



# FY08 ENVIRONMENTAL HEALTH REPORT

The purpose of the Environmental Health report is to summarize significant accomplishments over the past fiscal year. The report focuses on headquarters-level program efforts.

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## FROM THE CHIEF OF ENVIRONMENTAL HEALTH

Fiscal Year 2008 was extremely challenging with our division colleagues maintaining pace with CG modernization efforts. Although Environmental Health programs are not anticipated to change significantly, field implementation of those programs may change in light of the new Mission Support Command construct laid out with the anticipated inactivation of the CG Maintenance and Logistics Commands and combining the Safety and Environmental Health Officers under the CG Health, Safety & Work-Life (HSWL) Support Activity.

This report highlights the Environmental Health Division's functional support role to the Aviation, Afloat and Shore Safety Divisions in the areas of occupational medicine, human factors, industrial hygiene, and basic environmental health expertise.

**CDR Joselito Ignacio, CIH, CSP, MPH, REHS, Chief, Environmental Health Division**

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## OCCUPATIONAL MEDICINE

**LORAN** – CDR Dana Thomas has received extensive inquiries from the Long Range

Aids-to-Navigation (LORAN) community regarding claims of ionizing radiation exposures. As a result of an Occupational Health and Safety survey conducted at LORSTA George WA in 1993, it was discovered that the AN/FPN 44/45 amplifier stages emitted higher than acceptable levels of ionizing radiation. A combination of shielding and improved technologies have significantly minimized this exposure, but not yet allayed concerns from the LORAN veterans who have serviced and maintained these systems between 1980-1994. CDR Thomas in coordination with the National Naval Medical Center in Bethesda, MD and LORAN Program Managers at Coast Guard Headquarters developed an investigational protocol for the measurement of ionizing radiation exposures for personnel working at LORAN Stations between 1974 to 1994. Phase one of this study was completed in FY 2008 at the LORAN training site in Wildwood, NJ where preliminary data was gathered to validate true radiation risk. Repeat measurements are being conducted in Spring 2009. The next phase is data analysis to determine if there are any relevant health risks based on the amount of exposure incurred by LORSTA veterans. If indicated by the data, we will conduct further measurements at one of the four remaining LORAN stations with power amplifying units in Alaska.

**VESSEL TRAFFIC SERVICE (VTS)** – Since FY 2006, efforts to develop appropriate medical qualification standards for VTS operators, similar to the Aviation Air Traffic Controllers under the Federal Aviation Administration, has been pursued. CDR

Thomas completed multi-site VTS visits as well as the USCG VTS course to better understand the mission, which ultimately is to facilitate safe, secure and efficient waterborne commerce as well as the physical and mental demands placed on VTS watch standers. Based on this assessment, CDR Thomas has developed and implemented a rate-wide survey to assess the requirements and hazards of performing VTS work. Currently, CDR Thomas is working closely with CG-7413, Office of Personnel Management (OPM), and Department of Homeland Security (DHS) to create accurate Position Descriptions (PDs) and appropriate physical and medical standards for civilians to preserve maritime and public safety.

#### **HUMAN FACTORS EXPERTISE TO MISHAP INVESTIGATIONS – CDR**

Thomas served as both the Medical Officer and Human Factors expert on two MISHAP Analysis Boards: (a) Incinerator Fire and Mooring Line Lower Extremity Injury aboard the CGC Hamilton; (b) Personal Motor Vehicle Fatality involving a USPHS Officer. On the CG Hamilton MISHAP, approximately 30 or more acts, preconditions, supervisory and organizational factors were identified in the HFACs analysis, which resulted in a near catastrophic event. On the PHS MAB fatality, approximately a dozen separate factors were identified.

#### **NATIONAL MARITIME CENTER –**

Based on recommendations by National Transportation Safety Board, after the Staten Island ferry mishap in 2005, beginning in 2008, all merchant mariners required medical review and credentialing via a centralized process at the National Maritime Center. The significant workload of evaluating more than 60,000 credential and license requests per year proved overwhelming, for the understaffed Medical Evaluation Branch. A significant backlog of several thousand mariner credentials warranted urgent action.

Congressional leaders have criticized the U.S. Coast Guard, as mariners' licenses expired, making them unemployable. In 2008, CDR Thomas, worked with CAPT Hall as the only additional support for NMC's Medical Evaluation Branch. Beginning FY2009, CDR Thomas was joined by other USPHS physicians detailed to the Coast Guard, to cover this critical backfill until NMC has hired adequate full-time employees (FTEs). In the future, however, CDR Thomas' billet will serve a new role through CG-5434 as the medical review board for all Merchant Mariners' medical waiver appeals, where the mariner disagrees with the medical assessment at NMC.

