

Mustard

—Lessons of the Desert

by SFC Ricardo Soto-Acevedo

The main focus of this article is to relate field behaviors of mustard, as experienced by Chemical Destruction Group personnel. UN personnel did not cause any of the incidents described. They were caused by poor training and work habits of Iraqi personnel. The level of expertise was that of a common laborer and not of an individual who knew the potential effects of chemical agents.

On 3 April 1991, the terms for a cease-fire between Iraq and the coalition states were established under resolution 687 by the United Nations Security Council. Section C of the resolution deals with the elimination of Iraq's weapons of mass destruction, their facilities, and related items. Through this

resolution, the United Nations Special Commission (UNSCOM) was established, with Swedish Ambassador Rolf Ekeus serving as Executive Chairman.

One of UNSCOM's mandates was to take possession of all chemical weapons, agents and precursors for destruction. This mission included facilities used in the production, filling, and testing of chemical agents. A chemical weapons advisory panel developed the destruction guidelines, while the Chemical Destruction Group was charged with carrying out the destruction process.

The bulk of the destruction process took place at the Al Muthana State Establishment, a large chemical weapons production complex. Destruction

of the various chemical agents and precursors took different forms. Nerve agent was destroyed through a hydrolysis process, mustard was incinerated, and precursors were either burned in open pits or diluted to harmless levels.

Different nations supplied personnel protective equipment. The bulk of mission-oriented protective posture suits and protective masks were supplied by France and Great Britain. However, some personnel chose to bring their own personal protective equipment from their respective countries.

The main decon apparatus was of Austrian origin. It was a trailer-mounted unit consisting of a heater, water tank, pump unit, two roll-out hoses, and a blender. The main slurry generated was a mixture of Calcium Hypochlorite (HTH) and an electrolyte. The electrolyte was used to help the slurry cling to a contaminated surface longer.

Personnel decon stations were mobile and light, and consisted of basically one station. An individual coming out of a contaminated area walked up to the hot line and laid down any used equipment. He stepped up to the hot line and an individual on the clean side checked him for contamination using a chemical agent monitor (CAM), or an AP2C, the French equivalent of our CAM. Once checked, the person stepped into a pan filled with warm water and HTH; gloves and boots were scrubbed with a brush.

Upon completion, they stepped out of the pan and boots and gloves were



Vehicle, tire, and ground contaminated with mustard.

rinsed off prior to stepping over the hot line and onto the clean side.

Bulk mustard was stored in large containers, comparable to our one-ton storage containers. Mustard was also contained in 250 kg and 500 kg bombs. Explosive Ordnance Personnel developed entry procedures for each "container" to access the agent by explosive ventilation. Once explosively vented, the container and bombs were transported to the incinerator area for draining by Iraqi personnel.

During the transport of containers and bombs, incidents of contamination occurred. In one instance, there was a two mile spill of mustard onto the roadway. In a separate case during transport of bombs, mustard spilled onto the roadway.

However, this time the driver abandoned the truck and did not inform anyone of its location. The vehicle was located the next day, but due to the time lag, mustard had contaminated the truck bed and undercarriage and saturated the tires as well as an area of ground around the vehicle.

In the first incident, personnel loaded the decon trailer and moved toward the spill areas. When they checked the contamination with a CAM, the readings showed 4 bars. Decontamination of the roadway was long and cumbersome. As the decon team progressed forward, the decon trailer had to be stopped, reloaded, and moved to the next position.

By the discoloration of the slurry, they could see that the mustard was being brought to the surface. While proceeding with the decon process, we noticed the local workers driving over the areas that had not yet been decontaminated. It was necessary to set up a checkpoint outside the contaminated area. We checked any vehicle exiting the area for contamination. What we noticed was that of all the vehicles that drove through the contaminated area, none showed any visible signs of contamination.

Once decontamination of the roadway was complete, operations were

ceased. The following day, teams were dispatched to check and monitor the decontaminated area. The CAM still showed contamination (4 bars). It was decided that further decon would only be useless. Personnel would wear respiratory protection when driving through this area.

