Continuing Research into Gulf War Illness

EVIDENCE SUPPORTS A LINK BETWEEN lasting health problems in some Vietnam veterans and wartime exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) in the defoliant Agent Orange. Martin Enserink, in his News Focus article "Gulf War Illness: The Battle Continues" (2 Feb., p. 812), omits this point in his review of postwar syndromes of the past.

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A U.S. Air Force C-123 flies over South Vietnam in 1966, spraying defoliants containing dioxins.

The Agent Orange example suggests that sustained research might yield important information on the cause of health effects observed in Gulf War veterans. A major research effort was initiated in response to health effects observed in people who had contact with Agent Orange in Vietnam. The Environmental Protection Agency and others built on this work and found that 2,3,7,8-TCDD and related compounds ("dioxins") may affect the health of people in the general population (*1*). It is now feasible to avoid future health problems by preventing this pollution (*2*), and a global treaty seeking this goal is in the works (*3*). However, while Enserink reports scepticism regarding identification of a cause of Gulf War Illness after 10 years and $155 million spent on research, the research on dioxins spanned decades and cost more than $2 billion (*4*).

Lacking mention of these findings following the Vietnam War, Enserink's report appears overly pessimistic about the prospects for health research following the Gulf War. The concern is that we might lose opportunities to identify a new environmental exposure factor in order to to prevent recurrent problems, if we fail to continue use of present scientific tools.

GREG KARRAS
Communities for a Better Environment (CBE), 1611 Telegraph Avenue, Suite 450, Oakland, CA 94612, USA; e-mail: gkarras@cbecal.org

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I WISH TO TAKE ISSUE WITH THE DESCRIPTION IN Martin Enserink's New Focus article on Gulf War Illness (GWI) of our discovery (*1, 2*) of *Mycoplasma fermentans* in ~40% of GWI patients that "it is not clear whether *M. fermentans* really causes disease." In fact, there are numerous peer-reviewed papers on this issue (reviewed in *3*), and a patent supported by the U.S. Army has been issued entitled "Pathogenic Mycoplasma" (*4*). Studies of its pathogenic properties have been published by the Armed Forces Institute of Pathology showing that healthy monkeys injected with *M. fermentans* developed a chronic illness that progresses to become fatal (*5*). Also, civilian patients with similar symptoms also show high rates of infection (*2*, *6*, *7*). *M. fermentans* fulfills almost all of the criteria of pathogenicity (*8*), including recovery on specific antibiotics (*7*). On the basis of this information the Department of Veterans Affairs established Cooperative Clinical Study Program #475, a blinded, placebo-controlled study on the effects of antibiotic treatment on GWI patients with *M. fermentans* infections. Although the clinical results of this study are not yet available, the laboratory entry criteria to the study indicate that a high percentage of GWI patients have systemic *M. fermentans* infections.

GARTH NICOLSON
The Institute for Molecular Medicine, 15162 Triton Lane, Huntington Beach, CA 92649, USA; e-mail: gnicolson@immed.org

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted by e-mail (science_letters@aaas.org), the Web (www.letter2science.org), or regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

Statistics: What Seems Natural?

WHICH STATISTICAL DATA SEEM EASIER TO understand, 10 cases in 100, or 10%? In their Policy Forum "Communicating statistical information" (*Science*'s Compass, 22 Dec., p. 2261), U. Hoffrage and colleagues offer persuasive evidence that both experts and novices find it to be the former. When prevalence, sensitivity, and false positive rates are given as probabilities (e.g., 10%), most physicians misinterpret the information in a way that could be potentially disastrous for the patient, but when they are presented as "natural frequencies" (e.g., 10 cases in 100), the physicians' performance is dramatically better. The authors suggest ways to improve both communication of statistical information and medical education by using frequencies rather than probabilities.

The discussion by Hoffrage *et al.* leaves open the question as to why this is the case. Elsewhere, Gigerenzer and Hoffrage