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REPORT On the use of radioactive weapons in the Gaza Strip during « Operation Cast Lead » (27 December 2008 - 18 January 2009)

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There are some truths that are the fruits of long patience.

Report revised and updated, 4 July 2009.

FOREWORD

The present report attempts to bring together the information found in various articles published on ACDN's website www.acdn.net, in both French and in English, between 4 January and 12 February, 2009. It incorporates corrections and additions made possible by information received while our investigation was progressing - nearly every subsequent week has brought further details, rectifications, doubts, confirmations, surprises and revelations, right up to 20 May 2009. This report is still in no way definitive, since its subject remains largely veiled by industrial and military secrecy and because much is at stake, on the political, economical and military levels.

It relies essentially on analysis and cross-checking of information and documentation accessible to the public in the printed media or on the Internet. But it has also benefited from access to private sources which asked not to be quoted. One of these now agrees to be named: the person is M. Jean-François Fechino, a consultant on matters of diffuse pollution, and an expert accredited to the UN Environment Program. Fechino is the author of a hundred-page report on the effects of the use in Iraq of weapons containing Depleted Uranium (DU), and of a preliminary report on the weapons deployed in the Gaza Strip, a report submitted on 7 May 2009 to the UN Human Rights Council's commission investigating facts concerning Gaza (the "Goldstone Commission"). With him and some other people, we have tried together to ascertain the truth by comparing our points of view - a method which does not, of course, rule out the dangers of errors or of deliberately planted misinformation. I thank Fechino in particular for the information that he shared with me with no restrictions other than those necessary for protecting his sources.

Many people deserve thanks. Let me name in particular Paolo Scampa the president of AIPRI, Alain Acariès the secretary of Avigolfe, Noha Rashwami of the Palestinian Delegation to Paris, Haytham Manna and Violette Daguerre of the Arab Commission for Human Rights, Gilles Devers the lawyer who initiated the group action lodged at the International Criminal Court concerning war crimes and crimes against humanity, Gideon Spiro and Yehuda Atai for their courageous stances in Israel, Peter Low, Francine Fèvre and Dan McCaughey for their translating work, Dr Rosalie Bertell for her encouragement at the darkest moment, my ACDN friends, notably Yves Laigle, and my family for their constant support and patience.

The current and future investigations mandated as urgent by the UN, by the International Criminal Court and by other organisations, will perhaps lift other corners of the veil, and make it possible perhaps
[-] to inform the courts of justice about what really happened in Gaza,
[-] to take concrete measures to neutralise the adverse effects of all radioactive weapons, in Gaza, Iraq and elsewhere, and
[-] to ban them completely and definitively, including nuclear weapons.

May this report contribute to that end.

Saintes, 4 January - 4 June 2009

Jean-Marie Matagne Ph.D

President of ACDN (Action des Citoyens pour le Désarmement Nucléaire /Action of Citizens for the total Dismantling of Nukes)

ACDN
[-] Maison des Associations
[-] 31 Rue du Cormier
[-] 17100 - Saintes (FRANCE)

[-] www.acdn.net
[-] contact@acdn.net

[-] Action des Citoyens pour le Désarmement Nucléaire / NGO (JO du 6 juin 1996)
[-] Member of the Global Network « ABOLITION 2000 »

APOLOGIES

For technical reasons, we could not insert here various illustrations, documents or notes of reference which are included in the official report.

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1. Media Alert

In the night of 28-29 December 2008 (Sunday-Monday), at 1.18 a.m., the Jerusalem Post published on its website www.israel.jpost.com an article in English which was then updated at 9.15 a.m.. It was headed:

"The Israeli Air Force is using a new intelligent bomb provided by the USA":

Its author, Yaakov Katz, wrote:

"The Israeli Air Force (IAF), in its strikes against Hamas, has been using a new bunker-buster recently received from the US, according to information gathered by the Jerusalem Post on Sunday.

"This missile, called the GBU-39, was developed in the USA in recent years as a small-diameter bomb with low cost, high precision and able to cause very little collateral damage.

"Israel received in September the authorisation of [US] Congress to buy 1000 of these, and Defense officials declared this Sunday that the first shipment arrived at the start of December and was used successfully to penetrate the underground launching sites for Kassam [Qassam] rockets in the Gaza Strip, during the heavy aerial bombardment of the Hamas infrastructures on Saturday. GBU-39s were also used on Sunday for bombing the tunnels at Rafah.

"The GBU-39, which has GPS guidance, is considered to be one of the world's most precise bombs. Weighing 113kg, it has the same penetration capabilities as an ordinary bomb of 900kg, although it carries only 22.7kg of explosives. Only 1.75m long, its small size increases the number of bombs that a plane can carry and the number of targets it can attack on a single mission.

"The tests done in the USA has proved that it is capable of piercing at least 90cm of armoured concrete. The GBU-39 can be used in all weathers to a range of over 110 km, thanks to its fold-out wings."
That is how, at the very start of the Israeli offensive against Gaza nicknamed "Cast Lead", the GBU-39 made its entry on the ground and in the press.

Apart from the improper use of the term "missile", the rapid portrait given by the Jerusalem Post exposes all its most flagrant traits, except for one, of course, which will be discussed shortly.

A comparative study of the articles published in the specialist press about this device which has been several years in development, and of the technical specifications (sometimes mutually contradictory) that can be found on the internet, enables us to better clarify its nature and history, while leaving some gray areas which we would try to reduce in the coming days and weeks.

This work of analysis soon led us to conclude that the GBU-39 must contain Depleted Uranium, a radioactive metal with known destructive effects on the human and animal genome, as attested by the large number of victims since it was first used in Iraq during the "Gulf War" of 1991.
First approach to the GBU-39

2. First approach to the GBU-39

Made by Boeing, the GBU-39 (Guided Bomb Unit-39, also called GBU-39B, since there was an earlier prototype 39A) is a bomb - it falls from the sky, without a real autonomy of flight, unlike a self-propelled missile.

The GBU-39 is also designated as SDB1, and is the first of the Small Diameter Bombs: it is conceived as a cheap bomb which gives reduced collateral damage but is excellent at penetrating steel and reinforced concrete. Despite its small size, it is a "bunker-buster" bomb and it was sold to Israel as such.

(**Photograph)** *Casing of the GBU-39/B - Wings of the GBU-39/B in folded-back position*

On the public web there are two brief notices about it and several articles: one signed by Boeing's research offices, the other on the website of GlobalSecurity (GS), which merely repeats some of Boeing's data. The two overlap only partly, but they are in contradiction on one point: the bomb's total weight, which according to GlobalSecurity is 113 kg (250 lb) and according to Boeing is 130 kg (285 lb). Here one must follow Boeing (GS only stated the SDB1 was in the 250 lb class). Boeing gives the weight of the warhead as 93kg (206 lb), though without stating its length, and specifies that it is a "*penetrating blast fragmentation"* bomb. GS omits this point, but gives others, saying that the warhead has a *"steel case for penetration"* and that it contains 50 lbs of high explosive.

The GBU-39 looks like a long pencil. According to Boeing it is 70.8 inches long (1.8 m) and only 7.5 inches in diameter (19 cm). It has an advanced GPS guidance and positioning system able to resist interference. It is "smart": once dropped from an aircraft, it locks onto the target that was pre-set and corrects its trajectory, rather like a glider, thanks to its fins and the wings that unfold after a few seconds, once it has spun around 180°.

The GBU-39 belongs to the new generations of weapons that use "very special" steel of a composition which manufacturers and officials are tight-lipped about. But it is obvious that to achieve limited price-tags and increasingly high performance, Depleted Uranium holds the trump cards. The penetration capacity of a projectile into a target depends on four factors: it is proportional to its mass, its speed and its hardness, and inversely proportional to its section surface (thus a sewing needle pierces a cloth better than thimble does; and a heavy javelin with a thin hard tip, launched at top speed, can penetrate the earth while a rubber ball cannot). DU fills all the criteria: it is very heavy and hard - much more than lead - and its density produces a maximum mass in a minimal volume, and therefore an impact surface reduced to the minimum.

