# Fleet Public Health

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NEPMU-5
*San Diego, CA*

*Navy Environmental Health Center*


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***From the OIC:***

## MILCON Nears Completion… NEPMU-5 Ready for the 21st Century

March 10, 1999 marked the 50th Anniversary of Navy Environmental and Preventive Medicine Units. The NEPMU-5 ceremony was held against the backdrop of a military construction (MILCON) project, initiated in 1987, subsequently modified, funded and actually begun in October 1998.

The NEPMU-5 MILCON project primarily adds a new, two story, 6300 square foot building which will contain the Consolidated Industrial Hygiene Laboratory on the upper level and a large classroom area for training courses on the lower level. Additionally, substantial renovation and remodeling of the existing NEPMU-5 building is included in the MILCON.

*The new structure that comprises the major part of the MILCON, in its nearly-complete state.*

The new building will house a cutting-edge analytical laboratory, providing state-of-the-art services to the Navy. These services include chemical analysis of organic and inorganic compounds in air and bulk materials, along with toxicological testing of biological samples for the determination of workplace or deployment occupational exposures. The major scientific instrumentation and capabilities are designed to carry the

*(Continued on page 2)*

## To Fly or Not to Fly: Sawtoothed and Merchant Grain Beetles

Is everyone familiar with the most common pest of stored products? I'm talking about a small, dark brown beetle with six saw-like projections on its thorax that feeds on a wide variety of grain products. It's the Sawtoothed Grain Beetle right? Maybe not, if you see it fly.

The Sawtoothed Grain Beetle, *Oryzaephilus surinamensis* (L.) (Coleoptera: Cucujidae) is a very common and widely distributed pest of stored products. It is about 2.5 mm long, with a dark brown, roughened body, which is flattened for crawling

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# From the S.E.L.

To be an effective member of the Preventive Medicine Team, each person must be good at communication. Communication comes by speaking, listening, writing and reading. We all spend many hours of each day "communicating." In the beginning of our lives we are taught how to speak, then how to read and write, but what about listening? At times the person you are passing information to does not understand because they are not listening to what you are saying... perhaps you need to "listen" to what the other person is thinking.

As the speaker, we fill our conversations with our own collective monologues, and never really listen to what the other person wants to express. When you listen with intent to understand, you actually place yourself into another's frame of reference. This gives you a powerful position; now you have accurate data, the true reality inside another person's head and heart. In S. R. Covey's book he states, " Seek first to understand, then to be understood." Most of us want to be understood, first. In your next conversation with friends, family, co-worker or customer... listen, not with the intent to reply, but to understand. Listen, not to give the person the answer you think they want to hear, but to hear how they "see," think, and feel about the topic they are communicating to you. Gaining insight into another human can't help but make you empathetic, not that you will always agree with one another, but at some level, you will fully understand that person, emotionally as well as intellectually.

**HMC SUZANNE BLACK**
**SEL, NEPMU-5**

**Reference:**

Covey, Stephen R., ***The Seven Habits of Highly Effective People***, 1989, A Fireside Book, Simon & Schuster, New York

## *From the OIC:* MILCON Nears Completion… NEPMU-5 Ready for the 21st Century

*(Continued from page 1)*

Navy into the 21st century with future analytical savvy. The laboratory will be equipped with three atomic absorption spectrophotometers, including flame and graphite furnaces, and two inductive coupled plasma spectrometers, for the determination of toxic metal exposures. Seven gas chromatographs, with flame ionization, electron capture, mass selective, infrared, and nitrogen-phosphorus detector capabilities will be used to analyze trace organic solvent compound concentrations. Three high performance liquid chromatographs and an ion chromatograph with complex, sophisticated detectors will ascertain trace levels of known or unknown toxicological compounds found in workplace environments. Microscopes, both phase contrast and polarizing, will be utilized in identifying

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# NEPMU-5 Monitoring and Eradication of Multiresistant *Staphylococcus aureus* Carriage in BUD/S Students and Staff

**ProMED** is full of exotic disease outbreaks these days: Marburg Virus in the Congo Democratic Republic, Dengue Fever just about everywhere tropical, and even a brand-new deadly strain in Malaysia called Nipah Virus. But what most physicians dread is the emergence of old-fashioned bacteria which have learned to fight off the antimicrobials we have in the inventory. All-but-forgotten *Staphylococcus aureus* ("Staph") and *Streptococcus pyogenes* ("Strep"), along with another related bacteria, *Enterococcus*, are reaching the point of being untreatable in some strains. Enterococci are not particularly virulent and thus not familiar to most people, but are the vanguard bacteria for development of antimicrobial resistance. They have acquired full resistance against vancomycin, the drug of last resort for treating methicillin-resistant *S. aureus* (MRSA), and this resistance is genetically transferable to *S. aureus*. MRSA **are** a severe problem in several hospitals and there is evidence of infection in the community as well (i.e., people who have become infected without being in a hospital). Even "regular" *S. aureus* can be very difficult to treat in cases of toxic shock or deep cellulitis.

At NEPMU-5, we closely monitor the health of students undergoing training to become

*"hell week" hygiene call*

*(Continued on page 5)*

***From the OIC:*** **MILCON Nears Completion… NEPMU-5 Ready for the 21st Century**

*(Continued from page 2)*

and quantitating hazardous asbestos fiber concentrations. The new laboratory facilities will also include a purified water system, piped-in compressed gases, a new computer network, and an electronic record filing capability.

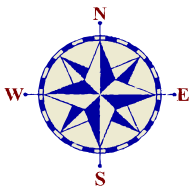
The new structure will also have three classrooms on the lower level, which will be equipped with the latest multi-media equipment to include audio and visual equipment to conduct PowerPoint presentations, video television conferences (VTC) and video television training (VTT). Each classroom seats twenty-five students with space to add more seating if necessary giving the capacity of seating 75 - 100 students. There will be on-line capabilities, which will allow research using the Internet, E-Mail, and Distance Learning via VTT. Other teaching methods that will be available for self-paced instruction and the ability to download general military subjects. There will be one computer in each of the classrooms. Each classroom will have independent voice/visual media presentation capability that could be combined to have one large-scale presentation accommodating up to 100 persons.

