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## Pesticides, Nerve-Gas Pills Tied to Gulf War Illness (Update1)

By Rob Waters

March 10 (Bloomberg) -- A pill given to U.S. soldiers to help protect them against nerve gas, and pesticides sprayed in the air and used to treat their clothes, may have triggered the cluster of symptoms known as Gulf War illness, a study found.

Scientists, U.S. government officials and veterans' groups have long debated why tens of thousands of soldiers who served in the Gulf War in 1991 developed a cluster of symptoms that became known as Gulf War illness. The symptoms include chronic fatigue, headaches, dizziness, loss of muscle control, memory and attention problems, and muscle and joint pain.

For many years, U.S. officials contended that Gulf War symptoms were caused by psychological stress, not chemical exposure. Today's review of more than 20 studies, published in the Proceedings of the National Academy of Sciences, led to the "ineluctable conclusion" that the high rate of symptoms in the soldiers was due to their exposure to any or all of the toxins, said study author Beatrice Golomb of the University of California, San Diego.

"This provides triangulating evidence from inside and outside the Gulf War arena supporting the causal connection" of the chemicals to the soldiers' syndrome, Golomb said in a telephone interview on March 7.

The key ingredient is acetylcholinesterase inhibitors, or AChEis, which act in the body to blunt the effect of an enzyme that regulates a brain chemical called acetylcholine. That substance helps neurons to fire. When the enzyme that regulates this chemical is blocked by an inhibitor, it causes the neurons to fire excessively, Golomb says.

'Abnormal Brain Function'

"This leads to uncontrolled muscle action, including of muscles involved in breathing, and can prevent people from breathing normally," Golomb says. "It also causes abnormal brain function. That's why nerve gas is a bad thing to be exposed to."

AChEis are found in pesticides used to protect soldiers against insects in the battlefield, and are also in the anti-nerve agent pills called pyridostigmine bromide, or PB, given to Gulf War soldiers. In addition, AChEis are in sarin, a nerve gas that was released into the atmosphere when U.S. forces launched rockets at an Iraqi munitions dump on March 10, 1991.

Golomb's research reviewed studies that found elevated rates of Gulf War illness-like symptoms in Gulf War soldiers, people in other occupational settings and animals with high rates of exposure to these substances.

Officials of the Department of Veterans Affairs declined to comment on the study, said spokeswoman Alison Aikele, in an e-mail today.

#### Earlier Report

A report of the Presidential Advisory Committee on Gulf War Veterans' Illnesses didn't find a link between environmental exposure and illness on the part of soldiers, according to a March 1997 publication by the veterans agency, and suggested post-traumatic stress disorder may have been the key factor.

“Current scientific evidence does not support a cause and effect link between the symptoms and illnesses reported today by Gulf War veterans and exposures while in the Gulf Region to the following environmental risk factors assessed by the Committee: pesticides, chemical warfare agents, biological warfare agents, vaccines, pyridostigmine bromide, infectious diseases, depleted uranium, oil-well fires and smoke, and petroleum products,” the VA publication said. “Stress is known to affect the brain, immune system, cardiovascular system, and various hormonal responses.”

#### Complaints `Correct'

“This new scientific evidence shows that veterans were correct and that the military and the VA intentionally lied to veterans for many years,” said Paul Sullivan, a former Army cavalry scout who fought in the Gulf War and suffers from migraine headaches and respiratory problems.

Sullivan and others fought for years for government recognition of the syndrome. Sullivan filed the freedom of information requests that he said led the Department of Defense to admit that 100,000 soldiers might have been exposed to chemical agents, including sarin, when the military destroyed the Khamisiyah munitions dump in March 1991.

“From 1991 to 1995, they adamantly denied that any chemical weapons were present on the battlefield, including Khamisiyah,” said Sullivan, in a telephone interview today. “Then the department slowly began releasing information” that as many as 100,000 soldiers may have been in range of the chemical release.

The studies evaluated by Golomb suggest that those soldiers were more likely to have impaired cognitive abilities and to perform worse on tests of neurological function.

#### `Scientifically Sound'

“I'm glad to see it written and it's scientifically sound,” said James Moss, a former U.S. Department of Agriculture scientist whose work in the mid-1990s found that the PB pill, combined with the pesticide DEET, triggered similar symptoms in cockroaches and mice. “I

think it's overdue that people are saying this, that there is some kind of association. It's turned up in several papers and nobody has negated them."

Moss, who wasn't involved in the new study, found in the mid-1990s that the potency of PB quadrupled in the presence of DEET, a pesticide widely used in the war. Uniforms of Gulf War personnel also were treated with permethrin, a pesticide that can increase the toxic effect of PB and DEET.

Moss left the USDA after his research contract wasn't renewed and currently manages a research laboratory at the University of Florida in Gainesville.

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