



U.S. ARMY COMBAT READINESS/SAFETY CENTER



Winter 2013 Edition



Message from Mr. Wolfe

Deputy Assistant Secretary of the Army, ESOH and Functional Chief, CP-12

The Industrial Hygienist Professionals

Safety and Occupational Health personnel are highly skilled professionals responsible for implementing the Army Safety and Occupational Strategic Plan. Occupational injury and illness directly impacts an organization's effectiveness and degrades readiness.

Hershell E. Wolfe (Hew)

Industrial hygienists and industrial hygiene technicians are vital to the anticipation, recognition, evaluation and control of health hazards in the Operational and Institutional Army.

Working as a team with other safety professionals, facilities engineers, environmental engineers and occupational

health nurses and physicians, industrial hygienists provide valuable guidance to commanders to reduce risk and protect the workforce.

A significant number of the Army Industrial Hygienists are board certified, and as members of Career Program-12 Safety and Occupational Health, they are required to complete core,

functional and continued training and education to ensure they remain competent, relevant and ready to provide the best service possible.

A special thanks to the team at Public Health Command for their contributions to this CP-12 Newsletter and the Career Program!



ARMY SAFE IS ARMY STRONG



BG Timothy Edens

Message from the DASAF

Timothy J. Edens

Brigadier General, USA

Director of Army Safety/Commanding General, USACR/Safety Center

Industrial Hygiene professionals

In sustaining readiness in today is a complex environment, our Army faces many significant challenges at home and abroad. Every accident or illness, on or off the battlefield, is an impediment to our mission and weakens combat readiness.

We rely on a multi functional team of safety and occupational health professionals ranging from safety specialists, engineers, health physicists, firefighters, emergency management personnel and industrial hygienists who must serve skillfully, competently and confidently.

All of the job series represented in the Safety and Occupational Health community are more important than ever given the austere fiscal climate we are facing in today's Army.

I challenge our CP-12 community to work together - leveraging all your skills - to positively impact our Army culture with a sustained focus on safety as an imperative to readiness.

Army Safe is Army Strong!





Dr. Brenda Miller

Where are we?

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First let me begin by thanking the Industrial Hygiene community for their commitment to moving Career Program-12 forward. Public Health Command has supported careerists by offering numerous training and professional development opportunities and has opened these to all career program-12 careerists.

According to the American Industrial Hygiene Association, Industrial Hygiene is both a science and art devoted to the anticipation, recognition, evaluation, prevention, and control of those environmental factors or stresses arising in or from the workplace which may cause sickness, impaired health and well being, or significant discomfort among workers or among citizens of the community. In some respects, Industrial hygienists are scientists and engineers committed to protecting the health and safety of people in the workplace and the community.



Protecting People is paramount to ensuring the Army's resources are trained and ready! The goal of the industrial hygienist is to



keep workers, their families, and the community healthy and safe.

Our IH careerists are an integral part of all military operations and are an essential component of readiness across the Army. These professionals are trained to advise, administer, supervise, and perform work in the field of occupational health. The education and training requirements of our IH workforce involve a combination of capabilities with positive education requirements required to remain relevant and ready in assisting commanders and staffs in injury prevention and occupational health needs.

Together we can influence –

Reduction of losses due to accidents, injuries, and occupational diseases across the Army.

Increased readiness for military operations.

Increased productivity in support operations.

Reduction of injury costs to the Army.





The Challenge to Remain Relevant

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The Civilian Workforce Transformation was established to produce a more “flexible and adaptable” workforce. In order to remain relevant, it is up to Army Career Program-12 (Safety and Occupational Health) careerist to continually develop and improve their skill sets, effectively understand and convey the value of their contributions, and successfully serve in leadership positions.

Navigating this landscape will take planning, training, and self development if we are to provide the right people, with the right skills to execute the demanding occupational safety and health program responsibilities supportive of today’s rapidly changing Army.

