

WHO ARE THE RAMS AT RMCOEH?

Who, we're not talking about football players. Rather, I am referring to US Air Force Residents in Aerospace Medicine (RAMs) who have come to the Center to complete the first year of their residency by obtaining our MOH degree. When they graduate from our program, they complete two additional years of residency at the USAF School of Aerospace Medicine, Wright-Patterson Air Force Base, Ohio. Thereafter, they may be assigned to various duty stations including Hill Air Force Base in Utah.

Aerospace Medicine is the medical specialty that focuses on normal individuals in abnormal environments. For example, as a pilot ascends, less oxygen is available to maintain consciousness, a condition called hypoxia. The onset of hypoxia is insidious and, if not recognized can lead to the tragic situation of a plane on autopilot flying, in spite of efforts by tower controllers or chase planes, until the fuel is exhausted. Another concern is exposure to high acceleration forces, measured in terms of "G" forces, where one G equals the gravitational force we all experience on the earth's surface. As high performance aircraft evolved, they expose the pilots to high G forces during tight turns and other maneuvers. Thus, a fighter pilot may experience the onset of nine Gs (nine times the force of gravity) *per second*. If the flyer does not immediately respond with physiological anti-G procedures (in addition to anti-G suits), a condition called G-LOC (G induced loss of consciousness) occurs, and fatal crashes occurred before the condition was recognized and counter measures were developed.

A hazard present since the early days of flight is spatial disorientation, or "pilot's vertigo", where misleading inputs from the semi-circular canals and the otolith organs (sacculle and utricle) in the inner ear, the eyes, or the skin and muscles cause the pilot to think the aircraft is flying safely when it is heading toward the ground. In one epidemiologic study, spatial disorientation was found to be a factor in twenty-six percent of fatal Air Force aircraft accidents. Such data have resulted in the recent decision to install Ground Collision Avoidance Systems in Air Force aircraft. The system takes over if the aircraft is on course to impact the ground or sea.

Other concerns include radiation exposure during high altitude or space flights, loss of bone minerals during space flight, establishing appropriate physical and mental standards for atmospheric and space flight, and evaluating crewmembers who have developed a medical problem to ascertain whether they can safely perform their duties without jeopardizing their own health, flying safety, or mission completion. A particularly

important role is participating in aircraft accident investigation boards to ascertain causes of an accident and developing methods to "break the chain" of events leading to the crash. Aero-medical specialists also study, evaluate, and provide prevention modalities. They additionally conduct education programs for flyers and others supporting flight activities.

Of course, operational air bases are large industrial complexes, so RAM graduates are typically active in all occupational medicine activities. This is the reason they obtain significant additional occupational medicine experience during the second and third years of the RAM program, and are able to take the certification examinations for both Aerospace Medicine and Occupational Medicine on completion of their residencies. In many instances, graduates also play roles in disease outbreak investigations, food and water sanitation, and health promotion and disease prevention programs. Many activities involve application of biostatistics, epidemiology, human factors, and other capabilities obtained at RMCOEH.

Additionally, RAM graduates provide clinical care for crewmembers, their families, and others in units the RAMs support. Each RAM applicant must have completed at least one year of a clinical residency before applying to the RAM program. Many applicants are certified in another specialty and all must have had at least two years of flight surgeon experience at an operational Air Force base. The current RAMs have had much more experience, as indicated by their advanced rank—Major Kevin Hettinger, Lt. Col. John Hatfield, and Lt. Col. (promotion to Colonel due in April) Tim Duffy. Over the years, all of our RAMs have added to our education programs by the perspectives they bring, including varied assignments at military bases, including combat ones, with a large variety of aeromedical challenges and opportunities. The RMCOEH is fortunate to have their presence to enhance our interdisciplinary activities.

Royce Moser, MD, MPH

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Steven C. Packham, Ph. D., D.A.B.T.