Boeing states that GBU has a penetration capacity of *" >3 feet of steel reinforced concrete".* GS gives us two quotations to choose from: *" more than three feet of steel-reinforced concrete"* (the same as Boeing) and *"six feet of reinforced concrete".*

Contrary to appearances, these figures where one is double the other may not be contradictory. Jean-François Fechino explains that they may correspond to two kinds of concrete: High Performance and Extra High Performance.

In France, the BFUP concretes (fibred concrete with ultra-high performance) - so-called by the AFGC (French civil engineering association) - appeared in the 1990s with impetus from both Électricité de France and the Bouygues & Eiffage consortium, both subcontracted to rebuild the cooling towers of the CATTENOM and CIVAUX nuclear plants. Produced by scientific research, these concretes have the peculiarities of very high resistance (8-10 times conventional concrete), of not requiring the passive armatures, usually sources of corrosion, to be watertight, and of having exceptional durability. There is today a range of formulae, developed and patented by leading construction companies. The BTHP concretes (concretes of very high performance) and the BFUPs result from a synthesis of progress over the last 30 years in optimising the skeleton, adding auxiliary elements and using fibre reinforcement. As for resistance to compression, the BFUPs exceed 150 megapascals (following the AFGC's definitions) and the BTHP performance is defined as lying between the BFUP and the BHP (high performance concrete), thus having mechanical resistance between 100 and 150 megapascals.

Here is how IsraelValley, the official website of the France/Israel Chamber of Commerce, announced these

purchases on 16 September 2008, referring to the press review by the Israeli Embassy in Paris: *"The US Ministry of Defense has approved the sale to Israel of 1000 penetrating bombs of the GBU-39 type built by Boeing and considered the most modern in the world, so Maariv reports. These bombs are capable of penetrating a 90-centimeter layer of reinforced concrete with great precision (a perimeter of 3 meters). The newspaper notes that before ratification this sale must still be approved by the US Congress. According to an Israeli military source quoted by the paper, the combination of these bombs with the defense force's forthcoming fighter planes, the F-35s, will considerably strengthen the capacities of the Israeli air force."*

According to Jean-François Fechino, the *"3 feet of steel reinforced concrete"* that Boeing says is the minimum that the GBU-39 can pierce amounts up to 4 or 5 metres of the concrete of the Atlantic Wall.

3. Suspicion of uranium

Reading all their technical characteristics, we see clearly that these weapons are based on metallic DU. Steel, even exceptional steel, would not achieve what is claimed for such a small bomb with a length well under 2 metres - unlike the GBU-28s, for example, which get their penetration power from a bomb casing made of special steel, which is slender (the first GBU-28s were made hastily during the Gulf War from artillery cannon barrels!), which are very heavy (4000 pounds is nearly 2 tonnes), and very long (over 5m for the warhead).

The word "steel", not present in Boeing technical description, and added by GS to describe the casing of the warhead (a "steel case for penetration") is quite inappropriate - unless it means an unspecified metallic compound (which would be called an alloy). The word serves to mask an obvious and certainly deliberate gap in the manufacturers specifications.

When one asks for bombs with:
[-] *focused local impact* (so as to speak of "surgical strike");
[-] *limited collateral effects* (so as to speak of "clean war");
but also
[-] very high penetration power (equal to a bunker-buster 8 or 16 times heavier) which can strike into the heart of a fortified or deeply-buried target;
[-] reduced weight, but very great mass-to-volume ratio, giving extreme compactness;
[-] low cost, and
[-] the capacity to be mass-produced, by making use of a material that is plentiful...

... then there is every chance they will consist of metallic DU. The proportion, according to Jean-François Fechino, will be 75-85%, with the rest being tungsten, titanium or molybdenum ... all special rare metals.

It is true that, apart from steel, metallic DU could have one serious competitor: tungsten. But DU has two advantages. First, it is much cheaper and people have difficulty finding uses for it (50 000 tonnes of DU are produced annually in the world, as a by-product of the nuclear industry), whereas tungsten is still a rare metal, in a market dominated by Chinese tungsten. Secondly and above all, unlike tungsten, DU is pyrophoric. This means it has the property of igniting when it scrapes against a hard substance like steel or concrete. So, a bomb tipped with DU will not only fly into tiny pieces because of the explosives, but in addition it will burn up the inside of the target that it hits. The DU does not itself explode, but it ignites triggering a "hellish fire" of nearly 1200 degrees C. Thus, the occupants of a tank hit by a DU shell are not torn to bits - not unless the fire causes munitions on board to explode - they are incinerated. What remains of the tank is highly radioactive. The GIs who in 1991 approached Iraqi tanks contaminated in this way were to discover this after they returned to the USA, sometimes years later.

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Being very conscious of everything that concerns nuclear technology, radioactive weapons, Depleted Uranium, and weapons of mass destruction in general, we realised immediately the size of the silent invisible drama that was unfolding, beyond the din of the bombings, beyond the immediate victims and obvious destruction, and that would play out in Gaza in the medium and long term, if the Israeli offensive were to continue and go on using radioactive weapons of this type.

4. Alert on the ground

Sunday 4 January 2009, 13.16 hours GMT -
The Iranian media agency Press TV broadcast a report entitled: "Depleted Uranium found in victims in Gaza".

Here we read that *"Norwegian doctors told a correspondent of Press TV, Akram al-Sattari, that they had found traces of Depleted Uranium in some people wounded at the start of the Israeli offensive launched on 27 December on the Gaza Strip."* This testimony comes after the Israeli tanks and troops crossed the border in the night of Saturday-Sunday and launched a ground offensive, after eight days of intensive bombardment by the Israeli air force and navy."

The report adds that *"Israel's Minister of Defense, Ehud Barak, issued a warning on Sunday that the offensive would be "full of surprises"."* Is the report suggesting that the use of Depleted Uranium (DU) could be one of these surprises?

In fact, the statement by the Norwegian doctors quoted by Press TV after some delay seems to correspond with the TV interview given by Dr Mads Gilbert and rebroadcast by Al-Jazeera in the night of 31 December (http://www.gnn.tv/B30595). It is from that date that the Norwegian doctor mentions traces of radioactivity in the wounded, and therefore in victims of the first phase of the Israeli offensive, at the time of the very first aerial bombardments.

During that phase, the Israeli authorities revealed that they had made considerable use of GBU-39's, which are, as we know, US-made bombs recently delivered (1000 units) at the start of December, from the USA to Israel. The "miraculous" features of these avant-garde bombs were vaunted widely in the Israeli press, but no mention was made of the key point, the only point that can explain the "performance" of these terror weapons: the fact that they must contain Depleted Uranium - a conclusion we had already reached.

Several questions arise, however: How, given the difficult conditions they are working under, did Dr Gilbert and his colleagues detect "traces of radioactivity" and more precisely of "Depleted Uranium"? Did they have the necessary time to carry out the complex analyses? Were they able to sample the necessary tissues or organic fluids? That type of analysis usually takes some weeks in specialised laboratories. How could these emergency medical staff carry them out? Nobody knows, and we had no way of contacting the Norwegian doctors where they were working.

5. The dilemma

We obviously could not count on the Israeli authorities to confirm Dr Gilbert's assertions, or the international media, which the Israelis are not letting into the Gaza Strip. So we contacted the Palestinian Delegation in Paris, hoping through it to obtain some appropriate samples of earth or other materials from Gaza, so as to have these analysed in independent laboratories (as we had done for Baghdad, as will be seen below). While waiting for these samples, we had to adopt another approach to try to verify the accusations of the Norwegian doctors: further study of the weapons which could have wounded the Gazan victims, notably the GBU-39s. Did they contain DU? There also, we could not count on confirmation from the US Department of Defense (DoD) or from the manufacturer Boeing.