The grounds of the new building will be fully landscaped with a new parking lot and a new entrance to Le-Hardy Street.

Another part of the MILCON was the renovation of Building 3235, which has been the "home" of NEPMU-5 since March 1978. One of the most visible changes (and well received) has been the installation of 18 large windows in the building; definitely a "quality of life" improvement. The renovation also moved and consolidated the Administrative Dept into the former classroom spaces and created a new larger "Quarterdeck" area. Some of the other significant changes included: 1) modification and refurbishment of both male and female heads, 2) new wall coverings throughout, 3) new carpeting, and 4) a new staff lounge.

The MILCON project is scheduled for completion in August 1999. With the conclusion of the MILCON, NEPMU-5 is even more capable to realize its motto "Readiness, Prevention, Fleet First" in the 21st Century, as we "Think populations… See individuals."

**CAPT James R. BEDDARD, MSC, USN**
**OIC, NEPMU-5**



## *Tales From Travel Clinic:*

# Perils of African Studies

A twenty-one year old woman presented to our clinic requesting medical advice before a semester of studies abroad. She had arranged for college credit for work in rural Cameroon (central western Africa). She had done her homework well, displaying a sensible appreciation of some of the medical threats inherent in such an overseas stint. She said she had acquaintances who had experienced malaria, and was receptive to the inconveniences of malaria chemoprophylaxis (weekly mefloquine) and personal protective measures (sleeves down at sunset, bednets, DEET). She accepted our recommendations for an array of pre-travel immunizations. These included yellow fever, hepatitis A, typhoid, and meningococcal vaccine. Because she was to be engaged in providing health care, the hepatitis B series was recommended. She was receptive to our warnings about other arthropod-borne diseases such as filariasis and onchocerciasis (river blindness), leishmaniasis, and trypanosomiasis (sleeping sickness). We counselled her on limiting exposure to fresh water streams and lakes (schistosomiasis) and rat awareness (association with Lassa fever, one of the frequently fatal viral hemorrhagic fevers). Lastly, we warned her of the huge (albeit unquantified) prevalence of HIV in the native population, and the need for road vehicle savvy (road accidents being, by far, the number one cause of mortality in Peace Corps workers overseas).

Six months later the young woman, having just returned to the States, telephoned our clinic. She complained of fever, malaise, loose stools and muscle pains and feared she had malaria. On examination she had fever, multiple mosquito bites and an enlarged spleen. We looked at blood smears for malarial and filarial parasites, finding none. Stool exams were normal. Blood cultures grew nothing. She wasn't anemic. What was going on? What bizarre foreign invader had she brought back to our shores? The differential diagnosis included a diverse array of parasitic and viral illnesses.

More incisive history-taking revealed she had had a sexual liaison shortly before her departure from Africa and that condom integrity had been compromised ("it kept slipping off"). This raised our suspicion for an HIV seroconverting illness (classically fever, fatigue, sore throat, and rash occurring 2-4 weeks after exposure). We counseled her against contact sports (risk of splenic rupture) and awaited preliminary results before beginning a costly serologic workup.

And then . . . the heterophile antibody (monospot) test returned . . .positive! Another perusal of the peripheral blood smear revealed numerous atypical lymphocytes. We confirmed the diagnosis with a positive IgM acute antibody test for Epstein-Barr Virus. While Epstein-Barr Virus may be associated with Burkitt's Lymphoma in malaria-hyperendemic areas of Africa, let that be the worry of your infectious disease consultant or epidemiologist. Our young college student had infectious mononucleosis!

There may be several lessons to this story for PMTs as well as our fleet customers. Number one, when you hear hoofbeats, think horses, not zebras (even in Africa). In this case it means looking for the life-threatening (malaria) and common (HIV seroconverting, mono, or mono-like) illness before undertaking a serologic "shotgun" approach. Our patient's diagnosis is common in college and young military communities. Number two, when the maritime strategy takes you to distant lands, be prepared. There are a host of sexually transmitted (and sexually associated) diseases out there, the list led by HIV/AIDS, and including, but not limited to, hepatitis B, syphilis, gonorrhea, herpes, chancroid, and LGV. Social and sexual discretion - Don't leave home without it! Our patient was lucky; not all sailors are so fortunate.

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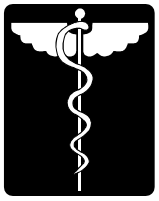

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SEALs at the Basic Underwater Demolition / SEAL school at the Naval Special Warfare Center in Coronado. They have had a handful of necrotizing fasciitis cases (the so-called "flesh eating bacteria"), usually caused by *S. pyogenes*. These and other illness cases generally occur during the most strenuous part of training known as "Hell Week". After the last case, NEPMU-5 Epidemiology and Microbiology Departments worked with medical elements at BUD/S and Infectious Disease Division at Balboa to culture all the cohorts in that class and staff, and both the previous and next class of students. Although looking for presence of *Streptococcus pyogenes*, we noticed a fairly high carriage rate of *S. aureus* (20/47 = 43%) on the skin abrasions of Hell Week students in Class 223. It was decided that an intervention to eliminate the nasal carriage of *S. aureus* in the students and staff would help reduce the *S. aureus* infection rate.

*Hospital Corpsman samples a Seal*

The treatment of choice is mupirocin, (trade name Bactroban), a topical antimicrobial applied to the lower nares. The nares are the favorite place for *S. aureus* to live and can easily spread to skin abrasions and even the bloodstream. Two weeks before Hell Week, we cultured the nares by a simple nasal swab on all the members of Class 224 and the staff. Those positive for *S. aureus* carriage are treated with mupirocin daily for five days. During Hell Week, any significant abrasions showing signs of infection were cultured each day. Afterwards, the whole class and staff nasal culture was repeated as a follow-up.

