helped with the USS EISENHOWER (CVN-69) outbreak. These outbreaks are difficult to contain, as they do not respond well to normal food-borne outbreak intervention procedures. They apparently can persist in the environment and spread via person-to-person much better than a bacterial agent like *Salmonella*.

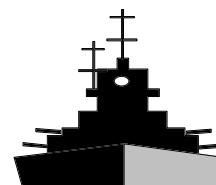
NEPMU-5 has been funded by the Global Emerging Infections System (GEIS) to study outbreaks on-board ship. With the collaboration of the Center for Pediatric Research, Eastern Virginia Medical School, which supplied the specific reagents and lab procedures, and the Naval Medical Research Center (NMRC) which supplied the original protocol and human use approval, we can detect HuCV. The main on-board procedures are reverse transcriptase – polymerase chain reaction (RT-PCR) and enzyme immunoassay (EIA) both of which detect the virus directly in stool, vomitus, food and environmental samples. Since HuCV have RNA instead of DNA, the genetic material has to be converted to DNA using reverse transcriptase in order to begin PCR. These tests will be compared

with the standard EIA of antibody titer rise from acute and convalescent serum draws.

Our goal is for all eleven aircraft carriers and amphibious assault ships in the Pacific to be capable of investigating and collecting significant specimens and data. These ships have large crews, which makes sample collection easier as there will be more cases than on a smaller ship. We have assembled collection boxes to send to each ship before their next long (> 3 weeks) underway period. These boxes contain enough supplies to collect stools and sera from 100 cases and are designed to help the ship begin the investigation until NEPMU-5 personnel can arrive with more supplies. The NEPMU-5 team would then begin onboard laboratory analysis of HuCV as well as rule out standard bacterial and parasitic agents.

The long-term solution to this problem is likely to be an oral vaccine, probably a cocktail of several HuCV strains most commonly found in shipboard outbreaks. The GEIS study would help identify these strains as well as determine the location of reservoirs and methods of transmission.

**Microbiologist
NEPMU-5**



Change of Charge held in Newly Completed Structure at NEPMU5

On 30 September 1999, NEPMU-5 celebrated both a Change of Charge and a ribbon cutting for the completed MILCON (See July 99 *Fleet Public Health* for MILCON details),

The Unit bid a fond farewell to CAPT James R. Beddard, as he departed for his next assignment at the Navy Environmental Health Center in Norfolk, VA. CAPT Beddard leaves a legacy derived from the CBRE leadership experience he brought and the BU-MED perspective he has shared. These were coupled with a continuing willingness to try new models of service delivery, whether they required relocation of service delivery, redefinition or reorganization of services

The incoming Officer in Charge is CAPT John E. Tueller, MC, USN. He is a native of San Francisco, California. In 1976, he was commissioned an Ensign in the Medical Corps, United States Navy Reserve.

Following completion of Family Practice training in 1983, he was assigned to Naval Hospital Lemoore, CA, as a staff physician. In 1986, he completed Flight Surgery training at Naval Air Station Pensacola, FL, and reported to the Third Marine Aircraft Wing at Marine Corps Air Station El Toro, CA. He served as squadron flight surgeon, Group Surgeon, and Assistant Wing Surgeon, and made an extended deployment to the Western Pacific as flight surgeon for the 11th Marine Amphibious Unit aboard USS BELLEAU WOOD (LHA-3).

After completing a Public Health academic year in 1989, CAPT Tueller spent one year as a resident epidemiologist with the Infectious Disease Branch, California Department of Health Services. In 1990, he was assigned to Navy Environmental and Preventive Medicine Unit No. 5, San Diego, CA, as Epidemiology Department Head. In 1993, he reported to USS CONSTELLATION (CV-64) as Senior Medical Officer. He also served as Battle Group Medical Officer for the CONSTELLATION Battle Group under COMCRU-DESGRU ONE, and made an extended deployment to the Western Pacific and Arabian Gulf. In 1995, he was assigned to COMNAVAIRPAC as Assistant Force

Medical Officer. Since August 1998, he has served as Force Medical Officer for COMUSNAVCENT and COMUSFIFTHFLT in Bahrain.

CAPT Tueller received a BS degree from Brigham Young University in 1976, with majors in Chemistry and Asian Studies. He earned the MD degree at the University of Utah in 1980, MPH degree at the University of California, Berkeley, in 1989, and MA degree at the Naval War College in 1998. He is board-certified in Family Practice, General Preventive Medicine, and Aerospace Medicine.