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We therefore faced a dilemma.

Should we, while lacking formal proof, denounce the use of these weapons, which we were convinced were radioactive, despite an ever-present doubt in our minds? We would risk the retaliation by outcry and scathing denials from whatever agents serve the military-industrial complex - and even reluctant criticism from some allies in the anti-nuclear, "abolitionist" peace movement, where some activists know nothing of the problem, where others know it badly and care little, and where some who know it well want to avoid the risk of making errors and thus tarnishing their image or that of their NGO.

The alternative risk was to wait for indisputable proof - which might mean seeing the Gazans and their regional neighbours, including the Israelis, being the victims or unwitting perpetrators of a "delayed-action" genocide, while the military chiefs, the political leaders and the scientists in the pocket of the military-complex continued to maintain a complicitous silence.

We preferred the first risk to the second. ACDN brings together citizens of the world who wish to act so as to contribute, as far as they can, to improving the fate of humankind and the survival of the species, which is threatened by nuclear and radioactive weapons. ACDN since 1996 (and its president since 1986) have been trying to get people to realise the imperious necessity of abolishing these weapons. It has been a 23-year "crossing of the desert": we have become aware that such is often the fate of "whistle-blowers". In the case of Gaza, as in others, we considered it imperative to sound the alarm-bell before the disaster become irreversible and incommensurable.

It is essential to avoid a repeat of the Iraqi experience.

6. The Iraq lesson: the attack on "Forward Base Falcon"

7. Return to Gaza

Now jump again to Gaza in January 2009. Just like the Iraqis, the Gazans underwent an inhuman blockade followed by an air and ground offensive. Would they too suffer from uranium contamination? Wiser from experience, we decided this time to proceed differently. We decided to affirm what we considered highly probable as if we were certain of it. That was supposed to touch some sectors of public opinion, perhaps even some curious journalists, and that might lead some political leaders to demand a public investigation. That was more or less what would happen.

On January 4, 2009 we published an article entitled:

[-] Parallèlement à l'offensive terrestre
[-] **A Gaza, le génocide à l'Uranium Appauvri a commencé**
[-] avec les bombes "GBU-39" fournies par les Etats-Unis

It was translated and published on January 6:

[-] It runs parallel with the ground offensive
[-] **In Gaza, Genocide by Depleted Uranium has begun**
[-] using "GBU-39" bombs provided by the USA

The article concludes: **"A veritable crime against humanity is being committed under our eyes".** It called on the

President of France, who was expected in Egypt the next day, to do everything possible to stop the crime, but also to set an example by banning from France's armed forces all weapons containing Depleted Uranium and by forbidding the sale of them: "France must stop this crime against humanity... France must work for a complete ban on Depleted Uranium weapons."

We sent this to numerous French press and media outlets, and to the ICBUW (International Coalition to Ban Uranium Weapons) of which ACDN is a member; we disseminated it widely on the « abolitionist », « antinuclear » and « peace movement » communities. Unable to interest French journalists - who breathed not a word on the subject during the whole of "Operation Cast Lead" and even to this day - the article was picked up by numerous French-language and English-language sites, thus helping to alert part of public opinion, especially (unsurprisingly) those sympathetic to the Palestinian cause.

The next day, 5 January, a new interview appeared with Dr Mads Gilbert, from the Iranian agency PressTV. We learnt of it immediately.

(PHOTO - Norwegian Doctor Mads Gilbert)

The journalist asked him: *"What can you say about what you have found concerning uranium?"* He replied: *"I cannot say much about our finds concerning uranium, but I can say this: it is proven that the Israelis are using a new type of weapon with a powerful explosive called 'Dense Inert Metal Explosive' (DIME) made of a tungsten alloy. These weapons have immense explosive power."*

Did this mean that Dr Gilbert knew nothing of uranium? We tend to another explanation: he simply did not possess the analyses - how could he under the circumstances? - and had no indisputable proof that the radioactivity he has spoken of on 31 December was due to particles of uranium. Meanwhile, he preferred to say nothing of it and to draw attention to another kind of non-conventional weapon whose ravages he was trying to repair, the almost unknown explosive DIME.

On January 6, to our great surprise, ICBUW released (without warning us) a statement taking a view contrary to ours and contesting Dr Gilbert's expertise. Now it is true that his experiences as a humanitarian surgeon familiar with theatres of war do not confer omniscience. But that is not a reason to make him say that he *"knows nothing of the uses of depleted uranium",* and that *"tungsten is radioactive".* Not when his exact words were: *"In the long term these weapons will have a carcinogenic effect on the survivors. They will develop cancers, we think. There has been very little research on this subject, but some studies, including some in the US, have shown a higher tendency to provoke cancer".* To state that tungsten, and therefore DIME, are carcinogenic does not say that they are radioactive! Has anyone ever claimed that asbestos is radioactive because it is carcinogenic?

We contacted the coordinator of ICBUW. Our correspondence did not convince us that his reasons for doubting the presence of DU in the GBU-39s came even close to making us change our opinions. But the authority of ICBUW imposed silence on the other NGOs, throwing doubt on the seriousness of our allegations. And that suited the pro-DU lobby very nicely *("even our opponents don't believe it!"),* and that lobby doesn't care much about the Gazan victims.

8. The Global Context

In his report about Depleted Uranium in Iraq, Jean-François Fechino described the situation in the following way.

"The problems of depleted uranium lie in the competence of scientists (nuclear research scientists) and military figures.

*"**The scientists*** are physicists and chemists who have generally had long professional experience and considerable prominence. For many lay-people, these are Men of Science who have gained Knowledge. For this reason they are seen as men of responsibility who cannot lie, all the more so because the use analyses that are a priori objective and approved by experts linked to international agencies. Well, what do these scientists say? That Depleted Uranium is not really a danger for the environment or for human beings, except in rare exceptional cases with some points of contamination. For all (or almost all) of this scientific community, DU is « 40% less contaminating than natural uranium ».

"**The military figures** (users but also arms researchers) rest their knowledge on the scientists' research reports (aforementioned), whose affirmations they use for their own purposes. Furthermore, during the all the development phases of these weapons, no specific precaution is used (no protective mask, special suit, decontamination by showering...), and even less during actual battles. So the men are handling with no precautions all the material to be loaded (artillery shells, gear to attach the missiles under aircraft wings, transfer of missile heads into the weapons holds of tanks, loading the machine-guns on board the planes...) as if they were handling conventional materials.

"These attitudes and gestures, relayed by the media, can only reinforce the sense of safety which civilian populations and their leaders feel with regard to public opinion in general and local populations in particular. It is a feeling very deeply anchored in the public's mind, especially since the scientists' discourse is deliberately reassuring whenever these problems are mentioned.

"Furthermore, **the media themselves** are present to 'add a coat of paint'. When we see TV journalists standing by piles of smoking rubble after a bombardment, with no protection, how can we get civilian populations to understand the dangers they face - dangers that are invisible, with neither smell nor taste? Besides, the results of these dangers are not always visible at once and do not show direct physical damage... The contaminations resulting from DU are not as spectacular as those of napalm (the photo of a Vietnamese girl walking naked with her skin peeling off after a US napalm bombing was a shock image that stirred the world's conscience and sped up the peace process in Vietnam).

"So there's no shock image for Depleted Uranium... Anyway, we are dealing with the concept of a 'clean war', presented in the media through careful orchestration by the PR services of the US forces... This makes it easy to imagine how hard it is for an ordinary citizen to contradict and merely doubt the words of experts, scientists and high officers, or of other levels in the hierarchy. What weight can one person's words have when, officially, the expert statements declare peremptorily that their weapons are virtually innocuous...?"

