

The Devastating Consequences of Israeli Weapons Testing

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Press TV on 4 March 2011 reported that cancer cases in Gaza had increased by 30 per cent, and that there was a link between the occurrence of the disease and residence in areas that had been badly hit by Israeli bombing. Zekra Ajour from the *Al Dameer Association for Human Rights* told the channel that Gaza had been a testing ground for illegal weapons.

On 20 December 2009 *Al Dameer* had published another paper in Arabic on the increase in the number of babies born in Gaza with birth defects, thought to be the result of radioactive and toxic materials from Operation Cast Lead. [1] The birth defects included incomplete hearts and malformations of the brain. During August, September and October 2008 the number of cases had been 27. In the comparable months in 2009 the numbers had risen to 47. There was a similar rise in aborted fetuses. *Al Dameer* had called for scientific monitoring throughout the Gaza Strip to obtain statistics on deformed foetus cases relating to the intentional use of internationally banned weapons.

Similar dramatic increases in birth defects over a longer period have been recorded in Iraq and have been linked to widespread use of depleted uranium weapons. (It is reported that local midwives no longer look forward to births as they don't know what is going to come out.) Although the epidemiologist Professor Alastair Hay told the *BBC* in March 2010 that it was difficult to suggest any particular cause for the trend [2], scientific data has been published which contradicts his opinion. A review in *Environmental Health* in 2005 [3] concluded by saying

"Regarding the teratogenicity of parental prenatal exposure to DU aerosols, the evidence, albeit imperfect, indicates a high probability of substantial risk. Good science indicates that depleted uranium weapons should not be manufactured or exploded."

When later asked in the same interview about white phosphorus, Prof. Hay had replied

"...phosphorus is an essential element in our bodies and so you would I think have to ingest a huge amount to cause any particular problem. But there has been no investigation anywhere that I am aware of to link phosphorus with health problems..."

Apparently the professor has not read the Goldstone Report of the previous year which states in paragraph 896:

"Medical staff reported to the Mission how even working in the areas where the phosphorus had been used made them feel sick, their lips would swell and they would become extremely thirsty and nauseous."

The toxicity of phosphorus is also recorded in a report by New York medical staff [4]

“Oral ingestion of white phosphorus in humans has been demonstrated to result in pathologic changes to the liver and kidneys. The ingestion of a small quantity of white phosphorus can cause gastrointestinal complaints such as nausea, abdominal cramps, and vomiting. Individuals with a history of oral ingestion have been noted to pass phosphorus-laden stool (“smoking stool syndrome”). The accepted lethal dose is 1 mg/kg, although the ingestion of as little as 15 mg has resulted in death.”

UNEP reported that breathing white phosphorus for long periods causes ‘phossy jaw’, a condition in which there is poor wound healing of the mouth and breakdown of the jawbone. [5]

Evidence of the use of depleted uranium against Gaza is tenuous and Goldstone merely recorded in paragraph 907 that it had received allegations which it had not further investigated. Much of this evidence came from *Action des citoyens pour le désarmement nucléaire* (ACDN: Citizens Action for Nuclear Disarmament). Their report of July 2009 hypothesizes that the GBU-39 bunker-buster bomb is packed with 75 kg of depleted uranium. (A UNEP report also ambiguously refers to bunker-buster bombs containing depleted uranium. [5]) The U.S. delivery of 1,000 of these bombs to Israel arrived in early December 2008 shortly before the start of the war. The GBU-39 is considered one of the world’s most precise bombs and Boeing, the manufacturer, claims that the bomb will penetrate three feet of steel-reinforced concrete. (UNEP suggests that it can penetrate reinforced concrete to depths ranging from 1.8 m to over 6m.) Boeing’s patent on the weapon mentions depleted uranium. [6]

It is not known how many bunker-buster bombs were used against Gaza but it seems reasonable to assume that the number could run into hundreds. It is thought that they were used mostly in the Philadelphia corridor against the tunnels. Desmond Travers, the former Irish Army officer who was a member of the Goldstone Commission, would only say that depleted uranium *may* have been used during the war, although he did agree that it would have been well suited for attacking the tunnels where maximum penetration would have been desired. [7] He was also in agreement with ACDN that the use of below ground targets would have considerably reduced the levels of aerosol uranium that was dispersed into the air.

