



Bug Bytes Volume 9 Issue 4 December 2014

Welcome

Navy Environmental and Preventive Medicine Unit-TWO serves the public health needs of the Navy. Our subject matter experts assist Navy and Marine Corps forces with public health reach-back support, training and consultation. We support both deployed and non-deployed forces. We support both shipboard and shore commands such as medical treatment facilities. Our staff is composed of Audiologists, Biochemists, Entomologists, Environmental Health Officers, Health Promotion Specialists, Industrial Hygienists, Microbiologists, Occupational and Preventive Medicine Doctors, General Duty Corpsmen, Radiation Health Technician, and Preventive Medicine Technicians. We also employ, train, and deploy a Forward Deployable Preventive Medicine Unit capable of meeting a variety of force health protection needs from small humanitarian assist missions to full scale operations.

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Hello from the OIC

CDR Jennifer Espiritu, Officer in Charge

Welcome to the last edition of Bug Bytes for 2014. As you peruse the contents, you'll see that we've been quite busy! This edition manages to capture the wide range of subjects on which we consult - from wellness to holiday safety to operational readiness/force health protection. I hope you enjoy the holidays and we'll see you in 2015.

Continue to reach out to us with your questions about public health and preventive medicine - we'll answer the call, anytime and anywhere.

Very Respectfully Yours,
J. M. Espiritu
CDR MC USN (FS)



NAVY ENVIRONMENTAL AND PREVENTIVE MEDICINE UNIT TWO
PROTECTION THROUGH PREVENTION

E-cigarettes: Harm Reduction vs Addiction Remission

By CAPT Christopher Clagett, MD

E-cigarettes are increasingly popular among teenagers, causing much concern regarding the health effects of adopting a new addiction by young people who had never previously used a traditional tobacco product. For them, there is nothing but downside to picking up the habit. In contrast to young people who had never previously used tobacco products, current smokers who would like to at least mitigate the adverse health effects of smoking may benefit significantly by using e-cigarettes. While e-cigarette cartridges have received some unfavorable press due to contaminants introduced in the manufacturing process that are legally permissible because e-cigarettes are unregulated for content, those contaminants are miniscule compared to the unwholesome stew of known carcinogens released by combusting tobacco. E-cigarettes release fewer volatiles than the carpeting, insulation, and other materials in your home or office or the plastics in your car; gotta keep things in proportion. The number of contaminants in tobacco smoke varies with who you read, but we can safely call the number more than you can shake a stick at. One of the most significant contaminants is Polonium 210 (Po210), a radioactive heavy metal.

How does Po210 get into tobacco? The tobacco plant picks up Po210 and a precursor from both air and soil. Po210 is one of the products in the decay chain of Uranium 238 (U238). U238 is present in varying amounts in soils around the world, slowly decaying to elements that themselves decay further, ultimately ending up as Lead 206 which is stable. Soils that have more volcanic rocks have more U238 and its decay products and fertilizers using phosphate from such rocks can significantly increase tobacco uptake of U238 decay products.

One of the decay products of U238 is Radon 222, which is a gas. This gas seeps up through the surface of the soil and sticks to airborne dusts that are then trapped by sticky secretions on the surface of the tobacco plant including its leaves. These secretions are not water soluble and therefore not washed off by rainfall. Another decay product downstream from Radon 222 is Lead 210. Lead 210, unlike Lead 206, is radioactive, and here is where it gets interesting. Radioactive elements generally decay by alpha decay, where they lose two protons and two neutrons, falling

two elements on the periodic table, or by beta decay. Beta decay is a process by which the nucleus sheds a beta particle and transforms a neutron into a proton or vice versa in order to optimize the ratio of neutrons to protons; the beta particle carries off a positive or negative charge depending on how the decay is working. The decay we're interested in here is when a neutron sheds a negatively charged beta particle, a.k.a. an electron, and turns into a proton. So, Lead 210 (Pb210) sheds an electron and moves up one step in the periodic table, becoming Bismuth 210 (Bi210). Bi210 is also radioactive and undergoes its own beta decay, shedding an electron, moving up another step in the periodic table; it is now Po210, the isotope we're interested in. Unlike Pb210 and Bi210, Po210 decays by alpha decay, becoming Pb206, which is the stable end of the line.

