

WEAPONS HANDLING: HOW I SHOT MYSELF p. 38

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RM
QUARTERLY

RISK MANAGEMENT

OFFICIAL SAFETY MAGAZINE OF THE U.S. ARMY

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<https://safety.army.mil>



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USACRC WEB-BASED TOOLS AND INITIATIVES

The U.S. Army Combat Readiness Center has developed multiple tools to provide leaders information on risk mitigation, all available at <https://safety.army.mil>, including the following:

- **Army Readiness Assessment Program** — a web-based tool that provides battalion or equivalent commanders with data on their formations' readiness posture by sampling unit safety climate and culture in five key areas: process auditing, reward systems, quality control, risk management, and command and control.

- **Army Risk Management Information System** — the central repository for all Army mishap data (Class A-D ground, on and off duty; Class A-E aviation). RMIS is designed to give leaders, safety officers and other personnel access to both current and archived mishap reports, with a goal of preventing similar incidents within their formations. Among other functionalities, users may search RMIS for specific mishaps by case number; conduct searches for a given timeframe or accident class; and obtain risk and hazard reports broken down by age, grade, equipment and additional variables. All data retrieved from RMIS is classified For Official Use Only and limited in use to accident prevention.

- **USACRC Lessons Learned** — one-page mishap investigation summaries produced for accident prevention purposes. Summaries contain information protected by DODI 6055.07 under safety privilege and are available only to CAC holders within the .mil network.

- **Ground Risk Assessment Tool** — a mission planning tool developed to augment the military decision-making process. Consisting of five integral parts, it assists users in identifying potential hazards and controls for specified ground missions or activities, both on and off duty.

- **Off-Duty Safety Awareness Presentation** — a highly informative safety presentation containing statistics, contributing factors and other relevant information regarding off-duty mishaps.

Developed for use at battalion level and below, the presentation comes complete with embedded videos and speaker notes that may be used as is or modified to reflect unit-specific mishap trends.

- **Preliminary Loss Reports** — short synopses of recent Army mishaps resulting in Soldier or civilian employee losses that alert commanders, leaders and safety professionals to circumstances affecting readiness. PLRs provide actionable knowledge and real-time information regarding accidental fatalities, both of which are critical in prevention through risk management.

- **Safety Campaigns** — a monthly focus on seasonal and non-seasonal risk management products and tools. Each monthly topic includes supporting videos, graphics and posters, articles and external links for additional resources.

- **Risk Management Magazine** — the official safety magazine of the U.S. Army, published online quarterly. In addition to the online version, the USACRC releases a weekly RM newsletter highlighting a variety of safety articles, posters and videos, seasonal safety campaigns and USACRC tools and programs.

- **Flightfax** — an aviation safety publication published online monthly. It provides leaders a snapshot of Army aviation hazards through analyses of mishaps within the last 30 to 60 days, near-term mishaps, aviation safety issues and historical context via a "blast from the past" feature.



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RISK MANAGEMENT provides a forum for Soldiers, leaders and safety professionals to share best practices and lessons learned and maintain safety awareness. The views expressed in these articles are those of the author and do not necessarily reflect the official policy or position of the U.S. Army, Department of Defense or U.S. government. Contents are specifically for accident prevention purposes only. Photos and artwork are representative and do not necessarily show the people or equipment discussed. Reference to commercial products does not imply Army endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission. Please credit the magazine and author.

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Mission Statement:

Meet the intent of the Army Strategy by enabling commanders, leaders and individual Soldiers to build readiness, modernize across the operational spectrum, empower and push processes to the lowest level of authority, and strengthen our alliances and partnerships through education in and application of risk management.



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FROM THE CSM

It is with great pleasure that I pen this note to introduce myself. I am absolutely fortunate to get this opportunity to serve an organization dedicated to the safety and wellbeing our Soldiers and Army Civilians throughout our Army.

I have been the recipient of a great career filled with professional Soldiers who have shown me the right way to accomplish any mission. Today, I once again find myself surrounded by a fantastic group of professionals dedicated to the protection of our Soldiers, on and off duty.

I read once that the difference between a good Soldier and a bad Soldier was about 10 seconds. It is in those 10 seconds a Soldier may make a decision that will impact his or her life and those around them. It is my firm belief that we as leaders can help Soldiers make the right decision at the right time to produce the right results. The U.S. Army Combat Readiness Center is dedicated to providing leaders with solutions to their safety and loss-prevention concerns. We can offer these solutions by providing candid feedback and facts from historical mishaps. Further, we will provide leaders with proven tools, information and methods to mitigate mishaps inside their formations. With the use of these tools, leaders at all levels will have the means to produce a top-notch safety culture inside their formations and encourage all Soldiers to make the better decision inside of those 10 seconds.

My in-processing briefs here and subsequent attendance at mishap investigation outbriefs have confirmed what I have suspected for some time now. First-line leaders are the key to stopping mishaps. Time and again the results from these investigations have pointed at the first-line leader as someone who could have intervened and stopped a tragedy before it happened. Something as simple as instructing a Soldier to put on their seat belt in a military vehicle is a great start to improving a unit's safety culture.

Of the last eight military vehicle fatalities, seven Soldiers have died due to lack of proper restraint use. All of these accidents were survivable if only they had secured themselves with a seat belt. Speeding in excess of the conditions or posted limits is another problem a first-line leader can quickly identify and fix. Leaders have to inject themselves into every operation in their units and hold individuals accountable with regard to safety. The USACRC can help these leaders.

The following can be of immediate use for shaping the safety culture we all desire of our units:

- Army Regulation 600-55 has been greatly improved regarding unit-level driver training. Located inside is a step-by-step method to establish a functional program that has built-in periodic checks to ensure your program is on the right track.
- Use the Army Readiness Assessment Program (ARAP) online survey. Those units that have not conducted this survey were much more likely to have mishaps (on and off duty) inside their formations versus units that embraced ARAP and put the results to constructive use. It can help leaders predict a mishap before it happens.
- Relook mission rehearsals. Are they conducted every time a section, platoon or company moves? What's discussed in these rehearsals? Numerous investigations of recent mishaps revealed that they are not conducted or, if they are, it is a rushed exercise.
- Do you have a summertime water safety program? There has been a significant uptick in Soldier deaths in water-related mishaps



this year. There was a time in the not-so-distant past that the Army conducted water confidence classes to identify weak swimmers. Regardless of the time of year, leaders should identify their nonswimmers and weak swimmers.

These are just a handful of ideas to invigorate your safety programs. Inside most brigade-level organizations there is a USACRC-trained safety professional ready to assist you in your push to safety excellence. I ask that you engage these individuals for their expertise to assist you in keeping our force healthy, mishap free and ready to fight.

I am indeed excited to serve as the command sergeant major for the USACRC. I am very thankful to Brig. Gen. Timothy Daugherty for selecting me to be his battle buddy in this endeavor. This is a great opportunity that allows me to continue to give back to our Army. I am committed to keeping our Soldiers ready and safe, no matter where the Army takes them. I am further committed to providing you the solutions to help you make that happen. ■

Readiness Through Safety

CSM William Gardner

EVERY ORGANIZATION HAS A

SAFETY CULTURE

Would you like the ability to identify the precursors to mishaps?

Would you like a tool that helps in the recognition of hazardous attitudes and behaviors that are possible precursors to human error mishaps?




ARAP

ARMY READINESS ASSESSMENT PROGRAM



U.S. ARMY COMBAT READINESS CENTER

<https://arap.safety.army.mil>



THE ARMY COMBAT

Balancing new physical training with new injury risks

Over the past year, select units have piloted the new Army Combat Fitness Test. The test was designed to better assess Soldiers' abilities to perform common tasks that reflect combat readiness through six events: the dead lift, standing power throw, hand-release push up, sprint-drag-carry, leg tuck hold and 2-mile run. This field-test period is the first phase of replacing the Army Physical Fitness Test, which has been in use since 1980. Several members in units testing the ACFT say it is more rigorous but better than the APFT. While studies are still underway, the Army's transition to the ACFT is on the horizon.

The ACFT will be conducted by all Soldiers Armywide starting Oct. 1, 2019. Soldiers will also conduct the APFT as the official test of record during a one-year transition until Oct. 1, 2020. While some aspects of standards, training and administration are being finalized, procedures and techniques are documented in Field Manual 7-22, Army Physical Readiness Training (PRT), 2012.

The ACFT and associated training requires Soldiers to use several parts of their bodies not previously addressed by the APFT. This supports a more holistic, balanced approach to Army

physical readiness. While the ACFT is intended to improve Soldiers' physical performance while reducing injuries in the long term, as with any new physical activity, it comes with new injury risks.

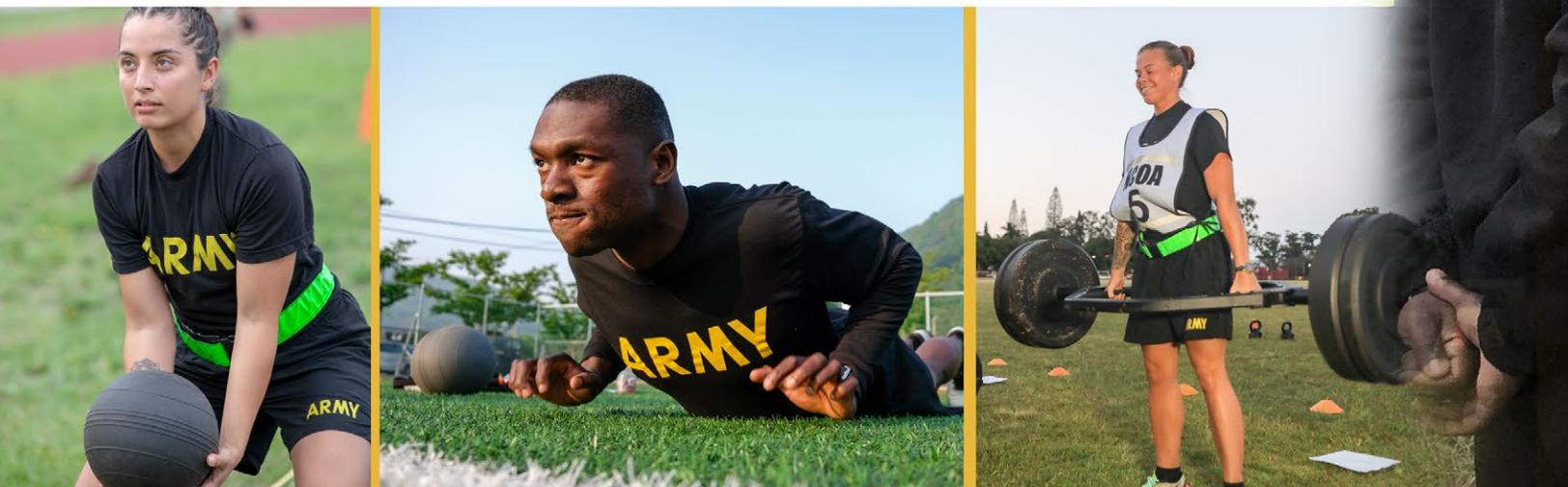
Observations by Army experts suggest certain injuries that may be anticipated (see Table 1). While the Army is sending out ACFT trainers to every unit to help train Soldiers, everyone should be aware of potential new problems and how to avoid them.

Why the change?

Leaders and Soldiers alike have long expressed concerns that the

APFT doesn't adequately measure abilities to perform common required tasks important during deployment. Not all aspects of the APFT are bad, however. Studies have demonstrated that the 2-mile run is an excellent way to test Soldiers' cardiorespiratory endurance, also known as aerobic fitness. Aerobic capacity is linked to the performance of more military tasks than any other aspect of fitness.

"Aerobic capacity is the most important measure of a Soldier's fitness," said Dr. Bruce Jones, a retired Army colonel and medical doctor with the U.S. Army Public



FITNESS TEST

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Health Center. "And weight-bearing physical activities such as running or marching are inescapable routine military aerobic activities."

Jones further explained that, "Poor run times are not only associated with poor performance; they are associated with higher risk of injury." So the 2-mile run time is a reliable way to monitor both aerobic fitness and injury risk.

The push-up test is also linked to key military tasks and is a good measure of upper-body muscle endurance. However, evidence did not support the value of using the sit-up test to measure military task performance.

An in-depth review of key fitness

elements and their association with military tasks found that muscle strength and power are critical to military task performance, as are agility and speed. The APFT does not measure these key fitness elements. The ACFT will now ensure Soldiers' combat readiness determinations include these additional fitness components.

ACFT injury risks

Historically, the majority of Soldiers' injuries have occurred in the lower back and lower body, which includes the knee, lower leg, ankle and foot. Excessive physical training emphasis on distance running and long foot

marches have been to blame.

"While lower body injuries may be reduced with more cross-training, they are expected to remain a primary concern," said Tyson Grier, an APHC kinesiologist. "Soldiers spend the majority of their time on their feet. Their lower body is constantly absorbing forces from carrying their body weight in addition to other loads."