The results showed a pre-culture carriage of 43% (24/56) in Class 224 students. Abrasion samples were collected on 19 students, with 9 having *S. aureus*. Only 4/19 needing abrasion cultures had *S. aureus* in the pre-Hell Week sample, indicating the intervention had greatly reduced the infection rate. Post-culture samples demonstrated a carriage of 33% (13/40), but only three of the 13 were from students also positive on the pre-sample (thus 10/13 did not receive mupirocin). Also, there were far fewer colonies per plate than with the typical pre-sample carrier, indicating a low level carriage that was missed or was simply a temporary condition. The medical and training staff members at BUD/S had somewhat lower carriage rates and likewise responded well to treatment.

On the other hand, three students were positive with MRSA strains, two from both abrasions and nares. Other students had borderline resistant strains. MRSA strains were determined by growth on a commercial agar with 6 g/ml oxacillin (an agent related to methicillin) and were also positive by PCR. Additionally, most strains were resistant to azithromycin and virtually all to penicillin. These indicate that multiresistant *S. aureus* strains are found in the community population and not just with hospital in-patients. Topical antimicrobials such as mupirocin cannot be used internally and are not the answer for infected patients.

NEPMU-5 continues to monitor the BUD/S students by repeating this intervention with Class 225 and probably will culture the next several classes. We are always on the lookout for emerging bacterial resistance and trying methods to prevent their causing infection.

**LCDR Scott A. THORNTON**
**Microbiology Team Leader**
**NEPMU-5**

## *Another Task for an EPMU:*
# A Snapshot of Disease Surveillance at Cobra Gold '98

In May 1998 HMCS(FMF) Cheri Inverso and HM1(FMF) Chris Lemon of Navy Environmental and Preventive Medicine Unit Six (NEPMU-6) traveled to Thailand to assist the Navy Medical Research Institute (NMRI) of Washington, D. C. with a diarrhea study during Exercise Cobra Gold. This was the first time that NEPMU6 personnel had assisted the NMRI medical personnel, who were interested in diarrhea origin and the opportunity to try out some new testing methods.

NMRI was working with pharmaceutical companies to formulate an effective diarrhea prophylaxis specific to Campylobacter jejuni. A high prevalence of the bacteria would serve to document a need for such a prophylaxis.

The study operated out of two sites during the Cobra Gold Exercise. One team, consisting of HMCS (FMF) Inverso, Army personnel, and Thai civilians, set up camp in Kanchanaburi. The other team was based at Utapao Naval Air Base near Sattahip, south of Bangkok. This team supported Air Wing and ground-based Marine units at Camp Samaesan Marine Base, also near Sattahip.

*Preventive Medicine personnel work in the 3rd FSSG Aid Station*

The research involved acquiring stool samples, history questionnaires and follow-up questionnaires for individuals with diarrhea. The stool specimens were collected and processed at the laboratory, using culture and sensitivity tests, polymerase chain reaction (PCR) and ova and parasite analysis (O&P) tests. The samples were then transported to the Armed Forces Research Institute of Medical Science (AFRIMS) lab in Bangkok, Thailand for additional testing. To ensure quality and reliability, the specimens were kept as cool as possible during their transport. For this, Mr. Jeerachai, a driver with a vehicle from AFFRIMS, was an invaluable asset.

LCDR Oyofu, of Navy Medical Research Unit 2 (NAMRU-2) in Jakarta, Indonesia worked at the lab in Utapao to conduct PCR tests on the stool samples. Dr. David Rollins, a civilian microbiologist from NMRI, tried out new types of field diarrhea tests. He also grew several food bacteria cultures to see what was present. Navy Medical Officers involved in the study were CDR Scott, LCDR Tamminga, LCDR Tribble and LT Sanders. CAPT Walz, a senior microbiologist from NMRI, headed up the Utapao team. We had also two Thai civilian workers who assisted us for a month. Ms. Orapon, a civilian lab tech, did most of the manual testing in the Utapao lab.

The work was slow at times. Initially, the expected numbers of diarrhea cases didn't materialize. But a few weeks after the exercise began, the pace picked up. Control samples were taken from asympto-

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# Transportation of Biomedical Materials

Public health and safety is the primary focus for regulatory compliance involving biomedical transport but due to our litigious society, a secondary issue – liability – must also be considered. In recent years, biomedical material transport has received increasing attention because of liability issues involving accidental exposure during transport. In addition, "non-compliance can result in large fines for laboratory personnel and their Commanders." In other words, *individuals* can be held responsible for not properly packing and shipping biomedical material.

Biomedical materials fall under the realm of hazardous materials. DOD 4500.9-R requires all DoD hazardous material shipments be approved by a DoD "certifying official" who has completed formal training and has been appointed in writing by their activity commander. There are four DoD-approved formal training courses for certifying officials dealing with hazardous materials. There is a fifth DoD-approved

