

Protected, but not comfortably

The heart of the military's chemical warfare defense system is a specially constructed protective modular suit, with pieces added as the threat level increases. It is made of a fire-retardant fabric that protects against chemical and biological agents, but it is unwieldy and can quickly become unbearably hot.

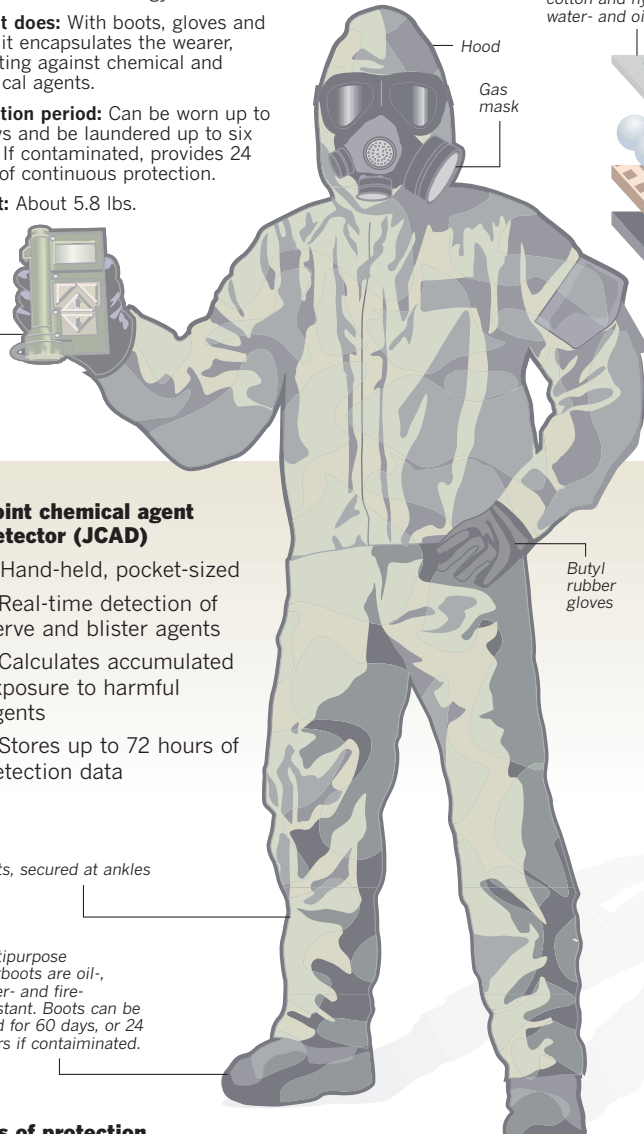
Protective clothing

JSLIST: Joint service lightweight integrated suit technology.

What it does: With boots, gloves and mask, it encapsulates the wearer, protecting against chemical and biological agents.

Protection period: Can be worn up to 45 days and be laundered up to six times. If contaminated, provides 24 hours of continuous protection.

Weight: About 5.8 lbs.



Joint chemical agent detector (JCAD)

- Hand-held, pocket-sized
- Real-time detection of nerve and blister agents
- Calculates accumulated exposure to harmful agents
- Stores up to 72 hours of detection data

Pants, secured at ankles

Multipurpose overboots are oil-, water- and fire-resistant. Boots can be used for 60 days, or 24 hours if contaminated.

Filtering fabric

Outer layer: Ripstop cotton and nylon fabric is water- and oil-repellent

Inner layer: Contains tiny carbon spheres that trap toxic vapors or liquids

Layers are supposed to let body heat escape

Liner fabric sits next to skin

The downside

Heat: Wearing the suit can add 10 degrees or more to the wearer's perceived ambient temperature. If outside temperatures exceed 80 degrees, soldiers wearing the chemical suits and masks are told to rest for 45 or 50 minutes for every 10 to 15 minutes of combat.

Movement: Can be unwieldy, particularly during combat situations.

Nourishment: Soldiers can drink in the suits but not eat.

Bodily functions: Male soldiers can relieve themselves while wearing the suits, but it's a two-person process. Women cannot urinate without risking exposure to contaminants.

Levels of protection

The military's system of protective garments is modular, allowing soldiers to wear only what they need, depending on the circumstances.

Low danger

Regular uniform is worn. Soldier carries protective equipment



Possible threat of contamination

Soldier wears protective jacket and pants over the regular uniform. Mask, hood and gloves are carried.



Probable threat of contamination

Soldier wears over-boots, jacket and pants. Mask, hood and gloves are carried.



Low levels of contamination detected

Soldier wears all protective clothing except gloves, which are carried.



Environment highly contaminated

Highest level of protection; entire suit is worn.



Sources: U.S. Dept. of Defense; U.S. Centers for Disease Control and Prevention; John Pike, GlobalSecurity.Org; Associated Press
Researched by Times graphics reporters JOEL GREENBERG, REBECCA PERRY AND CHARLES PILLER