#### **CDR Dana Thomas, MD, MPH**

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#### **HUMAN FACTORS**

##### **CREW ENDURANCE MANAGEMENT -**

On 25 March 2009, the Chief of Staff and DCO signed the Cutter Crew Readiness Standards Final Action Letter requiring all cutter assets to conduct CEM Risk Assessments and report results to Operational Control (OPCON) and CG-113 semi-annually, integrate CEM principles into cutter fleet policy and operational doctrine, infuse CEM principles into all training for leadership positions, and use CEM to schedule mid-patrol standards regarding time in port and develop Readiness Status to allow for adequate crew rest and recovery. This bold and aggressive mandate demonstrates senior management's commitment to proactively identify and control a preventable operational risk and protect the safety, health and performance of CG personnel.

A wrist activity monitor (WAM) data collection was conducted at Sector New York on Command Center personnel to address ongoing concerns with alertness and performance degradation associated with 12

hour watches and schedule rotation. Command center personnel activity was monitored continuously for 30 days to assess the effects of work practices on physiology. The results revealed a substantial portion of the staff was experiencing significant physiological disruption associated with their watch schedule. As expected, night watch staff experienced the largest amount of disruption. However, the disruption was isolated to the first 4-5 days of the schedule. If members remained on the night watch beyond 5 days and tried to maintain their night watch sleep times even on days off, their physiology adapted to the night watch and circadian rhythms were stable. On the other hand, if members rotated from day to night watches every week, physiology showed extreme disruption. Schedule options were developed to minimize physiological disruption. Environmental changes were also explored to improve alertness and performance. Lighting intensity was increased to provide a better signal to the biological clock which will increase alertness and promote physiological adaptation to the night watch. Facilities were also improved to accommodate 'nap' breaks during the night in the event that staff was overcome by drowsiness. A 30 to 60 minute nap during the 12 hour night watch has profound physiological benefit on alertness and performance. Since staff already receives periodic rest breaks during their watch, the 'nap' break does not burden resources. This research initiative provided objective guidance to integrate human-machine interface standards, environmental controls to improve alertness, and CEM physiological principles to more effectively manage command and control facilities.

A green light implementation effort is being planned to assist aviation operations with reverse cycle operations. Reverse cycle operations are conducted during the night and

early morning hours when alertness and performance are at their lowest. The reduced alertness and performance can compromise the safety and success of these operations. Exposure to monochromatic light in the green wavelength has been shown to promote physiological adaptation to night operations. The results will benefit not only aviation operations but any CG mission that must be conducted during the night and early morning hours. Results are expected this fiscal year.

Although TISCOM has conducted all functional tests for the Crew Endurance Management System (CEMS), CG-6 has been conducting their Enterprise management review to certify CEMS as "CG approved software" and have it reside on TISCOM servers. Once CEMS is available through TISCOM, unit IT personnel will be able to download and install CEMS on the CG Applications folder.

#### **HUMAN FACTORS ANALYSIS CLASSIFICATION SYSTEM (HFACS)**

The Joint Services Safety Committee (JSSC) Human Factors Working Group is in the process of refining the HFACS process to clarify and reduce redundancies in the nano-codes. A significantly streamlined version of HFACS is being tested for inter-rater reliability and is expected early next calendar year. In the meantime, we continue to institutionalize HFACS as the standard for conducting mishap investigations, and training personnel (e.g., sector safety managers, Area (kse), operational medicine and flight surgeons) on how to use HFACS throughout the investigation process. Mishap investigation training was provided at the National Transportation Safety Bureau Academy in Leesburg, VA for field safety personnel who have a high likelihood of being called upon to support mishap investigations. Although currently, only Class A and Class B mishaps are required to use HFACS, we

encourage the use of HFACS for all investigations to improve the human factors analysis and ensure a systems oriented approach to the investigation. Please use the recent mishap database improvements to submit your HFACS analysis results. If you have not received HFACS training, and may be called upon to participate in a mishap investigation, contact CG-1133 for training opportunities.

**Dr. Antonio Carvalhais, PhD**

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## **ENVIRONMENTAL HEALTH/SANITATION PROGRAM**

### **RADIATION SURVEYS & DOSIMETRY PROGRAM**

CAPT Adess manages the radiation survey and radiation dosimetry program for all U.S. Coast Guard clinics to include those x-ray units on-board vessels.

