Appendix A

Presentation 1 – Joel Graves

Gulf War Illness

~ A Review & A Proposal ~

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Member 1st Battalion, 67th Armored Regiment,
1st "Tiger" Brigade (Independent Task Force)
camped vicinity Al Jahrah after Desert Storm

Low-Level Sarin Gas Exposure

- Low-level exposures to certain organophosphorous compounds including sarin nerve agents to which our troops may have been exposed, can cause delayed, chronic neurotoxic effects. In addition, German personnel who were exposed to nerve agents during World War II displayed signs and symptoms of neurological problems even 5 to 10 years after their last exposure (GAO Report on Gulf War Illnesses, Feb 24, 1998, p6).
- "Previously, we reported that approximately 4% of a battalion of US Gulf War veterans developed a subtle neurologic syndrome that was strongly associated epidemiologically with perceived wartime exposure to low-level nerve agent (Haley and Kurt, 1997)(Journal of Psychopharmacology 14(1)(2000 87-88).
- Laboratory research prompted by soldier's reports compiled during the Gulf War suggest that the psychological stress experienced in wartime may enhance the penetration of AChE inhibitors (i.e. sarin) to the brain potentially exaggerating the effects of either alone (Soreq, H, The Health Impact of Chemical Exposures During the Gulf War, Feb28, 1999: ref Friedman, A. et al. Nat Med 2, 1382-1385 – 1996).

Low Dose Sarin Gas Exposure

- Gulf War veterans have complained of a variety of symptoms, including headaches, joint pain, fatigue, diarrhea, skin rashes, and dizziness. Evidence suggests they might have suffered neurological damage from some combination of stress and exposure... non-lethal doses of sarin. A recent Government Accountability Office report confirmed that exposure to low-level sarin during the Gulf War was more frequent and widespread than previously acknowledged (Suits, R. Vital Signs, Spring 2005, p10). This report is based on the results of the four-year, DOD funded study at Wright State, directed by Marianna Morris, PhD, professor and chair of pharmacology and toxicology and Daniel Organisciak, PhD, professor and chair of biochemistry and molecular biology.
- Even subclinical doses of sarin cause subtle changes in the brain; subclinical exposure to sarin has been proposed as an etiology to the Gulf War Syndrome (Sopori, Mohan L. Neuroimmune Effects of Inhaling Low Dose Sarin, Lovelace Institutes, Albuquerque, NM, Feb 2005).

Arms Control Today Jan/Feb 2006

Report Confirms Iraq Used Sarin in 1991

- U.S. investigators have confirmed that Iraq used chemical weapons to quash a Shiite uprising after the 1991 Persian Gulf War.
- The report marked the first outside confirmation that the regime had used chemical weapons to quell a growing 1991 insurgency.
- The report said the use of chemical weapons was an example of the "dire nature of the situation" and the regime's "faith in 'special weapons'" that it would consider using chemical weapons *while coalition forces were still in Iraq*.

Early Warning
By William M. Arkin

Excerpt from Washington Post Blog
November 28, 2005

http://blogs.washingtonpost.com/earlywarning/2005/11/another_saddam_1.html

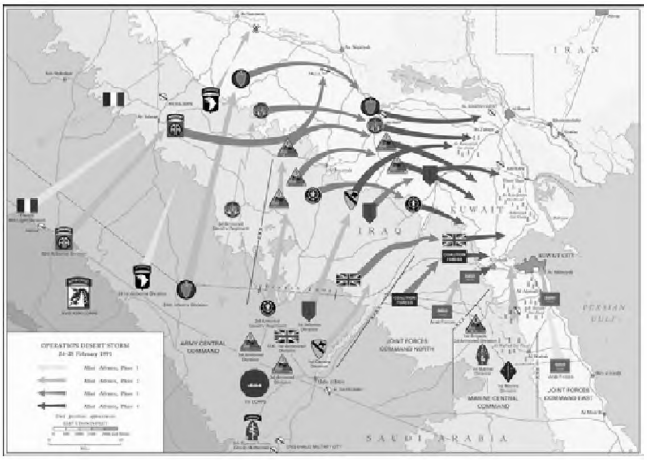
William M. Arkin on National and Homeland Security

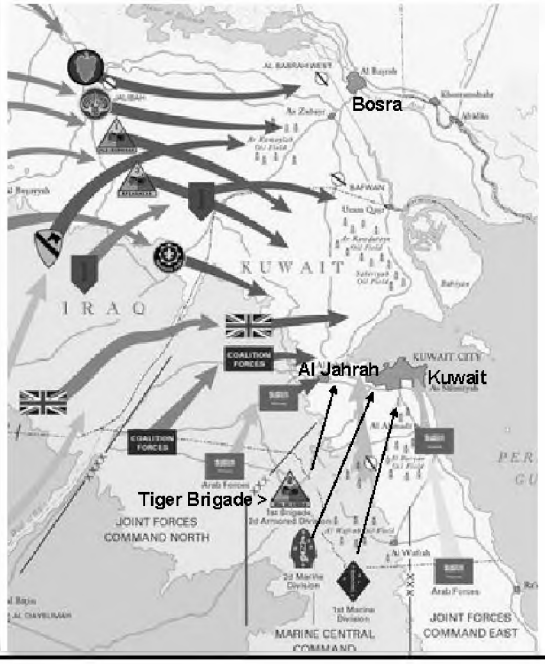
- I have a suggestion for another massacre, one that was unleashed in response to the worst instance of civil unrest since the beginning of President Saddam Hussein's rule.