Know where your profession is headed



There are numerous opportunities to become better informed professionally and to keep abreast of change. Stay informed by seeking out people and information. Colleagues

and peers have a wealth of knowledge. Connect with people and groups through professional organizations, conferences, social media, and the workplace. By seeking opportunities to serve on professional committees or working groups, you not only will enhance your technical knowledge and develop professional contacts but you will also contribute to advancing and shaping the future of your profession. Also consider joining a local chapter of the American Industrial Hygiene Association (AIHA), the American Society of Safety Engineers (ASSE), or the Health Physics Society; this can be personally and professionally rewarding and enhance your pool of professional contacts. Be aware of emerging hazards, regulatory changes, and advances in technology and professional practice. By culling through professional magazines and websites you can follow health

and safety topics making the headlines: nanotechnology, genomics, control banding, and military exposure guidelines.

Maintain technical proficiency



A goal of CP-12 is to provide the tools and opportunities to develop careerist that are technically proficient, well trained, and willing to take an interdisciplinary and collaborative approach to health and safety. Through collaboration, we can gain a healthy respect and



understanding of the various disciplines within CP-12 and also within other career programs we work with in protecting the health and safety of the military and civilian workforce. Being technically proficient means going beyond having just a basic knowledge of your profession. It means you are accomplished and have mastered the rubrics of your profession and are able to proactively exchange and implement new ideas and best practices.

On 20 July 2013, Army Career Program (CP-12) launched the Competency Management Assessment. Most CP-12 careerists recently had the opportunity to participate in the competency survey. This assessment requires input from both the careerist and his/her immediate supervisor to evaluate proficiency in the competencies established for the employee's current position. This assessment can shed light on strengths, weaknesses, and blind spots which can be used to put in place a plan to sharpen and enhance skills.

Convey the value of safety and health programs



The fiscal reality of decreased budgets within DoD this year and into the future makes it increasingly important for our services to be tied to mission execution success. We must be able to effectively convey the impact of our contributions to leadership at all levels. We must be able to effectively speak in terms of value. Sometimes it is difficult, to make the business case for protective strategies based on abstract technical and scientific rationale that are difficult to quantify. However, we must learn to tie our technical role to the economic value of our contributions and when possible, link health and safety recommendations to business metrics. By implementing a recommendation, does it produce cost avoidance, cost savings, or generate revenue? Consider the impact on FECA claims, employee turnover, medical removals, hazard pay, cleaning cost, or the use of personal protective equipment.

We must also help the commanders and other leaders make sound decisions based on the technical expertise and judgment we bring to the table. We do this by taking a more comprehensive multi-phased approach to identify and document contributions in terms of health and safety and in financial gains and predicting the recovery of initial investment and other benefits when implementing hazard

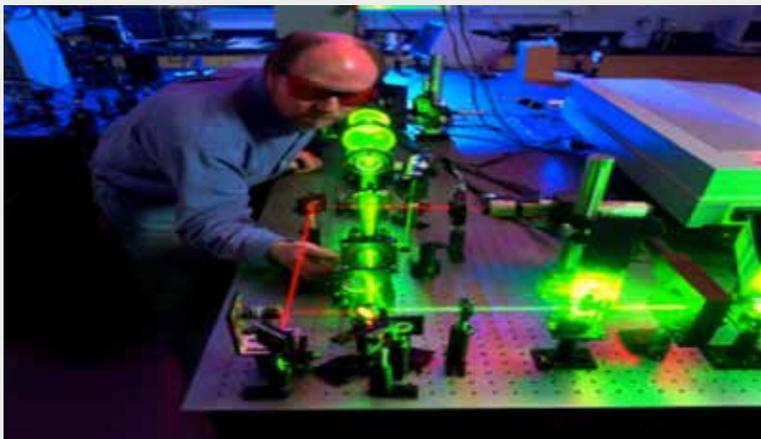
controls. Let's also remember the intangibles that do not show up on a balance sheet like the employee job satisfaction and wellness, time savings, reduced presenteeism, and support for other command programs.

Most importantly, our goal and reason for coming into work is to keep all Soldiers and civilians whole during their career with the Army. We must maintain our relevance and effectively convey our value to enable our goal to become a reality.



