

Rachel's Environment & Health News

#123 -Study Reveals Pattern Of Illness From Drinking Polluted Water

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Twenty-five people exposed to contaminated drinking water in Woburn, Massachusetts, have developed a pattern of disease involving skin disorders, damage to the central nervous system, and heart problems, when compared to a control group of forty individuals matched for age, sex, and social habits. In Woburn a public water supply was contaminated with trichloroethylene (267 parts per billion, or ppb), tetrachloroethylene (21 ppb) and lesser amounts of other industrial solvents such as 1,1,1-trichloroethane and chloroform. People drank the contaminated water for more than a decade before the pollution was identified.

The problem first came to light as a cluster of leukemia cases. Leukemia is cancer of the blood-forming cells, and it is almost always fatal. Between 1969 and 1972, 12 cases of leukemia occurred in Woburn, where only 5 cases would have been expected to occur naturally; Woburn has a total population of 37,000. The incidence of childhood leukemia in the entire city was 2.5 times the national average, but in East Woburn--the part of town principally served by the contaminated water wells--the incidence of leukemia in male children was 12.5 times what would have been expected by random chance.

The 25 individuals in the present study were not themselves victims of leukemia, but were members of eight families in which at least one member had leukemia. Examination and evaluation of the 25 individuals occurred 5 to 6 years after the polluted water wells had been closed. The study looked principally for damage to the immune system of the 25 people because an earlier study had reported that children of East Woburn were suffering a higher rate of pulmonary (lung-related) and urinary infections than children in West Woburn, where the water pollution was not so severe.

None of the 25 individuals had a history of unusual exposure to organic solvents, benzene, halogenated hydrocarbons, heavy metals, herbicides, or pesticides.

Medical examination of the 25 individuals "revealed a clinical syndrome including gastroenteropathy, cardiomyopathy and dermatological and immunological abnormalities."

In plain English, the study revealed that 13 (52%) of the people had stomach problems including chronic nausea and recurrent diarrhea and constipation (a condition known as the "irritable bowel syndrome"). These symptoms improved markedly after people stopped drinking the contaminated well water but were still present more than five years later in all affected subjects.

In thirteen of the subjects (52%), recurrent maculopapular rashes occurred within a year of the beginning of exposure. (Maculopapular rashes are a mixture of discolored skin and bumpy skin.) These occurred at least twice per year for 2 to 4 weeks. The rashes were poorly responsive to steroid therapy, were not associated with fever, and occurred most often on the extremities and face. No obvious cause could be found. In most cases, these rashes cleared up after one to two years of exposure, but in 4 cases, they continued after cessation of exposure.

Twenty-two of the subjects (88%) had frequent or chronic sinusitis [inflammation of the sinuses] or rhinitis [inflammation of the mucous membrane of the nose], and this was not related to the season of the year. (Chronic sinusitis was defined as two episodes per year for five years, responsive to antibiotics; chronic rhinitis was defined as appropriate symptoms for more than three months per year for five years with no seasonal component.)

Fourteen subjects (56%) complained of heart problems, including rapid heart rate while at rest, and palpitations or near syncope [heart spasms]. Echocardiograms revealed eight subjects with serious ventricular dysrhythmias [irregular rhythms of the pumping action of the heart].

Immunological damage was measured three different ways. The

findings revealed a "persistent lymphocytosis" [an excess of white blood cells] and an elevation in the absolute number of T cells. In addition, the ratio of helper cells to suppressor cells changed in the subject population, but not in the control population, as time passed after they stopped drinking polluted water.

Other studies of the effects of trichloroethylene (TCE) on humans have documented all of the symptoms reported among the 25 subjects. However, the exposure levels in the present study were lower than exposures reported in previous studies. The authors of the present study (two British cancer specialists, a California dermatologist and a Boston public health specialist, all of them medical doctors) concluded that "Since neurological [nerve], cardiological [heart] and dermatological [skin] abnormalities have been previously seen in humans exposed to TCE, the Woburn population which has all these abnormalities, probably represents a true syndrome of toxic exposure."

This is an important study because it reveals a group of symptoms besides cancer that can afflict people who are exposed to water contaminated with industrial solvents. Too often, health studies focus entirely on cancer. As important as it is, cancer is not the only symptom of drinking polluted water, and these physicians have made a significant contribution to the medical study of chemical victims.

Get: V.S. Byers, "Association between clinical symptoms and lymphocyte abnormalities in a population with chronic domestic exposure to industrial solventcontaminated domestic water supply and a high incidence of leukaemia." *CANCER IMMUNOLOGY AND IMMUNOTHERAPY*, Vol. 27 (1988), pgs. 77-81. For a free reprint, write to: V.S. Byers, Cancer Research Campaign Laboratories, University of Nottingham, University Park, Nottingham NG7 2RD, England. We received a copy from the excellent service, ENVIRONMENTAL HEALTH MONTHLY provided by CCHW, the Citizen's Clearinghouse for Hazardous Waste, P.O. Box 926, Arlington, VA 22216; phone (703) 276-7070; a year's subscription to the Monthly costs \$15 for grass roots activists and \$25 for professionals. Hats off to Linda King, CCHW's first field organizer, who started the project that became the MONTHLY; Linda has now left CCHW and she'll be missed by the hundreds of groups and individuals she has helped.

--Peter Montague

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WORKPLACE HAZARDS INCREASING

The workplace is becoming more hazardous, according to the federal Department of Labor's Bureau of Labor Statistics. The Bureau says 190,000 workers suffered new illnesses for the first time during 1987, an increase of 28% over the 136,900 new cases of job-related illness reported in 1986. Most of these illnesses involve noise-related hearing loss, skin diseases [presumably related to chemical exposures], and repetitive motion ailments. A total of 3,400 workers were killed on the job during 1987, and nearly six million (5,843,100) were injured on the job; half the injuries were so severe that employees lost a full day or more of work; the total time lost to injuries was 48.8 million worker-days. This means that 83 out of every thousand workers were injured on the job during 1987, a 5% increase compared to 1986 when 79 out of every 1000 workers were injured. --NEW YORK TIMES 11/16/88 (881116), pg. A14.

--Peter Montague

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