Edited by
Barbara S. ZIMMER
Publishing Editor, FPH
NEPMU-5

Emerging Infectious Diseases Journal is available on the Web. An abbreviated table of contents is listed below.

Access the full articles at <http://www.cdc.gov/EID>.

- * Medical and Public Health Response to Bioterrorism, D.A. Henderson
- * Bioterrorism: How Prepared Are We? D.E. Shalala
- * The Emerging Threat of Bioterrorism, J.M. Hughes
- * Congressional Efforts to Address Bioterrorism, S.A. McCann
- * Finding the Right Balance against Bioterrorism, R.A. Clarke
- * Historical Trends Related to Bioterrorism, J.B. Tucker
- * The Threat of Biological Attack, D.W. Siegrist
- * BW Programs of the Former Soviet Union and Iraq, C.J. Davis
- * Aum Shinrikyo: Once and Future Threat? K.B. Olson
- * The Prospect of Domestic Bioterrorism, J. Stern
- * Potential Biological Weapons Threats, M.G. Kortepeter
- * Epidemiology of Bioterrorism, J.A. Pavlin
- * Vaccines in Civilian Defense Against Bioterrorism, P.K. Russell
- * Vaccines, Pharmaceutical Products, and Bioterrorism, K.C. Zoon
- * Smallpox: Clinical and Epidemiologic Features, D.A. Henderson
- * Smallpox: An Attack Scenario, T. O'Toole
- * Aftermath of a Hypothetical Smallpox Disaster, J. Bardi
- * Clinical and Epidemiologic Principles of Anthrax, T.J. Cieslak
- * Anthrax: A Possible Case History, T.V. Inglesby
- * Applying Lessons from Anthrax Case History, J.G. Bartlett
- * Addressing Bioterrorist Threats, M.A. Hamburg
- * Cytotoxin-Producing E. coli O157 in Wales, R.M. Chalmers
- * Deer Tick Virus in the Northcentral U.S., G.D. Ebel
- * Dengue Reemergence in Argentina, G. Avilés
- * Chlorine Disinfection for C. parvum, C. Carpenter
- * C. cayetanensis in West Java, Indonesia, D.J. Fryauff
- * Dengue Hemorrhagic Fever in Delhi, India, L. Dar
- * The Potential Threat of Bioterrorism, J.E. McDade

Radon: The Uninvited Guest

Shortly after moving into housing on Guam, I was very dismayed to learn that my new house, the place where my two year old son and nine month old daughter were going to live for the next two years, was full of radon! As an Environmental Health Officer and a public health professional, it is embarrassing to admit that at the time, all I knew about radon was that it causes cancer and is taken very seriously by the U. S. Environmental Protection Agency. With only that to go on, my initial reaction was equal parts anger and fear. Determined to make sure that something was done immediately to remedy this situation, I set about doing the research so I could really hammer whoever turned out to be responsible for this outrage. Then my plan hit a snag: like everything else that I've had to deal with over the years, the more I learned about radon, the less anger and fear I was able to muster. It has since occurred to me that I am probably not the only one who has had these feelings, so I would now like to share what I have learned:

If you are like me, the most important question is: "Will this stuff make my family sick?" In all seriousness, the short answer to that question is that there is a solid body of sound scientific evidence to indicate that it might; and there is a solid body of sound scientific evidence to indicate that it won't. I realize this is contradictory, so let me explain. A well-documented study on uranium miners in Colorado from fifty years ago clearly shows that miners who were exposed to very high levels of radon - more than a hundred times the levels found in our homes - were more likely to get lung cancer than people who were not exposed to the radon. This correlation held up even when allowances were made for age, smoking, and other factors that might contribute to lung cancer. In addition, more studies on other miners and animals showed the same results. In fact, virtually all scientists agree that radon in high concentrations causes lung cancer. The difficulty is in applying these results to very low doses. What scientists did with this information was simply calculate the rate at lower doses from the rate at higher doses, essentially saying that if a dose of 100 units causes cancer in 10% of the affected population, then a dose of 10 units must cause cancer in 1% of the affected population (the actual process that is used for

these calculations is much more complicated, but this is the general idea). This process is called the "linear, no-threshold" model for assessing risk because it would make a straight line if plotted on a graph and it assumes there is no "threshold" where lower doses have no effect and higher doses do. The linear, no-threshold model is only used with substances that cause cancer because they cause genetic damage (mutations) in cells, and it is assumed that a single mutated cell can give rise to cancer (we'll get back to this a little later).

