

APG Senior Service College fellows learn from industry organization

APG Senior Service College Fellowship Program

APG Senior Service College fellows visited W.L. Gore & Associates, Inc. Feb. 27 as part of the Defense Acquisition University's Senior Service College Fellowship Program (SSCFP).

Fellows visit four private industry organizations during the academic year to gain an appreciation for the ways different organizations approach innovation, technological advancement, problem-solving, leadership and organizational culture.

Fellows Matt Lee, Bill Leonard, Gary Lichvar, Ayo Omololu, Lisa Sanders, Oral Walker, Randy Wheeler and Jennifer Wor-ton were accompanied by Jim Oman, APG SSCFP director and Ben Metcalfe, APG SSCFP coordinator during the visit to Gore's Barksdale facility in Newark, Delaware.

According to Metcalfe, the visit expanded upon course readings and case studies the fellows had completed as part of the fellowship program.

During the visit, the fellows toured the facility, learned of the company's history, growth and several of its better-known

products including GORE-TEX, a fabric found in jackets, shoes, gloves and several approved military clothing items.

While Gore representatives provided insight from several areas including product management, market development, sales, strategic communications and human resources, much of the day focused on human resources, culture and innovation.

The fellows also had the opportunity to visit a second Gore facility in Elk Mills, Maryland to learn how the company's materials and products are examined through an extensive series of tests.

"The fellows found the visit to Gore to be time well spent and a tremendous learning experience," Oman said. "It will undoubtedly be useful to each fellow as they make the transition to alumni and move into positions of greater responsibility."

APG Senior Service College fellow Ayo Omololu examines the GORE-TEX field jacket during a visit to W.L. Gore & Associates, one of four visits fellows will make to private industry organizations during the academic year.

Photo by Jim Oman



Army researching uniforms that automatically decontaminate

Story and photo by **C. TODD LOPEZ**
Army News Service

One day, Soldiers may wear uniforms and chemical protective suits that decontaminate themselves and are cool enough to wear for extended periods.

Researchers, such as chemist David McGarvey, Ph.D., at the Army's Edgewood Chemical Biological Center, or ECBC, on Aberdeen Proving Ground, Maryland, are part of a team led by the Natick Soldier Systems Center that is developing just those technologies.

The idea is that uniform items are pre-treated with a chemical that can render things harmless including nerve or blister agents.

"We have collaborators at the Air Force Research Laboratory that design reactive chemical components that can be placed on fabrics," McGarvey said. "If Soldiers are in the field, they may not know they have been contaminated. They might be going through a foliage area that had been previously contaminated, something might brush off on the uniform, or they might be in a position where logistically they can't get to a decontamination area - either because of the mission or because there isn't a decontamination setup available. We are trying to increase Soldier survivability through that type of capability."

In such cases, McGarvey said, the chemicals built into the Soldier's uniform begin working immediately to neutralize that contamination.

McGarvey is not developing those reactive components himself. Instead, he is taking swatches of uniform fabric - just one centimeter square - that have been treated with those reactive chemicals, applying one milligram of simulated chemical warfare agent - or the real thing - and then using a nuclear magnetic resonance spectrometer to determine what those chemical warfare agents are broken down into when they come in contact with the fabric treatment.

What he wants to determine is how the reactive agents work, and what is created as part of the reaction - and if the byproducts of that reaction are themselves dangerous to Soldiers.

"We are able to observe the chemical weapon material and we are able to identify the breakdown products and determine how well it works for decontamination," McGarvey said. "We determine how effective the fabrics are at doing their job, and determine what the



Chemist David McGarvey, Ph.D., of the Army's Edgewood Chemical Biological Center at APG, inserts a swatch of fabric into a nuclear magnetic resonance spectrometer. The swatch of uniform fabric has been treated with chemicals that can break down chemical warfare agents. The spectrometer is used to determine what those chemical warfare agents are broken down into when they come in contact with the fabric treatment.

breakdown products are. We explain the mechanism of how these agents work, so the fabric developers can change their formulation and then make better fabrics."

Sweating Soldiers

It is not just regular Army uniforms that may one day be pre-treated with such chemicals. At the forefront of the effort are replacements for chemical warfare protective suits that not only decontaminate themselves, but which are also lighter weight so they put less burden on the Soldiers who wear them.

Any Soldier that has worn the "Joint Service Lightweight Integrated Suit Technology," or JSLIST, knows how uncomfortable the uniform can be. The ensemble usually includes the JSLIST suit itself, which is designed to keep chemical warfare agents from ever reaching a Soldier's body, along with rubber gloves, rubber boots, a gas mask, and a hood.

The JSLIST suit is a challenge for Soldiers. For one, the suit decreases Soldier mobility. Additionally, while the suit provides chemical protection, it also comes with a significant heat burden - especially in warm climates - that greatly

decreases the effectiveness of Soldiers.