Radiation surveys of all x-ray equipment in the Coast Guard are performed by the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). For FY 2008, the following clinics have received radiation surveys and are operating them within the appropriate safety and health limits: CG Headquarters Support Command, Sector St. Petersburg, Air Station Miami + Opa Locka, Training Center Petaluma, ISC Alameda, Sector Mobile, ATC Mobile, Sector Galveston, CG Academy, ISC Boston, Air Station Cape Cod, Air Station Traverse City, ISC San Pedro, ISC Honolulu, Air Station Clearwater, ISC Miami, CG Yard, ISC Portsmouth, ALC Elizabeth City, TRACEN Yorktown, Sector North Bend. Due to recent transitions from photo to digital x-rays, two of the medical clinics were re-surveyed in FY 2008.

Radiation dosimetry badges are issued and analyzed by the U.S. Army Radiation

Dosimetry Center in Redstone Arsenal, AL. For FY 2008, 868 radiation dosimeters were issued to units with x-ray units, and after analysis, there were no findings indicating overexposures to ionizing radiation.

**INTRODUCTION TO ENVIRONMENTAL HEALTH COURSE**  
CAPT Adess successfully contracted with Tom Hunt & Associates to provide instruction to this annual 4-day long course. It is an opportunity for CG members to learn various Environmental Health competencies and skills in the area of food service sanitation, water quality, industrial hygiene, respiratory protection, hazard communication, blood borne pathogens, and communicable diseases. Since the last course update in 2005, CG-1133 updated the communicable disease, food borne outbreak and alien migrant interdiction training venues to fall in compliance with updated CG instructions. In FY 2008, there were approximately 16 students in attendance, and for FY 2009, the course is again funded under AFC-56.

### **HEAT INJURY PREVENTION INSTRUCTION**

Since early 1980s, an antiquated Cutter Afloat Heat Stress Instruction was used by the CG operational community. After extensive research, a new Coast Guard Heat Injury Prevention Instruction was drafted in FY 2008 with concurrent clearances received from CG HQ directorates and the CG MLCs.

Key changes included a more thorough description of heat injury risks, inclusion of CG shore units in monitoring heat stress conditions, addition of updated heat work/rest cycles, and acclimatization requirements for CG members newly operating in heat stress environments. Much of the previous cutter heat stress instruction was incorporated with slight updates and editorial clarity to the documents.

The instruction is currently at CG-11 office for final review and approval.

**CAPT Michael Adess, PhD**

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## **INDUSTRIAL HYGIENE**

### **IONIZING RADIATION**

In FY 2008, the Department of Homeland Security's Management Directorate, under the Occupational Safety and Health Manager, established a Departmental Radiation Safety Committee. One of the first directives issued to the components is a comprehensive inventory of any radiation sources that require an NRC-license. Even though all of the radiation sources managed by the Coast Guard are operated from the manufacturer's license of particular equipment, inclusion into the DHS radiation source inventory is still mandated. All of the radiation source-laden equipment owned and operated by the Coast Guard involves the radiation detection equipment overseen by CG-5 for illicit radiation sources on-board vessels, and the National Strike Force which use both radiation detection and chemical detection equipment for response. There are literally thousands of line-items requiring inventory and updates.

### **NON-IONIZING RADIATION**

In coordination with CG-1131, a CG Laser System Safety Instruction was developed. With the advent of laser range finders on-board vessel and aviation assets, and the use of industrial laser, the need to credential these systems prior to use is extremely important.

Currently, the instruction is awaiting CG-11 review and approval.

In addition, to respond to recent private sector studies concerning the use of cell phones and excessive radiofrequency radiation exposures,

a Frequently Asked Question document was developed and posted on the CG-11 website to address CG member concerns. The Coast Guard, in particular, has issued thousands of mobile communication devices for voice, email, and text messaging.

### **FIRING RANGE MANAGEMENT**

COMDTINST M8000.2D, Ordnance Manual, was extensively reviewed and input provided from CG-1133 in order to prevent excessive lead exposures while operating or maintaining CG-owned firing ranges.

On-going communication with CG-7 Small Arms Program on the substitution of lead-free ammunition has been difficult. The primary reason is that the Coast Guard uses DoD-typed class ammunition. Reduced hazard ammunition is currently available only in the 9 mm pistol or 5.56 mm rifle ammunition categories. The new .40 caliber pistol or 12-gauge shotgun in both 00-buckshot or rifled slug are still lead service in nature because they have failed DoD type classing for safe operation and usage.