Po210 is highly radioactive, with a half-life of only 138 days (the shorter the half-life, the more radioactive). That means that half or more of the Po210 present in the tobacco plant when it is harvested is gone by the time the consumer purchases the cigarettes, and the longer the cigarettes sit, the more Po210 they lose. So, just leave them on the shelf for a few months and problem largely solved, right? Not quite that easy. Remember Pb210? Its half-life is about 22 years. The growing tobacco plant has Pb210 that decayed from Radon 222 on its surface and Pb210 that it pulled in from the soil through its roots. Pb210 is inhaled in cigarette smoke and is deposited in the lungs, making a long lasting reservoir that produces an ongoing supply of Po210.

Pb210- deposited in the lungs gives the smoker a triple hit of radiation for each sequence ending in Pb206. We can think of the pathway Pb210 -> Bi210 -> Po210 -> Pb206 as a beta (bang!) beta (bang!) alpha (BOOM!) series of ordnance delivered to the lung target. One study measuring radiation delivered to the lung calculated that a pack a day smoker receives the equivalent of about 200 chest X-rays per year to the lung, a radiation dose that is highly concentrated against the delicate and completely unprotected epithelial cells lining the airways. For the person who already has a smoking habit, how is trading an e-cigarette for a burning cigarette not an improvement?

Holiday tips

By LTJG Christian Johnroe, EHO

The holidays can be a great time to be with loved ones and relax. They can also be a period of difficulty and increase stress; here are a few safety tips to keep in mind this holiday season. At a mall, Santa Claus will be visited by approximately 8,000 children, according to the International Council of Shopping Centers. He will be coughed and sneezed on, vomited and even urinated on. Increased patronage at these shopping centers will result in an increased use of facilities, stair and escalator hand rails and carts. It is important to increase efforts to ensure your health by frequent hand-washing. If you haven't already, get your flu shot as well so you don't spread the virus and everyone can stay healthy this season.

Be mindful of holiday snacks and treats that contribute to weight gain. According to a study in the New England Journal of Medicine, the average holiday weight gain is a pound or less. People already overweight, tend to gain more during the holidays. WebMD says that most holiday eating is a result of emotions and suggests having a plan when going to the holiday party. Find ways to remind yourself why you want to stay healthy. Make a plan to be aware of your meals and sticking to your exercise routine.

Speaking of food, don't leave the milk and cookies out too long for Santa this year. Foods that are perishable like milk can harbor pathogenic microorganisms if left out too long and cause illnesses. The CDC recommends to clean, separate, cook and chill for food safety during the holidays. Remember to clean your hands, utensils and food surfaces, separate foods by type, cook all turkey, stuffing and leftovers to 165°F and chill food to less than 40°F. Don't leave food out for more than two hours. The safest thing on your table might be that 100 year old fruit cake that will never go bad. This year, maybe just leave Santa a note telling him that the milk is in the fridge.

If you are spending the holidays with family and friends and need to do some traveling, plan accordingly. According to the Bureau of Transportation Statistics, 91% of long-distance holiday travel is by personal vehicle. The holidays bring increased traffic and, in some areas, foul

weather and hazardous road conditions. If you're driving, no matter the distance, be prepared, allow yourself time to get to and from your destination, and of course, don't drink and drive.

Don't stay up too late after getting home either. Sleep is an important part of a healthy lifestyle. Schedules can get hectic during the holidays but we all know that we require about eight hours of sleep each night. Need more help sleeping? The National Sleep Foundation also recommends having the same sleep schedule even on weekends (or holidays). Also, avoid heavy meals in the afternoon, naps and alcohol and cigarettes.

