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WHY A PURELY CHEMICAL DEFENSIVE POSTURE IS INADEQUATE

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Why a Purely Chemical Posture is Inadequate

(U) The US chemical warfare (CW) policy is to deter enemy first use of chemical weapons against US and allied forces and to terminate such use at the lowest possible level, should deterrence fail. The primary reason for using of chemical agents/munitions is to inflict casualties on the enemy and force him to adopt similar restrictive protective measures to those he forces on us with his use of chemical weapons. It is possible to achieve high protection levels against chemical agents and reduce direct casualty effects; however, protective equipment and procedures severely degrade mission effectiveness. This degradation varies with temperature, type of activity and length of time forces must remain in a protective posture. The initial user of CW gains a tremendous advantage if he is the only side to use CW or doesn't have to be concerned with retaliation.



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(S) If the Soviets employed chemical weapons against front line troops in support of an attack, they would most likely use a non-persistent agent. In this manner they could achieve casualties among the unwarned, and therefore unprotected troops, while at the same time posing no long term hazard to their own attacking forces. In addition, the Soviets would employ persistent agents on deep targets or front line positions they intend to bypass. The attacking Soviet forces would be protected by their positive pressure systems in their combat vehicles and could move through the positions attacked with non-persistent agents not degraded by individual protective equipment. The initiator of CW has the major advantage of choosing the time and place for the use of CW. He can thereby maximize the impact on his opponent and minimize the impact on his own forces. 

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(U) Each service person is provided an individual respiratory protection system (protective mask), antidotes, a decontamination kit, a first aid kit, and a protective uniform for defense

against respiratory and skin chemical and biological agent hazards. However, while this ensemble provides good protection, it degrades one's ability to perform the mission.

(U) The thermal insulation properties of CB protective equipment can cause excess heat to build up in the body. The rate of build-up primarily depends on temperature, humidity, wind speed, work rate and the specific clothing worn. If the buildup continues unchecked, the body eventually collapses - a casualty of heat stroke/exhaustion. To avoid these heat casualties, rest periods must be taken to reduce the heat generation rate below the dissipation rate, so that the body experiences a net heat loss until the excess is eliminated. Rest periods reduce the time an individual can productively work and so further degrade his daily performance.

(U) Tests have shown that personnel in CB protective equipment can accomplish most of their normal tasks; however, their rate of accomplishment is generally slower and error rates increase significantly. This could cause serious impacts on personnel working with nuclear weapons. The CB protective equipment can also cause heat to build up in the body, which limits the length of time personnel can work. These factors can significantly reduce the job performance of all personnel encumbered with the protective clothing.

~~(U)~~ The added bulk and weight of the CB protective equipment makes all movement more difficult, which accelerates fatigue and its proficiency/productivity degrading effects. Some tasks, such as inspecting engine inlets and working in small equipment bays, may not even be possible for large people because of the added bulk.

~~(U)~~ Peripheral vision is very limited when wearing the current mask. Activities requiring wide visual perception, like aircraft and equipment inspections, can be significantly more difficult and time consuming. In one Air Force exercise both a nicked compressor blade and a loose rivet were missed during an engine check due to vision restrictions. Other visual activities such as sighting various weapons becomes difficult to near impossible.

~~(U)~~ The loss of dexterity while wearing CB protective gloves can cause problems for personnel using small hand tools, handling small objects, or requiring high levels of digital dexterity. In servicing avionics and communication systems technicians must take extra time and care in placing and manipulating tools to avoid damaging sensitive, nearby parts. Typewriter and computer terminal operations can be slowed and error rates increased. Tactility is also greatly reduced especially when the hands become macerated.

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(U) Verbal communications, especially those using electronic apparatus, are degraded and the potential for error based on misunderstanding is increased. The necessity of wearing the standard flightline microphone and earphone sets outside the CB head gear distorts communications between the cockpit and personnel on the ground, especially in the noisy flightline environment.

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(U) US guidelines for human performance in full protection is that at 70°F a soldier doing heavy work would have to rest for 25 minutes after each 20 minutes of effort to avoid becoming a casualty. Varying periods of work/rest are prescribed as a function of temperature. At the higher temperature of 90°F, even low levels of physical effort would require 50 minutes of rest for 20 minutes of work to avoid heat injury while wearing full protective equipment. These individual standards can be determined by physical measurement much more readily than one can measure what the cumulative effect is on unit performance in combat. The performance is not only a matter of the psychological effects at moderate and high temperature, but is also a function of the

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impairment in sight, dexterity and hearing when actions must be performed in protective gear. [REDACTED]

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(U) The present US standard protective ensembles are more than adequate for protecting troops from threat-persistent agents while the troops are traversing chemically contaminated terrain, operating within contaminated terrain, and operating contaminated equipment; however, the loss in individual or unit effectiveness in combat situations due to wearing protective clothing ensembles will be much greater than that caused by chemical agents. [REDACTED]

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(U) Morale and psychological stress, which are functions of being under attack, are contributing factors to the general physical discomfort caused by the protective clothing. Only heat stress has been investigated in depth or quantified to any extent.

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