Table 1: Army Combat Fitness Test key injury concerns



3 Repetition Maximum Deadlift (3RM)

Task: lift heavy loads off ground
Condition: 5 minutes; hexbar, weights
Measures: muscle strength
Injury concern: knees, lower back; muskuloskeletal (MSK) and nerve tissues; acute sprains, strains, ruptures; cumulative (overuse) tendons, ligaments, spine



Standing Power Throw (SPT)

Task: mount/climb obstacle/vehicles, lifting
Condition: 3 minutes, 10-pound medicine ball, three throws
Measures: lower body power
Injury concern: back and neck (spine), shoulders; MSK, nerve; acute strains, sprains



Hand Release Push-Up (HRPU)

Task: pushing a load up/over, load carriage
Condition: 2 minutes, hands lift when down
Measures: upper body muscle endurance
Injury concern: shoulder, elbow, back, neck; acute MSK strains, ruptures; cumulative tendons, ligaments



Spring, Drag, Carry (SDC)

Task: pushing a load up/over, load carriage
Condition: 4 minutes, 5 x 50-meter shuttles in the following order, 50-meter sprint, 50-meter sled drag, 50-meter lateral shuttle, 50-meter kettlebell carry
Measures: muscle endurance, power
Injury concern: knees, shoulders, elbows, back; acute MSK strains, tears (e.g., ligament tears); cumulative (e.g., tendonitis)



Leg Tuck (LGT)

Task: climbing, rope bridges, load carriage
Condition: 2 minutes, 7-foot-high x 5-foot-wide pull-up bar or climbing pod
Injury concern: shoulders, elbows, wrist, other; acute MSK, nerve (e.g., fractures, sprains from falling, or muscle, tendon or ligament tears); cumulative tendons, ligments, nerves



2-Mile Run (2MR)

Task: climbing, rope bridges, load carriage
Condition: less than 21 minutes
Injury concern: knees, legs, feet, hip/pelvis; acute MSK (e.g., fractures, sprains from falling, or muscle, tendon or ligament tears); cumulative tendons, ligments; foot blisters



The Army updated its training doctrine to the physical readiness training (PRT) program in 2012 to reduce lower body injuries. The PRT deemphasizes distance running and encourages a mix of training activities to promote strength, agility, balance and power. The program has been associated with a reduction of injuries in initial-entry training; however, Army operational units have not shown comparable trends in injury reduction. Since the APFT has continued to be the test of record, these units may not have fully embraced the PRT.

With the implementation of the ACFT, the Army will still monitor Soldiers' aerobic fitness with the 2-mile run, but training time will also need to be devoted to a variety of other activities. The new tests are not risk-free, but the goal is to slowly build up the body's ability to perform activities that might cause Soldier injuries on the job. While this is to enhance physical performance, Army experts

recognize that the training for and conduct of the ACFT could also increase risk of injuries to the upper body, such as the back and spine, knee, shoulder and elbows.

Some items used for the ACFT, such as the trap/hex bar for the deadlift, have been specifically selected to reduce injury risk. To avoid injuries caused by excessive weight lifts, the maximum weight for the deadlift was limited to 340 pounds, which is considered a moderate weight by serious lifters. Procedures are designed to avoid injury. For example, the grader must spot the Soldier during the leg tuck

to reduce a falling injury. A required warm up before the ACFT and a specific deadlift warm-up period will reduce injuries. Despite these efforts, there will be a learning curve.

"A primary reason for injury resulting from the new test and training activities will be due to improper form and technique," Grier said. "These are new activities to learn. It is very important that Soldiers learn proper technique from the start and avoid developing bad habits."

Maj. Timothy Benedict, an Army physical therapist, added: "We also worry that 'too much too soon' will cause injuries. Some Soldiers

require immediate medical attention. These include strains or tears in arm, shoulder, chest or back muscles, torn knee ligaments, dislocated shoulders, herniated discs in the back, pinched nerves or fractured bones (such as from falling during the leg tuck).

While these acute injuries can occur when Soldiers are conducting military tasks or other personal activities, specific training activities may raise the risk. For example, studies of both professional and amateur weightlifters and power lifters have indicated that use of extremely heavy weights during the dead lift is associated with lower back disc herniation and knee

injuries. On the other hand, some rehabilitation studies have suggested that using lighter weights during the dead lift may be useful to strengthen the back and knees.

An acute tear of fatigued muscles and tendons in the chest, arm or shoulder while bench pressing heavy weights,

such as a pectoralis major rupture, is another highly studied injury. This injury is almost uniquely associated with the bench press activity, and only a couple of past military cases were other causes (parachuting and push-up training). Though the bench press is not part of the ACFT, there is concern that Soldiers may use this activity to train for the ACFT.

Injuries that develop gradually over time from overtraining are known as cumulative or overuse injuries. Overuse injuries occur when a repeatedly used set of body tissues haven't had adequate time to heal and rebuild.

"THE ACFT AND ASSOCIATED TRAINING REQUIRES SOLDIERS TO USE SEVERAL PARTS OF THEIR BODIES NOT PREVIOUSLY ADDRESSED BY THE APFT. THIS SUPPORTS A MORE HOLISTIC, BALANCED APPROACH TO ARMY PHYSICAL READINESS."

will start this training by lifting too much weight, conducting too many repetitions or not allowing days of rest between sessions that stress specific muscles."

While only future surveillance of Soldiers' injuries will be able to identify actual changes to the Army's injury trends, a review of existing evidence suggests potential injury risks associated with the new tests and associated training. Table 1 highlights key injury concerns.

Some injuries associated with the ACFT will be sudden acute injuries. Acute injuries are usually associated with sudden sharp pain and typically

Table 2. Injury prevention recommendations when training for the ACFT

General Risk Reduction

Establish healthy behaviors –

- Don't use anabolic steroids.
- Ensure proper hydration and nutrition.
- Review procedural guidance in FM 7-22, Appendix A.
- Get instruction from a certified trainer on technique frequency and increases to distance or weights, and any unique problems (for example, previous injuries, predisposition to knee injury).

Warm Up

- Prior to any physical training activity, warm up the body with light jogging, arm swings.
- Avoid static or bouncy stretching of cold muscles and joint tissues; this may even cause injury.
- Avoid using anti-inflammatories such as ibuprofen prior to exercise due to potential tissue damage and inability to notice body signals of pain.

Running

- Allow days of rest between, building distance and speed over time.
- Wear comfortable shoes that are not worn out and have a thumbnail space between the toe and end of the shoe.
- Replace some distance runs with sprint intervals.
- Conduct agility sprints (sharp turns of direction) on surfaces that are not slippery to avoid tears to knee ligaments.

Strength-Building Activities; Free Weights and Weight Machines

- Allow days of rest between, building the amount of weight over time.
- Start with a low weight for the first set to continue warm up.
- Adapt weights to be accomplished without imbalance on one side for complete sets. General guidelines are 8-12 repetitions and 2-3 sets.
- While muscle fatigue is expected, avoid complete muscle failure.
- Do not use back braces; they can reduce reliance on proper muscles and increase risk of injury. While braces may be useful for those with an existing injury, lifting may not be appropriate.
- Work opposing muscle groups. For example, excessive size and strength of front shoulder muscles could lead to an imbalance with weaker upper back and shoulder muscles. The imbalance increases risk of injury.
- Avoid bench pressing heavy weights. Other activities can work the same muscles without as much risk of muscle or tendon rupture.
- If using lateral pull-down weight machines, do not pull down behind the neck. The proper technique is to pull in front toward the chin.

“THE ARMY UPDATED ITS TRAINING DOCTRINE TO THE PHYSICAL READINESS TRAINING (PRT) PROGRAM IN 2012 TO REDUCE LOWER BODY INJURIES.”

“Continuing to stress tissues already injured from improper or excessive use or weight will only make the condition worse,” Benedict said.

While delayed muscle soreness can be a normal sign muscles are rebuilding stronger, pain in a joint or bone is not normal. Pain associated with overuse injuries may dull or only occur during the activity. Soldiers may shrug off this pain, but it can become more serious if use continues.

Overuse injuries to the lower body are the most common type of Soldier injury. Overuse to joints in the shoulders and elbows, as well as the knees and spinal joints, are concerning because of the new ACFT. A common shoulder overuse injury is a torn rotator cuff. Though it can occur suddenly, tissues have often already been worn from excessive use. Other common overuse injuries include tendonitis, bursitis and pain syndromes in the knee and lower back. These injuries may lead to long-term chronic or permanent tissue damage.

Why it matters

Injuries critically impact individuals, units and Army performance and cost the Army billions of dollars annually for medical treatment, rehabilitation and re-training, medical disability, and reduced productivity from restricted duties and attrition. Training-related musculoskeletal injuries are the leading reason for temporary medical non-deployment status. Injury can mean Soldiers being out of commission for some time and can notably increase their chances of getting injured again or developing chronic life-long conditions as they age. Though injuries will continue to be experienced by Soldiers, most are preventable.

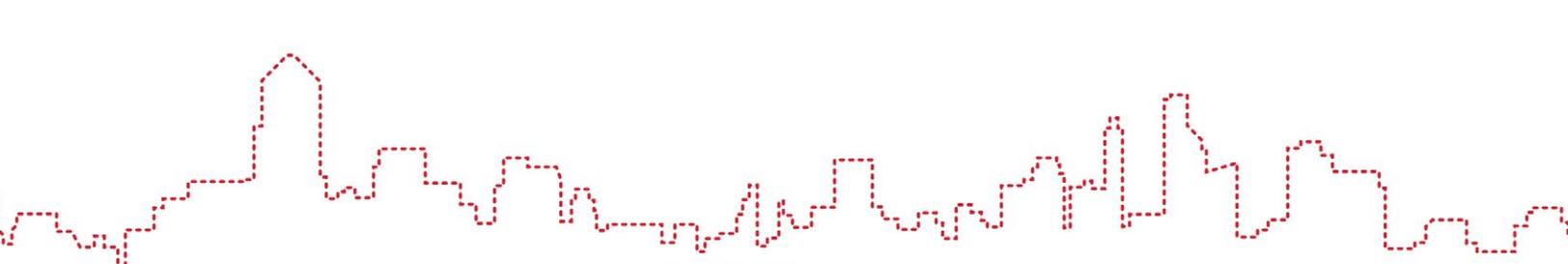
What can you do?

In order to optimize U.S. military performance, Soldiers and leaders must do their part to train smarter, which includes avoiding injury. Table 2 provides some general guidance. Using proper technique, slowly building up intensity and weight levels to acclimate your body, and

allowing rest days between similar activities are the primary keys to minimizing your risk. In addition, follow procedures as taught by ACFT trainers and seek guidance from Army Fitness Centers; doctrine in Field Manual 7-22; certified trainers, such as a master fitness trainer; and use the buddy system to warn one another of poor form and for hands-on help as a spotter to ensure proper balance and range of motion.

If you are injured, stop activities at early signs of pain and seek medical advice. Taking a break from activities temporarily to let the tissues heal can minimize the likelihood of a more serious injury. An injured knee can require weeks or months of rehabilitation. A worn rotator cuff tear can mean surgery. Lower back pain can result in a long-term health condition. To learn more about safely conducting and training for the ACFT, visit www.armyh2f.com. ■





BUILDING AN EFFECTIVE WORKPLACE

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As leaders of Army organizations, our focus tends to fall on planning for and executing the various missions we must accomplish to stay proficient and ready as a force. The result of this natural instinct, however, is that we may sometimes fail to see issues that are not readily apparent within our formations. These potential problems are often deeply ingrained within the organization's foundation and frequently pre-date current leadership, with negative habits and tendencies stretching far back in the organization's history. While commanders are "temporary hires" in the sense that civilian employees and some Soldiers will outlast any given leader's tenure and, therefore, own the organization's foundation, there are several steps we can take to foster a more positive and effective workplace environment, both now and in the future.

Promote civility

In my mind, there is nothing more important in building an effective workplace than promoting civility at every level of the organization. In two separate articles for Harvard Business Review between 2016 and 2018, Dr. Christine Porath, an associate professor of business at Georgetown University, discussed the costs of incivility at work. After 20 years of surveying workers in a variety of industries across the United States, she found that 98 percent of respondents had experienced rude behavior

at work, while 99 percent had witnessed it.¹ Porath believes incivility degrades employee performance by interfering with information processing, short-term memory, and cognitive ability.² I, and I am sure many of you, have seen and dealt with the negative effects of disrespect firsthand.

It is not enough to simply expect civility — the change begins with you. If you are not modeling civil behavior yourself, you cannot expect civility to take hold and grow within the organization. According to Porath, leaders can both display

and encourage civility by:

- Articulating the organization's values and setting expectations for respectful behavior;
- Defining what civility means to them;
- Giving employees basic training in civility;
- And coaching employees on active listening, giving and receiving feedback, and dealing with difficult people.³

At the end of the day, promoting civility does not have to be an academic exercise. You can accomplish it through an easy "hi" or "good morning" when you meet someone in the hallway. Walk around and talk to the people who work for you, Soldiers and civilians alike. Subordinates often feel far removed from the command team, and you taking time out of your day to simply ask how things are going will go a long way toward setting a positive tone that proliferates through the ranks. Also use your "town hall" updates to discuss your personal philosophy on civility. Taking just a few



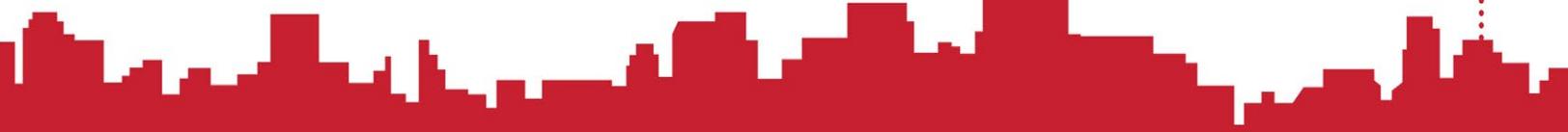
minutes to talk about respect with your entire workforce present will have a big impact in a short amount of time. As with any other training mission, promoting civility is about making the most of the time you have and providing opportunities for the maximum number of correct repetitions. Your workforce will soon “get it,” and your successors in command will thank you for it.