9. The Effects of DU

In August 1996 the UN's sub-commission for Human Rights classed DU weapons among the weapons thought to produce "excessively traumatic effects" to strike "civilian populations indiscriminately" and to cause "serious and lasting damage to the environment" in the terms of the Convention on Certain Conventional Weapons (CCCW, known as the Convention on Inhumane Weapons) adopted by the UN in 1980 and in force since December 1983. This places them alongside fragmentation weapons, incendiary and blinding weapons, and anti-personnel mines... However, for lack of a "specific additional protocol" to that Convention, the sub-commission's Resolution N° 96-16 had no concrete effect. Besides, this type of weapon is not mentioned in any international protocol for declaration, limitation or banning of strategic nuclear weapons because, although uranium is used, the fact that this uranium is depleted of U-235 (the key isotope for nuclear weapons) enables it to escape the restrictions. Thus, the only concrete effect of that 1996 classification was that Depleted Uranium disappeared from the military's vocabulary, and

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the manufacturers' catalogues and advertisements - but not from the weapons being made or being developed. And when some customs document asks an indiscreet question, the exporters happily declare that tungsten is present and not uranium.

Although its role is systematically minimised, DU is high on the list of possible cumulative causes of "Gulf War Syndrome", which brings together various symptoms and illnesses. This syndrome is now officially recognised, in the USA, as an indisputable reality. In November 2008, the « Research Advisory Committee on Gulf War Veterans' Illnesses » submitted to the Senate and published on the US government presses its final report entitled *« The Gulf War Illness and the health of veterans of the Gulf War (scientific data and recommendations) »*

The Committee, answerable to the Secretary for Veterans' Affairs, comprised some fifteen specialists, mostly doctors. Its report runs to 465 pages. It recognises that out of approximately 700 000 US military personnel deployed in SW Asia in 1990-91 during the operations Desert Shield and Desert Storm together known as the « Gulf War», between 185 000 and 210 000 have fallen ill. It does not state the number of deaths possibly resulting from various illnesses of the syndrome and from "other health outcomes" such as cancers, which stroke generally young men and women. A Report published by the VA Department in Feb. 2008 did not find significant differences of mortality, but the study it referred to stopped in 1997. Today, according to Maj. Doug Rokke, over 70,000 Gulf War "veterans" are dead.

More than one US soldier in four felt ill after the conflict - and according to other credible sources nearly one in two! Thousands dead as a result of these illnesses! Such post-conflict carnage is an unprecedented phenomenon in world military history.

As for the role of Depleted Uranium, this is what the report says (page 224):

"**Depleted uranium (DU).** *Low-level exposure to spent DU munitions and dust is thought to have been widespread during the Gulf War and was most prominent among ground troops in forward locations. Recent animal studies have demonstrated acute effects of soluble forms of DU on the brain and behavior, but persistent effects of short term, low-dose exposures like those encountered by the majority of Gulf War veterans have only minimally been assessed. There is little information from Gulf War or other human studies concerning chronic symptomatic illness in relation to DU or uranium exposure. Exposure to DU in post-Gulf War deployments, including current conflicts in the Middle East, has not been associated with widespread multisymptom illness. This suggests that exposure to DU munitions is not likely a primary cause of Gulf War illness. Questions remain about long-term health effects of higherdose exposures to DU, however, particularly in relation to other health outcomes."*

In short, according to this Report, almost nothing is known of the causal link between DU and the Gulf War Syndrome, since it hasn't really been studied, but we can say a priori that it is not the prime cause, although we may one day learn that it is that after all ... These intellectual contortions have difficulty concealing the embarrassment of the official investigators when confronted by the conclusion which numerous independent researchers had already reached -and even by the findings they gave themselves from page 85 to 100 of their Report.

For example, Dan Bishop, who has a doctorate in chemistry and chairs the International Depleted Uranium Study Team (Colorado, USA), says: *"The studies on sick US veterans of the Gulf War showed that they had each absorbed an initial dose of 0.34 mg of DU, which remains permanently in the tissue of their lungs. The alpha activity for 0.34g of DU is 5.2 Becquerels (5.2 alpha disintegrations per second, 160 million per year), amounting to a total activity (alpha, beta and gamma) equal to 26 disintegrations per second, or 800 million radioactive events per year."* Now there is no doubt possible about the health consequences of these millions of 'events': since they cannot all be "repaired", the damage to the cells, the splitting of chromosomes, the alterations to DNA - all demonstrated in the lab, including by the "recent studies on animals" mentioned in the Report - have the effect of provoking symptoms of

illnesses (cancers, leukemias, lymphomas, diabetes, sterility, foetal malformations...) which become irreversible.

It goes without saying that the Iraqi population has also taken a heavy blow from the DU disseminated there. According to Dr Jawad Al-Ali, of the Basra Oncology Centre, cancer deaths in the Basra region went from about 25 in 1988 to over 600 in 1998. Deformities in newborn babies have increased hugely and have taken monstrous forms.

And what would happen in Gaza? There, despite UN Security Council resolution 1860 of January 9 demanding an immediate ceasefire, the massacre continued. Reassured in our conclusions by information from a serious and reliable source, we published on 14 January a second article summarising the facts then known to us:

[-] **Genocide by Depleted Uranium in Gaza: the dossier**

That publication prompted strong reactions.

10. Background of the GBU-39

Unlike "gravitational" bombs, which are dropped by a plane flying over or near its target and which fall more or less vertically, the "GBU-39 intelligent bomb" is capable, thanks to the wings it unfolds when launched from the plane, of using its kinetic energy to "glide" on its way down, and to hit a target (depending on the plane's altitude) as much as 60 nautical miles (110 km) ahead or 40 miles (75 km) to the left or right of the plane that releases it. It can even, by operating an arc of circle, strike a target located behind the plane. Furthermore, it can modify its trajectory to strike within a few metres of its target. It is guided by a system that it carries for GPS positioning and trajectory calculation, a system which is pre-programmed but can be reprogrammed by the crew just before launching. Each bomb may have its own target.
The Boeing Corporation, in response to an earlier tendering process, gained a contract in August 2003 to develop this "small diameter bomb" (SDB) after strong competition in which it was accused and found guilty of corruption.

The SDB-1 or GBU-39 received its certification in September 2005; its series production began in April 2006; and the first examples were delivered to the US Air Force in early September 2006, ahead of schedule and at a lower price than predicted.

On that occasion, Major-General Jeffrey Riemer, in charge of programme coordination between different civilian and military laboratories and suppliers, declared:

"We are excited by the deployment of the weapons, the SDB-1, which adds to the various lethal options of the F-15E (Strike Eagle) in the war against terrorism."

According to him, the margin of error at point of impact was no greater than 1.2 meter.

The SDB-1 or GBU-39/B is a tube of about 1.8 metres long and 19cm in diameter. Once launched, it uses rear and lateral fins to stabilize its trajectory. It weighs 130kg, of which 93kg are the warhead.

A F-15E aircraft can carry four of these under its fuselage, with a BRU-61 undercarriage giving a total laden charge of 664kg, instead of a single bomb that would usually be much heavier. Each bomb is launched pneumatically and not by explosive cartridge - this requires no regular maintenance, facilitates handling and speeds up the plane's reloading when it completes its mission. So the plane can carry out multiple strikes with faster rotation.

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The GBU-39's precision, reliability and limited explosive charge - therefore also its lower "lethality" (or killing capacity) - greatly reduce the risks of "collateral damage". This makes possible certain hitherto forbidden uses: against enemy combatants located close to "friendly troops" or in the middle of a civilian population, be it friendly, neutral or hostile, since such populations are supposed to be spared according to the "rules of war" and international law. Thus these missiles are ideal for "anti-guerrilla" or "anti-terrorist" war.

