



# The Most Toxic War in History: 25 years Later

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29 January 2016

This month marks the 25<sup>th</sup> anniversary of the start of Operation Desert Storm, the combat phase of the Gulf War. Precipitated by Iraq's invasion and annexation of Kuwait in August 1990, the conflict was the first to see the widespread use of depleted uranium (DU) ammunition. US and UK forces subsequently acknowledged firing a combined 286,000kg of DU – the vast majority of which was fired by US Abrams and M60 tanks, and A10 and Harrier aircraft.

The decision to deploy the radioactive and chemically toxic weapons, which had been under development since the 1950s as a response to Cold War concerns over defeating Soviet armoured divisions, would prove highly contentious in the following years. Once the [media](#) and military's enthusiasm for what was promoted as a new paradigm in high-tech low-casualty warfare began to subside, [veterans](#), [journalists](#) and [civil society](#) organisations in the US and UK increasingly began to challenge the general conduct of the war, and the use of DU in particular.

Soldiers in Gulf War wearing gas masks. Image by Wikimedia

Soldiers in Gulf War wearing gas masks. Image by [Wikimedia](#).

This was largely to be expected, and had been anticipated just six months before the conflict in a US military [study](#) on the environmental and health risks of DU: *“Public relations efforts are indicated, and may not be effective due to the public's perception of radioactivity. Fielding and combat activities present the potential for adverse international reaction.”* Those wishing to continue to use DU weapons recognised that they would need to plan vigorous public relations efforts in order to justify their continued use, a pattern that continues

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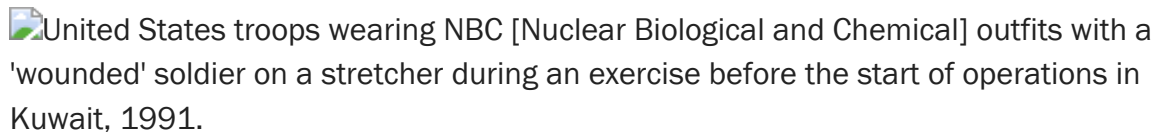
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today. Following 1991, this saw DU branded as the “Silver Bullet” – a weapon capable of such astonishing feats, and so militarily important, that any concerns over its potential health or environmental impacts should be disregarded.

### “The most toxic war in history”

As increasing numbers of veterans began to report post-deployment health problems in the years that followed, attention began to focus on the overall [toxicity](#) of the conflict. From oil fires and pesticides, to the use and disposal of chemical weapons, the Gulf War was increasingly viewed as “the most toxic in history”. Whether it was – conflict pollution had been developing in concert with the mechanisation of warfare and industrialisation throughout the 20<sup>th</sup> Century, or whether this just represented a growing awareness of the linkages between chemicals and health is a matter of debate. Nevertheless, questions were asked about whether possible exposures to a suite of chemicals could be responsible for the ailments reported by veterans. These ranged from birth defects to chronic fatigue, and led to the emergence of the catch all term [Gulf War Syndrome](#) (GWS).

United States troops wearing NBC [Nuclear Biological and Chemical] outfits with a 'wounded' soldier on a stretcher during an exercise before the start of operations in Kuwait, 1991.

US troops wearing Nuclear Biological and Chemical outfits with a ‘wounded’ soldier on a stretcher during an exercise before the start of operations in Kuwait, 1991. [Image by Wikimedia.](#)

In the decade that followed a number of internal reviews, which were triggered by public concern over veterans, flagged problems caused by the haste to

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deploy DU weapons. For example, a 2000 review by the US Government Accounting Office found that there had been significant **failures** in the training policies intended to minimise the exposure of military personnel to DU. It also found flaws in the systems of data collection necessary to determine exposure levels and subsequent health impacts, not only for DU but also for other toxic exposures.


In the case of DU, it also became clear that scientifically unjustified assumptions had been made about the health risks it posed. These ranged from basic information about the quantity of DU released when targets are struck, to the complex biological responses within the human body when cells are exposed, with the *in vitro* and animal **studies** necessary to identify DU's role in causing cancer only initiated in 2000. For those troops caught in friendly fire incidents, or who returned to, or repaired, DU damaged vehicles, it was clear that the scientific knowledge available on these and other issues was insufficient to answer their concerns about the health risks they faced.

The clear lesson from DU's use in 1991 is that far more data is required on the health risks and environmental behaviour of the substances used in munitions before they are deployed. Indeed, such data should be a pre-requisite for determining both the legality and acceptability of munitions prior to their use. In the rush to deploy the weapons, DU advocates found it all too easy to rely on assumptions that were not based on robust scientific evidence. Similarly, the lack of accurate monitoring of other toxic battlefield exposures hampered efforts to determine the cause or causes of GWS among military personnel. The situation was similar to that experienced by veterans from the conflict in south-east Asia, when efforts were made to quantify their exposure to dioxin contaminated herbicides.