In FY 2008, ISC Honolulu opened its new small arms firing range, which has been designated a lead-free range. Based on the available DoD-typed class ammunition for Reduced Hazard, only 9mm pistol or 5.56 mm rifle ammunition are used in this range. An adjacent portable 18-wheeler firing range is used for .40 caliber pistol and 12-gauge shotgun firing. CG-7 is awaiting final assessment of the ISC Honolulu range to determine the viability of continuing to operate a lead-free only firing range.

### **PANDEMIC INFLUENZA PREPAREDNESS – PERSONAL PROTECTIVE EQUIPMENT (PPE)**

In the event of an outbreak of Highly

pathogenic Avian Influenza (HPAI) (H5N1) within the USCG Area of Operations (AOR), a supply of PPE will be needed for USCG personnel whose missions may put them at risk of exposure to birds (or bird products) that may be infected with HPAI (H5N1) virus. Providing PPE in a pre-packaged assembled "Push Pack" will allow for effective and efficient distribution.

PPE includes facemasks, respirators, gloves, goggles, garments and hand gel. A Push Pack is a box or container that holds PPE for 5 personnel. Push Packs can be deployed on a ship, field location or warehoused for a period of time.

A contractor has been retained to receive PPE from government and from multiple vendors, repackage into Push Packs, store bulk PPE and assembled PPE Push Packs, distribute the assembled PPE Push Packs, and distribute the assembled PPE Push Packs as directed by USCG. CG-1133 is the Contractor Technical Representative (COTR) for the administration of the PPE contract. The initial phase of the contract is to produce Push Pack prototypes for delivery to selected Coast Guard clinics.

## **HEXAVALENT CHROMIUM**

Hexavalent Chromium is widely used in coast guard operations to prevent corrosion. A review of CG operations revealed that excessive hexavalent chromium exposure is prevalent throughout the CG Air Stations particularly in sanding, priming and painting operations. Overall, majority of the personnel exposures at the Air Stations exceeded the OSHA permissible exposure limit (PEL) for hexavalent chromium or the American Council of Governmental Industrial Hygiene threshold limit value (TLV) for Strontium Chromate.

CG-1133 is currently drafting a Request for Proposal (RP) for fiscal year 2010/2011 for approximately \$500,000 for enhancing or design/building engineering control at these Air Stations to reduce the personnel exposure to Hexavalent Chromium. Also, part of this RP would be identified to support additional PPE and training in those areas where the engineering control is present and working, but just not sufficient enough to get the exposures below acceptable levels. On the substitution end, we are still engaging with ARSC (Sam Mickey) who is personally looking into the Army's non-chrome primer and coating system. If and when this process becomes incorporated into the ARSC process for all CG aircraft, there will eventually be a decrease in hexavalent chromium/strontium chromium exposures. However, the substitution method is slow and will take several years, as aircraft are brought to ALC for their maintenance cycle, before all CG aircraft will have the current chromium components removed.

CG-1133 will work with CG Aviation Safety on the language to ensure that it is accurate and achievable.

## **LEAD**

Lead-based paint was used in pre-1978 buildings and several of these buildings are occupied by Coast Guard personnel and their family members. Traditionally, management of lead hazards in these buildings has included inspection, risk assessment and abatement of the hazards. Per USEPA and HUD regulations and as part of the management of lead hazard in Coast Guard controlled housing, occupants of the housing units are provided informational pamphlets on management of lead hazards. Additionally, lead inspectors and risk assessors are individually certified in order to perform their duties. While firms that conduct lead

abatement were required to be certified, certification of federal agencies were not required. In April 2008, USEPA published a new regulation which impacts the management of lead-based paints in Coast Guard controlled housing. CG 1133 drafted an ALCOAST to disseminate the information to various CG operations on the new requirements. Currently, the ALCOAST is awaiting CG 11 review and approval.

**Ms. Carolyn Onye, CIH, MS**

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**PANDEMIC INFLUENZA  
PREPAREDNESS & PRINCIPAL  
FEDERAL OFFICIAL SUPPORT**

**SUPPORT TO THE PRINCIPAL  
FEDERAL OFFICIAL PROGRAM FOR  
PANDEMIC INFLUENZA**

Since late August 2006, CDR Ignacio has retained his collateral duties as the previous Environmental Health staff officer to Environmental Health Division Chief. The work has taken a significant amount of time beyond supporting the Vice Commandant, in her pre-Designated National Principal Federal Official role.