As early as 5 October 2006, one month after delivery in the USA, they were used for the first time against real targets - by two F-15E "Strike Eagles" of the 494th Combat Squadron in South-East Asia, supporting ground troops in Iraq. Lt. Gen. Gary L. North, the Combined Forces Air Component commander, celebrated the event in these terms:
"Because of its small size, our aircraft are able to carry more individual weapons into battle, benefiting the Soldiers on the ground with more opportunities to defend their positions, while precisely destroying targets that would threaten American, coalition and Iraqi lives.
"The SDB is uniquely qualified for urban targets that call for precision accuracy and reduced collateral damage and in close-air-support missions that our aircrews find themselves in during Operation Iraqi Freedom and Operation Enduring Freedom. We now have the ability to put ordnance in places where collateral damage might be a concern."
On 19 December 2006, Boeing announced that the US Air Force was paying it 80 million dollars - probably as an advance - for a first order of 1600 SDB1s and various equipment associated with the bomb. This was only a first contract, since it was stated that: *"Boeing will manufacture more than 24,000 SDB 1 weapons and 2,000 carriages for the Air Force, with deliveries planned beyond 2015."*

11. An ambiguous Patent

A "small-diameter guided bomb", the GBU-39 perfectly matches the "small smart bomb" and other "weapons systems using the same principle", which is specified in the patent (US Patent App.11/541,207, 2006). This patent was granted to SD Roemerman and JP Volpi - men surely known to Boeing. It was published on 12 July 2007 but certainly goes back to November 2006, the month preceding the order sent by the Air Force to Boeing for 1600 bombs. In any case, it is certainly the GBU-39 that is intended and protected by the patent: it is named at § 43 and in table 2, continued on page 8, in the column « Remarks », where its effective weight is given as 285 pounds for the SDB for which patent is given.

On page 7 of this document, § 33 cites « zirconium » as an example of *« pyrophoric material »* that could be incorporated into a « small smart bomb ». § 34 explains that *« the non-explosive materials applied herein are substantially inert in environments that are normal under benign conditions ».* This means that « in normal handling » they do not threaten « *to become destructive in an explosive or an incendiary manner »* because *« the potentially lethal explosive factor is minimal or non-existent. »*

And here is the list of « selected materials » cited as examples for their « inertness » : - *« e.g. tungsten, hardened steel, zirconium, copper, depleted uranium and other like materials ».*

Depleted uranium... in a legal text where every word counts and can cost or earn millions of dollars, nothing is left to chance. In that case, why mention something as « ill-famed » as depleted uranium ? Is it there mistakenly, inadvertently, or because it would be a model example ? Certainly not. It is there because they have to mention it at least once in the « patent » so that its use would in future be legally protected from competitors. Once, but no more than that, and in a listing, so as not to attract attention to this kind of material.

That is probably the reason why it is not named again in Table 1, which, on the same page, lists the materials involved in the « small smart bomb », giving, for each, its function, nature, density, weight and volume. Those mentioned are : in line one, tungsten, as a ballast (so it is named here chiefly for its weight, which is precisely the chief merit of DU). Then aluminium, pyrex, steel, various electronic materials, polymers and finally the explosive (with

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no indication of weight). The name of the bomb is not given. The total weight, stated with astonishing precision, is also ridiculously small (25.036 pounds). In fact we must multiply this by ten (and the weight of the materials likewise) to get the real weight : 250 pounds, not counting the weight of the explosive. What we must note above all in the Table is the weight relationship between different materials. Out of 25.036 pounds, the « tungsten ballast » alone accounts for 20.239, which is over 80% of the total weight (without the explosive). If we multiply by ten, we get 202.39 pounds, which is 91.8 kg.

Our hypothesis: the « depleted uranium » mentioned in § 33 has been replaced in Table 1 by the word « tungsten ». Work backwards, replace « tungsten » with « depleted uranium » and you have the DU weight in the SDB1 : 91.8 kg. Or perhaps a little less, if it is part of an alloy with other components - for example tungsten, the only one mentioned, on account of "commercial secrecy". This is of course only a hypothesis!

12. Gaza as a testing-ground

The low cost of the GBU-39s (still estimated at between $35000 and $100000 each) is attractive for customers in general and Israel in particular (one source mentions $67000). It is even possible that Israel, in exchange for its massive experimentation in the field, benefited from a fat refund or even perhaps a free delivery. The real conditions of the transfer are of course unknown... and Boeing has officially denied that it happened!

Its total profile of characteristics makes the GBU-39, version SDB1, the ideal weapon for the offensive against Gaza.

Another version capable of hitting mobile targets (the SDB2) was ordered from Boeing also, this time in association with Lockheed. Its development was planned to end in late 2009, with tests programmed for April 2009. We have no reason to think that the Israeli Air Force possessed such devices in December 2008 - it did not need them - unless of course "Cast Lead" also served as a testing-ground for some SDB2 prototypes.

The penetration capacity of the GBU-39 enables it to destroy the underground rocket-launching sites and also the tunnels or underground passages of the "Philadelphia Corridor."

Its precision enables it to hit predefined fixed targets while reducing the "collateral damage" to the civilian population - which receives warnings also by leaflets or cell-phones to evacuate the sites immediately, these being the houses or sites which the Israeli forces link to the infrastructures of Hamas, and to the making, stocking and launching of the Qassam (or Kassam) rockets against the south of Israel. This reduces the political, judicial and diplomatic risk of being accused of committing massacres and war crimes.

The availability and mastery of the GBU-39s by the Israeli Air Force helps to explain the timing of the operation - along with the partial power-vacuum in the USA during the transition from the Bush to the Obama administration, the latter being presumed much less favourable to a military action (note that Israel interrupted "Cast Lead" two days before Obama's investiture), with the expiry of the truce that Hamas had agreed to six months earlier, with the end-of-year festivals likely to distract world attention. As we saw, the US Congress in September 2008 authorised the sale of 1000 to Israel. They were delivered at the start of December. They had to be made operational - by mounting the racks on the F15E aircraft, preparing logistic support, and training the crews. On December 19 the truce expired. On December 27 the air offensive began. It was a Saturday, a Sabbath - which increased the surprise.

The problem is that the GBU-39, although it limits the risks of war crimes, leads to crimes against humanity. In fact there is a "serious concern" which is mentioned in no descriptions of it: Depleted Uranium (DU).

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13. « The Genocide in Gaza has begun »

Gaza is a narrow strip of land covering 360 square km. A million and a half people live there, with a density of 3823 per square km.

The casing of the GBU-39 bombs contains uranium that is called "depleted". It is indeed depleted in U235, but it is enriched in U238 - which is radioactive with a half-life of 4.5 billion years.

DU is fearsome chemical and radiological poison which easily burns on impact and turns into extremely small radioactive particles (micrometric and even nanometric, i.e. of the order of a millionth of a millimeter). These pass through any barrier and any type of gas-mask. The products of all these combustions of uranium travel with the wind, contaminate the atmosphere and enter living organisms via respiration, ingestion or the smallest of wounds. Thus part of the uranium is present as invisible uranium oxide in the air the people breathe, while another part contaminates the soil, the subsoil, the groundwater, the vegetation and the food-chain.

The consequences of the use of DU bombs in Afghanistan and in Iraq are well-known, demonstrated and denounced by many scientists - if not all those whose salaries do not come from the military budgets of the USA, France, Israel... and others. These consequences have been made dramatically visible by unbearable photos of deformed new-born babies.

It is not hard to imagine the catastrophic consequences such bombs could have on the population of Gaza : cancers, congenital deformities, disorders of the immune system... compounded by the presence of chronic malnutrition and shortage of health-care on account of the Israeli blockade.
When they decided to drop the GBU-39s containing uranium on the densely-populated zones of Gaza, the Israeli leaders could not fail to be aware of its effects. But what of the Israeli people, whose weariness and exasperation at the strikes by Qassam rocket and mortar shells can be easily understood, were they aware, are they aware even now?