Ensure information flow

Communication is the number one issue I have encountered as a leader at every level of command. Employees want to be informed, and open communication helps build trust in leadership. There are several tools for gauging communication in your organization, including command climate surveys and the Army Readiness Assessment

Program. Then, once you have an idea on areas to improve, brainstorm some simple ways to keep the information flow open within mission limitations. Some strategies I have found particularly effective during my time in command include regular battle rhythm events like all-hands updates and working groups for key mission areas; informal sensing sessions where employees are free to discuss their concerns and propose solutions; monthly email

messages to the team outlining upcoming events or organizational milestones; regular emails to subordinate leaders, who are free to share with their teams, that provide guidance on expectations and project deadlines; and open invitations to the workforce to travel with me, by request, as practical to local engagements. There are many venues you can use to share both your thoughts and the organization’s goals — start by picking one you feel





are working toward. In my personal experience, “work with a purpose” is a critical element of job satisfaction. There is no motivation in coming to work every day thinking what you do makes no difference. The Army



is a big machine with countless and varied missions, and there is room for all of us to have an impact. Your communication plan should reiterate your organization’s



mission, goals, and objectives and outline your personal vision for accomplishing each. This step will not only give your employees purpose in their jobs, but also improve the information flow we often find lacking. Understanding what we do and why we do it, as well as continually refining how we achieve our goals,

comfortable with and build communication from there. The end result will be greater buy-in from your employees and a more engaged organization overall.

Articulate the organization’s goals and philosophy

If your organization does not have clearly stated goals and an overarching philosophy, your employees will not know what they

means no work is ever done in vain.

Encourage ownership of one’s path

Over the years I have come to believe, through both personal experience and observation of those working around me, that the three primary elements of happiness on the job are money, location, and flexibility for family time. However, it is a rare occurrence that you get

all three, especially as a Soldier who goes where the Army says. This is where owning one’s decisions and, therefore, their life’s path, becomes valuable. Everyone gets discouraged at various points in their careers, but leaders can help their Soldiers and even civilian employees by encouraging them to accept the decisions they have made and how they led to where they are in life, while also exploring how they can change their path if they want. The change might mean more education, separating from the Army earlier than planned, or in the case of civilians, leaving a longtime job they have become very comfortable with. But we should always counsel that changing paths often involves trade-offs. Again, you will be very lucky to get all you want out of a job — most of the time we have to settle for most of what we want.

Promote a strong sense of self-worth

Promoting a strong sense of self-worth is really a culmination of the four factors outlined above. When employees are treated with civility and respect, feel “in the know” through unfettered communication, have a firm understanding of the organization’s mission, goals, and objectives and how they fit in, and have taken ownership of their unique career paths, they will feel more valued and, in turn, more confident in what they do every day. Emotional intelligence in the workplace is a fairly old concept but remains relevant in organizational theory. The idea that taking heed of emotions at work, rather than simply thinking with our brains and expecting others



to do the same, might seem counter to the traditional way our Army does business. However, multiple studies have shown that organizations using emotional intelligence to create a high-quality work environment have more trusting, confident, and loyal employees.⁴ By simply showing your employees you value them and their work and encouraging direct supervisors to do the same, you are building a more emotionally intelligent organization and nurturing self-worth within your employees. This does not mean everyone will get a promotion (and leaders should discuss clear paths to career progression with their subordinates on a regular basis); rather, accomplishments will be recognized and celebrated, and employees can feel proud of themselves and their work, regardless of rank or grade. Likewise, it is important to acknowledge the feelings of those individuals who cannot overcome the fact their boss is not exactly the person they want them to be — even if that boss is

you. We cannot make everyone happy all the time, but we can counsel our chronically unhappy employees that their self-worth is not determined by what we or anyone else thinks of them or their work. Again, by showing we care even when we disagree, we can help all our subordinates move forward from job-related malaise. It takes deliberate effort for commanders to instill a sense of self-worth in their workforce, but the payoff is great.

Conclusion

Building an effective workplace will not happen in a day, nor will you complete the task in the short time you have in command. But you can start the process for those who follow you and those you leave behind, leaving a positive, lasting legacy for Soldiers and civilian employees to come. Both our current and future generations deserve our very best efforts — it starts with these simple steps today! ■

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PROS USE SEAT BELTS:

The Killer App to Avoid Being Killed



It was a spectacular, mid-winter morning. The weather was cool with a light breeze curling down the western slope of the Tiefert Mountains in “the box” at Fort Irwin, California. Three junior enlisted Soldiers and their sergeant maneuvered their Bradley Fighting Vehicle along a sandy track to their training evolution. It was the first time the junior Soldiers had been in such an intensely realistic training situation, and their squad leader was proud of their progress and enthusiasm for the mission.

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The young NCO reflected on the quality of their training and the robust support they were receiving from the National Training Center observer controllers and the leaders from their own armored brigade combat team. These warriors were getting the chance of a lifetime to learn how to improve their skills under the most demanding conditions with maximum repetitions as well as increase their confidence in preparation for an upcoming overseas combat tour.

Then, in what at seemed like an eternity, but in reality was just a few seconds, the metal-grinding din of a still-running and badly damaged engine filled the air and everything went black. As the sergeant slowly regained consciousness, he found himself inverted, in pain and disoriented — the smell of fuel and his own blood permeating his nostrils. Six inches from his face was

one of his specialists, contorted in a grotesque position with his head at a 90-degree angle to his neck and bleeding from the mouth, nose and ears. The young Soldier made a few faint gurgling sounds as his body took its last breath. Groans followed from the other two junior Soldiers somewhere in the dark space.

They'd later learn their vehicle had veered from its track, careened over a 30-foot wadi, landed hard on its roof and rolled before coming to a creaking halt. The Bradley's cabin held its shape and provided occupiable space required for a survivable crash. Unfortunately, there was one fatal flaw — none of the Soldiers wore seat belts and, as a result, became projectiles inside the vehicle. Had they chosen to buckle up, the crew likely would have suffered just some aches and scrapes. Sadly, that wasn't the case, and the end result was one

Soldier dead, three others injured and numerous lives shattered.

The story above is frustratingly repetitive. In the first three months of 2019, six Soldiers died from injuries sustained in on-duty tactical motor vehicles mishaps. All six were unrestrained. Data overwhelming supports the reality that seat belt use is the single most important element to surviving a motor vehicle accident. It's the law in most states and mandated by Army regulations. So why do Soldiers choose to ride unrestrained?

When traveling in a vehicle, occupants have kinetic energy (e.g., the energy possessed by moving along). Normally, when you want to stop a vehicle, you have to get rid of that kinetic energy, preferably by applying the brakes. In a crash, this can't happen due to



the deadly combination of sudden impulse, sustained momentum and a compressed time frame. Modern automobiles are engineered to include crumple zones, which absorb the deceleration force experienced during a crash and prevent it from being transmitted to the vehicle occupants. Those who wear seat belts participate with this technology and ultimately benefit from it. An unrestrained occupant, however, defeats much of this lifesaving design.

In every crash where passengers are not wearing a seat belt, there are three collisions. The first collision causes the car to buckle and bend as it hits an object and comes to an abrupt stop. The second collision occurs between the occupant and something in the vehicle's interior. For example, the driver's chest striking the steering wheel.

The third collision happens when the body's internal organs hit the chest wall or skeleton. And, in the case of coup-contrecoup, there are aftershock collisions after the third strike, where the brain sustains injuries at both the impact site and its opposite side when it rebounds.¹ Even when wearing a seat belt properly, depending on the impact of the crash, you can probably expect a broken collar bone. However, a broken collar bone beats a dead body every single time.

Higher-speed crashes may result in occupants breaking ribs. The more energy absorbed by the ribs, the more that break. Once enough are broken, the chest loses its structure and the ribs become sharp objects that can pierce the lungs and other vital organs. The carnage worsens if the space between the lungs and the ribcage gets punctured. The

chest will expand as normal, but the lungs won't go with it, which is known as a pneumothorax. It's one of the most common injuries in high-speed frontal crashes.

Side impacts have their own gruesome results. While the front ends of most automobiles are built to crumple in a controlled manner, side-impact crashes are much more damaging due to less protection in that area of the vehicle. Side impacts often result in more severe injuries to the thorax and upper body. There are also a lot more rib fractures and damage to the lungs and internal organs. Pelvic fractures are a particular problem because of the height of the bumper of the car that strikes another vehicle. And don't forget your bowels and other internal organs, which, when ruptured, spill digestive juices and other fluids into and around the rest of your body.



When the bowel is busted, waste products pour around the inside of the body, and the damage continues.

The earliest — and still some of the best — research into crash tolerance limits was conducted in the 1940s and 50s in the field of aviation medicine. These studies investigated how to protect pilots and astronauts from ejection forces of high-speed travel. Dr. (Col.) John Stapp used himself as a test subject to assess the limits of human tolerance in a high-G environment.²

From Stapp’s work, we know that a mere 10 percent increase in the speed of your car, say from 50 to 55 mph, results in an increase of 20 percent in energy absorbed and a

similar increase in crash forces. So, the injuries aren’t just 10 percent worse; they’re more like 20 percent worse. Likewise, for a 10 percent decrease in speed, crash injuries don’t decrease just by 10 percent. They actually decrease by 20 percent.

Conclusion

One of the safest choices drivers and passengers can make is to buckle up. Most Americans understand the lifesaving value of the seat belt; the national use rate was 89.6 percent in 2018. Of the 37,133 people killed in motor vehicle crashes in 2017, 47 percent were not wearing seat belts. In 2017 alone, seat belts saved an estimated 14,955 lives and could have saved

an additional 2,549 people had they simply buckled up.³ Every life is precious and worth protecting on duty, off duty, in garrison and in combat. Understand the potentially fatal consequences of not wearing a seat belt and make sure you and your family are properly buckled up before starting your engines.

Leaders, you should:

- Reaffirm at every opportunity just how valuable beyond measure your troops are — to themselves, their families and their country.
- Lead with your own example and talk about the need to slow down and buckle up at every formation, especially before holiday weekends and other key times. Don’t rely on check-the-box programs that simply give lip service to seat belt use.
- Emphasize the vital importance of seat belt use just as you would weapon safety or any other high-visibility threat to our formations.

Like so many other good habits, instilling a healthy routine of buckling up before the ignition switch is engaged costs nothing; however, it is the critical component to enabling the myriad other safety measures to work for saving lives. ■

“IN THE FIRST THREE MONTHS OF 2019, SIX SOLDIERS DIED FROM INJURIES SUSTAINED IN ON-DUTY TACTICAL MOTOR VEHICLES MISHAPS. ALL SIX WERE UNRESTRAINED.”

¹ https://www.researchgate.net/publication/7588858_The_contrecoup-coup_phenomenon

² <https://www.businessinsider.com/john-stapp-human-crash-test-dummy-usaf-2016-5>, and, <https://www.popsci.com/blog-network/vintage-space/john-paul-stapp-real-life-rocket-sled-man#page-2>

³ <https://www.ncbi.nlm.nih.gov/pubmed/16174940>

Get the tools before the road gets rough.



Driver's Training Toolbox

<https://safety.army.mil>



SCAN HERE FOR
MORE SAFETY
INFORMATION





Airport pavement markings and signs are intended to provide useful information to pilots during takeoff, landing and taxiing. But how effective are these markings and signs when a PI doesn't understand what the depicted information represents?

We are all guilty of providing our PIs with progressive taxi instructions. Think about it: You tell Joe to, "Turn here," followed by, "Hold here," and then, "OK, we are cleared to continue." This needs to stop. We aren't teaching these PIs to interpret markings and signs for themselves; we are teaching them to memorize a process without understanding why.

The problem presents itself when a PI is still relying on you to tell them where to go — despite hearing the clearance from ground and/or tower. At the same time, you are on the radio deconflicting something while the PI is trying to talk to you. PIs are not taught in flight school to interpret airport markings and signs. They have

been given progressive taxi instructions throughout flight school, progression and their training flights, and they get good at mimicking behavior rather than understanding the process.

So here's my anecdote. A few weeks ago, I had a 250-plus-hour PI fishtailing all over the airfield. He was slow on the turns and the fuselage was leaning to one side — typical PI stuff. I asked him if he was all right since he had a tendency to overcorrect the aircraft every three to five seconds and ride the brakes. He told me he felt uncomfortable during ground taxing because he could never align the tail wheel on the center of the black inscription on the taxiway. I chuckled and told him to stay situationally aware and

focus on not hitting anything.

As the PI proceeded to ground taxi from ramp to ramp, I told him I amended our original request to make way for other aircraft. I asked him to go ahead and proceed to an adjacent taxiway and then to the hold-short line. He looked at me and said, "What?" To my surprise, he did not know which taxiway we were on, let alone what I was talking about. So what did I do? I gave him progressive instructions.