All other substances are evaluated using the threshold model, which assumes there is some level of exposure that can be considered safe. This is the model we all use in our everyday lives; a shake or two of salt doesn't produce any ill effects, but if we eat ten pounds of salt, we can expect some problems. Even things that we consider "good" for us (like vitamins) have a threshold over which bad things happen. Toxicologists, the scientists who actually do this stuff for a living, have a favorite saying: "Dose makes the poison", which means anything will kill you if you get enough of it. And many believe the opposite is true as well - nothing will hurt you if you don't get too much. And this is where the more recent research comes in. Several studies have been done to try to answer the question of whether radon at very low levels causes cancer. These studies were done by taking large numbers of people and finding out how much radon they had in their houses. Then they were split into two groups: those with radon exposure, and those without. By comparing the rates of cancer in the two groups, it could be determined if the radon exposure group had more lung cancers (once again, the actual process used in these studies is very complicated, but this description shows the basic concept). The results? In the majority of these studies, no increased cancers in the exposed group. In fact, one particularly well executed study looked at radon and lung cancer rates in 1,600 counties in which 90% of the U.S. population lives, and found that as radon levels in the home increased, lung cancer decreased! One of the criticisms of this study was that it did not account for people moving from one house to another; but a study in Finland looked at families who lived in the same houses for

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JTF Eagle's Hurricane *Mitch* Disaster Relief For Guatemala: Preventive Medicine Planning and Findings

While serving as Group Entomologist at 2d Medical Battalion, 2d Force Service Support Group, Camp Lejeune, I had an opportunity last December to provide preventive medicine services to Joint Task Force-Eagle, in Guatemala. JTF-Eagle provided disaster relief and humanitarian assistance to the victims of Hurricane *Mitch*.

The hurricane did not pass over land, but dumped billions of gallons of rain on Honduras, Nicaragua, El Salvador, and Guatemala as it spun off the Atlantic coast of Honduras, during the last week of October 1998. The post-storm report included 5,657 fatalities, 8,000 missing, and 1,200,000 displaced. JTF-Eagle was created to provide assistance to the citizens of El Salvador, Guatemala and Nicaragua, with headquarters in El Salvador. JTF-Bravo provided assistance to Honduras alone, due to the tremendous amount of damage that had occurred in that country.

Our ten-member team was to provide all aspects of preventive medicine to our camp in Guatemala. Five of our ten PMTs augmented from three Naval hospitals, and two of our members were Marine Corps vehicle operators. As a part of Combat Service Support Detachment 69 (CSSD-69) at Camp Lejeune, initial planning for the operation began the week before Thanksgiving. We were not provided with a clear mission statement regarding the extent of our support to the host nation, nor did we know exactly where in Guatemala we would set up our base camp. Nonetheless, we gathered our equipment and supplies, in preparation for deployment by the first week of December. As it turned out, the camp consisted of over 700 Marines, Sailors, Airmen and Soldiers. The mission consisted primarily of road and bridge repair, as well as potable water production, using reverse osmosis water purification units (ROWPUs).

After reviewing Southern Command's disease threat assessments of the storm-ravaged nation, we decided to take Authorized Medical Allowance Lists (AMALs) 637 and 638 (preventive medicine equipment and supplies) and brought limited amounts of each to save space and weight on the C-130 aircraft

dedicated to transporting preventive medicine assets. Our equipment included two HMMWVs, two C-101 trailers, and three quad containers with the two partial AMALs packed inside.

Emphasis was on malaria and dengue prevention, leptospirosis control, and monitoring the water supply. Pre-deployment prophylaxis included chloroquine (500 mg pill) once a week for malaria protection and two doxycycline capsules (100 mg each) once a week to protect against leptospirosis, a water-borne disease. We anticipated high levels of dehydration due to high temperatures and slow, arduous travel on damaged roadways. We also expected high populations of pest insects.

After reading the intelligence reports, what we found in Guatemala was *not* what we expected. Hurricane damage was at a minimum. This was plainly evident as we drove from Guatemala City to our campsite outside the port town of San Jose, 60 miles west on the Pacific coast. Damage was largely confined to power poles and bridges, many of which were still standing, although unstably so.

