

Cancer and birth defects in Iraq: The nuclear legacy

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Ten years after the Iraq war of 2003 a team of scientists based in Mosul, northern Iraq, have detected high levels of uranium contamination in soil samples at three sites in the province of Nineveh which, coupled with dramatically increasing rates of childhood cancers and birth defects at local hospitals, highlight the ongoing legacy of modern warfare to civilians in conflict zones.

The radioactive element uranium is widely dispersed throughout the earth's crust and is much sought after as a fuel for [nuclear power plants](#) and for use in weapons. Depleted uranium (DU), commonly used in modern munitions such as defensive armour plating and armour-piercing projectiles, is 40 per cent less radioactive than natural uranium, but remains a significant and controversial danger to human health.

The [World Health Organisation](#) (WHO) sets a maximum uranium exposure of 1 millisievert (mSv) per year for the general public, but [environmental scientists](#) at the University of Mosul and the Institute of Forest Ecology, Universitaet für Bodenkultur (BOKU), Vienna, Austria, led by Riyadh Abdullah Fathi have measured significant levels of uranium in [soil samples](#) from three sites in the province of Nineveh in the north of Iraq. Writing in the journal *Medicine, Conflict and Survival*, Fathi and colleagues link their findings with dramatic increases in cancers reported to the Mosul Cancer Registry and the Iraqi national cancer registry (which began collecting data in 1975).

They conclude that:

"The Gulf Wars of 1991 and 2003 left a legacy of pollution with DU in many regions of Iraq. The effects of these munitions may be affecting the general health of Iraqi citizens, manifesting in an increase in cancers and birth defects."

They also warn that, even though some of the contamination measured in this study is specifically linked to known sites, it can be easily spread widely in the air, soil and water, particularly as dust in windstorms.

Their report "[Environmental pollution](#) by depleted uranium in Iraq with special reference to Mosul and possible effects on cancer and birth defect rates" begins with a literature review that collates health-related data from a range of sources, including a report by the WHO (in 2003), which states that [childhood cancers](#) – particularly leukaemia – are ten times higher in Iraq than in other industrialised countries.

Although there is already significant evidence of cancers and related illnesses in adults (particularly war veterans), the authors emphasise that it is the dramatic rise in the incidence of cancer and birth defects in children under 15 years of age since the second Gulf War that points to the terrible legacy of DU weaponry. Childhood cancers are now some five times higher than before the two Gulf Wars (currently around 22 children per 100,000, compared with approximately 4 children per 100,000 in 1990).

The focal point of their scientific study was three sites near Mosul: Adayah, a landfill for radioactive waste; Rihanyah, a former research centre for nuclear munitions (disused since 1991); and Damerchy, a small village on the Tigris River (about 10km north of Mosel), which was a scene of fighting in the 2003 conflict. Particularly high levels of uranium were found at Rihanyah where storage ponds of liquid and solid waste from uranium processing are still a source of radioactive pollution. The accumulation of [uranium](#) in wild plants (principally the shrub

Lagonychium farctum) was noted in Damerchy, where it is thought to have entered the food chain and is linked to the death of numerous head of cattle.

The team acknowledge that there are numerous other factors that impact on the data for cancer rates in the wider Iraqi population, including population increases and possible inaccuracies due to reluctance to register congenital malformations and deaths or poor administration in hospitals (although almost 70 per cent of births took place outside hospitals).

Nevertheless, with the WHO predicting that global cancer levels will rise by 50 per cent between 2003 and 2020, the presence of so much carcinogenic material across Iraq suggests that the public health legacy of the two Gulf Wars is only going to get worse.

More information: Fathia, R. et al. Environmental pollution by depleted uranium in Iraq with special reference to Mosul and possible effects on cancer and birth defect rates, *Medicine, Conflict and Survival*, Vol. 29, No. 1, 7–25. [dx.doi.org/10.1080/13623699.2013.765173](https://doi.org/10.1080/13623699.2013.765173)

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