I use this anecdote to highlight and correlate the growing number of ground taxi mishaps in aviation, which I believe is a result of inexperience and lack of ground school training. Although it may only be one small element of a larger problem, I would

PROGRESSIVE INSTRUCTIONS

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argue it is a contributing factor. The pilot in command is not always readily available to provide immediate assistance. The PI needs to understand the operational environment and be situationally aware.

As pilots, we are in a profession of lifelong learning. It's easy to point the blame at flight school and say, "Well, we never discussed markings and signs." As professionals, let's take some personal responsibility and do some reading before we have any more of these preventable mishaps. ■

FYI

A runway holding position marking consist of four yellow lines, two solid and two dashed, spaced 6 to 12 inches apart, and extend across the width of the taxiway or runway.

Runway side



Taxiway side



Alcohol and Water Don't Mix

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According to U.S. Coast Guard statistics, alcohol use is the leading known contributing factor in recreational boater deaths and a leading contributor in boating accidents. I know from my experience in tracking water-related fatalities nationwide that alcohol is also involved in many swimming deaths. What you may not know are some of the specific reasons why boaters and swimmers under the influence are more likely to drown.





As a park ranger at different lakes for many years, I can't tell you how many times I've heard people say that they don't understand why their loved one drowned because they were such a strong swimmer. When I find out that the deceased had been drinking, I know there are a couple of reasons why it might have happened. The first that comes to my mind is the inner ear condition (caloric labyrinthitis) associated with the sudden cooling of the skin and hyperventilation. It can cause those who are intoxicated to become disoriented underwater and not know which way is up. People who jump or fall in the water can become disoriented and swim down instead of up to safety, causing them to drown.

People jumping or falling into cold water can also drown due to an involuntary gasp reflex that can uncontrollably cause them to inhale water. Some believe that suddenly entering any water less than body temperature can cause an involuntary gasp reflex, but most water safety experts say that water less than 60 degrees is the danger zone.



Alcohol delays your reaction time, so a gasp reflex underwater may be another reason why people under the influence are more likely to drown.

Everyone knows that alcohol can impair your judgment, balance, vision and reaction time. Also, boaters know

how exhausting a day on the water can be even if you're not drinking alcohol. What you may not be aware of is that this fatigue is called "boater's hypnosis." It is caused by the effects of sun, glare, wind, noise and motion (vibration) of the boat. These boating stressors can slow your reaction time almost as much as if you were legally intoxicated. Adding alcohol to this condition intensifies the effects of these boating stressors, just as each drink multiplies your risks of a boating accident.

Operation Dry Water is a nationally coordinated effort to educate boaters about the dangers of boating while under the influence of alcohol



Most people never think they are going to be involved in a boating or swimming tragedy. Those who have lost loved ones or who have been seriously injured in alcohol-related incidents want you to know it could happen to you too. In addition to not drinking while boating or swimming, the best protection is to always wear a life jacket. Please share this information to help us spread

"OPERATION DRY WATER IS A NATIONALLY COORDINATED EFFORT TO EDUCATE BOATERS ABOUT THE DANGERS OF BOATING WHILE UNDER THE INFLUENCE OF ALCOHOL OR DRUGS."

or drugs. It is a year-round campaign with a heightened enforcement weekend from July 5-7. Law enforcement, recreational boating safety educators and volunteers will be out informing boaters about safe boating practices and removing impaired operators from the water. Find out more about Operation Dry Water at www.operationdrywater.org.

the awareness of the dangers of boating and swimming under the influence so we can all have safe enjoyable experiences on and in the water this summer. ■

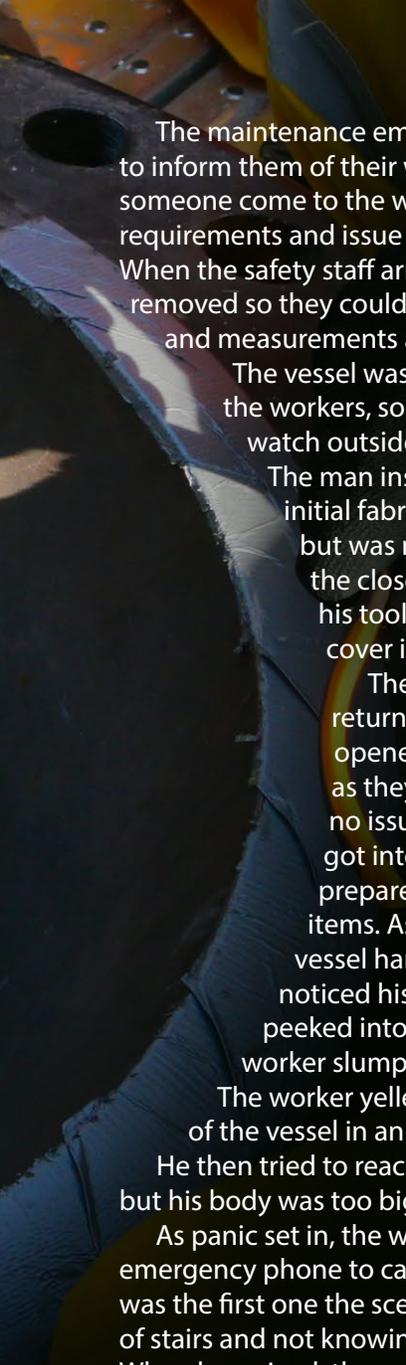




CONFINED SPACES

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On a sunny day with the temperature in the 80s, two maintenance employees were given a work order to complete fabrication work inside a vessel to elevate pressure on the piping system. The company they worked for produced plastic chips used to make various types of containers. Portions of the system use nitrogen to push the chips through the maze of pipes for further production. The workers were located on the top floor of the building, which was seven stories high. The vessel was located on a platform another eight feet in the air.



The maintenance employees called safety personnel to inform them of their work order. They asked that someone come to the work area to perform the safety requirements and issue the permits to start the job. When the safety staff arrived, the manhole cover was removed so they could perform all necessary checks and measurements and complete the permits.

The vessel was only big enough for one of the workers, so the other employee stood watch outside for additional safety purposes.

The man inside the vessel worked on the initial fabrication job for several hours, but was not able to complete it by the close of business, so he packed his tools and replaced the manhole cover in case of inclement weather.

The next day, the two workers returned to complete the job. They opened the manhole cover just as they had the previous day with no issues. Once again, one worker got into the vessel while the other prepared the gear and other work items. As the worker outside the vessel handed down some tools, he noticed his buddy had gone silent. He peeked into the vessel and saw the other worker slumped over and unconscious.

The worker yelled and banged on the side of the vessel in an attempt to revive his buddy.

He then tried to reach into the vessel to grab him, but his body was too big to get far enough inside.

As panic set in, the worker ran to the nearby emergency phone to call for help. Their supervisor was the first one to the scene, running up seven flights of stairs and not knowing what he would encounter. When he arrived, the panicked worker explained what happened. Fortunately, the supervisor was small enough to get into the vessel and reach the unconscious employee. Soon, though, the supervisor also passed out as the man outside the vessel looked on helplessly.

Safety personnel arrived shortly afterward, connected an emergency safety airline and stuck it into the vessel. As oxygen was pushed into the vessel, the supervisor awoke — groggy and disoriented but fully aware of his surroundings. The safety personnel tried to pull out the supervisor, but he was just out of their reach. They then threw down a rope, which the

“SOON, THOUGH, THE SUPERVISOR ALSO PASSED OUT AS THE MAN OUTSIDE THE VESSEL LOOKED ON HELPLESSLY.”

supervisor tied around the unconscious maintenance worker before climbing up and out of the vessel and passing out again. After a couple of attempts, the unconscious maintenance employee was also pulled to safety and the two men were transported to a hospital for medical attention. Fortunately, both survived.

Afterward, the safety personnel confirmed the cause of the mishap. While the manhole cover was closed overnight, nitrogen seeped from a non-air-tight valve and displaced the oxygen content of air. This caused the maintenance worker and his supervisor to fall unconscious when they entered the vessel.

When the vessel was checked by safety personnel to confirm it could be safely entered for maintenance, that measurement and permit were only good for that particular day. If work is not completed within that day, all of the safety checks must be conducted again before work can resume inside. There should also be a device inside the confined space to continuously monitor the air quality. In addition, ventilator fans can provide extra protection by ensuring a steady oxygen flow inside the vessel.

If you ever find yourself in a similar situation, resist the urge to go inside the confined space to attempt a rescue. The air quality could be hazardous and result in you, too, being rendered unconscious. It's always best to call for help immediately and monitor the situation from the outside. ■

FYI

For more information on preventing confined space mishaps, visit the U.S. Army Combat Readiness Center's workplace safety website at <https://safety.army.mil/ON-DUTY/Workplace/Confined-Space>.

There I was, arriving to my new unit as the safety officer and learning there was no pre-accident plan (PAP) or mishap response plan (MRP). The unit was using a plan the contractors had in place and nothing to cover the military side of the house. This was wrong no matter how you looked at it.

A unit needs to have an executable plan in the event something goes wrong and first responders are needed.

A unit never wants to discover its plan has flaws after receiving an initial mishap/incident notification. It doesn't matter whether you call it a PAP or MRP, there needs to be an efficient, effective and detailed strategy focused on the survival of the occupants involved. Conducting systematic rehearsals and reviews of functional areas ensures key players are informed of their roles and responsibilities in the event of a mishap. Every rehearsal needs to be treated as a real-world mishap response to maximize the training opportunity for all individuals or agencies that may have a roll in the response.

Commanders from garrison down to the unit level need to coordinate and integrate their plans to facilitate the best possible response. The unit operations officer develops and administers the plan with the technical assistance of the unit safety office in accordance with Department of the Army Pamphlet 385-90, Army Aviation Accident Prevention Program. Rehearsals of these plans are required quarterly and need to be documented to allow units to find discrepancies or flaws. However, documentation of

the drill/exercise is only part of it. A detailed after-action review should also be conducted to ensure your control measures and execution were effective. Even a well-rehearsed plan has room for improvement.

As an aviation safety officer and mishap investigator, I'm amazed there are units that seem to fail at taking seriously the importance of establishing, practicing and executing a good response plan. According to the consolidated fiscal 2018 FORSCOM Aviation Resource Management Survey Trends, version 23.1, an average of 49 percent of active-duty, National Guard and Reserve units surveyed had an effective PAP. Units need know the purpose and importance of the PAP/MRP. Coordination with garrison and civilian crash rescue agencies in the local area allows your unit to understand what assets are available in the event they are needed.

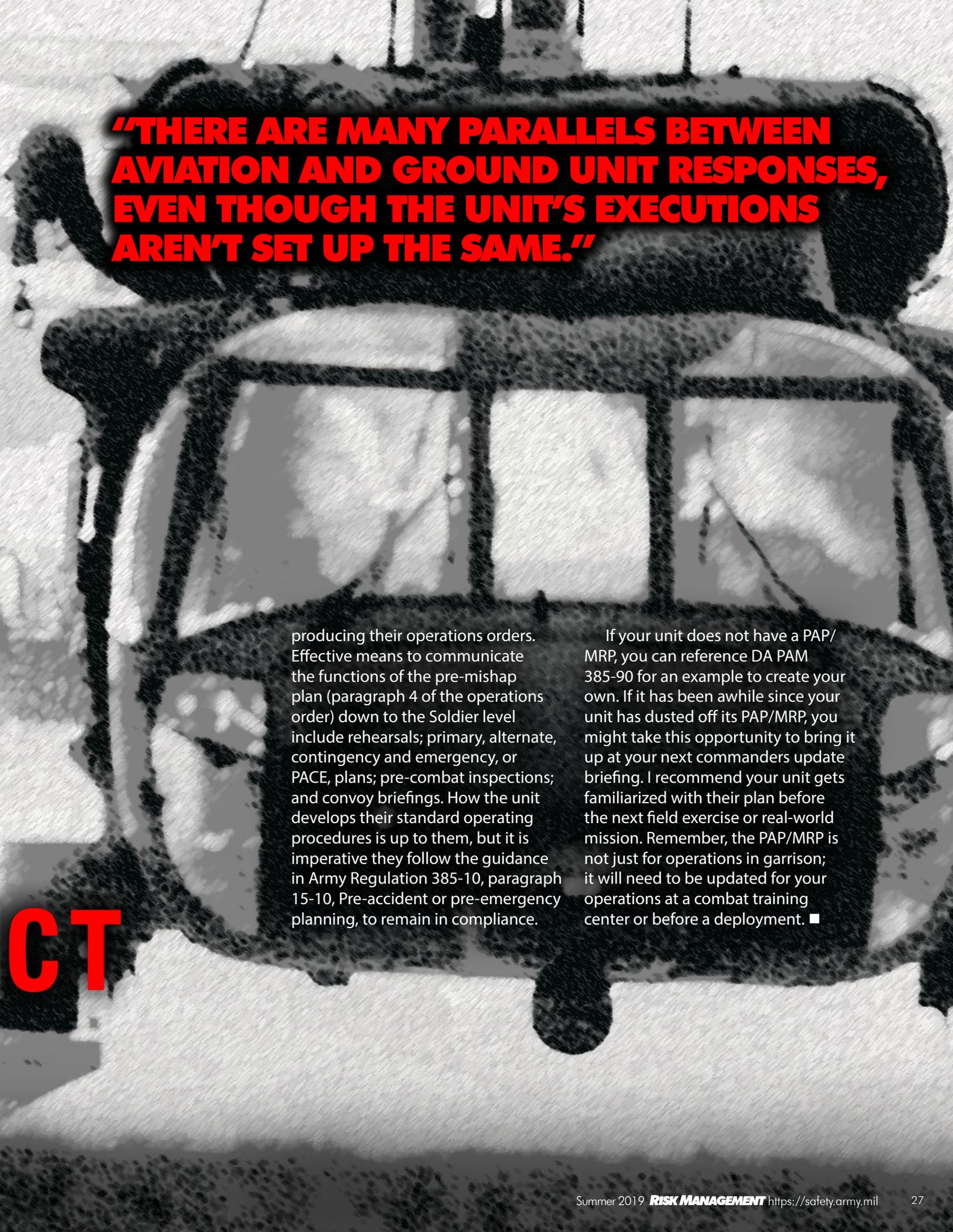
There are many parallels between aviation and ground unit responses, even though the unit's executions aren't set up the same. Primary and secondary notification is critical for the survival of those involved and should be the focus of any plan. Aviation units produce

a plan that S3/flight operations administers with technical assistance from the unit safety officers. Units must conduct full rehearsals and document the results.