The Pacific coast was bone-dry. No rain fell while we were in country from 9 December to 19 January. We trapped only 22 mosquitoes for the duration of our stay, and did not encounter any active cases of malaria or dengue in the local population. Due to the lack of standing water, leptospirosis was absent. We were thankful for the chloroquine, but our field hospital received plenty of GI sick calls that we now believe was due mostly to the doxycycline. The purple spots on my own hands disappeared within three days of discontinuing doxycycline (photosensitivity).

Due to these dry conditions, dust-borne upper respiratory tract infections were common and produced the largest number of sick calls. We averaged about one or two scorpion stings a day, and we responded to several alerts after some honeybee colonies migrated into camp. With bee-venom allergic troops in the vicinity and the possibility of Africanized honeybees, bee control jobs were a top priority (during our deploy-

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**JTF Eagle's Hurricane Mitch Disaster Relief for Guatemala:
Preventive Medicine Planning and Findings**

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ment, two children were stung to death in an adjacent province while playing in a park). We had not packed a bee suit, but several pairs of coveralls sufficed. In the tropical heat, the makeshift suit actually aided in weight reduction. Finally, there were snakes. We were not over run with snakes, but there were enough to make you pay close attention to where you walked, especially at night. While the snake tongs were nice to have, most snakes were DOA by the time I arrived to remove them. Snakes and Marines do not mix well. An interesting event occurred one midnight while on our way to a honeybee job; my driver stepped on a snake and almost jumped out of his skin. I thought it looked somewhat familiar, like the pet store variety, and then recognized it as a common boa constrictor. It was six feet long and weighed about 40 pounds. The tongs were useless for a snake of such size, so we just grabbed it and returned it to its jungle home, where it could play its natural part in controlling the rodent population.

Lessons learned from this deployment were to expect the unexpected. Although only five or six weeks had passed from the hurricane to the time we arrived, the dry season had set in and the cited disease threats were greatly diminished. It would have served us well to have called ahead to Guatemala to inquire about local environmental conditions. Bee suits would have been a welcome addition to the PMT set and should be considered with any tropical deployment. Finally, bring all augmentees on board as soon as possible. Our team members were kept on a loose 72-hour recall status, and as a result, barely joined the team in time to be issued 782 gear, receive mandated training classes and help with pre-deployment issues. These lessons were learned the hard way, but for good use.

These "lessons learned" will go a long way to prevent the same type of problems from occurring with our Mobile Medical Augmentation Readiness Team (MMART) here at NEPMU-6. As a member of this team, I am working with the MMART coordinator to ensure pre-deployment readiness is a high-priority goal and that our preventive medicine sets are ready to go now, not just before actual deployment. Emphasis will be on using unit personnel to complete an MMART team with as few augmentees as possible. This will fa-

cilitate rapid training and processing of personnel involved. Finally, the most current environmental information pertaining to our deployment site will be obtained 24 hours before deployment, if possible. Depending upon the area to be visited, this could be accomplished with a few phone calls. Doing so will ensure that the initial recommendations made by medical surveillance teams are still applicable to the current deployment force. Up-to-the-minute information may initiate changes to the original chemoprophylactic regimen. This could lessen drug-induced illness (i.e., discontinuing doxycycline and reducing GI illness) while saving money. Conversely, last-minute surveillance could lead to recognition of new disease threats with ensuing prophylactic recommendations made to protect deploying forces.

**Entomology Department
NEPMU-6**



Training Catalog Available

The courses are targeted to a variety of personnel. Preventive Medicine Technicians, Mess Management Specialists, Water Kings, Food Service Workers, Medical Department Representatives, and Medical Officers would find many of the Preventive Medicine classes beneficial. Occupational Health courses are geared Safety Petty Officers, personnel responsible for monitoring potential environmental hazards and Medical Department Representatives. The Pest Management training is directed to

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Testing Potable Water in a CBR Environment

There are many devices that the Navy and Marine Corps uses to assess chemical, biological, and radiological conditions. We use air-sampling devices for the field and aboard ship. We also have detectors such as the M-8, M-9, M256A1, and the Chemical Agent Monitor, used by individuals aboard ship and in the field.

Many people have asked, "How do we test water for chemical contaminants?" There is a water test kit for chemical contaminants called the M272. The M272 is capable of testing 25 water samples for cyanide, blister, and nerve agents. The basic components of the M272 are the carrying case, Draeger tubes (used for detecting vapors burned off from the water sample), a plastic water test column with stopper, confidence and testing reagents, instructions, and matches.