Steve is a Diplomat of the American Board of Toxicology and is currently employed as the toxicologist for the Utah Division of Air Quality. He received a Bachelor of Science degree from Brigham Young University in 1968 and continued his graduate studies at the University of Oregon Medical School where he received his Master of Science and Doctorate degrees in Medical Psychology in 1972 and 1973 respectively. Steve received his appointment as an Adjunct Associate Professor, University of Utah, Department of Family and Preventative Medicine, in 2004.

Steve joined the University of Utah faculty for the first time in 1973 taking a position in the Department of Neurology. He worked with the venerable Jack H. Petajan, MD, PhD., at the Veterans Administration Hospital and as part of an interdisciplinary research team at the U of U Flammability Research Center. At the FRC he developed an animal model to unravel the toxic mechanisms of fire effluents and combustion products from natural and synthetic materials. In 1976 Steve left academia and the Flammability Research Center to enter the private sector. He consulted internationally and became President of Biomedical Evaluation Testing and Research Sciences, Inc. in 1979.

Steve accepted his current position as toxicologist for the Utah Division of Air Quality in 1991. He has been a member of the Utah Asthma Task Force since its inception in 2002.

He was awarded the Utah Health Hero Award from the Utah Public Health Association in 2005 for his leadership and participation with the Utah Department of Health in conducting two studies on the effects of air pollution on asthmatic elementary students. Based on those research results his Working Group developed the Utah Department of Health School Recess Guidelines and Recommendations for Summer Ozone Activities.

Steve's career in the academic and private sectors has focused on practical research. He has participated in leadership positions in the development of national and international testing protocol standards and he continues to maintain an active consulting and expert witness practice in the private sector. Steve values the opportunity he has had to be a guest lecturer at the RMCOEH. He is currently working to help develop and market web and mobile apps that will make air quality monitoring data throughout the United States and Canada relevant and actionable to the general public.



Terracon Foundation Presents Grant



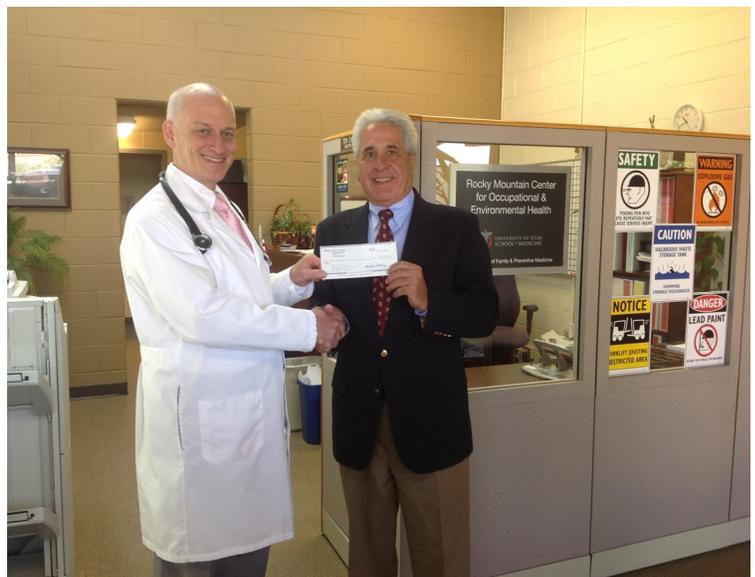
In commemoration of the Utah Workplace Safety Week, the Terracon Foundation presented a \$12,000 grant to the University of Utah-Rocky Mountain Center for Occupational and Environmental Health (RMCOEH) to assist in expanding the organization's online occupational safety and health graduate certificate program.

The timing of the grant award during Utah Workplace Safety Week is quite relevant according to Don Marano, who has had a close working relationship with the RMCOEH in various capacities over the past 33 years and is now employed by Terracon.

"This funding will contribute to the future safety of workers by providing online educational tools for the health and safety students of today, who will be the practitioners of tomorrow," Marano said. "The program will also advance our profession by giving students more alternatives to learn about various occupational hazards, solutions to these challenges, and proactive measures for prevention of injury and illness in the workplace."