Ground units typically develop their plans using the Military Decision-Making Process when

Practice Makes PERFECT

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"THERE ARE MANY PARALLELS BETWEEN AVIATION AND GROUND UNIT RESPONSES, EVEN THOUGH THE UNIT'S EXECUTIONS AREN'T SET UP THE SAME."

producing their operations orders. Effective means to communicate the functions of the pre-mishap plan (paragraph 4 of the operations order) down to the Soldier level include rehearsals; primary, alternate, contingency and emergency, or PACE, plans; pre-combat inspections; and convoy briefings. How the unit develops their standard operating procedures is up to them, but it is imperative they follow the guidance in Army Regulation 385-10, paragraph 15-10, Pre-accident or pre-emergency planning, to remain in compliance.

If your unit does not have a PAP/ MRP, you can reference DA PAM 385-90 for an example to create your own. If it has been awhile since your unit has dusted off its PAP/MRP, you might take this opportunity to bring it up at your next commanders update briefing. I recommend your unit gets familiarized with their plan before the next field exercise or real-world mission. Remember, the PAP/MRP is not just for operations in garrison; it will need to be updated for your operations at a combat training center or before a deployment. ■

CT



Safety Culture: Retaining Resources to Maximize Readiness

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The United States Army Combat Readiness Center (USACRC) recently investigated a mishap in which one Army vehicle collided with another, killing two Soldiers. The vehicles in the convoy exceeded posted speed limits and had no experienced leaders present, and the majority of the occupants failed to wear their restraint systems. The purpose of this article is to provide practical advice to avoid situations like these and to set a framework for discussions about safety culture within the Army. Recognizing that there is no panacea for safety in an organization, the information presented here focuses on a number of actionable initiatives that can arm leaders with the knowledge required to make a significant, constructive impact on safety culture. The primary goals of taking such measures are to save lives, to preserve equipment, and to provide the Army with more lethal fighting forces, while avoiding undue risk aversion.

Beyond the aforementioned mishap, the negative effects of poor safety culture are being realized throughout the Army. In fiscal year 2018, 26 percent of the Army's on-duty ground fatalities were caused by Soldiers being struck by or pinned between vehicles or trailers (USACRC, 2019). Additionally, of all Soldiers killed while operating or riding in a military vehicle over the past five years, 71 percent were not wearing seat belts or restraints (USACRC, 2019). In units where safety is an active part of the established culture, the tragic mishaps mentioned above are less likely to occur. The following 10 recommendations identify specific actions that leaders can take to improve the safety cultures of their units, to retain resources, and to maximize readiness.

1. Enforce accountability

Consistently, Soldiers are killed or injured as a result of violating basic Army safety standards. These unfortunate events continue to happen because leaders are not holding Soldiers accountable for these violations. Unit awareness of safety issues and policies in place to mitigate these pitfalls is only the first step. Awareness must be coupled with enforcement for safety rules to be taken seriously. Commanders can use letters of reprimand and ultimately Uniform Code of Military Justice action in the event of gross violations of the implemented safety rules. Both action and inaction reverberate within a unit. Appropriate actions, such as the enforcement of consequences, prove that unit leadership takes

safety seriously. Inaction reveals that there are no penalties for blatant disregard of safety policies; thus, Soldiers wrongly believe that no change is required.

2. Establish redline rules

Redline rules are a short list of no-fail safety measures, which everyone in a unit is held accountable to and recognizes. Expecting each Soldier in an organization to be an expert on the nuances of every aspect of safety would be unrealistic. Redline rules provide an overview of a unit's safety priorities and serve as a simple reference for Soldiers to remember. There is a short list of redline rules that fits every organization, and these rules should be reinforced constantly. Examples include:

- Rehearse before every convoy.
- Always use seat belts in vehicles.
- All drivers are trained and licensed in accordance with the Army standard.
- No vehicle moves without the proper ground guides.

3. Seek information on unit safety culture

No leader is able to observe all that takes place within an organization. In *Changing the Hidden Safety Culture* (2018), Robert Pater contends that the manner in which leaders deal with what they do not directly see has a significant impact on how they influence unit performance.

The USACRC has found that the Army Readiness Assessment Program (ARAP) offers leaders valuable insights on unit safety culture and that it is a key indicator of the likelihood of a mishap occurring. New battalion commanders are required to enroll in ARAP within 90 days of taking command. Once conducted by the unit, ARAP provides leaders with a score on a scale of 1 to 5. The USACRC's analytics indicate that units with ARAP scores in the bottom quartile account for a disproportionate amount of reported mishaps, almost 50 percent (USACRC, 2019). If they have not already done so, leaders should enroll as soon as possible. Once ARAP is complete, leaders receive immediate, quantifiable feedback that can help them identify safety shortfalls and inform improvement efforts.

4. Analyze and share information about near-miss incidents

Two questions should come to mind when there is a near-miss situation in an organization: What are we doing to address the situation so it does not occur again? And are we sharing our findings with our sister organizations? Units should dissect each near-miss occurrence in pursuit of the knowledge required to prevent similar mistakes. If an organization is overlooking near-miss situations, then it is forfeiting valuable insights and is destined to repeat the same failures. Leaders must take advantage of these fortunate near misses, learn from them, and share

the resulting knowledge across the Army enterprise.

5. Implement a risk-reduction process

Each unit needs a standardized risk-reduction process for an identified list of operations that it conducts. The risk-reduction process should be guided by a functional document that discusses the hazards of an operation and describes ways to reduce the likelihood of a mishap occurring. When a leader is not comfortable with the hazards associated with an operation, action should be taken to mitigate the risk or to modify the operation. This process should be relatively easy and should not be excessively time consuming. Ultimately, this is a forcing function that encourages Soldiers and leaders to think about the hazards associated with a mission as well as the control measures that can be implemented to reduce risk.

6. Emphasize rehearsals

Whenever units engage in activities that involve the potential for Soldiers to be injured, there should be some form of a rehearsal. The USACRC's analysis of the incidents that occurred over the past five years revealed that poor mission planning contributed to 79 percent of on-duty Class A Army vehicle mishaps (USACRC, 2019). *Field Manual 6-0, Commander and Staff Organization and Operations* (2014), emphasizes the fact that, "Rehearsals are limited only by the commander's imagination and available resources" (page 12-2). A highly complex rehearsal before every mission is not realistic. Leaders should choose the rehearsal method that is compatible with the given mission, time constraints, and resources that the organization has available. Even a simple map or terrain model rehearsal can help Soldiers build a lasting mental picture of how the mission will occur and identify shortcomings in the current plan.

7. Teach Soldiers how to counsel and enforce the counseling standard

An effective way to prevent avoidable reckless mishaps that occur off-duty is through proper counseling. It is leaders' responsibility to teach subordinates how to counsel and to ensure that counseling is done in accordance with the Army standard. When counseling, leaders should discuss the subordinates' goals and objectives, ask about issues that they are facing, and provide feedback on how subordinates can improve. Over the past five years, USACRC data indicates that driver misconduct was a contributing factor in 42 percent of Class A private motor vehicle mishaps (USACRC, 2019). Effective counseling allows leaders to better understand how their Soldiers behave off duty, to recognize red flags, and to help prevent unsafe actions. Counseling establishes a crucial relationship between leaders and subordinates and allows leaders to address safety concerns before they take place.



8. Evaluate driver training and licensing programs

Driver training programs should be comprehensive and realistic. Across the Army, Soldiers are crashing Army vehicles because they are not prepared to operate them when placed in challenging situations. Soldiers' failures in these circumstances are often a result of a lack of training on how to maneuver vehicles in an environment that is representative of challenges faced during actual operations. The USACRC's data show that, over the past five years, 67 percent of unit driver training programs were found to be inadequate and were identified as contributing factors in mishaps involving Army vehicles (USACRC, 2019). When Soldiers complete driver training, they should be prepared to safely operate the trained vehicles in all modes of operation to the standards set forth in *Army Regulation 600-55, The Army Driver and Operator Standardization Program*.

9. Develop an out-of-the-box safety initiative

Out-of-the-box safety initiatives should draw attention to units' most serious safety concerns. One example is micro-engagement. Micro-engagement is the practice of engaging personnel in communication through various forms that require only small portions of time, attention, money, or other involvement. These engagements can be conducted by text messaging, Twitter, Instagram, etc., and can be as simple as a short message from a company commander reminding Soldiers to make an intelligent plan for their weekend activities. The USACRC has published an information paper entitled *Micro-Engagements as Safety Messages* on its website. This paper explains how to conduct micro-engagements and encourages local commands to utilize them as a best practice. Leaders should draw from their experiences to develop unique out-of-the-box safety initiatives that resonate with Soldiers and address units' greatest safety concerns.

10. Ensure leader presence, knowledge, and willingness to engage

During multiple mishap investigations, the USACRC found that the appropriate leaders were not present when their units were conducting dangerous portions of an operation. Rather, they delegated authority to a subordinate who did not have the training or knowledge

to succeed in the given scenario. Whether in combat or while conducting standard garrison tasks, it is essential that Army leaders place themselves at the point of greatest friction. It is here that inherently dangerous operations occur and Soldiers require the most guidance. In these situations, a leader who is knowledgeable about the task at hand and has the gumption to make the necessary corrections is essential to accomplishing the mission safely.

Conclusion

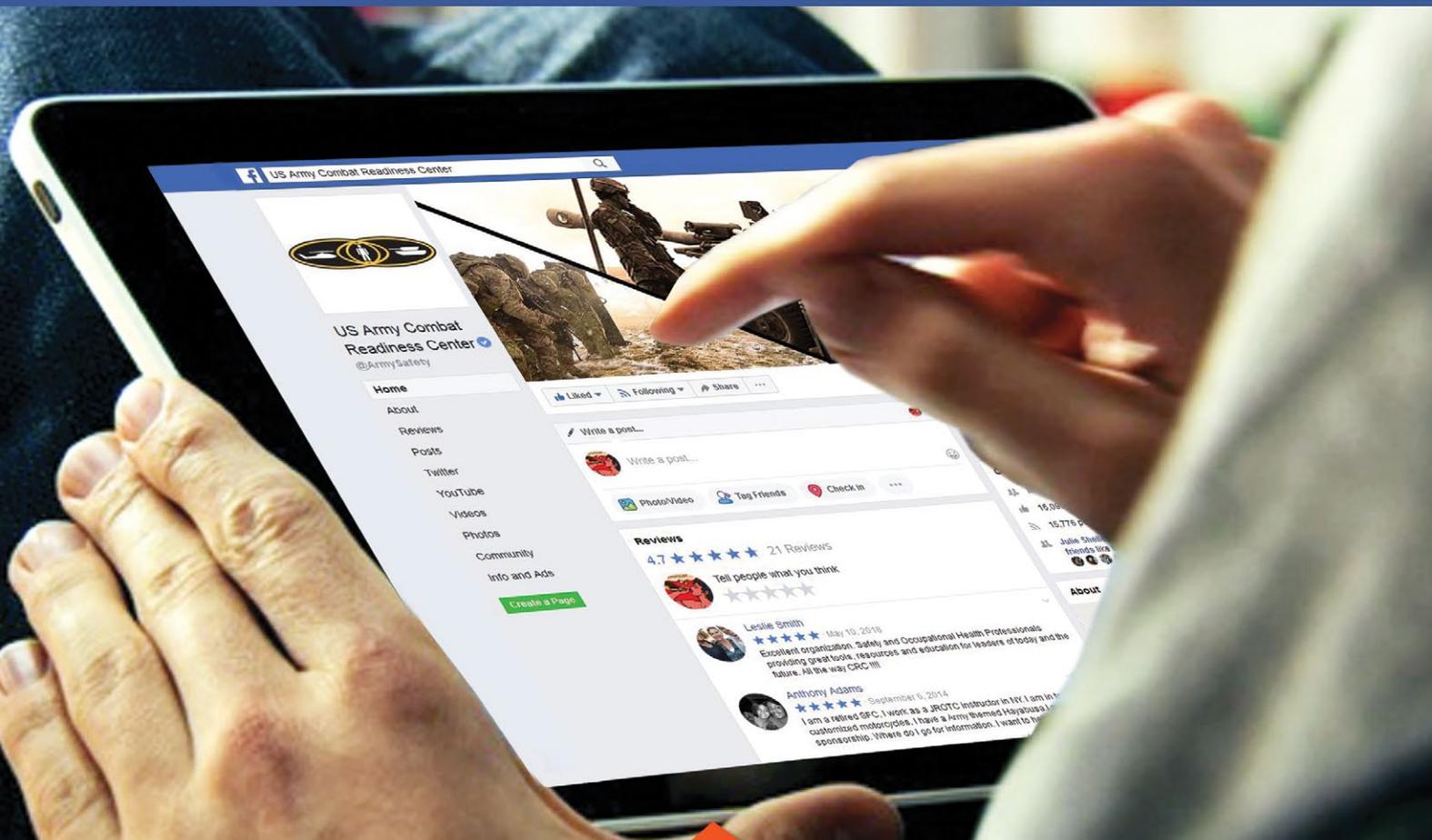
By design, the U.S. Army is frequently called upon to conduct dangerous tasks, but the persistent presence of danger is no excuse for complacency when it comes to safety. In fact, the threat of injury and loss of life should drive all Army leaders to commit to improving their units' safety culture. Following the recommendations in this article will not eliminate the danger inherent to the Army's directive, but it will help to minimize risk and to prevent avoidable mishaps. Leaders must eradicate the mentality that safety is too vast a problem to address and must not be resigned to losing more Soldiers in preventable incidents. When mishaps occur, not only are Soldiers' lives impacted, but also Army resources are removed from the fight and valuable organizational energy must be redirected. Army readiness increases when every asset at a commander's disposal is capable of being applied to a unit's designated mission. For the Army to be an effective lethal fighting force, this readiness has to be prioritized, and safety culture must be on the forefront of all leaders' minds. ■