In the incident regarding the abandoned vehicle, the tires were the main concern. The vehicle did not have a chemical agent resistant coating and the bed was still holding 250 kg and 500 kg bombs. The bombs had been explosively opened, but since large vehicles were in short supply, the bombs had to remain. Positioning the decon trailer to begin operations was cumbersome and difficult. The area and vehicle were decontaminated. About 24 hours later, checking revealed that the tires were still contaminated, regardless of how much or often they were decontaminated.

Applications

Through these incidents there can be many applications related to chemical warfare on the battlefield. Speed is the main thrust in battle, but caution must be exercised at all times.

Crossing a Contaminated Area. Most procedures cover contamination avoidance when encountering areas of contamination. Other procedures are set up to decontaminate after crossing a contaminated area, mounted or dismounted. The basic composition of the road surface was asphalt, and the principal hazard was vapor. Decontaminating an asphalt road creates a liquid hazard because mustard, when decontaminated with a slurry, will mix and rise to the surface. However, not all the agent will come out. When expediency is the main thrust, one cannot afford to wait. To facilitate a crossing, it may be easier to send out a recon team to the proposed crossing area. If mustard is soaked into the asphalt, the only hazard will be vapor, and driving at a fair rate of speed will not contaminate the tires.

Airfields. Another point of consideration is airfields. Runways are basically constructed of asphalt. Should a runway require decontamination, consider when the aircraft will be landing, the threat, and the availability of resources for decon operations. For a hurry-up situation, a slurry-based decon should not be considered. Again, the creation of a contaminated water



United Nations EOD personnel prepare to set charges for the explosive venting of mustard one-ton containers.

hazard comes into play. Prior to aircraft landing, thoroughly recon the runway. Puddles of mustard should be covered with HTH. Use caution when doing this. When combined, HTH and mustard ignite.

Should time allow decon, an alternative means may be employed. Hot water with HTH makes a better decon solution because HTH cannot readily dissolve in cold water. The hot solution soaks into the asphalt and works directly on the agent. Use caution when mixing this solution. If too much HTH is used, you may end up with a thicker solution than needed and risk bringing the mustard to the surface.

If mustard has been used on the runway, chances are that the sand in the area is contaminated, too. Soldiers in this environment should use caution with aircraft landings, take-offs, and taxiings. Contaminated sand can blow about and find its way onto a soldier where it may work its way into the MOPP suit, through the elastic area over the boots and gloves or under the hood. If contaminated sand comes in contact with the skin, the individual may get mustard burns.

Heat, sweat, and contaminated sand form the perfect combination to activate the mustard. Aircraft crew chiefs should be aware of the extraction of possible contaminated soldiers. Ways to limit the spread of contamination in an aircraft:

- Have rubber matting covering the entire floor of the aircraft. Vehicles and personnel should always have contact with the matting.
- With 463L plastic pallet covers, seats may be covered. Personnel are limited to sitting only on the covered seats.
- Personnel movement should be kept to a minimum throughout the flight.

In the second incident there is little one can do with a contaminated tire. FM 3-5 discusses weathering as the simplest and easiest form of decon. However, there are many factors a leader on the battlefield may consider.



CAM reading six bars near ground contaminated with mustard

One of the first questions is "How clean is clean?"

A decon squad or platoon may not have the necessary equipment to fully decontaminate vehicles, so leaders must plan ahead when requesting decon support. Give consideration to the availability of maintenance personnel and equipment. By having maintenance personnel within the contamination line, any tires or rubberized components can be changed out. If a maintenance unit is not available, an alternative plan could be to meet with a maintenance unit after decon is complete.

Leaders will always make decisions based on the threat and mission. If the unit must redeploy after a detailed equipment and detailed troop decon, then the leader must be informed about vehicles and equipment that have contaminated tires or rubberized components. The leader may elect to place those vehicles on the downwind side of the area away from the main body. Soldiers will know that there are still contaminated vehicles in that certain area and, as a minimum, respiratory protection is required.

The chemical destruction group finished its mission in June 1994 and the UN returned Al Muthana back to the

Iraqi government. Its mandate was accomplished and all members returned to their respective countries.

The benefit of the lessons are of great value to the chemical soldier today. Leaders and soldiers alike can plan the effective use of their assets. A decon operation that may be soldier-intensive can be delayed till later. Resources on the battlefield can be limited. With this knowledge they can be better prioritized.

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