The Effectiveness of Combat Decontamination Practices:
A Firsthand Experience

By Captain Nathan K. Player

While serving as a reconnaissance platoon leader, Special Troops Battalion, 3d Brigade, 25th Infantry Division, Schofield Barracks, Hawaii, my platoon was invited to participate in a study conducted on the effectiveness of the Army decontamination techniques specified in Field Manual (FM) 3-11.5. This article summarizes my observations and describes the results of the study, which was conducted at Schofield Barracks, 19–23 April 2010.[1]

My involvement with the decontamination study began in March 2010, when the commander of the 71st Chemical Company, Schofield Barracks, contacted me to determine whether my platoon would be interested in participating in the study. He explained that the agencies conducting the study (including the lead agency—the U.S. Army Edgewood Chemical Biological Center Automated, Detailed Equipment Decontamination for Land Vehicles Advanced Technology Demonstration—along with the U.S. Army Maneuver Support Center of Excellence; Defense Threat Reduction Agency; Concurrent Technologies Corporation; U.S. Department of Energy, Kansas City Plant; Sandia National Laboratories; U.S. Army Operational Test Command; Army Test and Evaluation Command Test and Evaluation Coordination Office; Dugway Proving Ground; U.S. Army Corps of Engineers Engineer Research and Development Center; U.S. Army Research Laboratory; and Johns Hopkins University Applied Physics Laboratory) wanted to use as many chemical, biological, radiological, and nuclear Soldiers as possible to ensure the highest level of efficiency during detailed equipment decontamination (DED). Because the platoon sergeant and I were happy to have the opportunity to provide such unique training to our Soldiers, we added the event to our training schedule.

The first day of the study was dedicated to in-processing and briefings. Scientists and support personnel explained the event timeline and announced that the goals of the study were to—

- Examine the functions required to follow prescribed tactics, techniques, and procedures or effective operation of the DED line.
- Examine system sustainability, ease-of-use operations, and safety concerns.
- Determine resource requirements to support the DED operations outlined in FM 3-11.5.
- Examine required logistics, equipment, and costs.

All Soldiers were issued badges according to their roles in the study. The platoon sergeant and I were issued "unit SME" badges, which granted us full access to the training area for the duration of the DED study and signified that we were not under medical evaluation. Our Soldiers were issued "DED participant" badges and biometric armbands, which were designed to take pulses, measure hydration, and track calories burned during the exercise. Our platoon Soldiers were then divided between the two platoons slated to rotate through the work/rest cycles of the DED study.

The following morning, the Soldiers received refresher training on DED operations. For the purpose of the study, participants were instructed to disregard any unit-specific decontamination standing operating procedures and to strictly adhere to the decontamination operations outlined in FM 3-11.5 (except for specified changes made to accommodate equipment replacements). The intent was to ensure that it was doctrine, rather than individual unit standing operating procedures, that was evaluated by the study. Next, the

A Soldier is fitted with a biometric armband.

DED line was set up according to the configuration shown in Figure 1. Observers/controllers were assigned to each of the stations to ensure proper setup.

Throughout the next several days, participants performed a series of decontamination dry runs. This allowed the scientists who had designed the study to ensure that the Soldiers knew their jobs. Once the participants were capable of consistently performing decontamination operations according to the requirements of FM 3-11.5, the actual DED study began. The vehicles involved in the dry runs and the actual study were "contaminated" with a simulated chemical agent and driven through muddy areas to emulate battlefield contamination. The simulated agent was designed to mimic the vapor pressure and persistency of HD (a sulfur mustard blister agent). Although most of the Soldiers were members of a decontamination platoon and were, therefore, well versed in decontamination operations, this was the first time they had attempted to remove a simulated chemical warfare agent specifically designed to mimic a persistent sulfur mustard agent.

While the original intent of this "baseline" study was not to prove or disprove the merits of current Army decontamination doctrine, the results did call into question the effectiveness of the thorough equipment decontamination process outlined in the doctrine. The results are clear: the doctrinal decontamination process takes considerable time, significantly taxes the health of Soldiers, and could be done much more effectively using modern technology. According to the official report, "Human factors on the DED process indicated that doctrinal DED was labor-intensive to the point of being potentially hazardous. Numerous safety concerns were pointed out by Soldiers and are summarized in this report. The [rate of perceived exertion] and exertion data both call into question the safety of doctrinal DED. Doctrinal DED with the JSTDS-SS [Joint Service Transportable Decontamination System–Small Scale] was found to be only moderately effective in removing simulant from the vehicles. Even with 38 Soldiers working in potentially unsafe conditions for 10 hours, only 38 percent of vehicles were decontaminated in one trip through the DED line. In conclusion, the baseline experiment highlighted several deficiencies in doctrinal DED. The data collected in the experiment, observations, and literature review can be used with the [process evaluation tool set] to evaluate any future changes to the DED process."