General activities have included the following:

- Advising on policy affecting the Pandemic Influenza PFOs;
- Coordinating, and conducting quarterly PFO meetings;
- Coordinating, and conducting monthly teleconferences;
- Attending weekly meetings at the White House Sub-Policy Coordination Council on Pandemic Influenza;
- Reviewing and commenting on documents related to border management, vaccine/antiviral prioritization, or state plans reviews;
- Attending, on behalf of the Vice Commandant, the Pandemic Influenza

workshops at the National Governors Association;

- Preparation for Pandemic Influenza Principal Level Exercises;

In late FY 2008 and early FY 2009, CDR Ignacio specifically planned, coordinated, organized and/or conducted the following PFO-type activities:

- Met with staffers from the House Committee on Homeland Security to prepare VADM Crea's Member Brief to designated congressional leaders on her Principal Federal Official roles and responsibilities;
- Planned, coordinated, organized and served as an evaluator for the Department's first Intra-Departmental Pandemic Influenza Tabletop Exercise in October 2008, which also involved providing a Prep brief to both the Deputy Homeland Security Secretary and to the National/Regional PFO Teams;
- Organized a Prep for VADM Crea and RDML Landry ahead of a Tri-National Pandemic Influenza Exercise with Canada and Mexico held at the Canadian Embassy;
- Organized, and conducted a quarterly PFO Team meeting, which involved coordinating a Classified Briefing on Biological Threats by the Biodefense Knowledge Center;
- Developed a PFO Succession Briefing to brief the new Homeland Security Secretary on the last two years worth of PFO activities;
- Participated as the National PFO rep in support of a CDC Pandemic Influenza Functional Exercise in Atlanta, GA with State Health Officials;

The current timeline is to continue support Vice Admiral Crea in her PFO role until her

assignment tour as the Vice Commandant is completed.

**CDR Joselito Ignacio, CIH, CSP, MPH, REHS**

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**CHEMICAL, BIOLOGICAL, NUCLEAR AND EXPLOSIVES (CBRNE) THREATS**

In mid- to late-2008, CG-1133 assumed the duties from CG-1132 of being the principal advisory division on CBRNE threats on behalf of CG-113. CDR Ignacio serves as the primary action officer for advising CG HQ Directorates and HQ units as well as CG LANT and PAC staffs on health and safety aspects related to CBRNE threats.

General activities included the following:

- Participated in monthly CBRNE meeting updates with CG HQ Directorates, and CG LANT and PAC staffs;
- Reviewed and provided comments on latest CG Decision Memorandum for the Deputy Commandant of Operations (DCO) regarding *In-Extremis* CG Operations in a CBRNE Environment;
- Participated in meetings and training/evaluation (T&E) events related to the limited WMD PPE Pilot Program at CG STA Boston, and CG STA Port O'Connor as well as extensive policy review and discussion on a WMD Decon Pilot Program;

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**COAST GUARD/USPHS FORCE MANAGER FOR ENVIRONMENTAL HEALTH OFFICERS**

In the force management area for Environmental Health Officers, the following activities were accomplished:

- Filled, at least temporarily for the next five years under AFC-57 funds, a PHS officer as the Sector Safety Instructor/TRACEN Yorktown Safety Manager, under a agreement in response to reduction in CERCLA funds for a CG line officer;
- Participated in a CG Advanced Education Selection Panel, and selected one Environmental Health Officer (LT Harold Hurst) to pursue a 2-year Master's program;
- Advertised, reviewed, and deferred to CG HSWL SUPACT to select a temporary 2-year PHS officer to replace LT Kyle Lim, who in turn will temporarily replace LT Hurst as the SEHO Detached Portsmouth.
- Coordinated with CDR Weems, who is the Force Manager for the CG IH Officers, to fill the SEHO Western Rivers billet with a CG line officer.

The FY 2009 Fall USPHS Assignments Panel will be challenging with the SEHO billets in Kodiak, Seattle, and Ketchikan as well as the CG HQ Environmental Health Staff Officer (O-5 billet currently held by CAPT Adess) are up for rotation. The challenge is that the SEHO Billet in Seattle, which is a CG line officer billet under the CG Personnel Allowance List, will be filled by CDR Weems for an incoming CG IH line officer from graduate school.

**CDR Joselito Ignacio, CIH, CSP, MPH, REHS**

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