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<https://safety.army.mil>



SCAN HERE FOR MORE SAFETY INFORMATION



During a live-fire training exercise, a Stryker crews' mission was to maneuver a squad of infantrymen along a designated route to a dismount point and return to the assembly area. As the four Strykers were returning, they reached an intersection and made a left-hand turn onto the main range road. The second Stryker in the movement continued south along the range road for 234 feet before it drifted over the right-hand shoulder. The vehicle commander was ejected from the commander's hatch as the Stryker rolled into a 41-foot-deep eroded ditch that was within feet of the main range road and masked by foliage. The Stryker came to rest upside down on top of the VC. Months prior to the mishap, the eroded ditch was evaluated as a hazard, but numerous garrison agencies failed to assess the risk level and mitigate the hazard until a permanent solution to fix it could be completed. This failure to properly assess and communicate the hazard resulted in a Soldier's death and severe damage to a mission-critical Stryker.

EVERYONE IS A SAFETY OFFICER

Safety is key to accomplishing a commander's intent. It involves the prevention of materiel loss, but the focus is really on saving lives. Each loss, whether in combat or garrison, has a significant impact on our force. Commanders rely on their Soldiers, leaders and civilians to effectively communicate critical information needed to make effective decisions to mitigate hazards and protect the force.

The agencies involved in the Stryker mishap mentioned above failed to communicate known critical information to appropriate

individuals in a timely manner and did not adequately evaluate the risk associated with the eroded ditch. This hindered leaders from making effective decisions to mitigate the ditch as a hazard. All of the agencies were aware of the ditch prior to the mishap but concluded it was someone else's responsibility. This was a failure in the risk management thought process. They forgot safety is everyone's responsibility.

Everyone is a safety officer. Everyone has an obligation to look out for themselves and the

Soldiers, civilians and families around them to heighten safety awareness, promote safety and employ hazard control measures. Army Regulation 385-10, The Army Safety Program, and U.S. Army Installation Management Command's safety program regulation clearly define the requirements, but we often fail to act on them, degrading our safety efforts. Everyone must embrace the safety program and be actively involved. The goal of the safety program is to reach all Soldiers, Department of the



“EVERYONE HAS AN OBLIGATION TO LOOK OUT FOR THEMSELVES AND THE SOLDIERS, CIVILIANS AND FAMILIES AROUND THEM TO HEIGHTEN SAFETY AWARENESS, PROMOTE SAFETY AND EMPLOY HAZARD CONTROL MEASURES.”

ICER

MAJ. BRIAN HARTMAN
Accident Investigations, Reporting and Tracking
U.S. Army Combat Readiness Center
Fort Rucker, Alabama

Army civilians, contractors and their families. Reaching every member of the Army community is paramount in instilling a culture that puts safety first — a culture that protects the force and keeps the Army mission-ready.

Even with the best safety programs in place, we can never become complacent or act as if what we are doing is good enough. The Army continues losing lives through senseless, preventable mishaps. We as an Army need to communicate the actions necessary to verify the agencies involved in the assessment of a hazard, develop the controls necessary to mitigate the associated risks and take action to prevent mishaps. We must understand there are various levels of controls. In the mishap above, simply announcing there was a hazard, informing the units training in the area and marking the location until a more permanent solution to eliminate it was completed would have prevented the loss of a Soldier.

The bottom line is the safety program is about saving the lives of our Army family. We cannot be satisfied with our safety programs or become complacent as long as we are still having mishaps that cause the loss of life. When you practice and teach about safety and speak up when you witness unsafe or risky behaviors, you are saving lives. I cannot think of a higher calling. ■

I remember like it was yesterday. It was almost 0745 and I was nearly at the end of my night shift in the local emergency room, where I'd been working for the past few months. It had been a fairly quiet night, but that was about to change. As I restocked my critical care bays, we received an EMS call alerting us about a 1-year-old in cardiac arrest due to heatstroke. Sadly, upon arrival, all we could do was pronounce the child dead.

After speaking to the distraught mother, we learned she had been on her way to work and stopped to drop off her older child at preschool. She left her other child sleeping in the car seat. While inside the school, the mother got caught up in a conversation with another parent. When she returned to the vehicle 25 minutes later, she found her baby unresponsive. The outside temperature at that time was in the low 80s with a cool breeze. Unfortunately, that was enough to create a deadly situation.

In the past several years, there has been a rise in fatal heat incidents involving children being left in cars. According to the National Highway Traffic Safety Administration, heatstroke is one of the leading causes of non-crash-related deaths among children. These occurrences do not discriminate, and even the most conscientious parent can unknowingly leave a sleeping child in a vehicle. Other risk factors include caregivers who aren't used to having a child in their vehicle, or those whose daily routine suddenly changes.

In 2018 alone, 51 children died from vehicular heatstroke, up eight from the previous year. On average, 38 children will die from heat-related deaths due to being trapped inside a vehicle. Fortunately, these types of deaths are preventable if parents and other caregivers remember the slogan "Look Before You Lock." Make a habit to look for children in their car seats before locking your vehicle's doors. This simple but important step can help protect your children from heatstroke and yourself from becoming a part of this deadly statistic.

In addition, according to www.safekids.org, a nonprofit established to help families and communities keep children safe, heatstroke deaths can be reduced by remembering to ACT:

Avoid heatstroke-related injury and death by never leaving

a child alone in a car, not even for a minute. And make sure to keep your car locked when you're not inside so kids don't get in on their own.

Create reminders. Keep a stuffed animal or other memento in your child's car seat when it's empty, and move it to the front seat as a visual reminder when your child is in the back seat. Or,

DID YOU KNOW?

Even at an outside temperature of 60 F, the temperature inside a vehicle can reach 110 F. A child can die when his or her body temperature reaches 107 F. Deaths caused by children being left in hot cars peak in July.

Look Before You Lock



efore ck

STEFANIE DIAZ
U.S. Army Combat Capabilities Development Command
Ground Vehicle System Center
Detroit Arsenal, Michigan

HARD FACTS ABOUT HEATSTROKE

On average, every 10 days a child dies from heatstroke in a vehicle. In more than half of these deaths, the caregiver forgot the child was in the car. A car can heat up 19 degrees in just 10 minutes. And cracking a window doesn't help. Young children are particularly at risk, as their bodies heat up 3-5 times faster than adults.

Source: <https://www.safekids.org/heatstroke>

place and secure your phone, briefcase or purse in the backseat when traveling with your child.

Take action. If you see a child alone in a car, call 911. Emergency personnel want you to call. They are trained to respond to these situations. Some other tips to help keep your child safe include:

- Invest in a “smart” chest clip, which generates a series of tones that are activated through a wireless receiver to remind a driver that a child is in the car seat within two seconds of turning off the vehicle.
- If someone else is driving your child, or your daily routine has been altered, always check to make sure your child has arrived safely.

Infants and young children are sensitive to the effects of extreme heat and must rely on others to keep them cool and hydrated. Never leave children in a parked car, even if the windows are open. (Remember, pets can also suffer heat-related illnesses, so don't forget them either.) Protect your children and always Look Before You Lock. Don't let a moment of forgetfulness turn into a lifetime of regret. ■

I have ridden motorcycles for most of my life. There have been times, however, where I had to refresh myself with the proper procedures and skills I learned many years ago. One skill that seems to get lost from time to time is the act of looking ahead of where you are riding. A simple acronym that helps me focus by using my eyes and mind rather than my hands and feet is SEE — search, evaluate and execute.

SEE YOUR SUR

CHIEF WARRANT OFFICER 4 JOHN FLAHERTY
Joint Force Headquarters – Alabama
Montgomery, Alabama

“HAVING A SOFT FOCUS AND ROTATING THE HEAD SLOWS DOWN THE FLITTING OF YOUR EYES AND BRINGS A FULLER, SMOOTHER PICTURE INTO VIEW.”

The Motorcycle Safety Foundation characterizes riding as more of a skill of the eyes and brain rather than the hands and feet. Once the basic skills are acquired, safety on the road is more about using your eyes and the brain to help sort out and organize, as well as prioritize, safety factors in traffic. It makes us on-the-fly risk analysts. Situation awareness is one aspect of safe riding or driving, but a safety mindset

2. Take a soft, wide view of things.

If we focus too much on something, our peripheral vision fades, which narrows the field of vision. Soften your focus and let your awareness of the broader field come into view. Most humans have at least 114 degrees of vision with an additional 40 degrees on each side. A soft focus opens up this wider field and reduces the five faults of a too-focused visual aptitude: target fixation, compulsive overscanning, tunnel vision, looking too close and looking too far downrange. Having a soft focus and rotating the head slows down the flitting of your eyes and brings a fuller, smoother picture into view.

ROUNDINGS

is needed for effective hazard perception.

Another important acronym I use is SIPDE, which stands for scan, identify, predict, decide and execute. The SIPDE and SEE techniques create time and space that allow us to control our personal safety margin. They both depend on visual cues by seeing what is where and how it is happening.

This process also engages the brain to retrieve the visual cues from memory. That visual memory helps the brain predict and decide for you how to execute a defensive action. It all starts with the eyes. The brain will follow based on what our eyes see.

Here are three things to do on every ride:

1. Look down the road.

Looking 20 feet ahead of the front tire is too close. At 50 mph, the bike is traveling about 88 feet per second. In 0.176 seconds, you have covered that 20 feet. However, look too far down the road and you'll lose sense of where you are in the picture. As a rule of thumb, you should look at least 100 feet downrange. A good way to judge that is the white lines painted down the center of the road are roughly 10 feet long.

3. Turn your head.

Most humans can turn their head between 60-80 degrees of rotation left and right. We should be able to turn our heads far enough that our chin is almost in line with our shoulders. Mirrors leave blind spots, so a glance or twist of the head brings extra potential threats into our view, which give us better situational awareness. Be smooth, glance, scan and let the brain fill in the blanks. We typically see what we expect to see, so look with an open mind and take in the full spectrum of your surroundings.

In summary, in an article from the July/August 2018 Motorcyclist magazine, Page 84, Ralph Hermens writes, “As a rider, we have to keep our head on a swivel. We have to pay attention to everything around us and constantly be in the moment. Sometimes predicting what other drivers — or in our case, riders — will do can save your life. But assuming someone will behave as we would can be just as dangerous. Leave enough space for those around to be unpredictable, and always give yourself an out.”

Look down the road, soften your focus to widen the view, turn your head to scan all available obstacles and use SEE. It could just save your life. ■

How I Shot Myself

NAME WITHHELD BY REQUEST

One day while watching ESPN, I saw a story about an NFL wide receiver who shot himself in the leg. I wondered how anyone in their right mind could put a bullet in their own leg. I never would have imagined that one day I'd find myself in a similar situation. But there I was, riding in the back of an ambulance en route to the hospital with a severe, self-inflicted gunshot wound to my left thigh.

Back in April 2011, I took my two daughters to my aunt's house in Florida so she could watch them while I attended the Aviation Safety Officer and Warrant Officer Advanced courses at Fort Rucker, Alabama. The drive from Baltimore, Maryland, to Florida wasn't bad, and I arrived in Tampa about 4 p.m. Once there, I prepared myself for the drive to Alabama later that night. I thought I did everything right to prep myself for the five-hour trip, such as eating a good dinner and taking a nap so I would have sufficient rest

the AH-64D Apache Longbow all the way down to a .22-caliber rifle, so no big deal, right? The pistol was still in the car when I rolled into Florida.