Marano added that the grant will support the RMCOEH program in issuing graduate certificates in Occupational Safety and Health through online courses to individuals desiring to expand their knowledge and skills in their fields of expertise. These certificates will include ergo-

nomics and safety, industrial hygiene, occupational health, and general occupational safety and health.



Don Marano presenting the grant on behalf of Terracon to Dr. Hegmann

Upcoming Continuing Education Classes and Events

December Courses

- Lead Safety for Renovation, Repair, and Painting (RRP) Training Course
- OSHA 511/501/503 General Industry
- Asbestos Inspector/Management Planner Training

January Courses

- OSHA 521 OSHA Guide to Industrial Hygiene
- Asbestos Contractor/Supervisor Refresher, Burley, ID
- OSHA 3015 Excavation, Trenching and Soil Mechanics Mountain

February Courses

- Pulmonary Function Testing
- OSHA 6000: Collateral Duty Course for Other Federal Agencies
- Process Safety Management
- Supervisor Safety

March Courses

- Rocky Mountain Comprehensive Review of Industrial Hygiene
- OSHA 5810 Hazards Recognition and Standards for the On-Shore Oil and Gas Exploration and Production Industry

April Courses

- OSHA 7115 Lockout/Tagout
- OSHA 7300 Introduction to Permit-Required Confined Space Entry
- 7100 Introduction to Machine Guarding
- 7405 Fall Hazard Awareness
- 7410 Managing Excavation Hazards

Correspondence Courses (Enroll at any time)

For additional information on CE classes, including distant learning courses, please visit the continuing education section of the RMCOEH website: <http://medicine.utah.edu/rmcoeh/>

RMCOEH News Corner

The Rocky Mountain Center is pleased to welcome Mr. Michael Hampton, CSP, ARM as the Training Manager for the National Institute for Environmental Health Sciences Worker Education and Safety Training Program. As such he serves as program manager and primary instructor for hazardous waste worker training. He will also be responsible for development and deployment of Safety & Health courses in accordance with OSHA, MSHA and general risk management principles for industry.

Michael is a proven corporate leader in the field of loss prevention for wide range of industries, including surface and underground mining, hazardous waste treatment and disposal, construction materials manufacturing, and metals smelting and refining. Prior to coming to the Center, he was the Regional Director of Safety and Health for Barrick Gold of North America where he initiated regional planning and development meetings for senior safety and health leaders in a business unit. He participated in development of "Leadership in Safety" training materials for supervisors and managers and provided mentoring to an organization of approximately 90 safety and health professionals at all levels. In addition, he directed the development of regional standards and compliance systems to meet or exceed corporate and MSHA requirements.



Thomas Boeger recently started here at the Center. He will be utilizing over 15 years of hand on experience to support the desktop, laptop, and networking infrastructure at the Rocky Mountain Center. He consider himself a "jack-of-all-trades" IT guy and plans on wearing many hats from project manager to desktop repair. Tom is coordinating the process of fully transitioning curriculum for a Master of Science of Occupational Health, Master of Occupational Health, and a Certificate of Occupational Health into an interactive online learning environment for the Rocky Mountain Center. And is developing and implementing a plan to securely store and backup intellectual property, and training users on an individual basis. He also is troubleshooting and resolves issues with PC's, Mac's, printers, the network in general, and the list continues.

When he's not at work, you'll find him in a few places, the favorite of which is spending time with his wife, Krista and two children a, 7-month-old and a soon to be 3-year-old. Tom moved from Asheville, NC to Salt Lake City, in part, to pursue his adventurous lifestyle. If it's an epic powder day, he's most likely making memories by snowboarding on, in, and through "the best snow on earth." During the summer, he'll escape the valley and venture into the Wasatch on his mountain bike at least once per week. Unless the snow has blocked his path, you'll often find him commuting to work on his road bike 2-4 days per week as well. You'll often find him hiking the Wasatch with his family as well. He loves reading, but his tastes are eclectic in that he favors academic works in the realm of theology / Christian studies, peacemaking and conflict resolution, and sci-fi / fantasy fiction. He is an optimist, filled with much energy, and is passionate about trying to live life to the fullest at every moment.