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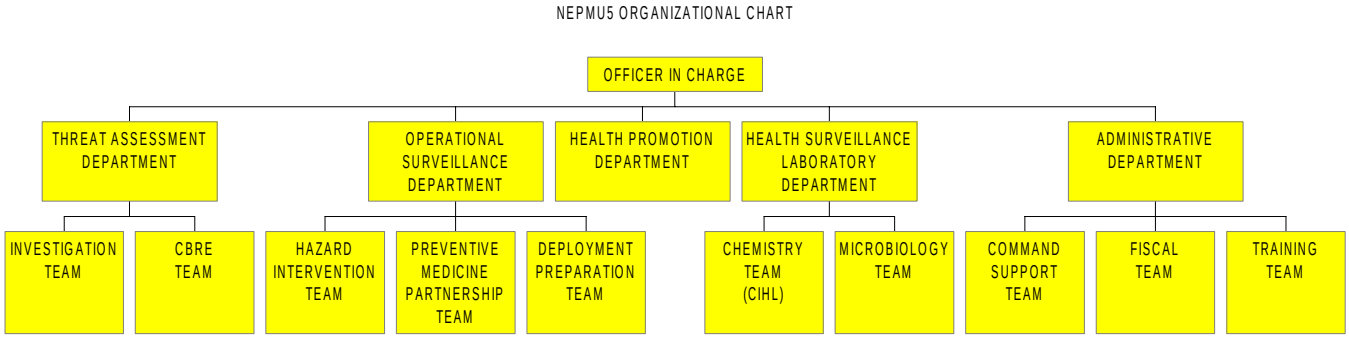
# NEPMU-5: Changing for the Times

1999 may be the year of mergers and hostile takeovers. However, for NEPMU-5, it is the year that marked a top-to-bottom re-organization. Spearheaded by CAPT Beddard, NEPMU-5 OIC, the re-organization was a consequential realignment with BUMED's and NEHC's change in their respective strategic goals. On May 3, 1999, after several meetings by the Unit Executive Steering Committee, the new NEPMU-5 organizational structure was unveiled and put in effect. The Unit's new organizational chart is shown above.

As indicated in the chart above, the Unit is now made up of five main departments with two or three teams under each. What may come as a surprise to our customers is the disappearance of former departments like Industrial Hygiene, Environmental Health or Entomology. In reality though, these departments did not go away, but are embedded in each of the new departments working together as a multidisciplinary team of professionals. Let's take a closer look at each department and team.




**THREAT ASSESSMENT DEPARTMENT:** The department's mission is to ascertain the medical threat environment and assist the operational forces through active assessment and communication of hazards. This department is responsible for outbreak investigations, medical intelligence visits, establishing risks, communicating with operational forces, predeployment briefs, and analysis of post deployment reports. The department is divided into two teams: Investiga-

*(Continued on page 12)*

# BUMED Regional NAVOSH Departments Moving!

Most of you should know by now that the BUMED Regional Navy Occupational Safety and Health (NAVOSH) Departments, currently located at Navy Environmental and Preventive Medicine Units 2, 5, and 6, are being relocated to the Navy Environmental Health Center (NEHC) in Norfolk, Virginia. All NAVOSH support for BUMED activities worldwide will come from NEHC. All personnel should be in place and ready to go by the beginning of July. We will have three safety specialists, three occupational health nurses, three industrial hygienists, and a data management specialist. We will retain our positions on the BUMED IG team.

Our support to our customers will not change. We will continue our assist visits, answering your day-to-day questions, conducting required periodic evaluations of command OSH programs, and whatever a command needs in the way of support for their OSH programs. Some of the faces, phone numbers, Email addresses, and, of course, the location, should be the only changes you notice.

Any questions may be directed to the new NAVOSH department head, Mr. Casey Szewczak at (757) 462-5564; DSN prefix is 253. Official notification of the transfer is forthcoming.

# Digging up some Grub

In 1995, I took the Combat Casualty Care Course, offered by the Joint Medical Readiness Center at Fort Sam Houston, TX. A First Class Independent Duty Corpsman and former Navy Seal was the Cadre leader for my training group. Upon learning I was an Entomologist, he took an interest in what I might be able to teach him. As very often happens, be it at work or with my son's Boy Scout troop, he would ask me to identify every insect we came upon. But, then he would ask, "can I eat it?" Well, my first thought was *"have at it."*

He did not want to eat the bug, however. This Corpsman was a survivalist. He wanted to know if eating a katydid would make him sick, a very pertinent question for Special Forces, stranded pilots and prisoners of war. The broadest answer to that question is, indeed, insects are a primary source of sustenance for several primitive cultures and are becoming delicacies in several nations. This article is designed to provide basic rules of thumb regarding finding and identifying the most edible insects.

In several environments, insects are the most readily available forms of food, even in winter. They are plentiful and easy to find, if you know where to look, and are a good source of protein. But, keep in mind, poisonous insects are plentiful. There are enough toxins in one monarch butterfly caterpillar to kill a small dog. So how do you know what is safe?

First, do not eat brightly colored grubs, caterpillars, butterflies, grasshoppers or beetles. Brightly colored animals use their coloration as a warning to predators in order to avoid being ingested, as with the monarch butterfly. Poison-arrow frogs have one of the most poisonous chemicals known to man, curare, covering their skin. They are very beautifully colored, but touching them can be deadly. Drab colored insects are less likely to be poisonous. These insects use camouflage to avoid being eaten, instead of toxins. Second, if it smells bad don't eat it. Odor is also a defensive warning. Third, hairy caterpillars and grubs will have low palatability, and can cause severe gastrointestinal distress. Insects with hard exoskeletons, especially adult beetles, may also be difficult to digest. Soft-bodied insects are far more digestible. Fourth, if other animals are eating it, you probably can too. Rats, especially, have digestive systems that are similar to ours. That's why they are used for laboratory studies. Monkeys, goats, pigs and other omnivores also have similar constitutions. Termites are very plentiful in the tropics and subtropics. At the onset of the rainy season, dispersing adults literally cover the landscape. Wings should be removed to increase digestibility.

*A large scarabid larva, such as this, is nutritious and safe to eat.*

Wood-eating beetle larvae are a very good food source. These insects are easy to find under bark and inside the wood of decaying logs. In winter, logs are the best place to find insects. Certain species will attack a decaying tree "en masse," so they may be very plentiful. Other species, especially those that infest pine trees, grow to be as big as a human thumb. Watching woodpeckers will show you where to look; beating your head against a log must be a tough way to make a living, so there must be a pretty good reward. Wood infesting beetles are soft bodied, and they rely on the bark and wood for protection, and, therefore, are not poisonous.