You want to put presents under your tree so make sure it doesn't burn down. The National Fire Protection Agency has several tips to avoid tree fires. Artificial trees should be labeled by the manufacturer, "fire retardant" or choose a fresh tree that is green with needles that do not fall off. Lights should have a label of an independent testing laboratory for indoor or outdoor use. Do not use lights with worn cords or loose bulbs and never use lit candles to decorate a tree. Turn off all Christmas lights before going to bed.

Don't forget about your chimney, keep it clean. Chemical residue from fires condense in the cooler part of the chimney and forms layers of creosote. Creosote is also extremely flammable and over time, build up can cause chimney fires. The Chimney Safety Institute of America says that a clean Chimney will not burn. They recommend a CSIA certified Chimney Sweep to inspect your system annually. A certified Sweep will also provide advice on cleaning and maintaining your chimney.

Lastly, the holidays can be stressful. Everyone has different coping strategies to relieve holiday stress. The Mayo Clinic website has several tips for coping with holiday stress and depression. A few of them are to reach out to others and your community if feeling isolated or lonely, don't abandon healthy habits and seek professional help if you need it. Stay safe and healthy this holiday and remember to take the time to enjoy the season.

Health Promotion and The Great American Smokeout

By HM2(SW) Leslee Davidson

Started by the American Cancer Society in the 1970s, the Great American Smokeout takes place nationwide every year on the third Thursday in November. It is an educational event designed to help smokers quit, with a goal of providing motivation for smokers who are thinking about quitting. Friends and family can also participate by sponsoring a smoker to quit for twenty four hours.

The Great American Smokeout is a perfect opportunity for smokers to learn about the effects smoking can have on their health. Many military members start smoking at a young age, right around the time they join the service. The military lifestyle can create stressful situations and deployments that lead Sailors and Marines to believe they have to smoke to get any break from their busy day. This mindset can produce serious long term consequences for the health of sailors and marines, especially if they plan to stay in the military and don't contemplate quitting.

This year for the Great American Smokeout, the NEPMU-2 Health Promotion Division supported Naval Medical Center Portsmouth (NMCP). Along with NMCP's Health Promotion Department and the Dental Clinic, NEPMU-2 Health Promotion provided materials from the UCANQUIT2 campaign. In the past, HM1(SW/AW) Cason, HM2(SW) Davidson, and HM3 Knight have worked with the ships on the waterfront at Naval Station Norfolk. They decided this year they would

assist at the medical center that included not only active duty Sailors but also dependents, beneficiaries and other military services. They felt that NMCP was a great platform for the awareness tools they wanted to present. There were many enthusiastic patrons that were willing to either quit for a day or sponsor someone. The Great American Smokeout was a huge success, touching the lives of smokers who are ready to make the change, ready to quit smoking.

For DoD tools and resource to help with your tobacco cessation program or perhaps participate in the next Great American Smokeout go to UCANQUIT2.org.



HM2(SW) Leslee Davidson, HM1(SW/AW) Melissa Cason and HM3 Jennifer Knight at the Great American Smokeout in NMCP.

NEPMU-2 Supporting Working Mothers

By CDR Jennifer Espiritu, OIC

Marine Corps Base Quantico is known as the Cross Roads of the Marine Corps and Naval Station Great Lakes is the Quarterdeck of the Navy. NEPMU-2 sees its share of students from the three military services, the Coast Guard, and our civilian counter parts, as well as physician trainees from the National Capital Consortium.