The 2013 Class of AAOHN Fellows

The American Association Occupational Health Nurses: AAOHN, AAOHN.org) has recognized RMCEOH adjunct faculty, Dianne Stewart and Francie Barber as OHN Fellows. The AAOHN Fellows are recognized leaders in the field of Occupational and Environmental Health Nursing. Fellows have demonstrated outstanding accomplishments through significant contributions in the areas of clinical practice, education, research, management and/or policy.

Dianne and Francie officially accepted this designation as OHN scholars at an Awards Ceremony and Breakfast, Wednesday, April 17th 2013 at the AAOHN National Conference in Las Vegas.



Pictured Left to Right:
Cynthia Groves, Director AAOHN (North Central Region), Beloit, WI; Debbie Fell-Carlson, Salem, OR; Debbie Reed, Versailles, KY; Barbara Burgel, San Francisco, CA; **Francie Barber, Midvale, UT**; Steve Marks, Hammonton, NJ; **Diane Stewart, Salt Lake City, UT**; Catherine Pepler, AAOHN President, Merrimack, NH

MORE RMCOEH NEWS

*D*r. Kelli Graziano is a board-certified Occupational Medicine physician. She graduated from the University of North Dakota School of Medicine in 2007 and received her Master of Occupational Health from the University of Utah in 2010. Dr. Graziano completed her residency in Occupational Medicine in 2011 at the University of Utah and specializes in the care of injured workers and the prevention of work related disease. In her free time, Dr. Graziano enjoys foreign travel, outdoor activities, and live music.



*S*enator Karen Mayne received the 2013 RMCOEH Award of Excellence in Workplace Safety and Health at the 30th Annual Utah Conference of Safety and Industrial Health. The Conference was held October 16-18, 2013 with 256 attendees.



RMCOEH Alumni Scales Mt. Everest (RMCOEH in Hand!)

*D*avid Roskelley (MSPH, Class of 1997) recently summited Mt. Everest (Nepalese word: Sagarmatha) on Sunday, May 19, 2013 @ 7:29am (Nepal time/date). The climb essentially begins in Lukla (9,383 Feet) and ascends through the Khumbu valley, the Khumbu Ice Fall (Glacier), the Lhotse Face, and the South Col before topping out at 29,029 Feet. The entire climb takes approximately 6-7 weeks due to the need to acclimatize at each higher camp. The air pressure at the summit is only one third of the air pressure at sea level. In David's opinion, the only safe way to climb the mountain is with the use of supplemental oxygen and the help of a Sherpa. We are thrilled to see

Page 4 RMCOEH in-hand!!



Opioids and Safety Sensitive/Safety Critical Jobs

 Opioids are the most potent pain relievers for acute pain. They are also prominently used for peri-operative pain. Their use to treat chronic pain is controversial.

Opioids have been labeled as causing potential impairments. Recall vivid warning labels on prescription medication vials. While providing potent pain relief for acute pain, these medications act on the central nervous system, causing sedation and otherwise impairing higher cognitive functions. They are also quite addictive.

Yet, there are some laboratory-based driving simulator studies suggesting drivers on opioids chronically may not be impaired if they are taking them for a prolonged time. Those drivers have been thought to be accustomed to the effects of opioids. Still, concerns about traffic safety and other safety critical jobs have produced major controversies about whether a worker is impaired or not. Thus, previously there has been no quality guidance.

To help address these issues, the recent Opioid Guideline from the American College of Occupational and Environmental Medicine's Evidence-based practice guidelines has reported a comprehensive systematic review of the evidence for crashes in association with opioids. An interdisciplinary panel of 15 experts chaired by Michael Weiss, MD, MPH developed this guidance that was finalized in November 2013.