I awoke, as planned, at 11:30 p.m., loaded the car and prepared to leave. I decided to put my pistol away since I was no longer in Baltimore. While sitting in the driver seat of my car, I removed my weapon from between the seat and center console. I placed my thumb on the hammer and proceeded to ride it forward when, suddenly, I sent a .45-caliber hollow-point bullet into my thigh!

I'd put my weapon in a non-firing configuration like that numerous times before and it never went off. What was different this time? It could have been many factors, but at that particular moment, I wasn't thinking about

woulda-coulda-shoulda. The bullet went into my leg, shattered my femur and stopped. In shock, I convinced myself I hadn't just shot myself. I placed the weapon on the seat, put my car in drive and proceeded to drive to Alabama.

After about two minutes, I finally came back to reality and

comprehended what just happened. My leg started burning. It felt like someone had dumped gasoline on it and set it on fire. I turned the car around and headed back to my aunt's house. Once there, I walked to the door and told my aunt about my accident. She called the authorities and medical personnel, and I was taken to the hospital.

Amazingly, my car wasn't damaged and there wasn't a drop of blood anywhere. I've had time to reflect on this incident and consider what I should've done differently. For starters, I shouldn't have chambered a round or, if I did, I should've done so properly and not rode the hammer forward in an attempt to clear the weapon. I also should have stored my pistol out of reach from my daughters. Although I've taught them everything there's to know about weapons, sometimes curiosity can get the best of kids.

There's nothing I can do about my accident now. However, I hope my mistake will make others think twice about their decisions when it comes to handling privately owned weapons. ■

DID YOU KNOW?

In an effort to reduce weapons handling mishaps, the U.S. Army Combat Readiness/Safety Center has developed the Range & Weapons Safety Toolbox, available at <https://safety.army.mil/ON-DUTY/Range-and-Weapons-Safety-Toolbox>. Check it out today!

before I got behind the wheel. Little did I know I had already set myself up for failure before leaving Baltimore.

Any time I'm home in Maryland, I keep a .45-caliber 1911 automatic Colt pistol in my car. I've owned the pistol for many years and I'm licensed to carry it in several states. I've also trained on a variety of other weapons, from the 30 mm cannon used on

FYI

Remember to **THINK** weapons safety!

Treat every weapon as if it's loaded.

Handle every weapon with care.

Identify the target before you fire.

Never point the muzzle at anything you don't intend to shoot.

Kep the weapon on safe and your finger off the trigger until you intend to fire.

YOU AND YOUR WEAPON: NEVER HAVE BOTH LOADED AT THE SAME TIME

**Never handle a weapon
under the influence.**

Alcohol was identified as a factor in many fatal off-duty privately owned weapons-handling accidents.



**RANGE & WEAPONS
SAFETY TOOLBOX**

**CHECK IT
OUT TODAY!**



<https://safety.army.mil>

There are many things in the desert that can hurt you. When you are unfamiliar with the area, it is hard to recognize when some of those things are present. Having a battle buddy can help mitigate those risks. I often thought adults should be responsible for themselves and didn't need another Soldier with them at all times to make sure they're behaving. As my time in the Army has progressed, my thinking changed. The following incident is an example why.

UNFORESEEN HAZARDS

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During a recent deployment to the U.S. Army Central Command area of responsibility, I mentioned to the RQ-7B maintainers my preference that at least two unmanned aircraft system repairers (15E) be present during every launch and recovery. Even though our experienced maintainers were more than capable of accomplishing pre-launch tasks autonomously, I knew there were many unforeseen hazards. I didn't want any of my skilled maintainers being taken out of operations for something that may have been prevented had there only been one other person present. Due to a lapse in judgment, that is what almost happened.

It was July and the weather was hot and dry. We were supporting ground operations with 24-hour intelligence, surveillance and reconnaissance and had established a good battle rhythm. We were able to

allow the six maintainers to work on three shifts, eight hours each — 0800-1600 hours, 1600-0000 hours and 0000-0800 hours.

The morning shift was getting ready for our 1000 hour launch and, unbeknownst to the platoon leadership, the maintainers only had one 15E at the launcher performing the pre-flight. A young maintainer on his first deployment was doing everything correctly, just as he had for the past few months. This time, however, was different. It wasn't different because of operations, set up or anything the aircraft operators were doing. It was different because an irritable, aggressive and deadly saw-scaled viper decided to coil up on the rails of the launcher.

A saw-scaled viper found in Afghanistan is believed to be responsible for more human deaths than all other snake species found in the region combined. Thankfully, the maintainer,



SEEN

“A SAW-SCALED VIPER FOUND IN AFGHANISTAN IS BELIEVED TO RESPONSIBLE FOR MORE HUMAN DEATHS THAN ALL OTHER SNAKE SPECIES FOUND IN THE REGION COMBINED.”

as he was running his hand down the strap of the launcher, heard the hissing sound the viper makes when it feels threatened. Alarm bells immediately went off in the maintainer’s head and he stepped away safely.

Had the maintainer not heard the viper and been bitten during the pre-flight, there is a good chance he would have died. He was alone and away from the ground control stations and main living area for the rest of the platoon.

Fortunately, we were able to use this close call as a teaching moment and emphasize the fact that it wasn’t because we thought it took two for the job. We knew they were proficient in their duties. It’s for the unforeseen hazards. Soldiers are irreplaceable assets in our platoon and we want them looking out for each other. We did miss our launch time while we waited for pest control to remove the uninvited visitor, but we didn’t lose a maintainer. That’s what was most important. ■

What are heavy metals? The answer depends upon who you ask. A metallurgist would define heavy metals based upon the density of the material. A physicist would classify them by their atomic number on the periodic table. A chemist would base the definition upon the chemical behavior of the element. While there are differences in opinion over what should be included in the group when referring to heavy metals, the one thing everybody agrees upon is that they are toxic at low concentrations and can create severe health hazards.

Protecting Against Heavy Metals

JERROLD SCHARNINGHAUSEN
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Some of the most common heavy metals exposures on military installations include lead, chromium, cadmium and beryllium. In very low concentrations, heavy metals can be essential in maintaining various biochemical and physiological functions in living organisms. Common sources of heavy metals in the workplace include mining and industrial wastes; vehicle emissions; lead-acid batteries; fertilizers; paints; treated timber; and the aging water supply infrastructure.

Heavy metals tend to bioaccumulate. Bioaccumulation occurs when an organism absorbs a substance at a faster rate than it is excreted from the body. The accumulation in your body can occur through a variety of routes, including ingesting contaminated food and water; breathing contaminated air; and absorption through the skin. Toxicity will depend upon the route of exposure, the amount absorbed by the body and the duration of exposure (i.e., acute or chronic).

Numerous public health measures have been undertaken to control and prevent heavy metal toxicity occurring as a result of occupational exposures. Heavy metal toxicity is involved in a variety of physical processes, some of which the exact mechanism is not clearly understood. Each metal, however, is known to have unique features and properties that conform to specific toxicological mechanisms of action.

Lead

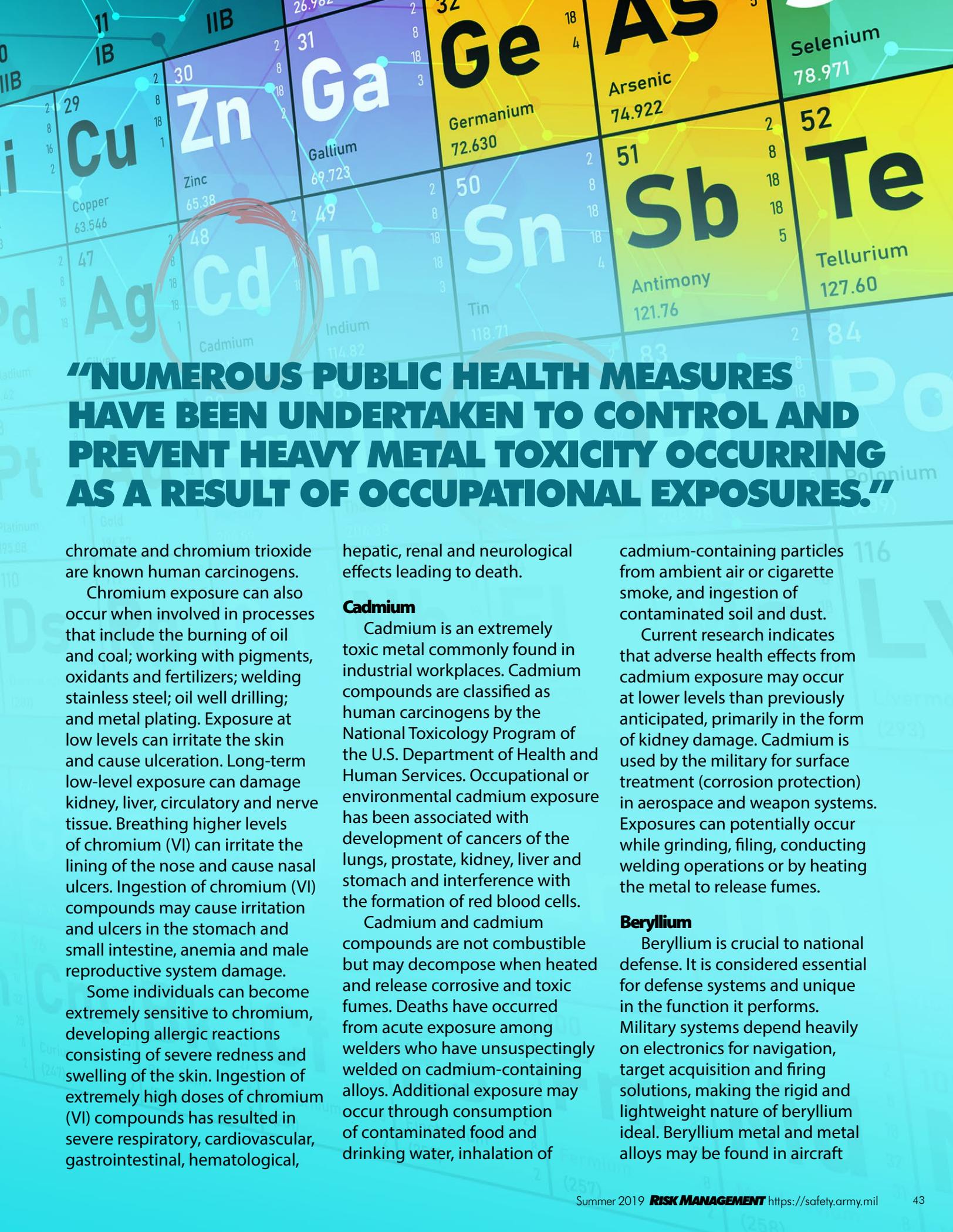
Overexposure to lead is one of the most prevalent occupational exposures worldwide. Activities with high potential for lead exposure include construction work, smelter operations, vehicle repair and weapons firing. Non-workplace exposures can occur from deteriorating lead paint or older water systems. Lead exposure in humans can result in a wide range of biological effects depending on the level and length of exposure. Effects vary over a broad range of doses,

with infants and small children being more sensitive than adults.

High levels of exposure may result in toxic effects in humans, which in turn cause problems in the formation of hemoglobin, damage to the kidneys, gastrointestinal tract, joints, reproductive system, and acute or chronic damage to the nervous system. Lead exposure can occur from inhalation of lead dust during range maintenance operations, deteriorating lead paint or through ingestion from eating or drinking in areas where lead is present.

Chromium

The Occupational Safety and Health Administration estimates that more than 558,000 workers are potentially exposed to chromium and chromium-containing compounds in the workplace annually. Chromium is used in paint pigments, cement, paper, rubber, metal alloys and other materials. Calcium chromate, lead chromate, strontium chromate, zinc



“NUMEROUS PUBLIC HEALTH MEASURES HAVE BEEN UNDERTAKEN TO CONTROL AND PREVENT HEAVY METAL TOXICITY OCCURRING AS A RESULT OF OCCUPATIONAL EXPOSURES.”

chromate and chromium trioxide are known human carcinogens.

Chromium exposure can also occur when involved in processes that include the burning of oil and coal; working with pigments, oxidants and fertilizers; welding stainless steel; oil well drilling; and metal plating. Exposure at low levels can irritate the skin and cause ulceration. Long-term low-level exposure can damage kidney, liver, circulatory and nerve tissue. Breathing higher levels of chromium (VI) can irritate the lining of the nose and cause nasal ulcers. Ingestion of chromium (VI) compounds may cause irritation and ulcers in the stomach and small intestine, anemia and male reproductive system damage.

Some individuals can become extremely sensitive to chromium, developing allergic reactions consisting of severe redness and swelling of the skin. Ingestion of extremely high doses of chromium (VI) compounds has resulted in severe respiratory, cardiovascular, gastrointestinal, hematological,

hepatic, renal and neurological effects leading to death.

Cadmium

Cadmium is an extremely toxic metal commonly found in industrial workplaces. Cadmium compounds are classified as human carcinogens by the National Toxicology Program of the U.S. Department of Health and Human Services. Occupational or environmental cadmium exposure has been associated with development of cancers of the lungs, prostate, kidney, liver and stomach and interference with the formation of red blood cells.