When I was a Staff PMO here years ago, I realized that we (barely) met the letter of the law for having a place for staff members to use to pump and meet their babies' needs. Moreover, we didn't have a good solution for lactating students who wanted to advance their careers by taking our classes but needed a private and secure space to pump and store breast milk. Last year I asked NEPMU-2 staff to come up with a good solution, we found a good enough stop gap measure - a vacant office which we used as a resource room. It was a place where DIVOs or Chiefs could counsel someone

privately, or staff members could participate in a telecon without bothering their neighbors, or a mother could close the door to pump breast milk. This past year, an even better solution was found – one of our storage spaces with a lockable door was cleaned and re-organized, and its contents recycled or moved. We ensured the space was habitable with adequate ventilation and engaged in some self-help to make it less industrial and more comfortable. Now staff mothers and visiting mothers have a place to call their own. I'm really proud NEPMU-2 talks the talk and walks the walk about supporting Navy mothers.



Forward Deployable Preventive Medicine Unit and Bold Alligator

By HM1(SW/AW) Ryan Predum

The Forward Deployable Preventive Medicine Unit (FDPMU) has a history of providing rapid response to environmental disasters around the world and sustained public health operations in medium-threat combat environments. Participating in Bold Alligator 2014 allowed the FDPMU to showcase its wide array of public health capabilities and also demonstrated its adaptability to seamlessly integrate with U.S. naval amphibious forces and international partners in a large scale crisis response exercise. FDPMU members were assets under the Navy Expeditionary Force (NEF), performing an Occupational and Environmental Health Site Assessment (OEHS) critical in setting up its base of operations on Bogue Field, NC. The FDPMU team consisted of a BioChemist, a Preventive Medicine/Occupational Health Doctor, an Entomologist, and specialists in the fields of Industrial Hygiene, Environmental Health, Microbiology, Radiology, and general Preventive Medicine. The team arrived with field laboratories capable of identifying a myriad of

environmental health hazards and infectious substances, as well as vector prevention and control. Throughout the Bold Alligator exercise, FDPMU members responded to environmental health threats and prevented unforeseen hazards and disease outbreaks.

According to LCDR Andrew Bobb, OIC of FDPMU, "The FDPMU role in Bold Alligator was unique in that we were both an exercise player and a real-world service provider. As for how we did, I don't think I can put it better than to say that we have already received multiple requests from Bold Alligator participants for our participation in upcoming exercises and operations."

The FDPMU team proved the importance of having public health professionals integrated into large scale crises response operations and they delivered on NEPMU2's mission of "Force Health Protection- Anytime, Anywhere!"



Laboratory Technician HM1 (SW/AW) Ryan Predum cultures samples from a source on Bogue Field.



Left: LCDR James Dunford identifies mosquitoes caught on Bogue Field.



Right: HM2(FMF) John Linton hangs fly traps around the base of operations on Bogue Field.



LCDR Andrew Bobb, FDPMU OIC assists LTJG Kevin McManus in donning his hazmat suit before going to collect an unknown chemical sample.



HN Derek Galvao and HMC (SW/AW/FMF) Jennifer Nolan prepare "shake 'n' bakes" for uniform treatments.



LCDR James Dunford and LTJG Kevin McManus promoted during Bold Alligator. CDR Jennifer Espiritu, NEPMU-2 OIC "pinned" both of them during her visit to the camp on Bogue Field.

NEPMU-2's Blue H for the 7th Consecutive Year

By LT Paula Volk, EHO

NEPMU-2 won the Blue H for the seventh consecutive year! The Blue H is a Navy Surgeon General's Health Promotion and Wellness Award recognizing excellence in workplace health promotion policies, activities and outcomes.

Nancy VonTersch has headed up the health promotions division for 15 years and has been instrumental in NEPMU-2's winning this award every year, since it began in 2007.

According to CDR Jennifer Espiritu, OIC, "Our string of Blue H's demonstrates that in addition to our vast knowledge of wellness and health promotion which is an available resource to and at the waterfront, we practice what we preach. Our Blue H's and how we live and work are evidence of that everyday commitment over the years."