## Increasing concerns over the health of Iraqi civilians

Concerns over the health risks that DU weapons posed to Iraqi civilians took rather longer to emerge but by 1996, [reports](#) had begun to circulate from western journalists visiting Iraqi hospitals. Harshly affected by the sanctions regime, which blocked access to basic equipment and medication, medical professionals were identifying changes in the rates and age distribution of certain cancers, and in the prevalence of birth abnormalities.

Politicisation of the findings by the Iraqi regime, and a disinterest in the humanitarian consequences of the legacy of the 1991 conflict, contributed to a failure to meaningfully address these reports. Yet the problems that the US military had faced in trying to determine the health effects being reported by their own troops during the 1990s also applied for those who sought, and continue to seek, to examine the impact of the weapons on Iraqi civilians.

 Sole of shoe at 'Highway of Death' in Iraq, where DU munitions were used to destroy tanks and other vehicles of Saddam Hussein's retreating army in Gulf War

Sole of shoe at 'Highway of Death' in Iraq, where DU munitions were used to destroy tanks and other vehicles. Image by [Christiaan Briggs](#).

As was the case with military personnel, systems to track and record potential environmental exposures for communities in conflict were, and remain, largely absent. Mechanisms for warning civilians about possible environmental exposures are largely non-existent, in spite of the numerous pollution risks found in contemporary conflicts. Systems to follow up possible exposures in order to determine health effects in the medium to long-term are almost unheard of. What civilian epidemiological or exposure [research](#) there is, is often undertaken independently with minimal resources, as a result [studies](#) may be

temporally or geographically limited, which can leave methodologies open to criticism.

### **The new norm?**

The pollution generated in 1991 affected military personnel and public and environmental health across the Persian Gulf area, with smoke plumes travelling 1,600km and oil slicks affecting 440km of coastline, but it was not unique by contemporary standards. The conflict in Ukraine is also thought to have produced significant pollution, due to the fighting taking place in one of the most heavily industrialised regions on Earth. Elsewhere, current Russian and Coalition bombing operations against Islamic State controlled oil facilities in Syria have also caused widespread air, water and soil pollution. This is also likely to be the case for the conflict as a whole, which has seen half of Syria's housing stock pulverised to rubble and fighting in and around industrial areas. From Iraq, to Libya and South Sudan, isolated and strategically valuable oil and gas facilities are often the targets of choice for militaries and armed groups alike.


Instability and armed conflicts also degrade the institutional frameworks that safeguard environmental and public health. These forms of degradation can create pollution problems in their own right, for example by limiting governmental systems of oversight or management for industrial or domestic wastes. Institutional damage also reduces the capacity of the State to properly address pollution threats to public health and the environment. Instability can also slow or halt progress towards the implementation of multilateral environmental agreements, be they on waste, water or biodiversity, ensuring that the environmental legacy of armed conflict lasts well beyond the cessation of hostilities. Together with the direct environmental damage caused by



conflict, the diminution of environmental governance and institutional capacity has serious [implications](#) for the attainment of the environmental dimensions of the Sustainable Development Goals.

### **Lessons learned?**

A quarter of a century on from the Gulf War, what have we learned? As anticipated in 1990, DU weapons have not become any more acceptable, with an overwhelming majority of States demonstrating their [concerns](#) at the UN General Assembly every two years. This has helped encourage a shift in US [policy](#) on their use. Gulf War veterans are still seeking [recognition](#) for their illnesses but the experiences from 1991, and Vietnam before it, have helped catalyse progress on the collection of “[environmental intelligence](#)” for troops on deployment.

 Gunners of 26 Squadron (Sqn) Royal Air Force (RAF) Regiment based at RAF Honington wearing the GSR10 gas mask during an exercise. Image by Defence Images  
Gunners of 26 Squadron (Sqn) Royal Air Force (RAF) Regiment based at RAF Honington wearing the GSR10 gas mask during an exercise. Image by [Defence Images](#).

Rather less progress has been made for the civilians living in environments polluted by conflict, and much more could and should be done to gather data on environmental risks and integrate it into humanitarian assistance and public health systems. As for environmental protection in times of war, little has changed since 1991. For that reason Ukraine deserves praise for sponsoring a [resolution](#) on the necessity of greater environmental protection and more effective response ahead of this May’s [UN Environment Assembly](#).

Last year, the Toxic Remnants of War Project completed a [study](#) that examined whether a more formalised mechanism of post-conflict environmental assistance could not only help address wartime environmental damage when it does occur, but also help to strengthen norms against the most damaging military behaviours. For inspiration, we looked to the treaties on land mines and cluster bombs but also to the norms and principles established by international environmental and human rights law. Although primarily a think piece, it clearly demonstrated that elements of these systems are readily transferrable to the protection of the environment in relation to armed conflicts – if the political will could be mobilised to address the topic in a meaningful way.

Building the political will for the systemic change that could overhaul the existing ad-hoc responses to wartime environmental damage, and challenge the [weakness](#) of current protection under international humanitarian law is a significant challenge, but if we fail to do **so** we will be ignoring the lessons from 1991 and from many conflicts since.

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