Did they suspect that their government, while allegedly targeting Hamas's leaders, militants and installation, was beginning (consciously or not) a slow "ethnic cleansing" of the Palestinian population, which will be inexorably contaminated, plus a destruction of its environment? Do they measure the risk they themselves run of being victims, since after all atmospheric movements do not stop at Gaza's borders? Do they know that the Israeli ground soldiers, even if they return home intact or lightly wounded, may also have been marked for life in their lungs, their blood or their genes by the effects of these perverse weapons?

14. Letter to UNSG Ban-Ki-moon: the UN must investigate

On Sunday 18 January 2009, the very day that Israel announced it was ending its military operation, we sent by fax and email a letter to the UN Secretary-General, Mr Ban-Ki-Moon. It spoke of the radioactive weapons used in Gaza, the known precedents, in Iraq, the Balkans and Afghanistan, and continued thus:

« The same misfortunes are now likely to occur in the Gaza Strip and in neighbouring areas such as Egypt, Jordan and Israel itself. Furthermore, the nanoparticles of uranium in the atmosphere can travel great distances, so that no part of the world is totally sheltered from their contamination.

« Depleted uranium weapons thus have a genocidal character, and threaten humankind as a whole. Their use amounts to a crime against humanity.

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« We are aware that nothing short of on-the-spot sampling and scientific analyses of a thorough, multiple, objective and rigorous nature can truly verify our fears by showing the presence of radioactive materials - or can prove our fears to be groundless (for which we would be extremely glad). If radioactive materials are found, measures must be taken urgently to decontaminate the areas, and to inform and protect the local population, as far as possible.

« For these reasons we request that you give orders as soon as possible for an investigation on the spot to search for traces of radioactivity. We presume that the UN Environment Program could do this, because one of our groups was told (concerning a previous matter which it had drawn to the attention of your secretariat and the IAEA) that such missions fell outside the scope of the IAEA. »

The letter was co-signed by Jean-Marie Matagne, for ACDN, Paolo Scampa, for AIPRI (the Association Internationale pour la Protection contre les Radiations Ionisantes/International Association for Protection against Ionising Radiation), and Alain Acariès, the father of a UN blue-helmet peacekeeper in the FORPRONU mission (Balkans) who died as a result of nanoparticles caused by the use of Depleted Uranium weapons, and who is also the secretary of AVIGOLFE.

The signatories proposed entrusting this task to the UN Environment Program (UNEP), which had already investigated such matters in the Balkans and which knew how to find DU where it was present.

Meanwhile on 19 January the accredited ambassadors to Austria of the Arab nations presented, through Prince Mansour Al-Saud, a letter to the International Atomic Energy Agency (IAEA) expressing concern about "medical and media reports" and saying that "traces of Depleted Uranium have been found in Palestinian victims." The Arab ambassadors asked the IAEA to carry out a "radiological and physical investigation in order to ascertain the presence of Depleted Uranium in the weapons used by Israel in the Gaza Strip". The IAEA replied quickly that it agreed to the request and was going to carry out the investigation. That announcement ruled out the UNEP undertaking the mission.

Now, four months later (May 2009), the IAEA has yet to find a single expert to send. It is true that even before the arrival of investigators an Israeli government spokesman declared that they would find nothing. Earlier, on 13 January, the head of the Israeli Armed Forces had denied using white phosphorus bombs, although that was obvious from images shown widely, and had been forced to admit it on 20 January and the retreat to a second line of defense: "they are authorized weapons." Yes, barely tolerated, but not for use against civilians... As for the radioactivity of the GBU-39s, we will see shortly the technical reasons why the Israeli forces think they are less likely to be caught red-handed.

15. The Art of Dodging

The GBUs are built in the USA by the Boeing corporation in its factory in Saint Louis (Missouri). Knowing this, Jack Cohen-Joppa, a US citizen who remained "skeptical" about ACDN's assertions asked the US Department of Defense (DoD) whether or not the GBU-39s contain DU. While awaiting the DoD's response - he is still waiting - he asked the Boeing's communications officer the following question: *"Does the Boeing facility in St. Louis have a DOE license for holding or handling depleted uranium ?".* He received this reply: *"Boeing does not have a license as there is no depleted uranium activity at our St. Louis/St. Charles facility."*

Nevertheless, despite its appearance of denial, that answer does not at all imply that there is no DU in the GBU-39s: their « construction » in Saint Louis might be limited to the assembly of separate pieces, and does not imply either furnaces or foundries for metal alloys, or even the machining of the pieces. If one wishes to trace the DU present in the casings of the GBU-39s back to where the alloy is made or the casing is machined, one might have to start with

the US Air Force's laboratories or with one of their subcontractors supplying the casings. But the USAF, also contacted by Jack Cohen-Joppa, had a ready reply: "No comment". That was predicted.

16. The GBU-39: portrait as of 20 May 2009

The information publicly available and that gathered from various sources by Jean-François Fechino so far, and subject to modifications prompted by new data, enables us to make the following portrait of the GBU-39:

The GBU-39 weighs 130 kg when launched (285 pounds). If that is indeed the case, then the bomb itself, the warhead, weighs 113 kg (250 pounds).

This difference of 17kg seems to correspond to the « navigation kit » which comprises
- an external shell of carbon, very light and smooth, aiding its movement through the air
- attached to this, wings and fins also of carbon; the wings are folded in at take-off and fold out a few seconds after launching ;
- a servo-motor and little jacks to deploy the wings and fins, and later to vary their position and orientation to control the trajectory ;
- an Advanced Anti-Jam GPS aided Inertial Navigation system.

All of this kit explodes on impact with the target.
The warhead, which itself weighs 113kg, comprises :
- a detonator that can be programmed to cause the explosion just before, during or after impact with the target, according to the effect sought ;
- nearly 23 kg of a powerful explosive (50 pounds being 22.680kg): tritonal, a derivative of ammonium perchlorate in which the aluminium has been replaced by DU poweder (at a level of 10%) and to which fulminate has been added ;

Tritonal is classed among High Energy explosives (HE), and has the form of a slightly powdery solid which reacts to the slightest electric spark. It is made into the form of a narrow sausage and it is consumed at high speed while emitting a gas which, compressed into the envelope by the bomb, causes it to explode into many fragments, all at a speed of a 100th of a second.

This powerful explosive ensures great velocity for these "metal shards" which drive into everything in their path and ignite because they contain pyrophoric DU. They can travel right through human bodies and only reinforced concrete stops them at a depth of about a metre. After that, they burn, releasing a maximum of heat and minimum of smoke... on account of the "mini impacts dispersed widely around the target".

It is conceivable that the GBU-39s or some of them were armed with the latest thing in explosives : DIME (Dense Inert Metal Explosive).

- A metallic cover composed of an alloy of 10 % titanium, 10% tungsten and 80 % depleted uranium.

This Ti/Tu/DU alloy is friable and has preformated alloy iron shards. The explosions make it shatter according to the preformating. They hold on because of the way they are moulded and they are held in shape (despite the forces and speed) by the cloak of fullerenes, which also explodes in shards.

- A layer or « coat » 2.5mm thick, composed of fullerenes.

This coating on the metallic casing reinforces its hardness when it pierces the target after dislocation of the external envelope, and above all it protects the DU from premature or excessive rubbing when entering the target, in

particular in the case of enforced ultra strong concrete into which carbon tungsten fibres have been mixed. Fullerenes are a new « type of carbon » with reinforced molecular structures, coming directly from the military laboratories of Los Alamos, and linked to the research (both university and private) conducted into nanomaterials and metal structures. As resistant as diamonds, fullerenes appear outwardly like black soot.