Due to the long history of FM 3-11.5, many within the Chemical Corps will likely disagree with the conclusions of the study. However, the modernization of the DED process would undoubtedly allow for contaminated troops to be sent back into the fight faster and on a larger scale than is possible using traditional decontamination methods. In addition, the number of Soldiers required to conduct decontamination operations might decrease with the modernization of decontamination procedures. This would be beneficial for the following reasons:

- The Army is undergoing force structure changes under the restriction of a zero growth policy. Every Soldier added to a unit must be removed from somewhere else. And from past experience, we know that the Chemical Corps is often one of the first on the chopping block. A modernized, automated decontamination system would allow us to sustain and improve decontamination readiness in the face of near certain force reduction requirements.

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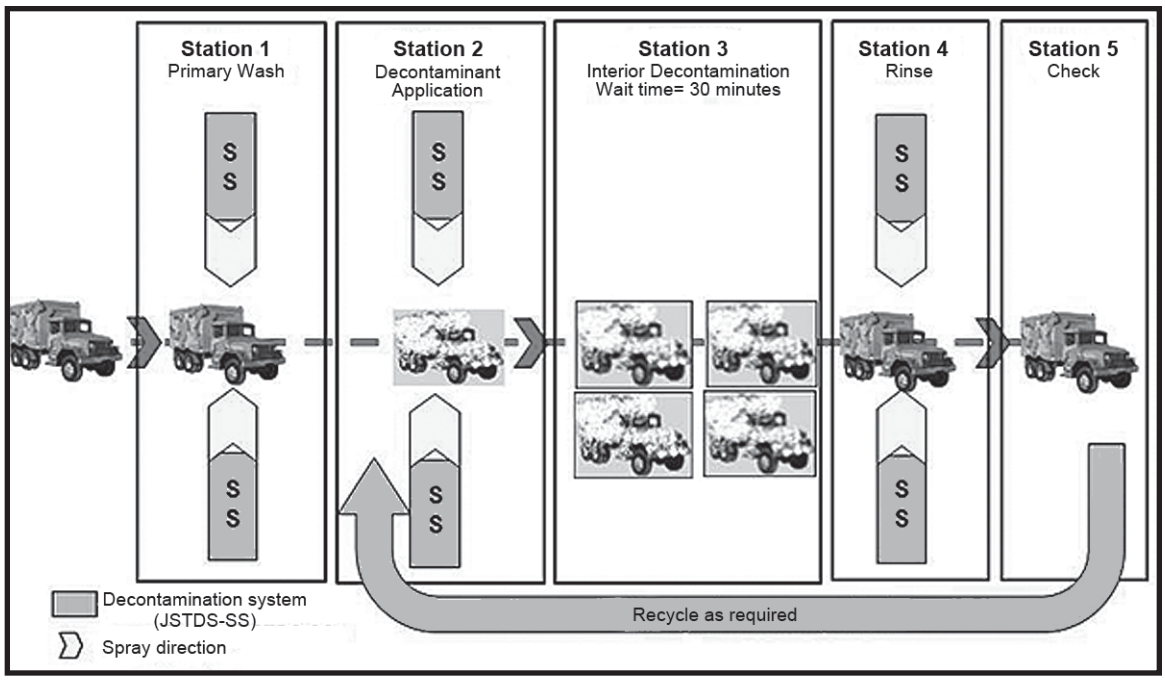

Figure 1. Schematic diagram of the DED line

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- Under the current doctrine, the decontamination process must be augmented by Soldiers from nonchemical units. Chemical, biological, radiological, nuclear, and high-yield explosives readiness training has suffered greatly due to the Army force generation cycle, which significantly hinders the ability of non-Chemical Corps Soldiers to effectively conduct decontamination operations. A shift to a minimally manned automated system would allow decontamination platoons to support the needs of the brigade without any outside help.

My participation in such an important and informative study was a great learning experience. As decisions are made regarding the application of this and other follow-on study results, I am confident that our leaders are doing what is best for our Corps. I believe the future holds great things for DED operations and the Chemical Corps.

Endnote:

[1]A complete copy of the decontamination study may be obtained by contacting the U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39183.

Reference:

FM 3-11.5, *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination*, 4 April 2006.

At the time this article was written, Captain Player was a student in the Chemical, Biological, Radiological, and Nuclear Captain's Career Course at Fort Leonard Wood, Missouri. He is now the commander, Waco Recruiting Company, Dallas Recruiting Battalion, Irving, Texas.