



DEPARTMENT OF VETERANS AFFAIRS  
Veterans Health Administration  
Washington DC 20420

**IL 10-2005-020**

In Reply Refer To: 131

September 15, 2005

**UNDER SECRETARY FOR HEALTH'S INFORMATION LETTER**

**NEW STUDY REPORTING INCREASED RISK OF  
BRAIN CANCER DEATHS AMONG 1991 GULF WAR VETERANS POSSIBLY  
EXPOSED TO SARIN CHEMICAL WARFARE AGENT AT KHAMISIYAH, IRAQ**

**1. Purpose.** This Under Secretary for Health's Information Letter provides information to clinicians who:

- a. Examine and provide care to veterans who may have been exposed to low levels of chemical warfare nerve agents including sarin during March 1991 weapons demolitions at Khamisiyah, Iraq, and
- b. May have concerns about how such exposures may have affected the veteran's health.

**2. Background**

a. A recent scientific study ("Mortality in US Army Gulf War Veterans Exposed to 1991 Khamisiyah Chemical Munitions Destruction." TA Bullman, CM Mahan, HK Kang, WF Page. *American Journal of Public Health*, August 2005, 95(8), 1382-1388) reports an increased risk for brain cancer among United States (U.S.) Army 1991 Gulf War veterans identified as possibly exposed to low-levels of chemical warfare nerve agents during March 1991 weapons demolitions at Khamisiyah, Iraq, based upon exposure modeling sponsored by the Department of Defense (DOD).

b. DOD has informed the Department of Veterans Affairs (VA) that they intend to mail letters in September 2005 to the more than 100,000 Gulf War (Operation Desert Shield and Desert Storm) veterans estimated, through the DOD exposure modeling, to have been exposed to low levels of sarin at Khamisiyah. The letters will inform them of these new results and suggest that concerned veterans can contact their local VA medical center for more information.

c. Concerns about possible health problems from low-level sarin exposure became an issue for 1991 Gulf War veterans following revelations that some Iraqi munitions destroyed by U.S. forces at Khamisiyah contained this agent. In 1997 and 2000, DOD sponsored modeling of potential chemical warfare agent exposure for Gulf War veterans resulting from U.S. demolition of Iraqi chemical weapons at Khamisiyah in March 1991. They concluded that no Gulf War veteran experienced acute exposure; however, about 100,000 veterans could have been exposed to "very low levels" (sub-clinical sarin exposures so small that they would have caused no

immediate or obvious poisoning). This is consistent with DOD's observation that throughout this period there were no reports of chemical warfare agent detections, or of any service members experiencing symptoms consistent with acute chemical warfare agent exposure.

d. The new publication compares causes of death among 100,487 sarin-exposed (based on DOD's model) to 224,980 non-exposed Army Gulf War veterans. Researchers reported no difference in overall death rates or overall death rates from cancer between the exposed and non-exposed Gulf War veterans. However, exposed veterans were about twice as likely to have died from brain cancer compared to unexposed veterans, or about 12 excess brain cancer deaths among the 100,487 exposed veterans over a 9-year period.

e. Consistent with earlier studies, overall mortality and mortality for any specific cancer including brain cancer among these veterans was about half that of the comparable civilian U.S. population. This is almost certainly because people joining the military tend to be significantly healthier than average. NOTE: A current congressionally mandated literature review by the National Academy of Sciences Institute of Medicine (IOM) will include evaluation of the new report.

f. There are several significant problems with the new study that limit its interpretation:

(1) The DOD Khamisiyah exposure modeling has been soundly criticized as unreliable by both the U.S. Congressional Government Accountability Office and by IOM. In their 2004 Update on sarin health effects, IOM concluded "Because of the uncertainty in the [Khamisiyah] exposure assessment models . . . studies [based on that model] do not provide strong evidence for or against the presence of neurologic effects."

(2) The study's authors themselves point out that since sarin is not a known carcinogen, it may be that the demolitions at Khamisiyah released other hazardous agents that could have caused the apparent increased risk of brain cancer death. Sarin specifically and organophosphorus nerve agents in general, including commonly used pesticides, are not considered to be carcinogens.

(3) The use of multiple statistical comparisons used in this study could easily have lead to a spurious statistically-significant association. Apparently, more than sixty comparisons were made to identify one statistically-significant association between model-based exposure and brain cancer. The authors themselves concluded that additional research is needed to confirm findings of a higher brain cancer death risk for some Gulf War veterans.

(4) A 2000 congressionally-mandated review and a 2004 update conducted by the IOM concluded, based upon their review of a large body of scientific literature including reports using the DOD Khamisiyah modeling, that the evidence did not support any long-term health effects following sub-clinical sarin exposure. ("Gulf War & Health Vol. 1: Depleted Uranium, Pyridostigmine Bromide, Sarin, Vaccines." Institute of Medicine, National Academies Press, 2000, 408 pp, and "Gulf War & Health: Updated Literature Review of Sarin." Institute of Medicine, National Academies Press, 2004, 120pp, at [www.nap.edu](http://www.nap.edu)).

**3. Guidance.** The following summary is to assist VA health care staff in providing care to veterans of the 1991 Gulf War who may have been exposed to chemical warfare nerve agents including sarin during operations at Khamisiyah.

a. There are no tests available today that can confirm exposure to these agents years or decades in the past. Therefore, medical care should focus upon the current health of the veteran, e.g., taking a thorough military and medical history, along with a basic medical examination that includes appropriate laboratory tests and specialty consultations if warranted relating to the veteran's complaints and medical findings.

b. Systematic congressionally-mandated reviews of relevant literature on sarin health effects by the National Academies of Science Institute of Medicine have not identified any specific illness as connected to sub-clinical exposure to chemical warfare nerve agents including sarin.

c. Although possible exposure to low levels of sarin at Khamisiyah in 1991 probably has minimal clinical significance today, VA health care providers need to be prepared to address the concerns of veterans and their families that may result from hearing about the new study either from the media or from DOD's letter-writing campaign. In particular, even if the finding of increased brain cancer risk among Khamisiyah veterans can be confirmed, the actual risk of brain cancer among veterans of the 1991 Gulf War is very small. Additional general information about the risks from exposure to sarin and other hazardous agents associated with the 1991 Gulf War is available at [www.va.gov/EnvironAgents](http://www.va.gov/EnvironAgents), and in the VA Veterans Health Initiative Independent Study Guide "Health Effects from Chemical, Biological, and Radiological Weapons," available at [www.va.gov/VHI](http://www.va.gov/VHI).

d. Veterans need to be informed that seeking care for conditions possibly related to exposure to chemical warfare agents does not constitute a claim for compensation. **NOTE:** *Veterans wishing to file a compensation claim need to be referred to a Veterans Benefits Counselor, or be advised to contact the appropriate VA Regional Office at 1-800-827-1000.*

**4. Inquiries.** Questions regarding this information letter may be addressed to the Director, Environmental Agents Service (131), at (202) 273-8579.

S/ Jonathan B. Perlin, MD, PhD, MSHA, FACP  
Under Secretary for Health

DISTRIBUTION: CO: E-mailed 9/22/05  
FLD: VISN, MA, DO, OC, OCRO, and 200 – E-mailed 9/22/05