DoD Laser and the EMF Injury Hotline

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The online reporting systems for the DoD Tri-Service Laser Injury Hotline and the DoD Electromagnetic Fields (EMF) Injury Hotline are now live.

The Air Force is the proponent for both hotlines. These databases will replace the electronic forms that were previously used. Access to the databases is granted through the Air Force Environment, Safety and Occupational Health (ESOH) Service Center. Personnel who need to report accidents can fill out the Injury Accident Report online. Other professionals wanting access to injury data are also encouraged to request permission to the hotlines. Although reports can be completed and loaded into both databases, the historical data has not been imported into either hotline. If you already have an active account, you can become a "consultant". Consultants can view and comment on the reports placed in the database. Consultants must provide their Health Insurance Portability and Accountability Act (HIPAA) training information. All consultants must enter the date for their most recent HIPAA training; the completion

date must be within the past 12 months to be valid. To avoid conflicts and delays, make sure to edit your profile and provide the training date.

The Injury Accident Reports can be directly accessed through these websites below:

- Laser Injury Electronic Reporting Form <https://hpws.afrl.af.mil/dhp/OE/ESOHSC/laserinjury/>
- EMF Injury Reporting Form <https://hpws.afrl.af.mil/dhp/OE/ESOHSC/emfinjury/>

DoD Laser Injury Hotline

Every incident will be investigated and evidence of overexposure or injury (or absence thereof) documented IAW DODI 6055.15 and the conforming Service-specific Laser Protection Programs. When a suspected injury or overexposure to laser radiation occurs, the following steps are taken:

1. The supervisor will make sure the each exposed individual is taken immediately to a medical facility and examined by a qualified ophthalmologist/optometrist.
2. The supervisor will notify the unit Laser Safety Officer (LSO) and Unit Commander within 8 hours of the incident.
3. The LSO is required to notify the Tri-Service Laser Injury Hotline via the ESOH Service Center within three duty days of any incidents. The LSO will report the incident to the US Army Public Health Command's Nonionizing Radiation Program and Tri-Service Vision Conservation and Readiness Program at 1-800-222-9698 or laserincident@amedd.army.mil
4. The LSO will complete the Online Reporting Form. Please contact the ESOH Service Center if you have any questions at esoh.service.center@wpafb.af.mil or call 1-800-473-3549.



DoD EMF Injury Hotline

Each of the Tri-Services shall investigate and document incidents/accidents involving personnel exposure and provide timely expert medical advice in the event of an injury or suspected injury from EMF devices IAW DODI 6055.11. The US Army agent for EMF systems is the USA Public Health Command (USAPHC), Army Institute of Public Health (AIPH), Nonionizing Radiation Program. When a suspected or known overexposure to EMF radiation occurs:

1. Immediately discontinue EMF operations. Unless necessary, do not change the EMF system configuration and/or settings.
2. All injuries or suspected injuries must be reported immediately to the supervisor.
3. Report the injuries to the Radio Frequency Safety Officer (RFSO) or Radiation Safety Officer (RSO). The RFSO or RSO should ensure that

the potentially exposed individual(s) receive(s) an appropriate medical examination within 48 hours of the incident

4. The RSO or RFSO should initiate an investigation of an alleged EMF overexposure with 24 hours of the incident by contacting the USAPHC, AIPH or equivalent tri-service command and forwarding information regarding the incident.

For personnel exposures occurring at, or above, five times the maximum permissible exposures (MPEs), the following additional actions are required:

- Perform EMF measurements for documentation of the EMF exposure that may have been received.
- Report for medical examination. Employees will report to the occupational health clinic or appropriate medical center for additional follow-up treatment as necessary. For serious injuries call "911".
- Documentation providing a

description of the circumstances surrounding the exposure incident, statements from personnel involved in that incident, and recommendations to prevent similar occurrences.

- Ensure the EMF overexposure incident is reported using the Medical Surveillance System and included to the individual medical record.

Electromagnetic Fields accidents/incidents should be reported to the DoD EMF Injury Hotline at 1-888-232-ESOH (3764) or via email at esoh.service.center@wpafb.af.mil. Reports should be submitted through the online EMF Injury Reporting Form.