Col Raymond Lane, who is chief instructor of ordnance with the Irish armed forces, gave testimony to the Goldstone Commission on weapons used in the Gaza conflict. He told the Commission that he had no expertise of depleted uranium and so had not investigated it. He gave no reason for his failure to bring in specialist expertise to investigate the subject. [8]

In April 2009 Jean-François Fechino from ACDN was part of a four-person team which went to Gaza for the Arab Commission for Human Rights. Samples that the team brought back were analysed by a specialist laboratory which identified carcinogens: depleted uranium, caesium, asbestos dust, tungsten and aluminium oxide. Thorium oxide was also found, which is radioactive, as are depleted uranium and caesium. The analysis also identified phosphates and copper, along with volatile organic compounds (VOCs) which are a health hazard, especially to children, asthmatics and elders. [9]

Depleted uranium burns at almost 1200°C (TNT by comparison burns at 576°C). [6] [10] At this temperature the fire vaporizes any metals in the target which in combination with

uranium are released into the air in aerosol form. After deposition the aerosols have the potential to contaminate groundwater. (The Gaza aquifer, which is the Strip's only water source, is also connected to ground water supplies in Egypt, although water only flows into Gaza from Israel. [11])

There is empirical documentation that the aerosols can travel up to 42 Km and theoretical documentation that they can travel further. [3] Sderot is about 43 Km from the Philadelphia corridor and less than five kilometres from Beit Hanoun. In consequence it may be that the activities of Israel's air force have created a greater threat to the Israeli city than all of the 8,000 well-publicized rockets from Gaza ever have.

Depleted uranium accumulation has been recorded in the bone, kidney, reproductive system, brain and lung. It is carcinogenic, toxic to the kidneys, damaging to cellular DNA and causes malformations to an embryo or foetus. [3]

Although an IDF spokesman told CNN on January 7, "I can tell you with certainty that white phosphorus is absolutely not being used" , the chemical had been used by Israeli forces since the beginning of the war. [12] The Goldstone Report stated that Israeli sources later claimed their forces had stopped using white phosphorous on 7 January 2009 because of international concerns. This was also untrue as there is evidence that it had been used after that date. Goldstone declared Israeli armed forces to have been "systematically reckless" in using white phosphorous in built-up areas (paras. 884, 886 & 890).

Difficulty in detecting the extent of damage to tissue and organs gave serious problems to medical staff trying to treat white phosphorus injuries. Several patients died as a result. Doctors found that when they removed bandages applied to a wound that still contained fragments of white phosphorous, smoke would come from the wound since the chemical continues to burn as long as it is in contact with oxygen. White phosphorous sticks to tissue so that all flesh and sometimes muscle around the burn would have to be cut out. The substance is also highly toxic (Goldstone paras.892/4/5/6).

An article published in *The Lancet* included photographs of a young man who was admitted to hospital in Gaza with white phosphorous burns on 30 per cent of his body. The day after admission smoke was noticed coming from the wounds and the patient was rapidly transferred to the operating room for removal of dead tissue and removal of white phosphorus particles. During the operation a particle of the chemical was dislodged and caused a superficial burn on a nurse's neck. The patient survived. [13]

Col Lane testified that although white phosphorus gave the best quality of smoke for military purposes it was '*horrible stuff*' and the Irish army had stopped using it 20 years previously. He recounted how the British army had sea-dumped quantities of the material off the coast of S.W. Scotland in the 1950s, some of which had been washed up on the coast of Ireland by a storm in 2007. It had ignited on drying (the colonel had witnessed this himself) and in one instance a child had suffered burns as a result.

Mass spectrometry analysis conducted by the New Weapons Research Group (NWRG) found aluminium, titanium, strontium, barium, cobalt and mercury in biopsies taken from white phosphorus wounds at Shifna Hospital, Gaza. (Aluminium, barium and mercury have potential for lethal and intoxicating effects, aluminium and mercury can cause chronic pathologies over time, mercury is carcinogenic for humans, cobalt can cause mutations, and

aluminium is fetotoxic i.e. injurious to fetuses.)[14][15]

White phosphorus bombs are built with alternating sectors of white phosphorus and aluminium. Analysis by NWRG of the powder from a shell near Al Wafa Hospital in Gaza also found high levels of molybdenum, tungsten and mercury. Tungsten and mercury are carcinogenic, while molybdenum is toxic to sperms.