As with the other weapons trialled in Gaza, the GBUs' materials and other characteristics - and their operating system as a whole - enable them to do a "multiple service" of destruction and lethality:

* deep penetration into the best-protected underground targets (concrete of high, very high, or ultra-high performance; thick armour made of steel, or steel reinforced by DU);
* explosion differed until the desired and programmed depth is reached;
* subsequent explosion and self-destruction of the device, if the primary operating system fails to function;
* "classical" destruction of the target, by blast from the inside;
* projection of metal shards in inert or living bodies inside or surrounding the target, with "decapitation" or "amputation" effects on human bodies;
*external and internal cremation of the bodies, with the metal shards themselves becoming fire-carriers;
*the impossibility, in the case of wounded survivors, to distinguish the metal shards or to extract them surgically;
*reduction of the length of survival for the injured and the burnt, because of internal radiotoxic and chemical poisoning due to Depleted Uranium and its descendants;
* radioactive contamination of the natural environment by dispersion, on the sites of the explosions and beyond, caused by DU nanoparticles and other radionucleides derived from uranium;
*attacks on the genome of the target population.

In a word: these weapons are *genocidal.*

17. How much uranium, and where?

Boeing announced a Warhead weighing 206lb or 93kg (in fact 93,44 kg). This number does not include the weight of explosive. But in comes in contradiction with other findings previously mentionned. According to them "the GBU-39/B is equipped with a 250-lb warhead with a forged casing ... that contains a 50 pounds explosive charge". Logically the warhead without explosive weighs 200 pounds, which is 90.718 kg. If Boeing indicates 206 lb, that's probably because we have to add to the metallic casing the relatively small weight of the detonator and the "cloak" of fullerenes. This weight must be deducted from the 35lb navigation kit added to the "naked" bomb, so that the weight of explosive can remain the same.

Let's accept this figure. The metallic shell of the GBU-39 would then exceed 90kg: 90.718 kg (not far from 91.8, according to our earlier hypothesis). 80% Depleted Uranium out of 90.718kg of metallic alloy makes 72.57kg. If we then add the 2.26kg of DU mixed with the explosive, when the bomb hits its target (after shedding its accompanying carbon, wings, tail-fins etc), then the total weight of DU in a GBU-39 would be about 75kg (74.83).

This extremely compact mass, this "ballast" arriving in a nose-dive, therefore at high speed (in the final stages of its trajectory the bomb is programmed to drop as vertically as possible), is what enables it, before exploding, to pierce at least 90cm of high-resistance armoured concrete (twice that, according to sources such as GlobalSecurity, which reported that right from the first tests it pierced six feet of "reinforced concrete") or several dozen metres of earth... down to 60m... or even 100m in depth in loose earth. It then explodes at the programmed depth.

From the sometimes contradictory information we had earlier, we had largely underestimated the minimum weight of DU contained in a GBU-39 and dispersed when it exploded. We were well short. Today we think that the real weight

is about 75kg, close to the hypothesis we deduced from a careful reading of the patent quoted above.

If we suppose that Israel "consumed" during "Cast Lead" all thousand GBU-39s -but it is possible that a part of them were kept safe, possibly for a use against Iran-, then some 75 tonnes of DU would have been dispersed in the soil and subsoil of the Gaza Strip, partly in sites suspected of housing rocket-launchers, partly and especially in the tunnels of the "Philadelphia Corridor" running near Rafah along the Egyptian frontier. That would be the dispersal, over a limited area in the heart of population zones, of one fifth of the tonnage of DU that was dispersed over all of Iraq during the whole of the 1991 "Gulf War", according to generally accepted estimates (the Advisory Committee on Gulf War Veterans' Illnesses estimate is 320 tons).

It is at least highly probable that several hundred GBU-39s were used during "Cast Lead", injecting several dozen tonnes of Depleted Uranium into the earth of Gaza.

But what remains on the ground, on the surface? At first sight, nothing. Why?

[-] Because radioactivity, being invisible, odourless and tasteless, can be present without anyone seeing it; because to detect it you need special receivers (Geiger counters, "Quartex"...) which you place near the emission source, and you need to be able to interpret the findings, because the passage of time and the landfilling work make it harder every day to collect data in Gaza.

[-] Because, unlike many other weapons found there, including a whole non-radioactive GBU-10 which apparently failed to explode (see the photos in J-F Fechino's "preliminary report"), you will probably not find any part of the GBU-39 warhead: just in case some failed to explode as planned, these bombs were provided with a delayed self-destruction system

[-] Because the micro-or nano-particles of DU which could rise up through the hole at the moment of explosion were immediately dispersed in the atmosphere, where they mixed with the "background noise" of pre-existing natural or artificial radiation, which they increased without us being able to pin the blame on them

[-] Because the largest mass of DU particles remains trapped underground where the bombs exploded... yet without leaving a crater. In fact the explosive power is deliberately limited. Its blast range does not exceed a diameter of 26 ft (under 8m). Under the ground, it creates only a sort of temporary cavity which may then collapse in on itself.

But all that does not mean these bombs will cease to do damage.

First of all, J-F Fechino's "preliminary report" states that he detected in several spots radioactivity levels twice the average values given by the IAEA for the same places. The increase in ambient radioactivity is far from innocuous, since we know there is no minimum for the dose that can harm human beings.

Also, the Gazans who since January 2009 have rebuilt tunnels on the bombed frontier run the risk of crossing contaminated zones, inhaling radioactive particles, and developing more or less quickly cancers or symptoms comparable to those of "Gulf War Syndrome".

Finally, the radio-elements that remain underground will eventually join the groundwater, and later enter the food-chain.

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Estimates of the contamination and the risks of radioactivity are possible only by analysis of samples taken at a good depth in spots where bombs are known to have exploded.

Subsequently, to isolate and ban access to the zones concerned, before (or for lack of) decontaminating them by huge earth-moving work, we will require indispensibly the indications that the Israeli Air Force can give. No one else can say with sufficient precision what type of bomb was used exactly where and at what depth they were supposed to explode.

Paradoxically, we can say with some cynicism that Israel may have good grounds for recognizing the use of radioactive bombs: if our assertions are correct, then virtually the whole of the"Phladelphia Corridor" is now radioactive, to a considerable depth - thus preventing the piercing and use of tunnels... The best way of eliminating this risk, if not the only way, is to make these tunnels useless, i.e. *to lift the illegal and inhuman blockade of Gaza.*

18. Other weapons deployed in Gaza

The GBU-39 are not the only bombs used against the "Philadelphia Corridor" tunnels, far from it. As early as January 1, an Italian journalist, Pietro Battachi, in the Occidentale wrote that « his sources » (military or governmental ones, obviously) of « spoke of dozens of underground passages destroyed by 5000-pound GBU-28s » ("Le fonti parlano decine di corridoi sotterranei centrati dalle GBU-28 da 5000 libbre"). It is conceivable, of course, that GBU-28s (conventional bunker-busters) are mentioned here instead of GBU-39s, which can do the same underground job as the GBU-28s, while weighing 16 to 20 times less.

"Bunker-busters" of Israeli manufacture like the 1000-pound PB500A1 (425 kg) or the 500-pound Mk82 (227kg) were also used.

Israel's leaders do not shrink from the use of other radioactive weapons. The proof is seen in this photo, showing the soldier Dan Cohen, a comrade of the soldier Gilad Shalit, part of the same tank brigade, along the border of the Gaza Strip. It appears on 25 June 2007 on the Ynet website of the wide-distribution Israeli daily Yedihot Aharonot. He is carrying on his shoulder an arrowhead-shell which is indiscutably tipped with depleted uranium.