Additional Information

For answers to any questions concerning lasers or EMFs and their safe use please contact the U.S. Army Public Health Command, Army Institute of Public Health, Nonionizing Radiation Program, (410) 436-3353/3932, email: army.laser.safety@us.army.mil.



Deployment Industrial Hygiene

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Health and Safety professionals ensure workers do not suffer injury or ill-health as a result of their work activities. The deployment setting is a unique work environment. Although Soldiers and civilians still perform common tasks, the conditions are often uncommon.

Industrial Hygienists collect and evaluate exposure data throughout DoD. This longitudinal exposure data is a part of force health protection mandated by a presidential directive issued by President Clinton in 1997. This directive requires DoD to establish a lifelong medical record that tracks individual service member's exposure to hazards. This manages potential and actual operational risk associated with occupational health and environmental hazards. Often times, data collected in a tactical setting is environmental data and

not specific to an individual.

To assess risk, Industrial Hygienists capture exposure data. Advances in technology make industrial hygiene equipment smaller, lighter and less intrusive, and allows us to better function within mission parameters. The main obstacle is asking soldiers to carry extra equipment while in a potentially hostile environment. Although practicing industrial hygiene in a deployment setting is similar to CONUS, there are some challenges.

Having completed several IH surveys during short deployment rotations, it has been my experience that preparation in the industrial hygiene lab is key to a successful sampling event. It starts with collecting as much information prior to the trip. Find out if air sampling has been conducted in the past or if there are health and safety reports from other sources available. Study the details to become more knowledgeable about the people, site, and environment. Look at aerial images of the area. Check out the site by using a



mapping browser. Look for any surrounding structures and processes that may influence the environment on the site such as nearby pollutant point sources.

This will help determine the instruments needed onsite. Spend plenty of time with sampling equipment prior to deployment. Practice calibration, assemblage, and use. A great way to prepare for a sampling event and manage equipment needs is to assemble a spread sheet that documents the analytes of interest, the equipment needed, the analytical methods, interferences for equipment, and calibration gases.



Environmental factors can become a menace to IH equipment. Understanding how these factors affect the equipment is a must. An Industrial Hygienist that cannot calibrate his/her instruments cannot sample. It is vital to plan for unanticipated factors that may cause instruments to utilize more calibration gases. Extreme temperatures, dusty environments, or humidity may influence the results. Another likely problem is the electrical supply onsite may not be the same as stateside. Take a 220 volt compatible step down travel adapter/converter for the equipment.

Carry multiple pieces of equipment capable of sampling the same analyte. Each piece of equipment has different criteria and may collect or analyze analytes differently. Including a variety of equipment and using different sampling methods will support the integrity of your data later and may save a repeat visit for more sampling. Since this is a deployment setting, you probably will not have the luxury of a repeat visit.



After establishing what you will sample and the equipment needed, obtain a list of the survey participants. Waiting until you have arrived in-country to look for "volunteers" is counterproductive. However, flexibility is important. Your local POC is essential to coordinating this effort. Talk to

your IH counterpart, more than likely it will be military personnel. Make sure that you have communicated with them, and everyone is clear on timelines and task responsibilities. It will allow you to develop a sampling strategy for specific tasks and shifts before you arrive. Representative samples from all tasks and shifts will bolster the data integrity. Plan on working long days and sampling both day and night shifts.

Industrial hygiene in the deployment setting is still evolving. We are learning and adapting to become better at identifying and measuring soldiers potential exposures in combat. Safety has a longer history of being present in this environment because of brigade combat team safety professionals. However, the mandate to track a soldier's exposure history during tactical operations has Industrial Hygienist partnering with other CP-12 careerist to protect warriors throughout their military career on and off the battlefield.



