CHEMICAL WEAPONS

U.S. Research on Sedatives In Combat Sets Off Alarms

U.S.-funded studies on how to turn such drugs as Valium or Prozac into weapons undermine a treaty against chemical weapons, critics say

Drugs such as Valium and Prozac might seem like the antithesis of modern weapons, but not to the U.S. government, which is sponsoring research into the feasibility of combat use of sedatives and other drugs that inhibit the function of the central nervous system (CNS). The work, described in documents obtained by *Science*, is part of a broader effort to create an arsenal of nonlethal weapons for soldiers and police. But critics say that turning such drugs into tools to subdue hostile forces would run counter to an international treaty that bans the use of chemical weapons.

Although the United States ratified the Chemical Weapons Convention in 1997, it maintains the right to use nonlethal riot-control agents in law enforcement and certain combat situations, despite objections from other countries. Indeed, the government's interest in nonlethal weapons has grown significantly over the past decade as U.S. forces have been deployed in such urban settings as Somalia, Kosovo, and Bosnia, says a spokesperson for the U.S. Marine Corps, which oversees the Department of Defense's (DOD's) Joint Non-Lethal Weapons Program (JNLWP). Funding for studies of nonlethal weapons has jumped from $14 million in 1997 to $36 million in 2001. A domestic program aimed at giving law enforcement officials better ways to resolve a variety of situations, from dispersing rioters to rescuing hostages, is also under way.

Work on the use of drugs as nonlethal agents is being conducted at the Institute for Emerging Defense Technologies of Pennsylvania State University, University Park. Created in 1997 to research nonlethal weapons for the Marine Corps, the institute is supported in part by a contract worth up to $42 million from the Corps to the university, and its director, engineer and retired Col. Andrew Mazzara, was formerly head of JNLWP.

Mazzara and engineer John Kenny are currently carrying out a study that tries to gauge the effects on humans of breathing in an aerosolized mixture of calmatives (substances that depress or inhibit CNS function and produce tranquil or calm behavior) and pepper spray—a commonly used crowd-control agent. The study, funded by the National Institute for Justice (NIJ), uses high-tech dummies to monitor absorption rates, concentration, and flow of the mixture into the bloodstream and various organs. Mazzara says that NIJ, the research branch of the Department of Justice (DOJ) and a member of JNLWP, asked him to do the study "because they see violent reactions to OC [pepper] spray." The study, due to be completed this year, hopes to identify the optimal dosages needed to temporarily subdue targets.

Enhanced combat. Will U.S. troops someday be toting guns that combine sedatives with tear-gas weapons?

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The research builds on a 2000 review paper by Kenny and two colleagues at the institute that urged the Marine Corps to give "immediate consideration" to weaponizing sedatives such as diazepam (Valium) and selective serotonin reuptake inhibitors such as fluoxetine (Prozac) and sertraline (Zoloft). The scientists also proposed research into the possible weaponization of "drugs of abuse" and convulsants such as those commonly found in rat poison. Kenny, who leads JNLWP's human effects advisory panel, says the Corps did not request the 49-page paper, but a Corps spokesperson acknowledges receiving it.

Several scholars who track the convention say such activities undermine—if not openly violate—the chemical weapons treaty, which prohibits the development and use of chemical agents that cause "temporary incapacitation or permanent harm to humans or animals." "This is definitely pushing the envelope, if not crossing the line, of what is covered in the treaty," says Jonathan Tucker, who follows chemical and biological weapons for the Monterey Institute of International Studies' Washington, D.C., office. Tucker says the list of proscribed agents, which include nerve gas, mustard gas, and weapons containing commercial chemicals such as hydrogen cyanide and phosgene, is open-ended and based on the agents' ability to injure a target population.

The U.S. efforts also raise a red flag for Julian Perry-Robinson, a professor of science policy at the University of Sussex, U.K. Any work on such weapons, he says, "is historically troubling because it ties in to an older U.S. program" that disappeared from view during the Cold War. "It's worrying to see it coming up again." New studies on nonlethal chemical agents, he adds, also send a message to other countries that it's all right to pursue research on more toxic agents.

U.S. military officials discussed nonlethal weapons at a joint U.S.-U.K. seminar held November 2000 at the Ministry of Defence in London. Pentagon officials there suggested that some of the military's research be funded by civilian agencies. According to an official report of the seminar, U.S. officials declared that "if there are promising technologies that the DOD is prohibited from pursuing," the military should "set up MOA [memoranda of agreement] with DOJ and DOE [the Department of Energy]."

Some experts see the funding of Mazzara's work through DOJ as an example of this approach. "It's a pretty clear intent to violate the treaty," says Tucker, "if the intent is to use these weapons in international military conflict."

The National Academy of Sciences has just completed a review of the military's nonlethal weapons program, and Kenny's study was included in background material that the Marine Corps provided the panel. Negotiations over which portions of the report might be militarily sensitive have delayed its release, according to a spokesperson at the academy.

The Sunshine Project, a government watchdog group based in Austin, Texas, has publicized Kenny's study. And its director, Edward Hammond, is not waiting for the academy's verdict on the quality of the research: "It's shocking and disturbing that this kind of weapon would be contemplated at all," he says.

—ALEXANDER STONE

Alexander Stone writes from New York City.