The principle behind the test is that the reagent is added to the water sample, the sample is warmed with a match, and the contaminant is vaporized through, and detected by, the Draeger tube. A discoloration in the tube indicates a positive test.

The NSN is 6665-01-134-0885 and it costs about \$178.00. It is a good idea to learn to use this test kit before you actually need it, because it generally takes a long time to feel comfortable using it. There are many steps. The process takes approximately 20 minutes to test water between temperatures of 50F and 105F. At lower temperatures, the water may need to be warmed for 10 minutes. In higher temperatures, the water needs to be cooled to 105F or below, or foaming in the Draeger tube may result. The test time varies whether you are testing for all three groups at the same time, or just one or two agents. The results are indicated in the Draeger tube. A positive result is indicated by a discoloration in the media; a negative test will reveal no change in color.

The limitations of the M272 kit are that it is difficult to purchase all reagents separately. When you have exhausted 25 tests, you may have leftover reagents if you did not test for all three groups. Remember the kit tests for all three threat agent groups per

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NEPMU Laboratories: On the Front Against BW Agents

Some biological agents have been causing death for thousands of years. Others were just recognized in the last 200 years. Smallpox was known in China almost one thousand years ago. Carlos Finlay, a Cuban biologist, identified mosquitoes as the primary vector of yellow fever. In 1881, further studies at Walter Reed Army Medical Center by an Army physician proved the causative agent to be a virus. Ricin toxin was identified in 1889, tularemia in 1911 and the deadly anthrax in 1863. These are just a few of the many deadly agents that might be used against our troops at any time.

The effects of anthrax can show up within 24 hours of exposure. Even with proper treatment, for those who develop symptoms, mortality can surpass 95%. Ricin and Botulinum toxins are two good examples of naturally occurring toxins. Death caused by either toxin can occur hours after exposure. All four NEPMUs, two in CONUS and two OCONUS have been tasked to develop internal capabilities to detect

some of the most deadly microorganisms and toxins ever known to humanity. Some of these agents include anthrax, tularemia, plague, ricin etc. In February 1999, the NEPMU-6 laboratory, in Pearl Harbor, assisted the FBI with a bio-terrorist threat. NEPMU laboratories are being modified to handle these organisms and toxins with some of the highest biological safety precautions as well as equipping themselves with the most sophisticated technology available to detect these deadly agents.

The threat that hostile forces will use biological agents continues to be a military concern. Effective personal protective measures and environmental detection systems will very likely provide satisfactory protection for our forces. The U.S. military has the greatest capability in this country to address domestic biological and chemical warfare. Our military doctors, however, must become familiar with the diagnosis, treatment and prevention of illness caused by agents

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NEPMU-7 Supports Latvia MEDCEUR Exercise

(Continued from page 1)

from branch clinics throughout the theatre, and a team of civilian health professionals and U.S. Army physicians from the Centers of Excellence (COE) in Hawaii.

The exercise began with a week of lectures, translated into Russian for the benefit of the Baltic participants, co-presented by COE physicians and subject matter experts from other participating elements. The ultimate goal of the exercise was to train participants how to provide medical support in complex humanitarian emergencies. Preventive medicine topics figured prominently in the training agenda. Lectures on Communicable Diseases and Environmental Health Problems were jointly presented by Centers of Excellence and NEPMU-7 staff members.

The second week of the exercise focused on skill stations for clinical treatment of trauma patients. This training culminated in a mass casualty drill involving a downed aircraft and 200 crash victims. Participants set up receiving tents and deployed first responder teams to patients, transporting them to the receiving area, where they were treated or transferred to more capable facilities.

NEPMU-7 and Host Nation preventive medicine personnel cooperated in addressing several environmental health and preventive medicine issues during the exercise. Frequent inspections of the galley and berthing helped ensure the health of participants was properly maintained. Preventive medicine also helped secure use of previously unavailable laundry facilities, improving both personal hygiene and morale.

In addition to supporting the MEDCEUR, NEPMU-7 working with HM3 Matthew Snider, a preventive medicine technician from Naval Hospital Naples, conducted follow-up site visits for a concurrent SeaBee exercise also held in Latvia. Dubbed Cornerstone '99, this exercise involved renovations to two orphanages and a small college in fairly rural areas. Drinking water at these sites was re-tested and a survey of berthing and work areas was performed. Samples of paint and building materials at the work sites were collected for analysis for lead and asbestos by NEPMU-7's Industrial Hygiene Department. All findings were passed on to the independent duty corpsman serving as the SeaBees' senior medical representative.