Connecting Physical Ergonomics to Safety

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Have you ever thought about the relationship between safety and ergonomics? With reasonable effort one can make the case that safety relates to both divisions of ergonomics: human factors and physical ergonomics

Most safety professionals are very well acquainted with human factors how humans perceive information from their environment to formulate responses. Accident investigations often consider the human factors of mishaps that result in damage to equipment and/or injury to human operators. However, the link between physical ergonomics and safety, the subject of this article, is sometimes not

understood as well.

This connection is best explained using concepts from energy trace barrier analysis (ETBA). Traditionally ETBA entails identifying an energy source and tracing the path it follows to reach a person and produce some adverse effect. Energy that originates from the environment is fairly easy to identify. In ergonomics, vibration

is one form of energy from the work environment that creates hazards. Knowledge about the way that mechanical vibration travels from source to person is used to characterize the exposure and devise interventions. One example would be the transfer of energy from a helicopter in the form of vibration to the pilot and crew.

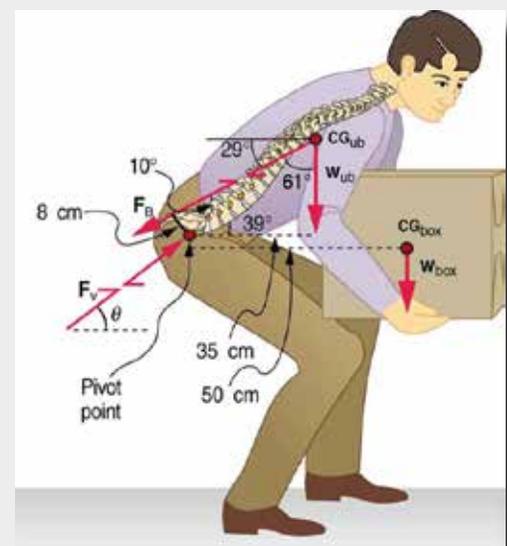
Ergonomics is challenging

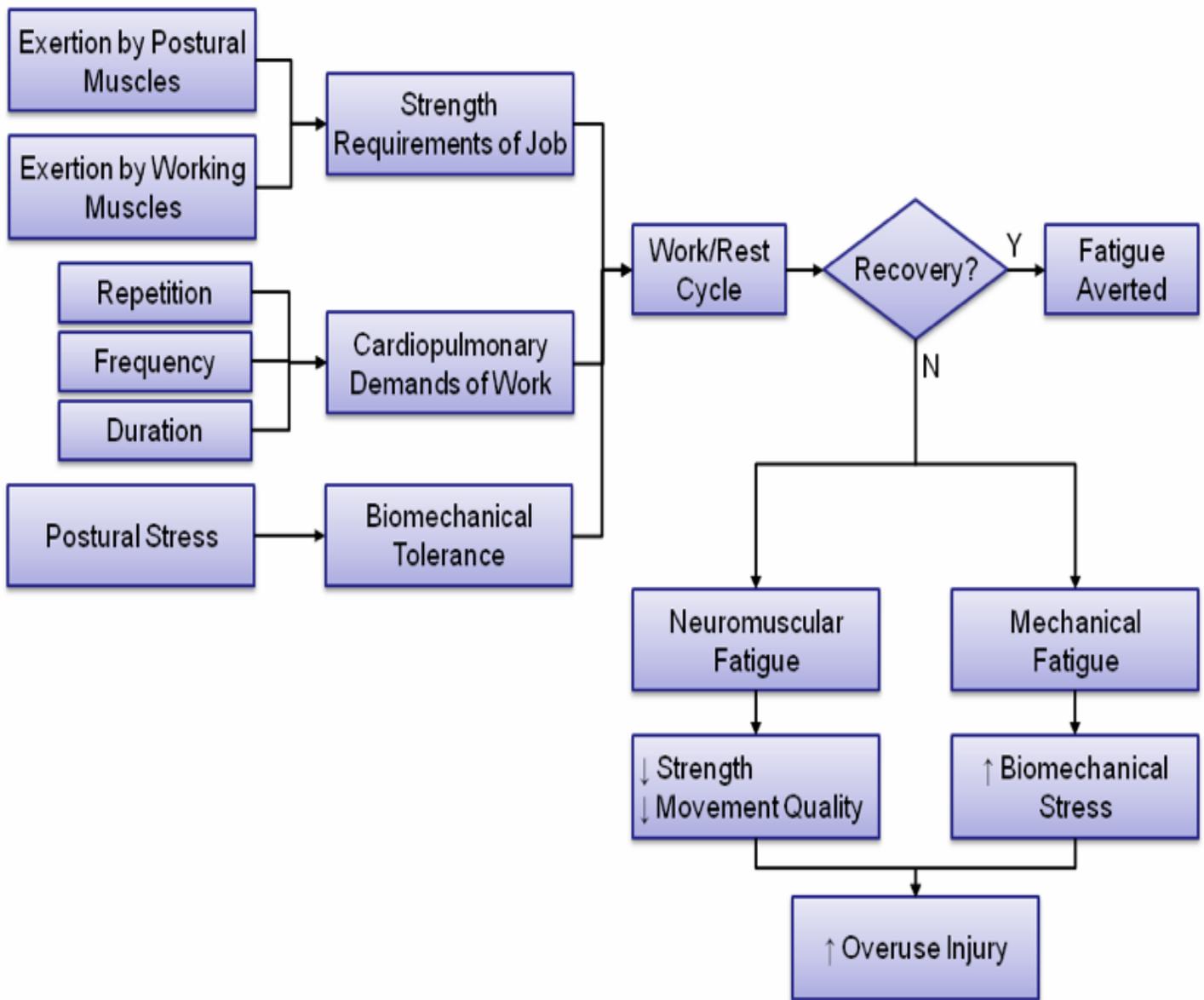
because only a small portion of hazards that are assessed are easily measured environmental exposures. The greatest share of ergonomics hazards evolve from biomechanical energy generated inside the body when a person performs work. It's the force that an arm generates when a hammer is swung or the legs exert when lifting a 50 pound pelican case. And, to understand these internal hazards, it is important to recognize the differences in how internal biomechanical forces behave compared to exposures that originate outside the body. In particular, current technology does not allow biomechanical energy sources to be measured because of the multitude of individual forces from numerous muscles and ligaments. The biomechanical energy from our musculoskeletal system is included in the total exposure and because of the many dissimilar variables present (i.e., distance between load and lifter, repetition, frequency, and