Boiling insects is a good practice. Some toxins, such as bee venom, are not stable at high temperatures, and will break down. Not all toxins will break down at high temperatures, however. Maggots should be boiled to kill pathogens contracted from their food.

Unfortunately, I can't vouch for taste. Some people say that if you fry them in butter…well if you had butter you probably wouldn't be eating insects.

**LT Brian F. PRENDERGAST, MSC, USN**
**Medical Entomologist**
**NEPMU-6**

*(Continued from page 1)*

into cracks and crevices. *O. surinamensis* has a worldwide distribution in warehouses, silos, mills, and food processing plants, from which they can be transported to Naval vessels. Although the name *Oryzaephilus* means "rice-loving", this voracious beetle will feed on practically any grain product such as flour, bread, crackers, barley, oatmeal, cereal, bran, cornmeal, corn starch, popcorn, and pasta. It will also feed on chocolate, dried fruit, nuts, spices, pet food, and dried meat. This beetle has chewing mouthparts and can chew through cellophane, plastic, foil, and tightly sealed packages. When viewed under magnification, it is easy to see six saw-like projections behind the head on either side of the thorax, hence the common name.

A close relative of the Sawtoothed Grain Beetle is the Merchant Grain Beetle, *Oryzaephilus mercator* (Fauvel) (Coleoptera: Cucujidae). It feeds on the same products, has the same saw-like projections on its thorax, and is almost identical in appearance to the Sawtoothed Grain Beetle but has larger eyes, making the area between the eyes and thorax much narrower and giving the head a more triangular shape (Figure 1).

Control measures for these two insect pests depend on understanding the biology and behavior of both. The female of both species lays up to 250 eggs in small batches in the food supply. Larvae are 2.5 mm long, yellowish white with a brown head capsule. There are 6-7 generations per year. Development time depends on temperature and humidity, with the optimum conditions being 32C and 70% relative humidity. Adults can survive the winter and live up to 3 years. The wings of both beetles are well developed but only the Merchant Grain Beetle is known to fly. Control can be achieved by thoroughly inspecting all infestable products, especially products supplied by a prime vendor. Never assume that products arrive pest free from the prime vendor. Cleanup all spillage under deck grating and behind shelving and storage racks. If products are infested, determine if the level of infestation is less than 7 or more beetles per pound, the established threshold for these insects. If so, products can be frozen for a minimum of 72 hours to kill all adults and larvae, which can be sifted out afterward.

Why should we be concerned about these beetles? After all, they don't bite, sting, spread disease, or consume a significant amount of food. However, they do contaminate significantly more food than they eat with their feces and cast skins, making it unfit for use and costing the Navy a lot of money. Adults are long-lived, produce many offspring, and if a small infestation is ignored, they have the potential for infesting an entire storeroom or warehouse. Furthermore, the Merchant Grain Beetle is known to fly. This behavioral aspect could enable it to migrate more quickly to other areas of a ship or warehouse. Infestations of Merchant Grain Beetles may be more widespread for this reason, whereas Sawtoothed Grain Beetle infestations may be more localized.

If you discover these beetles or any other insect aboard ship or at a shore station and do not know what it is, contact a Navy entomologist at one of the NEPMUs or DVECCs for identification and control recommendations.

Figure 1. Sawtoothed Grain Beetle (left) and Merchant Grain Beetle (right) noting difference in size of eyes and appearance of area behind the head.

**LTJG Frederick M. STELL, MSC, USNR**
**Medical Entomologist**
**NEPMU-2**

# MMART Experience in Honduras following Hurricane *Mitch*

NEPMU-5 and DVECC Jacksonville joined up to deploy as a Mobile Medical Augmentation Team (MMART) to Honduras following the devastation caused by Hurricane *Mitch*. Along with individual personnel from NEHC, NEPMU-2, and Naval Medical Center, San Diego, the Team assisted Joint Task Force – Bravo in rebuilding the country. The storm hit the northern coastal area hardest, however, the real damage was caused not by high winds or the storm surge, but by the torrential rains dumped on the mountainous regions during the last week of October 1998. This led to flooding throughout the country, including the Pacific coast, as rivers washed away bridges and roadways. The toll of missing and dead was over 13,000 in Honduras alone.

The Hondoteam (as it was dubbed) consisted of members with a combination of expertise to provide a portion of almost all of the services available in the Forward Deployed Preventive Medicine Unit. The Team flew to its new home at Soto Cano Air Base, the HQ of JTF-B on 10 November. The base is located in the center of the country about 45 miles NW of the capital city of Tegucigalpa. The MMART brought satellite phone and email capability but DSN phone lines were also readily available on base.

Fortunately for the Team members, the rescue effort and disposal of bodies immediately following the storm was completed before their arrival. Early country-wide preventive medicine assessments done by MMART/JTF-B personnel determined the floodwaters had rapidly receded except in coastal low-lying areas. They also flew to El Salvador to determine the need for an additional JTF HQ site (later termed JTF-Eagle). For awhile, it appeared an 80-bed version of a Fleet Hospital would be sent and tailored to help the Hondurans, but this and other military hospital proposals were rejected by the host nation. Large-scale displaced persons camps did not materialize, so the mission of the MMART focused on providing PM support to Marine Engineer and SeaBee units who were repairing bridges and roads. These sites were widely scattered throughout the country and usually required Team PMTs to stay several days at a time to complete mosquito control tasks. The base population at Soto Cano grew from the normal 500 to over 2000 with augmentees. The Team briefed these new arrivals in PM measures. Direct help for the Honduran people was eventually given in the form of a large vector spraying mission in the north coastal areas in December. Although aerial spraying proved impractical due to Navy spray equipment not fitting Army helicopters, Hondoteam members did truck-mounted and backpack spraying for three weeks. Also, one-day community health clinics (a mainstay activity of the Soto Cano Hospital which are planned months in advance) were continued as scheduled all over the country with help from the MMART.