Health topics covered include alcohol abuse prevention, injury prevention, nutrition, physical activity, psychological health, sexual health, tobacco cessations and weight management. Awards are earned at three levels: Gold Star, Silver Eagle and Bronze Anchor. Commands that achieved at least 50 percent of available points in every topic, achieved key must-do criteria and also achieved 80 percent of the total available points, earned the Gold Star level award.

Primary prevention policies and activities in Department of the Navy workplaces, communities, and medical treatment facilities are critical to maintaining a fit and ready force. Reducing behavioral risk also enhances individual quality of life and reduces long-term health care costs.

"I am proud of our cohesive teamwork - always teamwork, which makes our success possible - AND - the real story is not my leadership, but rather our Top Leadership! Since 2007, how many Blue H awards has NEPMU-2 been awarded - under multiple OICs. That's the story, because the sustained Top Leadership is the benchmark to support a healthy command climate," said Ms. VonTersch.



Some of the NEPMU-2 personnel who made the Blue H happen.

Environmental Stewardship Flagship Award

By LT Paula Volk, EHO

NEPMU-2 was recipient of the 2014 Navy Community Service Environmental Stewardship Flagship Award for a small shore command.

According to CDR Jennifer Espiritu, OIC, NEPMU-2 is committed to establishing and maintaining a culture of community service among Sailors and the staff by encouraging and supporting individual and group volunteer, humanitarian and charitable activities. "I'm particularly proud of this accomplishment because these opportunities to volunteer were a nice intersection of our professional knowledge in environmental science and personal interest in participating with the local community and conserving the resources of the local area," said Espiritu.

For the award period NEPMU-2 volunteered for the Chesapeake Bay Foundation to rebuild reef habitats, and the Norfolk Zoo helping to renovate animal habitats and assisting in clearing an overgrown bamboo grove.

NEPMU-2 volunteers also participated in the "Adopt-a-Space" program with the Nauticus Museum and the Battleship Wisconsin BB-64 in Norfolk, helping to restore the executive officer's stateroom.

"It's great for the command to win this award even though we volunteer to help the community and not for the accolades," said HM1(SW/AW) April Baisden. "I am happy to be a part of a work environment that is committed to giving back to the area."

The Environmental Stewardship Flagship Award recognizes the best year round volunteer supported program that promotes good stewardship of environmental resources.

"This commitment to others is what drives NEPMU-2 volunteers, keeps the current cycle of volunteerism moving forward and expanding, and what makes the program such a success," said Senior Enlisted Leader, HMC(SW/AW/FMF) Thomas DeWitt.

Upcoming Training

Click [here](#) for full class schedule

Food Safety Managers (B-322-2101): 26-27 Jan, 23-24 Feb	DoD Pesticide Applicator Certification (B-322-1050): TBD
Shipboard Sanitation Certificate (B-322-1100): 17 Feb	DoD Pesticide Applicator-Cat 8 only-(B-322-1074): TBD
Shipboard Pest Management (B-322-1075): 6-7 Jan, 3-4 Mar	TRI-Service Food Code 21-22 Jan, 18-19 Feb
	Lab Identification of Malaria (B-322-2210): 28 Jan, 25 Mar

For further info contact:

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Did you know?

- The electric chair was invented by a dentist.
- Almonds are members of the peach family.
- Ants stretch when they wake up in the morning.
- Mars appears red because it is covered in rust.
- Americans eat 35,000 tons of pasta a year.
- Over 2,500 left handed people are killed a year from using right handed products.
- The stomach acids found in a snake's stomach can digest bones and teeth but not fur or hair.
- For every human there are 200 million insects.
- Sharks are immune to all known diseases.
- Men are struck by lightning 7 times more than woman.

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Training

- [Threat Assessment](#)
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RESOURCE LINKS

Instructions

Navy Medicine Publications

PrevMed Topic Page

NMCPHC (NEHC) supported page of Preventive Medicine topics and resources

USAPHC

U.S. Army Public Health Command

WHO Fact Sheets

World Health Organization publications and fact sheets

AFPMB

Armed Forces Pest Management Board online

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