"A lot of our theater operations are taking place in very hot climates," McGarvey said. "The main problem the Army is worried about is, even if they don't run into a chemical weapon, the Soldier could be rendered combat-ineffective just by wearing the suit. Within a few hours, for the JSLIST suit that is being currently used, there is a heat burden. In the desert sun it gets to be a problem."

McGarvey said development is underway for a new product called the "Uniform Integrated Protective Ensemble," or UIPE. The UIPE is meant to one day replace the JSLIST. Important requirements for the UIPE include a different design so that it is easier for Soldiers to move while wearing the suit: improved mobility. Also, the fabric used is meant to be thinner. Additionally, he said, the UIPE is being designed with specially designed vents that provide some breathability to the uniform.

The first iteration of UIPE - UIPE 1 - has already undergone field testing at Aberdeen Proving Ground, though it is not yet fielded, McGarvey said.

The UIPE 2, the follow-on design,

is expected to include self-decontamination features as well, and will be a boon to those units that are most likely to come into contact with chemical warfare agents.

"We're looking at Special Operations and things like that," McGarvey said. "They want people to maintain a high level of mobility. There is less certainty that they are going into a contaminated area. So the idea is to have something that is flexible, lightweight, and which provides a certain level of protection."

For Soldiers in the rest of the Army - non-Special Operations units - the UIPE could be equally effective.

"They have the possibility, even if they are not aware they have been contaminated, that they can remain safe in that circumstance," McGarvey said. "It is a way to reduce the logistical burden to the Army and a way to protect Soldiers who have been contaminated."

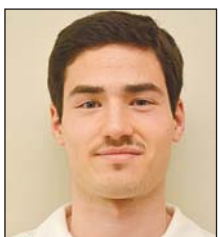
On the horizon, McGarvey said, is UIPE 3. He said goals there include more efficient chemicals built into the fabric that can handle a wider variety of chemical warfare agents as well as a larger volume of such agents.

"We are always looking for something that is faster, more effective, and that can handle a higher amount of agent," he said. "It's also important that the materials be compatible with human skin."

McGarvey said that some of the chemicals in testing now are already approved for human use. Some, for instance, are related to chemicals found in hand sanitizers.

"They've been [Food and Drug Administration] approved, approved for consumer use for human skin contact. And they've already been shown to be biocidal - one of the points of the suits is to protect against biological threats as well as chemical threats," he said. "Since these compounds are known to be biocidal, it's a good starting point. And we've also seen very good results against chemical weapons with some of them."

ECBC is not alone in developing agents that can be incorporated into the fabric of both regular military uniforms, as well as chemical warfare protective suits. The ECBC is part of a team that includes the U.S. Army Natick Soldier Systems Center, the Air Force Research Laboratory, the Massachusetts Institute of Technology, and the Defense Threat Reduction Agency.



At your service

Brandon Allen, AWC Health Educator

By **RACHEL PONDER**
APG News

As an Army Wellness Center health educator, Brandon Allen teaches clients how to adopt and sustain a healthy lifestyle.

His responsibilities include conducting metabolic and fitness testing, and body composition assessments using the

Bod Pod, a device that measures body fat and fat free mass (which includes muscles, bones, organs, connective tissue and water weight.)

Allen uses the results to help clients set realistic, achievable goals and he encourages them to have monthly assessments to track their progress.

In addition to working with clients on

a one-on-one basis, he teaches "Upping Your Metabolism," "Stress Management" and "Healthy Sleep Habits" classes offered through the AWC.

Allen said he was drawn to this line of work because he wanted to help others.

"Everyone has a different story, and I find it rewarding to have the opportunity to assist these individuals in reaching their goals no matter how big or small," he said.

He was promoted to this position last November, after serving the APG AWC two years as an Oak Ridge Institute for Science and Education (ORISE) intern and as a health technician. Prior to working at APG, he was a physical therapy technician.

Allen holds a bachelor's degree in exercise and sport science from Frostburg State University and is a National Academy of Sports Medicine certified

personal trainer. In 2014, he earned an Exercise is Medicine Level 1 credential from the American College of Sports Medicine.

The six core programs offered at AWC include health assessment review, physical fitness, healthy nutrition, stress management, general wellness education, and tobacco education.

The AWC program is a U.S. Army Medical Command Program overseen by the U.S. Army Public Health Command. The center, located on the third floor of the Kirk U.S. Army Health Clinic, offers free, standardized health services to Soldiers, retirees, their family members and Department of the Army civilians, on a space available basis. Hours of operation are 7:30 a.m. to 4:30 p.m., Monday through Friday. For more information or to schedule an appointment, call 410-306-1024.