

# Progress in Soldier Hydration

JEFFREY M. DUNN  
JOHN R. KENNEDY, PH.D.

“**A**n army marches on its stomach.” Attributed to both Napoleon Bonaparte and Frederick the Great, this well-known saying attests to the importance of Soldiers being well-fed. No one would dispute the validity of this sentiment, but all would agree that being properly hydrated is even more critical to the Soldier than having a full stomach.

For millennia, Soldiers have carried water in canteens. Basic canteen design has changed little over the centuries. Whether constructed of animal skin, wood, metal, plastic, or other materials, these containers typically hold about a quart of water and include a stopper or screw cap to keep the water from spilling out when the Soldier is not taking a drink.

Throughout history, canteens have done their job effectively; however, they can be inconvenient to actually use. A Soldier must remove the stopper or screw cap and then hold the canteen in place to take a swig of water. Once complete, the canteen stopper or screw cap must be securely replaced (without allowing dirt or dust to get in) to avoid leakage, which could mean losing the rest of the water. The activities required to take a drink from a canteen prevent a Soldier from simultaneously doing anything else.

In the late 1980s, which is very recent in terms of the science of personal hydration, a commercial water-carrying system revolutionized the personal hydration market. In this system, water is carried in bladders that are integrated into a backpack. Various attachments (such as tubes, mouthpieces, and clips) allow users to secure the water-pack to the body in a relatively comfortable manner and, even more importantly, drink water on demand and hands-free. Commercial versions of these personal hydration backpacks became extremely popular with Soldiers, especially those engaged in arid environments. This groundbreaking innovation was quickly adapted into the Modular Lightweight Load-Bearing Equipment (MOLLE) hydration system.

The quick popularity of these systems is easy to understand. In addition to providing hands-free, on-demand drinking water, the backpack eliminates the need to remove one’s canteen from an already-cluttered web belt. Also, most backpack personal hydration systems hold more water than conventional canteens. The MOLLE hydration system carries three liters or a little more than three quarts of water, which is about three times the amount of a traditional canteen.

Unfortunately, there was one major drawback to the MOLLE

hydration system: it was not safe for use in chemical, biological, radiological, and nuclear (CBRN) environments. The only hydration systems authorized for use with the M40/M42 series protective masks or the M50 series protective masks were the one-quart and two-quart canteens with the mask compatible canteen caps. In CBRN environments, American Soldiers were stuck with essentially the same hydration technology that Greek soldiers used during the Peloponnesian War (431-404 BC).<sup>1</sup>

Fortunately, Soldier hydration in CBRN environments has undergone a dramatic change with the development and fielding of the multi-purpose personal hydration system (MPHS; NSN 8465-01-643-5606).

The MPHS is similar to the MOLLE personal hydration system, except that the MPHS has a hardened water reservoir and drink tube that protects its contents from CBRN and toxic industrial chemical/toxic industrial material (TIC/TIM) contamination. By direction of Safety of Use Message 17-010 from the TACOM Life Cycle Management Command, once a Soldier has been issued an MPHS, the canteens are not to be used with protective masks. The MOLLE personal hydration systems are also not to be used with protective masks. Although some manufacturers of commercial personal hydration systems have claimed that their products meet CBRN protection requirements, those claims have not been proven. It is also prohibited to use these commercial systems in CBRN environments. This is because canteens, the MOLLE personal hydration system, or commercial hydration systems may not adequately protect water from contamination in CBRN environments; therefore, the potential exists that a user could be exposed to hazardous levels of toxic chemicals or biological agents.

The MPHS is specifically designed to function with protective masks. Once the MPHS is removed from its packaging, it may be used for up to 30 days. It will protect the water it contains for up to six hours while exposed to threat chemicals. During that time, a Soldier may hydrate with the MPHS while wearing or not wearing a protective mask. The MPHS will be issued during the deployment phase to units requiring CBRN Individual Protection Equipment. Although the MPHS does not include a hydration system carrier, the MOLLE hydration system carrier (NSN 8465-01-641-9671) is also functional for the MPHS. When operating in high-threat environments, Soldiers



Figure 1  
— MOLLE  
Hydration  
System



Figure 2 — Multi-purpose  
Personal Hydration System  
(MPHS)

should keep their MPHS filled. Refilling any hydration system — including the MPHS — in a contaminated environment can expose Soldiers to hazardous chemicals or biological agents.

Every Soldier should be proficient in MPHS use before being confronted with a CBRN event. Because the MPHS should only be used in actual CBRN threat environments, the Army has developed a MPHS training kit (NSN 8465-01-643-6221). This training kit converts the MOLLE hydration system reservoir so it can be connected to M40 and M50 series protective masks. An initial issue of training kits has been shipped to installation Central Issue Facilities (CIFs). Any replacement components for the training kits must be ordered through normal supply channels. If your unit has not received them yet, check with your unit supply personnel.

Soldier CBRN hydration has finally entered the 21st century, thanks to the efforts of the Soldier Protection and Individual Equipment Team at Natick Soldier Research, Development & Engineering Center; the Product Manager Soldier Clothing and Individual Equipment at Program Executive Office Soldier; and the Combating Weapons of Mass Destruction Requirements Determination Division at the Maneuver Support Center of Excellence.

For a training guide on the MPHS, go to: <https://tulsa.tacom.army.mil/Safety/?t=soum&f=MPHSUserGuide.pdf>.



Figure 3 — MPHS connected to Joint Service General Protective Mask

For a training/familiarization video, go to: [https://www.youtube.com/watch?v=OLznJLW2\\_j4](https://www.youtube.com/watch?v=OLznJLW2_j4).

For a training guide for the MPHS Training Kit go to: <https://tulsa.tacom.army.mil/Safety/?t=soum&f=CBRNHydTrainKit.pdf>.

**Notes**

<sup>1</sup> John R. Kennedy and Jeffrey S. Pacuska, "Evolution of Warfighter Hydration," *Infantry Magazine*, May-June 2013, 14-15.

**Jeffrey Dunn** is currently the Integrated Protection Thrust Area Manager within the Soldier Protection and Survivability Directorate at the U.S. Army Natick Soldier Research, Development and Engineering Center, Natick, MA. He was previously matrixed full time to Product Manager Soldier Clothing and Individual Equipment, where he was the lead engineer for the Multi-purpose Personal Hydration System. He holds a Bachelor of Arts degree in engineering from Fairfield University, a Bachelor of Science degree in chemical engineering from Columbia University, and a Master of Science degree in Project Management from Boston University. Mr. Dunn is a licensed Project Management Professional from the Project Management Institute and is also a member of the Army Acquisition Corps.

**John R. Kennedy, Ph.D.**, is a physical scientist who works with the Engineering Directorate, Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD. He holds a Bachelor of Science degree in chemistry from New Mexico State University, a Master of Science in physical chemistry from Texas Tech University, and a Doctor of Philosophy degree in physical chemistry from Texas A&M University. He is a retired Army lieutenant colonel and is a graduate of the U.S. Army Command and General Staff College and the U.S. Naval War College, College of Naval Command and Staff. Dr. Kennedy is a member of the Army Acquisition Corps.

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