During the exercise, NEPMU-7 personnel repeat-

edly wore away at the misconception that preventive medicine concerns and personal comfort concerns are the same thing. Preventive medicine can quickly become entangled in issues such as snoring in the barracks or the volume of hot water available for showers. A question that had to be asked time and again was "Is the issue being raised capable of causing illness or injury?"

While it makes no sense to live under miserable conditions if improvements can be made, field living by its very nature is often austere, even in barracks. In the field, Sailors have to adjust to a lack of familiar comforts and preventive medicine has to apply good old-fashioned common sense when determining which issues are legitimate health risks and which are simple discomfort.

The mission concluded successfully and leaders from all participating countries expressed their satisfaction with the training that had been accomplished during the closing ceremonies. Coordination with host nation preventive medicine personnel, education on the risks present and preplanning of preventive medicine efforts were all important in keeping the participants healthy during this brief foray into Eastern Europe.

**Industrial Hygiene Department
NEPMU-7**

NEPMU-6 Awarded Meritorious Unit Commendation

NEPMU Laboratories on the Front Against BW Agents

(Continued from page 9)

such as anthrax or Botulinum A toxin. For this reason the NEPMUs have taken on the role of trainers in "Medical Management of Chemical, Biological, Radiological and Environmental (CBRE) Casualties," a three-day course designed for medical personnel. Shorter briefings may be available on request from your cognizant NEPMU.



The new Ruggedized Advanced Pathogen Identification Device (RAPID) analyzer provides quick (within 30 minutes) field identification of BW agents.

The limitation and eventual elimination of both biological and chemical weapons are two of the greatest challenges facing the international community. Until that day comes, NEPMUs will be on the front with the latest advances in technology and training to support Sailors, Marines, Airmen, Soldiers and out communities.

**Microbiologist
NEPMU-6**

Radon: the Uninvited Guest

(Continued from page 6)

twenty years or more and still came up with "no increased risk" for results. These studies seem to support the notion that there is a threshold for radon exposure. But wait, what about the single mutated cell being the start of cancer? It is true that if a person inhales a single atom of a radon daughter (radon itself isn't the problem, it's the "daughters" that are left when it breaks down), it can mutate a single cell and start a cancer. The human body can and does successfully deal with cell mutations continuously, so a few atoms of radon in the air probably won't overwhelm the body's defense mechanisms. There is even a theory called "hormesis" that suggests that low levels of ionizing radiation are actually healthy, giving the body an opportunity to "exercise" it's ability to destroy mutated cells.

So, back to the question, "Will the radon in my house make my family sick?" Unfortunately, there is no conclusive answer. As a father, I tend to err on the side of caution. But in this case, after reading the research papers and asking all the questions, my opinion is that there isn't much cause for concern. The facts

are:

- The EPA's action level for indoor radon is 4 picocuries (a unit of measure for radioactivity) per liter of air; the level in the great outdoors is about .4 picocuries per liter. (If the linear no-threshold model is correct, we probably shouldn't be breathing fresh air...)
- Cancer risk associated with radon is always based on a thirty year exposure; very few of us are going to live in the same house that long.
- There is no conclusive evidence confirming a link between low levels of radon and lung cancer; and while there is no absolute proof that there isn't a link, there is some pretty good evidence that a threshold does in fact exist.

**Environmental Health Department
NEPMU-6**



Testing Potable Water in a CBR Environment

(Continued from page 9)

test. You will need to purchase the entire kit unless you have time to shop. Environmental conditions can impair your ability to perform water tests. In Saudi Arabia, temperatures have been known to reach 140F. That means you would have to cool the sample down with some ice, if you have it. In cold weather, the water will need to be warmed. Either way, you are looking at additional test time. If it is dark, it will be difficult to read the tubes with a red light. You will need a white flashlight to see the test results, which may compromise your tactical position.

With all the cost and use limitations, it is still recommended for your field unit or ship to have at least two in your stock of CBR defense equipment. Despite the potable water system being a closed system aboard ship, it can become contaminated if it is compromised in any way. Whatever the case, the M272 is still a sound investment and it is a good idea to include it in your Operating Target (OPTAR).