In a report appropriately entitled *Gaza Strip, soil has been contaminated due to bombings: population in danger* NWRG also conducted analyses of two craters caused by bombs in 2006 and two others by bombs in 2009. In the 2006 craters they identified tungsten, mercury and molybdenum, while in the 2009 craters at Tufah they discovered molybdenum, cadmium, cobalt, nickel, manganese, copper and zinc. Cadmium and some nickel and manganese compounds are carcinogenic. [15]

NWRG has further conducted research of hair samples from 95 children resident in heavily bombed areas of Gaza. Again using mass spectrometry the study identified the carcinogenic or toxic metals chromium, cadmium, cobalt, tungsten and uranium. One wounded individual also had unusually high levels of lead. The study found the results alarming and considered the levels could be pathogenic in situations of chronic exposure. Thirty-nine of the examinees were recommended for further checks. [16]

It has been reported that soil in the area of a DIME (dense inert metal explosive) bomb blast may remain barren for an indefinite period of time because of contamination from heavy metal tungsten alloy. [17] The same material in trial rapidly caused tumours in 100 per cent of rats when used at both low and high doses, with the tumours spreading to the lungs, necessitating euthanasia. [18]

DIME weapons were first used against Gaza by Israeli drones in the summer of 2006, when Palestinian medical personnel reported that it significantly increased the fatality rate among victims. [19] Shortly after the DIME weapons were also trialled during the first week of the war in Lebanon in July 2006.

The Goldstone Commission was unable to confirm that DIME munitions were used by Israeli forces during Operation Cast Lead. Col Lane had told the Commission in testimony that there was no actual proof. He then went on to testify that he had been given samples in Gaza which analysis in Dublin had shown to contain DIME materials consisting mostly of tungsten with traces of iron and sulphur. He was of the opinion that ordnance had been used that had some sort of DIME component. He also mentioned that he had read of unusual amputations, and that tungsten and cobalt would have this effect. [8] Weaponry had been found with DIME components which was capable of amputation and there are Palestinian amputees, yet neither Col Lane nor the Commission was prepared to say that DIME weapons had been used by Israeli forces.

DIME bombs cause a high proportion of amputations particularly legs, while patients often suffered internal burns as well. The bombs consist of powdered tungsten alloy mixed with an explosive material inside a casing which disintegrates on explosion. The tungsten powder tears apart anything it hits including soft tissue and bone, causing very severe injuries. Tungsten alloy particles, described as “finely powdered micro-shrapnel” [16], are too small to be extracted from the victim’s body and are highly carcinogenic (Goldstone paras. 902-4).

No weapons fragments can be found from DIME bombs with standard diagnostic resources, despite the indication of heavy metals from this type of injuries. Mass spectrometry analyses by NWRG of biopsies from amputation injuries revealed aluminium, titanium, copper, strontium, barium, cobalt, mercury, vanadium, caesium, tin, arsenic, manganese, rubidium, cadmium, chromium, zinc and nickel. [14] Doctors reported that it was difficult to determine the extent of dead tissue (which it is vital to remove). This resulted in higher rates of deep infection, subsequent amputation and higher mortality. [20]

The wide range of heavy metals discovered by analysis in casualties, residents and soil in Gaza suggests that other unidentified weapons may have also been trialled. (The Sensor Fuzed Weapon has been suggested as one such technological perversion that the Israeli forces may have used. [21])

The whole Gaza population and their environment, including generations yet to be conceived, have been put at risk of serious long term injury from heavy metal pollution of the air, soil and groundwater (and possibly the seawater too), while the causal pollution is likely to cross state borders into Egypt and even into Israel. Reassurances of the legitimate and responsible use and the reduced lethality of weapons (an opinion in part shared by Col Lane) are callous and inadequate in the context of the dangerous reality that has resulted. Meanwhile the impacts of Israel's illegal assaults on Gaza remain ignored and the deeds uncensored by the wider international community.

Notes

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- [11] <http://www.standwithus.com/FLYERS/WaterFlyer.pdf>
- [12] Human Rights Watch, 10 January 2009; *Q & A on Israel's Use of White Phosphorus in Gaza*
<http://www.hrw.org/en/news/2009/01/10/q-israel-s-use-white-phosphorus-gaza>
- [13]
<http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2810%2960812-4/fulltext?eventId=login>
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