The microbiology lab block was set up in the Soto Cano Hospital lab to assist with febrile cases and outbreaks. A few cases of vivax malaria were found in ACDU personnel at the start of the relief effort, but a weekly regimen of chloroquine and doxycycline kept malaria low and leptospirosis nonexistent. Lack of liberty during most of the deployment also kept diarrhea rates down. A mini-cluster of four dengue cases occurred in December among SeaBees working in the northern city of San Pedro Sula. A rapid card assay for dengue IgG and IgM detection was brought by the Team (PanBio, not the MRL kit mentioned in the last issue of FPH) and the SeaBee lab tech trained to run it at the BAS. There are plans to procure and test several of these new rapid assays for malaria, leptospirosis, hepatitis, filariasis, brucella, and other agents that previously required extensive equipment found only in reference labs or the Navy Forward Deployable Laboratory.

Probably the major lesson to be learned for those on MMARTs is to be ready for any contingency at any time. We all think about possible deployment to the Persian Gulf or the Balkans and have plenty of time to plan for disease threats in those regions, but none of us expected to be sent to Honduras on three days' notice. Always keep up with current events and start going over contingencies in your head.

**Hondoteam members from NEPMU-5:**
CDR Bob Wood (EHO), Team Leader
LCDR Scott Thornton (Microbiologist)
LCDR Alex Kallen (ID specialist TAD from NMCSD)
HMC Dolores Pickens (PMT)

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# New Study Confirms Isoniazid Safe

Though isoniazid (INH) remains the best chemotherapeutic agent to prevent tuberculosis (TB), past studies have emphasized toxic effects on the liver. These findings have led practitioners and patients to be overly cautious about prescribing and taking the medication. However, a recent article (March, 1999) in the *Journal of the American Medical Association* (JAMA) concluded that the frequency of hepatotoxicity may have been overestimated.

Currently, Navy Medical Department personnel follow the guidelines set forth in BUMEDINST 6224.8 (Tuberculosis Control Program) concerning the use of INH therapy. Enclosure (2), EVALUATION AND PREVENTIVE THERAPY OF TUBERCULIN REACTORS, specifies in detail when a tuberculin "reactor" (induration of 5mm or more) should be placed on INH. Determining factors include presence of risk factors and the size of the induration measured. Many people seem to preferentially recall the subparagraph about previously-known reactors 35 years of age or more generally not being candidates for INH, and even to generalize it to others besides "previously-known reactors". In reality, there are numerous situations where reactors 35 and over should be prescribed INH. These include: any recruit with 10mm or more of induration, close contacts of newly diagnosed cases with 5mm or more of induration, known/suspected HIV infection with 5mm or more of induration, CXR showing fibrotic lesions compatible with healed TB with 5mm or more of induration, IV drug user with 10mm or more of induration, medical conditions which increase the risk of TB (listed in 2b(1)(e)) with 10mm or more of induration, and any recent converter with 15mm or more of induration.

According to BUMEDINST 6224.8, the risk of INH hepatitis varies from 0 in those under 20 years of age to 23 per 1,000, in the 50-64 age group. In comparison, the above JAMA study reports an age-specific rate of hepatotoxicity in persons receiving isoniazid therapy which is much lower. The researchers found rates of only .8 per 1,000 in the 15-34 age group, 2.1 per 1,000 in 35-64 age group, and 2.8 per 1,000 in the over 65 age group. These new results are significantly lower than those in previously reported studies.

The take-away message here is two-fold. First, the BUMED Instruction does NOT say never to put anyone over 35 years of age on INH. In fact, it even lists a number of specific situations where starting INH is the appropriate thing to do in the 35 or over age

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***Another Task for an EPMU:* A Snapshot of Disease Surveillance at Cobra Gold '98**

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matic volunteers to test and verify results as well as check the new test capabilities. Incidentally, several of these samples were positive for various pathogens.

The team worked every day for a month to make sure each diarrhea patient that arrived was accounted for. Patients were treated accordingly, but some were apprehensive about submitting samples or otherwise unable to provide them. In spite of these obstacles, a significant amount of data was obtained during the deployment. Some of it is still being processed and evaluated.

This is just one of many joint operations that NEPMU-6 personnel have assisted with over the years. At the conclusion of Cobra Gold '98, all of the team members agreed that they had each gained valuable insight in working with other units, services and countries. The 3rd FSSG support was critical to the successful accomplishment of the mission. The NEPMUs are always ready to assist in joint exercises and operations, as shown by their numerous deployments over the years.

*The Utapao team tries out the local transportation.*

**HM1(SW) Chris LEMON**
**Environmental Health Department**
**NEPMU-6**

*(Continued from page 7)*

tion Team and the Chemical, Biological, Radiological, & Environmental (CBRE) Team. The Investigation Team is primarily responsible for disease outbreak investigations, while the CBRE Team continues to provide training in the medical management of CBRE casualties. These two teams are staffed by two epidemiologists, two industrial hygienists (IHO), environmental health officer (EHO), Entomologist, & two preventive medicine technicians (PMT).

**OPERATIONAL SURVEILLANCE DEPARTMENT:** The department's mission is to maintain readiness through disease and environmental surveillance and intervention by providing preventive medicine support to the fleet. This department is responsible for collection and analysis of DNBI, MERS, CHCS/SAMS data, hazard intervention, workplace monitoring, IH baseline surveys, deployment preparation, deratization inspections, & maintenance of the preventive medicine partnership. The department is divided into three teams: Hazard Intervention Team, Preventive Medicine Partnership Team, and Deployment Preparation Team. The Hazard Intervention Team is primarily responsible for conducting baseline IH surveys, and monitoring of shipboard operations through air sampling or dosimetry to evaluate worker exposures to health stressors. The Preventive Medicine Partnership Team has overall responsibility for maintaining continuous and consistent preventive medicine support to the fleet through weekly visits by the PMTs. The Deployment Preparation Team on the other hand works closely with the fleet to provide guidance and assistance in meeting predeployment requirements. This department is staffed by two EHOs, two IHOs, an Entomologist, an occupational health nurse, and several PMTs.