duration of lifting) all of these factors affect the intensity of the exposure and complicate risk characterization.

Imagine someone doing a simple box lift starting from the floor and ending at a nearby table top. From the perspective of the ETBA, one may conclude that just knowing the weight of the object being lifted may provide enough information to understand the hazard. However, even though the weight of the load is an important contributor to the hazard, you must keep in mind that the real exposure originates inside the body. A more complete picture of the hazard is attained when other factors are considered: For example, when the worker bends forward to grab the box, muscle tissues are stretched and compressed. Postural muscles are recruited to stabilize the back, pelvis and other joints. Prime movers, the muscles most directly responsible for performing the lift, are energized to power the

movement. Tracing this energy one finds that at the instant the lift starts, arm muscles contract to grasp the object and back, hip and knee muscles contract to produce movement from stooped to standing posture. In addition, shoulder and arm muscles contract to move and place the object on the table top. Every contracted muscle fiber and every stretched/compressed tissue is exposed to a force that contributes to the potential injury hazard. That hazard increases significantly when poor workstation design and improper lifting technique exacerbate the magnitude of adverse biomechanical energy transferred to muscle tissues. The diagram below depicts how mechanical energy from muscle contraction, along with biomechanical stress due to posture, is associated with job demands that increase fatigue, hazard and injury risk, especially when excessive.





As anyone who has performed physically demanding work can attest to, only accounting for muscular exertion and postural stress will not give a complete assessment of the hazard. It's the increased heart rate and breathing that quickly shows cardiopulmonary demands should also be considered. Returning to the example, if the lift is performed with sufficient repetition, frequency and

duration to tax the worker's cardiopulmonary capacity, injury risk will increase further. As shown in the diagram, the risk can be reduced by following administrative controls to reduce the exposure and permit cardiopulmonary recovery.