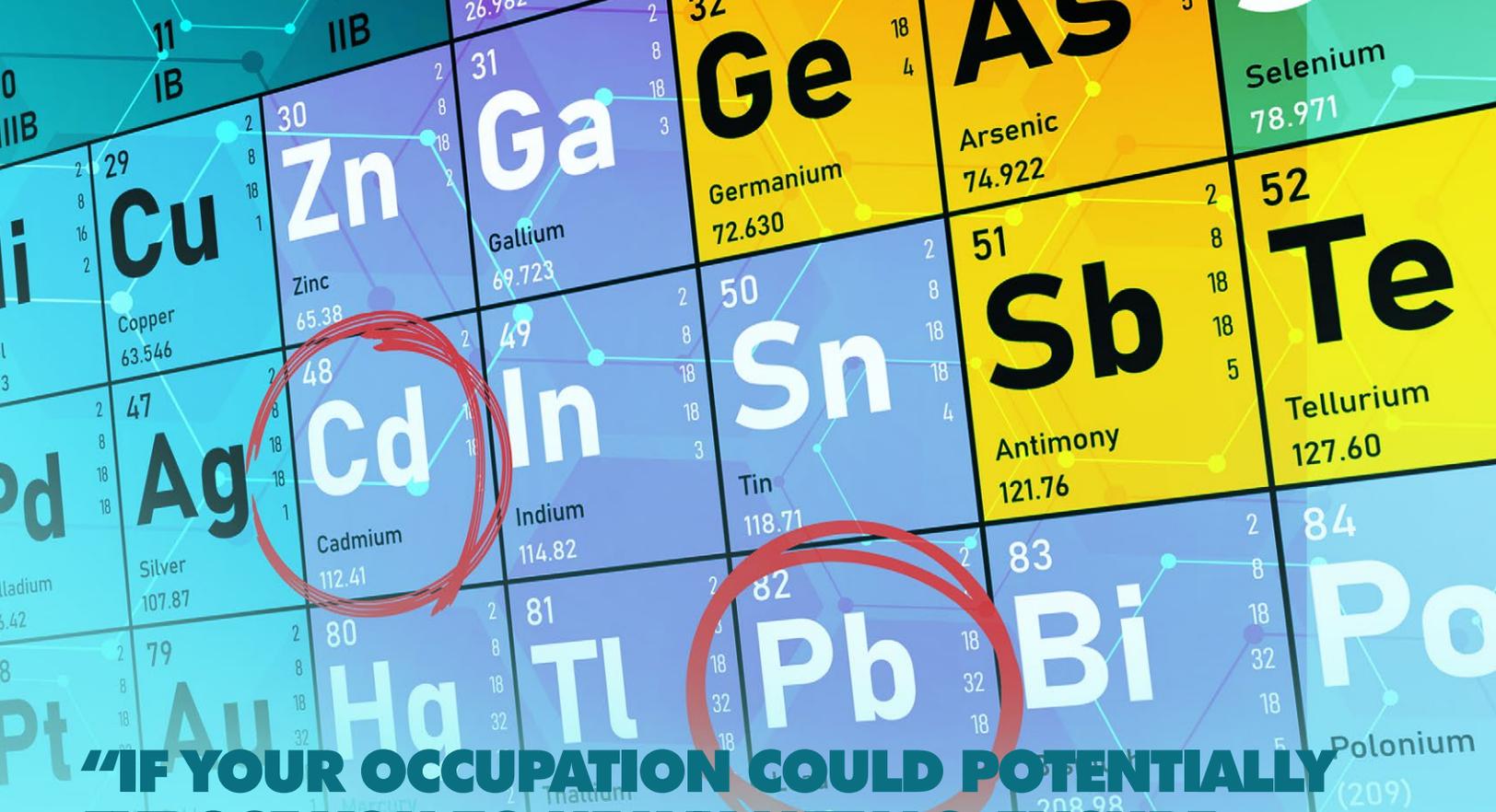
Cadmium and cadmium compounds are not combustible but may decompose when heated and release corrosive and toxic fumes. Deaths have occurred from acute exposure among welders who have unsuspectingly welded on cadmium-containing alloys. Additional exposure may occur through consumption of contaminated food and drinking water, inhalation of

cadmium-containing particles from ambient air or cigarette smoke, and ingestion of contaminated soil and dust.

Current research indicates that adverse health effects from cadmium exposure may occur at lower levels than previously anticipated, primarily in the form of kidney damage. Cadmium is used by the military for surface treatment (corrosion protection) in aerospace and weapon systems. Exposures can potentially occur while grinding, filing, conducting welding operations or by heating the metal to release fumes.

Beryllium

Beryllium is crucial to national defense. It is considered essential for defense systems and unique in the function it performs. Military systems depend heavily on electronics for navigation, target acquisition and firing solutions, making the rigid and lightweight nature of beryllium ideal. Beryllium metal and metal alloys may be found in aircraft



“IF YOUR OCCUPATION COULD POTENTIALLY EXPOSE YOU TO HEAVY METALS, ENSURE THAT YOU ARE USING THE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT FOR THE JOB AND IT IS SERVICEABLE.”

disc brakes, X-ray transmission windows, space vehicles optics and instruments, aircraft/satellite structures, missile guidance systems, nuclear reactor neutron reflectors, nuclear warhead triggering devices, fuel containers, precision instruments, rocket propellants, navigational systems, heat shields, mirrors, high speed computers, ceramics, electronic heat sinks, electrical insulators, microwave oven components, gyroscopes, military vehicle armor, rocket nozzles crucibles, thermocouple tubing, laser structural components, substrates for high-density electrical circuits, automotive ignition systems, radar electronic countermeasure systems and special non-sparking tools. The use of beryllium in electronic and electrical components,

aerospace and defense applications accounted for more than 80 percent of its consumption. Occupational exposure to beryllium occurs at places where workers engage in machining metals containing beryllium, recycling beryllium from scrap alloys or use beryllium products. Contact with beryllium metal and metal alloys is usually unlikely, since the material is typically enclosed to prevent exposure. Breathing large amounts of soluble beryllium compounds can result in lung damage resembling pneumonia. The damage to the lungs may heal if beryllium exposure is eliminated. Some people can become sensitive to beryllium, developing an immune or inflammatory reaction to small amounts. The U.S. Department of Health and Human

Services has determined beryllium and beryllium compounds are human carcinogens.

Conclusion

The Department of Defense is currently researching strategies to develop new and innovative technologies to replace heavy metals. These strategies include reduction, substitution and elimination of these materials wherever possible. The Department of the Army has established and implemented Installation Restoration Programs to clean up contaminated areas that occurred from past Army-related operations. If your occupation could potentially expose you to heavy metals, ensure that you are using the appropriate personal protective equipment for the job and it is serviceable. ■

UNMANNED ~~=~~ EXPENDABLE

- ✓ **Conduct deliberate mission planning and reassess as mission dictates**
- ✓ **Secure proper mission approval and update as risk elements change**

- ✓ **Know your equipment**
- ✓ **Stay in the fight, follow your checklist**



<https://safety.army.mil>

SELECT FISCAL 2019 MISHAP SUMMARIES

ON-DUTY FATAL MISHAPS

ACV

■ A Staff Sergeant died in an Army combat vehicle mishap at the Joint Readiness Training Center, Fort Polk, Louisiana. The Soldier was riding as a passenger in the rear of an M1165 up-armored HMMWV when it overturned on a gravel downgrade during rotational training on the reservation.

■ A Soldier assigned to the Nevada Army National Guard died in an Army combat vehicle mishap at the National Training Center, Fort Irwin, California. The Soldier was serving as the tank commander in an M1A1 Abrams during a night movement when the vehicle overturned into a wadi.

OFF-DUTY FATAL MISHAPS

PMV-4

■ A 32-year-old Specialist died in a PMV-4 mishap on Georgia Service Route 144. The Soldier was inside his vehicle on the road shoulder, awaiting assistance for a flat tire, when he was struck from behind by an approaching motorist. He was wearing a seat belt but died from his injuries at the hospital.

■ A 36-year-old Soldier died in a PMV-4 mishap in North Carolina. The Soldier was traveling on an interstate with three of his children when his Dodge Caravan struck a tow truck that was responding to a disabled motorist. The tow truck was reportedly partially in the left travel lane with its yellow flashing lights activated when the mishap occurred. The Soldier was pronounced dead at the scene, and two of his children suffered fatal injuries.

PMV-4

■ A 19-year-old Specialist died in a PMV-2 mishap on Fort Stewart, Georgia. The Soldier was leaving a

parking area when he lost control of his sport-model motorcycle and struck a Jersey barrier. During the mishap sequence, the Soldier's helmet reportedly came off, resulting in a fatal head injury.

■ A 30-year-old Soldier died in a PMV-2 mishap in El Paso, Texas. The Soldier was stopped at an intersection when he was struck from behind by another motorist.

Pedestrian

■ A 21-year-old Soldier stationed at Joint Base Lewis-McChord, Washington, died in a pedestrian mishap near Tillicum, Washington. The Soldier was struck by a passing motorist after exiting a ride-sharing vehicle.

Privately Owned Weapon

■ A Soldier died in a privately owned weapon mishap in Independence, Kentucky. The Soldier was handling a .38 Special handgun when he was struck by a chambered round when it accidentally discharged.

Sports and Recreation

■ A 35-year-old Soldier assigned to the Alaska Army National Guard died in a water-related mishap near Fort Greely, Alaska. The Soldier was dipnetting in the Copper River when he was reportedly swept away by the current.

■ A 20-year-old Soldier stationed at Fort Carson, Colorado, died in a swimming mishap at Paradise Cove near Guffey, Colorado. The Soldier was swimming with other Soldiers when he submerged. Attempts to revive him were unsuccessful.

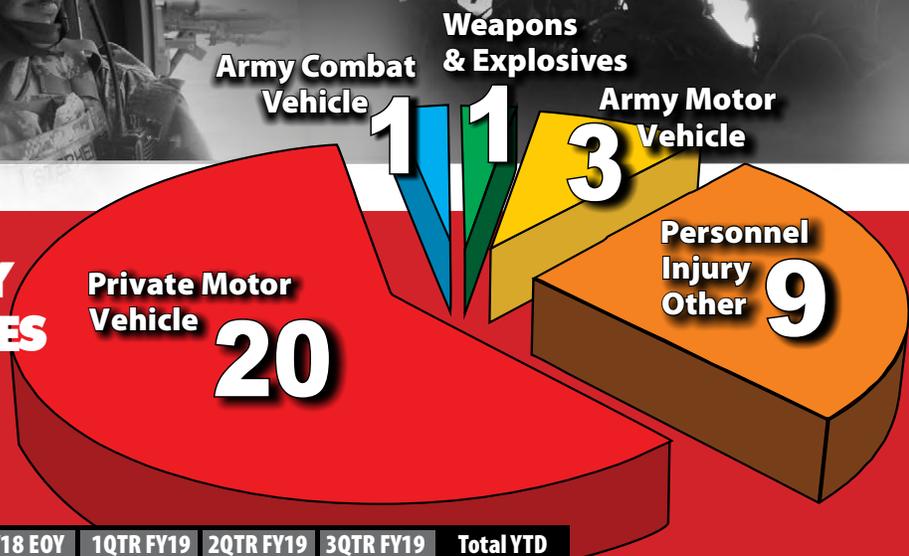
■ A 21-year-old Soldier stationed at Schofield Barracks, Hawaii, died in a swimming mishap in Kailua Bay, Oahu, Hawaii. The Soldier was swimming with two civilians when witnesses noted the swimmers were in distress. Surfers attempted to help the swimmers, but they were unable to locate the Soldier. His body was recovered three days later.

■ A 19-year-old Soldier stationed at Fort Bliss, Texas, died in a



3RD QUARTER FY19 ARMY MILITARY MISHAP FATALITIES

TOTAL QTD: 34



Category	FY18 EOY	1QTR FY19	2QTR FY19	3QTR FY19	Total YTD
Army Combat Vehicle	4	1	3	1	5
Army Motor Vehicle	8	3	3	3	9
Aviation	6	0	0	0	0
Fire	1	0	0	0	0
Personnel Injury Other	22	1	5	9	15
Private Motor Vehicle	64	16	14	20	50
Weapons & Explosives	6	2	2	1	5
Total	111	23	27	34	74

as of 10 July 2019

swimming mishap in Big Bend National Park. His body was recovered by park rangers after he went missing while swimming with other Soldiers.

■ A 25-year-old Soldier stationed at Joint Base Lewis-McChord, Washington, died in a swimming mishap at Lake Crescent, Washington. He was camping with another Soldier when he drowned while swimming.

■ A 31-year-old Warrant Officer died in a PMV-2 mishap in Arlington, Virginia. The Soldier was operating his sport-model motorcycle at a high rate of speed on Interstate 395 North when he left the roadway, struck a concrete Jersey barrier, crossed the opposing lanes and crashed. He

was thrown from the motorcycle, which caught fire during the crash sequence. The Soldier was deemed an experienced rider, having completed the Motorcycle Safety Foundation's Experienced RiderCourse in August 2016, and was wearing personal protective equipment, but died at the scene.

■ A 34-year-old Sergeant First Class died in a boating mishap on Joe's Bayou near Destin, Florida. The Soldier was operating his 20-foot center-console boat when he and his passenger were thrown overboard in rough waters after reportedly experiencing a steering problem. Personal flotation devices were available, but their use has not been confirmed. Alcohol was not associated with the mishap.

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