**HEALTH SURVEILLANCE LABORATORY DEPARTMENT:** The department's mission is to provide the highest quality analytical, consultative, and training services for deployed and non-deployed medical surveillance while proactively seeking new and innovative ways to serve their customers. The department is responsible for analysis of CBRE samples, consultative service support to customers, deployment field equipment functionality, maintenance, and calibration, and training of IHOs/PMTs in deployment field analytic methods and equipment. The department is divided into two teams: Chemistry Team, and Microbiology Team. The analytical support provided by these two teams is critical to the successful outcomes of the key activities conducted by the two preceding departments. This department is staffed by a military and several civilian chemists, a microbiologist, and two lab technicians.

**HEALTH PROMOTION DEPARTMENT:** The department's mission is to provide health promotion expertise to develop and advise customers on the current requirements and recommendations to create awareness concerning health programs. The department is responsible for promotion of smoking cessation, alcohol reduction, injury prevention, cancer prevention, physical readiness, stress management and suicide prevention. This department is currently staffed by an epidemiologist.

**ADMINISTRATIVE DEPARTMENT:** The Department's mission is to provide planning, programming, and coordinating of all administrative aspects of the Unit. The list of responsibilities that this department has is long. But without their support, none of us could go on TAD for some critical training, get funding for our supplies and equipment, send and receive messages, or worse, get our security clearances. Bottom line, this department is an integral part, and as important as the three preceding departments. There are three teams in this department: Command Support Team who provides clerical support to the Unit aside from a myriad of other responsibilities; Fiscal Team who manages our budget and ensures that every cent is accounted for, and; Training Team who coordinates all the training courses we offer here at the Unit. The department is headed by the Admin Officer and supported by several hard charging civilians.

Our new organizational structure reflects our readiness to support both peacetime and wartime contingency operations. The multidisciplinary makeup of each team under each department provides a team approach that enhances our capabilities to provide a system of comprehensive preventive medicine services that ensures our customers are fit and healthy, both in garrison or forward deployed.

*(Continued on page 13)*

# Meningitis Outbreak? How things *Should* be Done

Early in the morning of 17 Dec 1998 a physician working in the Emergency department at Naval Hospital Camp Pendleton notified the Epidemiology Department of Navy Environmental and Preventive Medicine Unit #5 (NEPMU-5, San Diego) that a Marine recruit had just been admitted to the hospital with what appeared to be meningococcal meningitis. This is an acute infection of the membranes covering the spinal cord by the bacterium Neisseria meningitidis. Spread by aerosol droplets and direct person-to-person contact, untreated, it frequently leads to coma, shock, and death within hours.

An epidemiologist/medical officer from NEPMU-5 and an environmental health officer from Naval Hospital Camp Pendleton immediately went into action to identify, track down and provide prophylactic antibiotics to all potential contacts of the recruit. This was no small feat, contacts in the previous ten days having been determined to number between 600 and 800 individuals, depending on definition of 'close' contact. Cooperation was requested from and provided by numerous personnel at various commands. This narrative briefly describes how effective team participation by Line and Medical personnel enabled preventive medicine tasks to be performed completely and efficiently within hours, not days, possibly aborting a life-threatening infectious disease outbreak.

- On short-fuse request, the Pharmacy department at Naval Medical Center San Diego (NMCSD) provided 400 doses of the oral antibiotic ciprofloxacin to supplement NAVHOSP Camp Pendleton supplies.

- The Infectious Disease Division, Naval Medical Center San Diego, and the Epidemiology department at NEPMU-5 maintained communication as consultants for the epidemiological tracing of the *Who – What – When – Where* of activities of the case patient Marine recruit.

- Major Dennis O'Keeffe, S3 officer at the Recruit Training Regiment of the Marine Corps Recruit Depot (MCRD), provided detailed historical information on potential contacts of the patient.

- LTC Robert Ferguson, Commanding Officer of the 3rd Recruit Training Battalion, MCRD, provided logistical support with officers of Kilo Company and the Weapons Field Training Battalion.

- CPT James Mistretta, company commander of Kilo Company, series officers CPT Joseph Jones and CPT Andrew Bergen, and Drill Instructors identified and provided recruits from Kilo Company, Edson Range personnel, and DIs appropriate antimicrobial prophylaxis with ciprofloxacin.

- CPT Brent Ruth and CPT David Loyack, officers from the Weapons Field Training Battalion, MCRD, assisted in the prophylaxis of recruits and DIs as well

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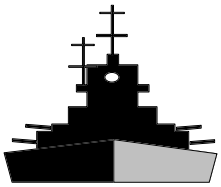
**NEPMU-5: Changing for the Times**

*(Continued from page 12)*

**LT Allen LUMANOG**
**Threat Assessment Department,**
**NEPMU-5**



**MMART Experience in Honduras following Hurricane *Mitch***

*(Continued from page 10)*

HM1 Tom Hendrickson (PMT)
HM2 William Hutchinson (Lab Tech)
HM2 Stephen Carr (PMT)

**DVECC JAX:**
LT Elizabeth Dykstra (Entomologist)
HM1 Vernon Stiles (PMT)
HM2 Margaret Whalen (PMT)

**NEPMU-2:**
LCDR Steve Rankin (Entomologist)

**NEHC:**
LCDR Mike Macinski (IHO)

**Meningitis Outbreak? How things *Should* be Done**

*(Continued from page 13)*

as other personnel at Area 31 (employees at the small exchange, chow hall, and chapel). They were also instrumental in obtaining a list of recruits who had just completed mess duties at the Area 31 chow hall and returned to MCRD.