On the other hand, if the worker fails to get proper rest, fatigue becomes more imminent and can manifest in two ways: First, the risk

of mechanical fatigue increases from tissues being exposed to a level of biomechanical energy that is beyond the tolerance limits of the tissues. This can be thought of as the "coat hanger" effect. Similar to a coat hanger that breaks from being repetitively bent at a specific location, musculoskeletal tissues can fail if they are stressed beyond their limits.

Second, the risk of injury due to neuromuscular fatigue increases. Research has shown that engaging in activity to the point of fatigue, causes the body to recruit other muscles, not part of the usual motor programming. A worker's movement will deviate because the newly engaged muscles pull at different angles

through the joints.. The altered motion stresses tissues not conditioned to perform the activity, thereby increasing injury risk.

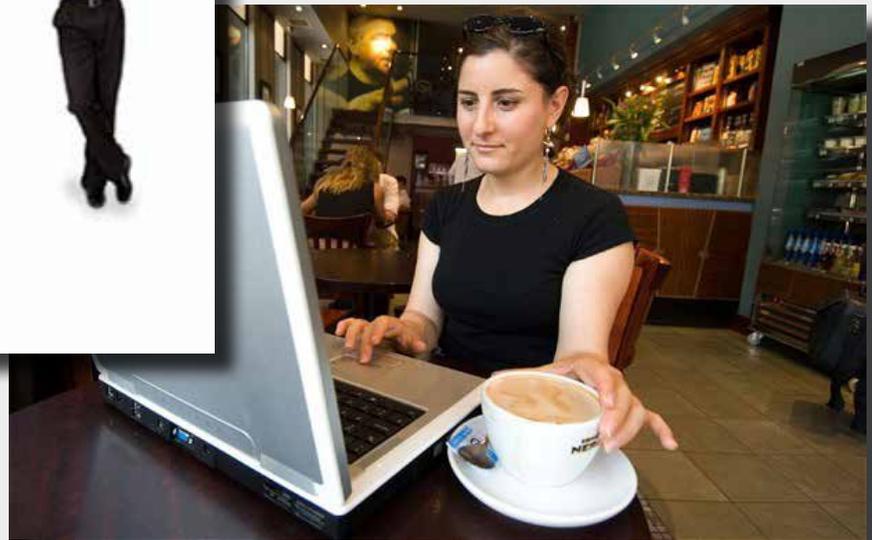
The information in this article can help safety professionals use the principles in energy barrier trace analysis to understand

physical ergonomics. Workplace hazards increase when workers are exposed to biomechanical forces and cardiopulmonary loads that exceed their tolerance limits, however safety professional can control these exposures by thinking about the internal stressor that the body produces.



The Perks of Online Learning for CP-12 Professionals

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Web based learning is a great option for CP-12 professionals in today's financial climate. Defense Connect Online (DCO) and the U.S. Army Enterprise Lifelong Learning Center Blackboard System are the most popular systems used by the Army.

We need on-line training to meet demand, accommodate busy schedules and reduce costs. Here are some reasons on-line training will work for you.

(1) Flexibility.

Web based training provides flexibility for student's work schedules and global locations. "Live" web-based courses are usually re-broadcast to reach multiple time zones. On-demand courses that are pre-recorded are very convenient allowing students

to "attend" class when it works for them.

(2) Saves time.

Online training is a time saver. There are no classroom breaks and question and answer sessions are limited. No travel means no time away from work or your personal life. Online training is self-paced, yet with some time limits. Students may complete knowledge checks to judge their comprehension while enrolled and may have several chances to

pass the final exam. Face-to-face training usually requires students to successfully pass the exam with one try.

(3) Networking.

Networking is important to professional growth. Web based classes offer a forum for fellow classmates to interact. Students use discussion boards, blogs, and email. Many online classes have mandatory discussion boards and students receive points toward the course grade for



participation. Many students are more comfortable with discussion boards than responding orally in a classroom.

(4) Continuing education credit.

