

Press release

## Genetic damage and health in Fallujah Iraq worse than Hiroshima

Results of a population-based epidemiological study organized by Malak Hamdan and Chris Busby are published tomorrow in the International Journal of Environmental Studies and Public Health (IJERPH) based in Basle, Switzerland. They show increases in cancer, leukemia and infant mortality and perturbations of the normal human population birth sex ratio significantly greater than those reported for the survivors of the A-Bombs at Hiroshima and Nagasaki in 1945.

Results of a survey in Jan/Feb 2010 of 711 houses and more than 4000 individuals in Fallujah show that in the five years following the 2004 attacks by USA-led forces there has been a 4-fold increase in all cancer. Interestingly, the spectrum of cancer is similar to that in the Hiroshima survivors who were exposed to ionizing radiation from the bomb and uranium in the fallout. By comparing the sample population rates to the cancer rates in Egypt and Jordan, researchers found there has been a 38-fold increase in leukemia (20 cases) almost a 10-fold increase in female breast cancer (12 cases) and significant increases in lymphoma and brain tumours in adults.

Based on 16 cases in the 5-year period, the 12-fold increases in childhood cancer in those aged 0-14 were particularly marked. The cancer and leukemia increases were all in younger people than would normally be expected. Infant mortality was found to be 80 per 1000 births which compares with a value of 19 in Egypt, 17 in Jordan and 9.7 in Kuwait. An important result is that the sex-ratio, which in normal populations is always 1050 boys born per 1000 girls was seriously reduced in the group born immediately after 2005, one year after the conflict: in this group the sex ratio was 860.

Birth sex ratio is a well known indicator of genetic damage, the reduction in boy births being due to the fact that girls have a redundant X-chromosome and can therefore afford to lose one through genetic damage; boys do not. Sex ratio was similarly reduced in the Hiroshima survivors children. "This is an extraordinary and alarming result" said Dr Busby, who is visiting Professor in the University of Ulster and Scientific Director of Green Audit, an independent environmental research organization. He added: "To produce an effect like this, some very major mutagenic exposure must have occurred in 2004 when the attacks happened. We need urgently to find out what the agent was. Although many suspect Uranium, we cannot be certain without further research and independent analysis of samples from the area." Malak Hamdan, who organized the project said: " I am so glad that we have been able to obtain proper scientific confirmation of all the anecdotal evidence of cancer and congenital birth defects. Maybe now the international community will wake up".

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