After searches of databases going back to 1966, nine sizable epidemiological studies were identified and included in the analyses. Both strong (eg., Lortab, Percocet, Vicodin) and weak (eg., codeine, tramadol) opioids were consistently associated with increased risk of motor vehicle crashes (MVC) in all of these epidemiological studies of working age adults sufficiently powered to detect motor vehicle crash risk. Only one small study was underpowered, though it also showed a trend.

One study additionally found an association with unsafe driving actions (especially failure to stay in the lane) that preceded fatal crashes. Two studies

suggested higher crash risk with higher doses of opioids. Also of interest is one study that suggested the impairments reversed on cessation of opioid treatment, which argues the problem is related to opioids, rather than confounding by another factor such as behavior. The magnitudes of increased risks for crash from opioids ranged from 21% to 190% increased risk.

How do these "real world" studies jibe with some of the experimental studies? Some driving simulator studies previously were found to not match real-world experiences particularly with cell phones, where driving simulator studies have suggested risk equivalent to alcohol intoxication, but the real-world studies with continuous video cameras trained on over 2,000 drivers failed to find increased risk of crash. Thus, the driver simulator, experimental studies may be negative as they do not apparently reflect the 'real world' of driving when assessing cell phone risks or opioids risks.

With this convincing epidemiological evidence, the ACOEM Opioids panel recommends preclusion of safety sensitive job functions while under treatment with opioids. They also noted there are no validated tools to determine that someone is safe to operate a vehicle on opioids. Among those treated with opioids, sufficient time after the last dose is recommended to eliminate approximately 90% of the drug and active metabolites from their system. The guideline also recommends caution among those consuming other depressant medications such as benzodiazepines and sedating antihistamines. (e.g., diphenhydramine including Benadryl)

The specific recommendation regarding use of opioids by workers in safety sensitive jobs reads:

Acute or chronic opioid use is not recommended for patients who perform safety sensitive jobs. These jobs include operating motor vehicles, other modes of transportation, forklift driving, overhead crane operation, heavy equipment operation and tasks involving high levels of cognitive function and judgment.

RMCOEH now has over 525 graduates and we would love to know where you are. Please send a photo of yourself either alone or in front of the sign of your employment and a brief description of your job to: Toni.Chambers@hsc.utah.edu

We plan to highlight 2-3 alumni in every newsletter.



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RMCOEH Alumni ~ Spencer Chicketts

I am the Chief of Occupational Medicine at Edwards Air Force Base. I oversee occupational health services at Edwards Air Force Base, CA that also includes the Air Force Research (Rocket) Lab, and US Air Force Plant 42 in Palmdale, CA.

A benefit of practicing Occupational Medicine in the Air Force is the breadth of what I do as an "Occ Doc". Every day is different and the challenges are endless. My responsibilities include hearing conservation, medical surveillance exams, care of injured employees, fire and police exams, toxicology, and medical worksite visits. I am tasked to monitor and mitigate known workplace hazards and at the same time be alert for unknown hazards from the Air Force's newest weapon systems. I also work as an Air Force Flight Surgeon and FAA Aviation Medical Examiner and perform aviation exams for military aviators, aircrew, instructors at the Air Force Test Pilot School, and for members of the Edwards AFB Aero Club.

As an Occ Doc at a federal installation I work in multiple health care systems; I provide occupational health services for the men and women of the armed forces as well as for federal civilian employees who are part of the Department of Defense team. Management of workers' compensation claims, fitness for duty determinations and pre-placement examinations for civilian employees are also my responsibility.

Training and education are an important part of my job, mostly because staffing is perpetually changing

in the Air Force. It seems like once you have staff members trained, the Air Force decides they are needed somewhere else and you are handed new personnel to train! One benefit to this is that I am able to help young airmen learn, grow, and achieve their goals.

Feel free to visit my barren part of the world anytime. You are likely to see new and unusual things flying in our skies. Just beware to bring water and don't be alarmed if your car windows suddenly shake; it is only a sonic boom!