- LCDR Kelley Skanchy of the clinic at MCRD was instrumental in providing prophylaxis to those recruits who had just returned from mess duty in the chow hall at Edson Range.

- CAPT Jose Calderon, senior medical officer at the Edson Range clinic was instrumental in prophylaxing contacts of the case at that clinic, as well as getting standard medical form (SF 600) treatment documentation into the health records of all Marines provided antimicrobial therapy at Pendleton.

Not long ago, case-fatality rates with this disease exceeded 50% and epidemic spread ravaged military and school-aged populations. Our case patient recruit recovered fully with treatment, and in the days and weeks that followed no further cases were reported in the area.

As this scenario propitiously demonstrates, the efforts of many people and command elements may be harnessed to rapidly investigate and mitigate an outbreak of a serious infectious disease such as meningitis caused by Neisseria meningitidis. Not only is it important to provide expeditious and appropriate antibiotic prophylaxis to contacts, it is equally imperative to decrease the potential for pathogen spread by promoting good personal hygiene measures, such as handwashing - even in the field. Units in environments where handwashing facilities are limited or nonexistent may wish to consider procurement of one of several new waterless hand sanitizers to reduce the mission-degrading potential of infectious disease pathogens.

**LCDR C. BEADLE, MC, USN**
**Threat Assessment Dept., Investigation Team**

**CAPT P.E. OLSON, MC, USN**
**Head, Threat Assessment Department**
**NEPMU-5**

**Transportation of Biomedical Materials**

*(Continued from page 6)*

course, taught at USACHPPM, that is designed to deal specifically with the transportation of biomedical mateial. Regardless, each of these courses "satisfy the DoD training requirement for health care facility personnel who package biomedical material." Subsequently, after attending one of these courses, the certifying official must train medical personnel on proper packaging and shipping requirements for biomedical material.

One training issue that needs to be addressed is that all packages offered for biomedical transport must be inspected by a certifying official prior to sealing by a lab tech/hospital corpsman. Further, the certifying official must certify (sign) the shipping papers/ manifest. This process of certifying is ensuring that the package has been packed in compliance with all pertinent regulations that were designed to protect the health and safety of the public. Another training issue is the use of POVs for the transport of biomedical material. In most cases, the use of POVs is not advised due to the issue of liability.

The proper procedure for biomedical materials transport consists of a myriad of complex regulations involving both federal and military requirements that need to be carefully assessed. It is important to ensure that all applicable rules and requirements are adhered to. In conclusion, in order to protect the health and safety of the public and minimize liability - compliance is a necessity.

The following is a list of the five (5) DoD approved courses for certifying officials:

1. U.S. Navy - Transportation of Hazardous Materials - Navy Supply Corps School, Athens, GA
2. U.S. Air Force - Transportation of Hazardous Materials - Lackland AFB, TX
3. U.S. Army - School of Military Packaging Technology - Aberdeen Proving Grounds, MD
4. U.S. Army - Savannah Defense Ammunition Center and School - Savannah, IL
5. USACHPPM - Transport of Biomedical Material - Aberdeen Proving Grounds, MD

**ENS Jacqueline Piotrowski, MSC, USNR, REHS**
***j03piotrowski@juno.com***
**Industrial Hygiene Department**

# Hail & Farewell

## Welcome Aboard! Fair Winds and Following Seas!

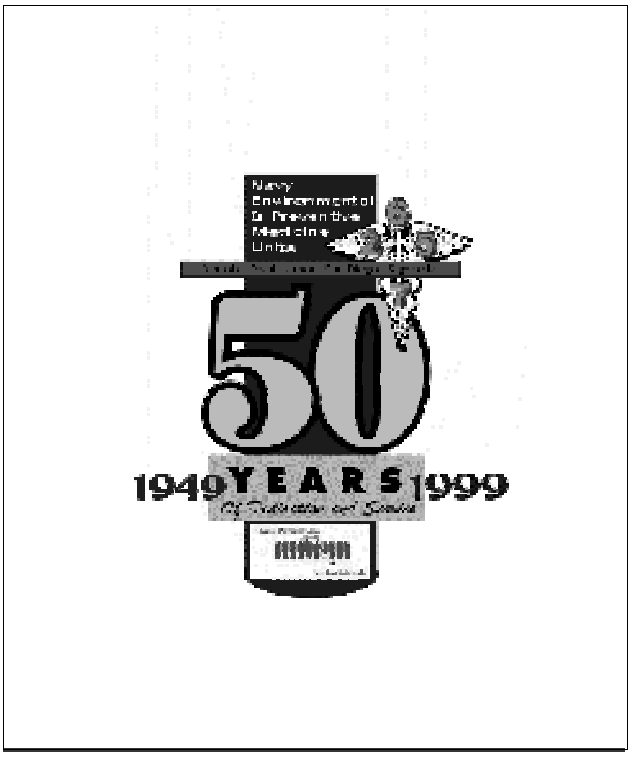
**New Study Confirms Isoniazid Safe**

*(Continued from page 11)*

group. Second, based on a recent study, the risk of INH-associated hepatitis may be much lower than earlier data indicated.

TB remains a very real problem in the Navy and Marine Corps. INH therapy is one of our most useful tools in preventing the disease, and we can use it with confidence in its safety. Of course, baseline and 1, 2, and 3 month liver function tests (AST or ALT) and careful clinical follow-up are still a good idea for certain groups being placed on INH (including those 35 years old or greater). Remember, the risk of hepatotoxicity is always lower than the risk of contracting TB when INH isn't used.

**HM3(SW) Derek BOYD**
**Barbara CORPUZ (U of HI MPH Intern)**
**CDR Jeff YUND**
**All of NEPMU-6**

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