The M272 water test kit

Navy Environmental and Preventive Medicine Unit Five offers a course in medical management of CBR casualties every quarter. The next course is scheduled for November 30-December 2, 1999. You may contact HM2(FMF) Weaverling at (619) 556-7076 or DSN 526-7076 for a quota. This

course is either ongoing or in development at all NEPMUs. Check with the one nearest you for details.

**Threat Assessment Department
CBRE Team
NEPMU-5**

Fortieth Navy Occupational Health and Preventive Medicine Workshop

Plan now to attend the Fortieth Navy Occupational Health and Preventive Medicine Workshop in Norfolk, from 28 January to 4 February 2000. The theme for this year's workshop is "Force Health Protection: Prepare and Protect."

Registration headquarters will be the downtown Marriott Hotel. Attendees staying at any of the workshop hotels will be within walking or shuttle distance of all workshop events. Free parking is available at Harbor Park and shuttle service will be available for attendees staying at BOQs/BEQs, or attendees coming from other locations.

This year, the Sixth Independent Duty Corpsman (IDC) and Preventive Medicine Technician (PMT) Conference, the Eighth Health Promotion Conference, and the Second Annual Combined Operational and Aeromedical Problems Course are being held in conjunction with the NEHC conference. NEHC workshop registration personnel provide information and manage registration for these conferences.

The preliminary program, workshop registration, and hotel registration information will be available electronically on the NEHC home page at www-nehc.med.navy.mil by mid-September 1999. If you are unable to download the program electronically, or would like a copy on disk, please contact NEHC.

The points of contact for information about the workshop are:

Ms. Carol Boston at: (757) 462-5508,

Mr. Dick John at: (757) 462-5512 or

The Registration Coordinator is

Ms. Norma Thrower at: (757) 462-5452

A workshop information line is available at:

(757) 462-5421.

The DSN prefix for all numbers is 253.

The e-mail address is: workshop@nehc.med.navy.mil.

**Karen Murphy
Public Affairs Officer
NEHC**

Hail & Farewell

Welcome Aboard!

Fair Winds and Following Seas!

Training Catalog Available

(Continued from page 8)

personnel requiring DoD certification.

Preventive Medicine and Occupational Health courses taught in the Pacific, beginning October '99 can be found on the on-line catalog at the following web sites:*

- Navy Environmental and Preventive Medicine Unit No.6, Pearl Harbor, HI

<http://nepmu6.med.navy.mil>

- Navy Environmental and Preventive Medicine Unit No.5, San Diego, CA

<http://trout.nosc.mil/~nepmu5>

- Courses taught by the Navy Disease Vector Ecology and Control Center, Bangor, WA are also listed.

*Acrobat Reader software required



NEXT ISSUE: JANUARY 2000

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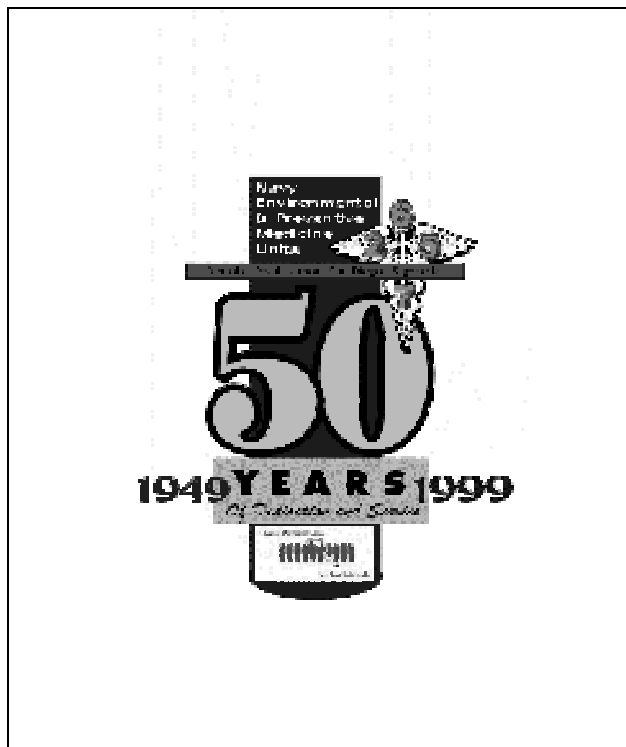
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