  What happened in this massacre bears heavily on the current health of American veterans, on our view of the competence of the U.S. intelligence community and the current weapons of mass destruction debate.

- In a little noticed discovery, the Iraq Survey Group investigating Iraq's WMD concluded last year that the former regime dropped chemical weapons on Shi'ite rebel groups during their post-Desert Storm revolt in *March 1991*. This finding directly contradicts the Pentagon review of potential causes of Gulf War Syndrome as well as the earlier conclusions of the intelligence community which had looked into the matter.

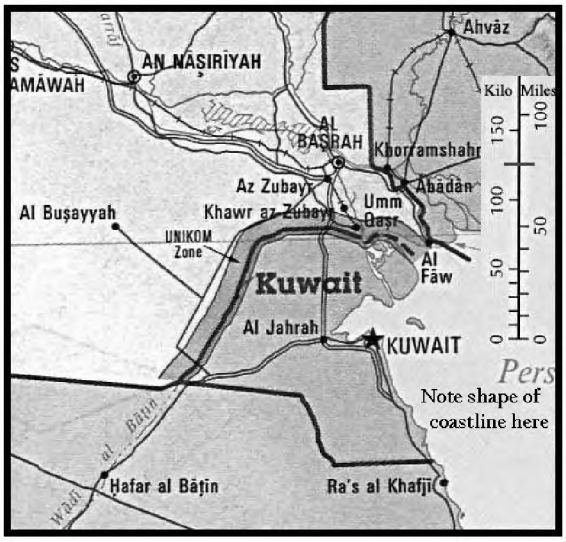
Troop Deployments During Desert Storm



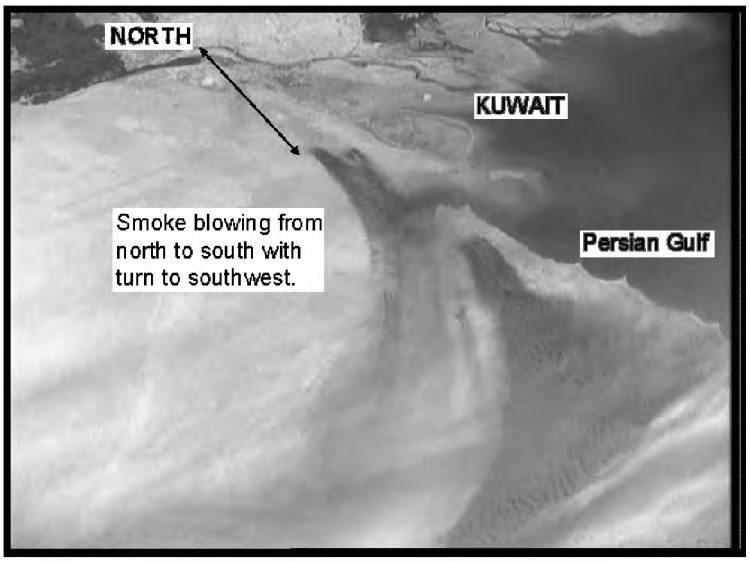


Detail of Troop Deployments in Southeast Iraq and Kuwait during Desert Storm.

Basra to Kuwait City



Oil Well Fire Plume View from Space



On March 15th, after the evening meal, everyone got sick. Some were very sick and went to bed. I was nauseated and dizzy for several hours. We thought it was food poisoning, but we heard a rumor that chemical alarms had gone off in some units around us. Our own chemical alarms had been put away a month before after the war.

Unusually strong north winds blew down on us for a few days. At that time, Bosra, 75 miles to the north, was gassed by Saddam Hussein to put down the Shiite uprising, and the nerve agent blew down on us. I acknowledge that it was a small dose, but it was enough to set off alarms and make people sick. Even if a small dose, it was a significant amount.

Picture taken out of Humvee window at midday during attack. It was so dark, we could barely see road
Picture is of oil well fire to west blowing down on us as we attacked north to Kuwait City, 2nd day.

People were exposed to many different toxins and environmental contaminants, and many synergistic effects are possible. But I believe sarin gas, perhaps along with combat stress, is most likely responsible for most Gulf War illness.

Soldier on top of captured Iraqi T-72, taken with camera flash at noon time.
It really was that dark. It was so dark, you could not read a book outside.
All of these pictures are of the 1st Battalion, 67th Armor Regiment, 2nd Armor Division

My Proposal

I propose that Gulf War Illness in most veterans of that era is due primarily to sarin gas exposure, whether from Khamasiya and other bunker demolition events or from the Bosra uprising.

I am sure that the sarin gas exposures have been exasperated by other exposures, combat stress, and their synergistic effects; and therefore, has manifested itself differently in different people.

But if sarin gas exposure is the one common thread to the overall illness, then it is possible to create a case definition and propose more exact research guidelines and treatments for veterans.