CP-12 online courses offer careerists continuing education units (CEUs) and certification maintenance points (CM). Certain occupations require documented annual CEUs to ensure members are up-to-date with current practices. The Combat Readiness Center tracks CEUs for all participants enrolled in CP-12 courses.

(5) Saves money.

It always comes down to the dollar. Face-to-face training costs more. It requires you to travel and

there are the added expenses of tuition, gasoline, lodging etc. Most brick and mortar training sites will be more than 20 miles from your home or office. There are numerous opportunities for CP-12 careerists to receive free or reduced tuition online training.

Online training can enhance your professional career. Take advantage of the web based training offered to our career program through the Combat Readiness Center/Safety Center <https://safety.army.mil/training/ONLINETRAINING/CareeristBlackBoardCourses/tabid/2340/Default.aspx> and US Army Public Health Command <http://phc.amedd.army.mil/Pages/Training.aspT>.



Careerists on the Move

USAPHC Industrial Hygienist Wins Prestigious Award



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Shih-Houng Young, an Industrial Hygienist at the USAPHC, was one of the authors awarded best paper by the Society of Toxicology during their 2013 annual meeting. The paper entitled "Blood Gene Expression Profiling Detects Silica Exposure and Toxicity" described research on gene expression alterations by microarray in the blood of rats exposed to silica.

The research was conducted at NIOSH in Morgantown, West Virginia. The importance of this research represent a breakthrough for the detection of target organ toxicity using a easily obtainable sample that can be applied to a wide range of human chemical exposures. Congratulations Shih-Houng Young!

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What's New

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The Army Respiratory Protection Program



The newly updated Army Regulation 11-34, has been revised to update the policies and responsibilities for the Army Respiratory Protection Program. This regulation establishes responsibilities, policies, and prescribed procedures for the management, control, and use of respirators as part of the Army Respiratory Protection Program. Military - unique masks and chemical, biological, radiological, and nuclear respirators used for emergency response are exempt from this regulation.

Some of the changes to this document are the following:

- Redefines policies for the Army Respiratory Protection Program and mandates compliance with regulatory criteria.
- Eliminates the request for waivers requirement.
- Revises leaders' responsibilities for the Army Respiratory

Protection Program.

- Updates titles of commanders and directors.
- Establishes program objectives.
- Revises requirements for selecting respiratory-protective devices.
- Revises requirements for using respirators and related equipment.
- Revises and adds guidance

for evaluating use, training, maintenance, testing, air quality, recordkeeping and program requirements.

- Makes other administrative changes throughout.

To obtain a copy of AR 11-34 visit the USAPHC website http://www.apd.army.mil/pdffiles/r11_34.pdf.

Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure



The new DA PAM 40-513, Occupational and Environmental Health Guidelines for the Evaluation and Control of Asbestos Exposure (formally TB MED 513) provides preventive medicine information and guidance to establish a comprehensive program that promotes health and protects civilian and military personnel against adverse effects of asbestos exposure.

What's New

This pamphlet provides guidance for implementing the essential elements of both an environmental and an occupational asbestos program. This document also provides requirements and guidance for the medical commander's support to the installation asbestos management program. The asbestos risk mitigation strategy approach at any installation can be divided into three program elements: the installation asbestos management program (IAMP), the occupational asbestos exposure program, and the non-occupational asbestos exposure

program. There is much overlap among these three program elements.

Some of the changes to this document are the following:

- Describes the procedures for implementing the Occupational Safety and Health Administration asbestos standard promulgated in Title 29, Code of Federal Regulations, sections 1910.1001, 1915.1001 and 1926.1101.
- Identifies the Occupational Safety and Health Administration asbestos program standards.
- Changes the non-occupational

asbestos exposure program standards as identified in technical bulletin medical 513.

- Describes post-abatement requirements.
- Describes the requirement for a competent person for abatement operations (chap 8).
- Describes asbestos accreditation requirements.
- Replaces and expands the requirements found in technical bulletin medical 513 throughout.

To obtain a copy of DA PAM 40-513 visit the USAPHC website http://www.apd.army.mil/pdffiles/p40_513.pdf





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