To measure what all these weapons mean in practice, we must refer to the descriptions which surgeons present in Gaza have given of their effects on victims of these « new types of weapons » or materials (white phosphorus, DIME, tungsten, DU...) used in « Cast Lead »:

« *2 metres away, a body is cut in two; 8 metres away, legs are severed, burnt as if by thousands of needle pricks*» The wounded survivors *« have no trace of metal in their bodies, but strange internal haemorrhages. Some substance burns their blood vessels and causes death, we can do nothing*» (Dr Mads Gilbert, Le Monde, 12 January) *« Initially, everything seems in order...but it turns out on operation that dozens of miniature particles can be found in all their organs,"* says Dr. Jam Brommundt, a German doctor working in Kham Younis, a city in southern Gaza. *"It seems to be some sort of explosive or shell that disperses tiny particles...that penetrate all organs. These miniature injuries, you are not able to attack them surgically."* (Dr. Jam Brommundt, a German doctor working at Kham Younis, in southern Gaza) (*)

We are forced to ask the same questions as Dr Gilbert : ***« Could this war perhaps be the laboratory for the death-makers? Could it be possible in the XXIst century for one group to confine population of 1.5 million and do whatever it wants with them while calling them terrorists? »*** And how can one describe this "war" which on the one side causes 14 deaths (11 Israeli soldiers, 4 of which were hit by "friendly fire", plus 3 civilians hit by a rocket fire) and 50 wounded, and on the other side at least 1330 killed and 5450 wounded, most of these being

civilians, and half of these children? (Source: Foreign Policy In Focus)
Is 1 against 100 a fight or is it a killing game? A collection of war crimes? The start of a genocide which dares not speak its name and which hides behind the memory of another genocide?

All weapons of war are by their nature lethal. But those that use radioactive materials, whether as a form of explosive in atomic or thermonuclear weapons, as a metallic envelope or pyrophoric penetrator as in DU munitions, all have a characteristic that ought to have been banned in any case : besides direct effects which are more or less « limited » by the size of the explosion, they also always have « contaminating » collateral effects which are virtually unlimited in space and time.

They are therefore triply criminal weapons : as weapons of war (since the UN Charter, as is often forgotten, bans war as a means of resolving disputes) ; as genocidal weapons ; and as ecocidal weapons.

19. What is at stake

To acknowledge the extraordinary toxicity of DU weapons would have enormous consequences, chiefly economic and financial. What would such acknowledgement require?

Such acknowledgement would require the states responsible for using the weapons to pay compensation to the victims affected - if those effects can ever be compensated - or to the families of deceased victims.

It would require the ongoing care for the victims still living, civilians as well as soldiers, which would cost a huge sum. No wonder the chiefs prefer to have them die slowly with the causes of their misery being denied. For how could one prove to a military pension committee, months or years after exposure to DU, that one's renal or lung cancer, or one's child's congenital deformity is due to that exposure? Numerous other phenomena could play a role. Only those soldiers with physical wounds (usually from "friendly fire") who carry detectable particles of DU in their bodies have much hope of being recognised as victims.

Such acknowledgement would require:

[-] that every weapon containing DU - all kinds of munitions: shells, bullets, bombs, missiles, mines and even armoured tanks like France's Leclerc tanks (which are so expensive they are not exported) or the similar tanks of the US and Israeli forces etc - to be withdrawn from service, and to be replaced (since an army hates a vacuum). That would cost a fortune. Furthermore, the "retired" uranium would then have to be made harmless, which is impossible, or stockpiled and monitored in secure dumps, which could cost even more.

[-] that the production of these weapons should cease, and so would cost the jobs of numerous "arms industry" workers and therefore worsen the economic crisis. Above all it would reduce the profits of the share-holders of Boeing, Lockheed, Raytheon and co. We know that Boeing already has orders for over 24 000 GBU-39s. But some have suggested a figure of 150 000 units in the next decades. Not to mention the GBU-40 (SDB2). This is a four-billion-dollar program that must be cancelled, a jewel of the USAF that must be annihilated.

- that the contaminated sites should be rehabilitated, which would cost a fortune. Thus, according to Jean-François Fechino, the 88 submunition bombs weighing 417kg (type CBU-105 WCMD-SWF) dropped by B-1B bombers in the 2003 Iraq War dispersed uranium over a total area of 44 km2. The 818 CBU-103 WCMDs (other submunition bombs, of 429 kg) dispersed it over a total of 218 km2. And that is only a fraction of the total DU spread over Iraqi territory: at least 350 tonnes in 1991, certainly over 1200 tonnes since 2003.

[-] that those responsible for DU crimes committed should be brought to justice.

[-] and that finally, the entire nuclear industry, civilian as well as military, should be set in question, as being the great supplier of depleted uranium which people don't know what to do with and which is "recycled" for military purposes.

In view of all that, one understands why some leaders prefer to insidiously lead the world's population to its ruin.

20. The onus of proof

In the pages above we have described the GBU-39s with precision. But it is not an exhaustive description, and may be inexact on points of detail. We have also and above all declared that each GBU-39 contains a considerable mass of DU, equal to at least 75kg. If we are in error on this key point, it is up to the Israeli Armed Forces or the USAF to bring the proof.

As user and supplier, they must tell us what metallic alloy forms the warhead, and explain why well-informed personnel - though many are far from well-informed - speak of it as « hot, very hot metal » - which clearly means radioactive, and why those who handle it wear special suits. The USAF must explain why, in Afghanistan where it also uses GBU-39s, it requires the allied servicemen arriving on bomb-sites to wear NBC suits. The pretexts so far advanced are specious.

The Israeli Air Force and the USAF must let independent experts equipped with Geiger counters have access to the weapons themselves, preferably without warning and into any arsenal, so that there is no time to mislead them (as the Israelis did so successfully in the 1960s when one US inspection team visited Dimona - the underground levels where military plutonium was produced were so well masked that the inspectors never knew they were there).

Israel must indicate exactly the places where the GBU-39s were used, facilitate the access of experts and authorise the taking of samples for extended analysis by independent laboratories. No « industrial secrecy » or « defense secrecy » should be invoked for such investigations. On the contrary, *any refusal should be interpreted as an admission of crime.*

21. At the last minute, 20 May 2009: the proof is there.

In April 2009 a four-person mission under the auspices of the Arab Commission for Human Rights. The samples of earth and dust that they brought back from Gaza were then analysed by a specialist laboratory, which found in them quantities of Depleted Uranium (which is radioactive), Cesium (which is radioactive), asbestos dust (which is carcinogenic), Volatile Orgnaic Compounds (VOCs, which are fine particles which endanger health, especially the health of children, asthmatics and old people), phosphates (from oxidation of white phosphorus), tungsten (which is carcinogenic), copper, aluminium, and Thorium Oxide (ThO2, which is radioactive)...

Detailed results should be transmitted to the concerned authorities and made public as soon as possible.

Conclusion: only one camp, that of Humanity

Genocide means the extermination of a human group. DU weapons are weapons of extermination. They strike indiscriminately against a whole population, even attacking its genetic heritage. The human group they strike is everybody who breathes in or ingests the fallout. This group is not defined by political, national, religious or ethnic

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affiliation, but by geography. Its location makes it, for physical or meteorological reasons, the "privileged" victim of extermination, although no frontier can reassure the neighbours that they will not share the same fate to an unknown degree.

The same remark applies for the victims of radioactive fallout from nuclear tests or catastrophes. Chernobyl is in Ukraine, but its victims can also be in Belarus, Russia or France.

It follows that the use in Gaza of DU weapons, in particular GBU-39 bombs constitutes doubly a crime against humanity: the humanity of the Gazans, humanity in general.

Genocide is sufficiently proven if the civilian or military leaders responsible for the use of radioactive weapons know, before using them, the extent to which they attack the life, the environment, the survival and dignity of the victims of these weapons - in a word their genocidal character. This condition is enough to show what contempt they have for their future victims. The only defense that these leaders will offer will be: *"We didn't know"* - a line that has often been used in the past. But soon it will be impossible for anyone to use such a defense credibly, be he a head of state, a colonel, a bomber-pilot, or a soldier in artillery or munitions. We hope that this report will have helped to establish that to use radioactive weapons is indeed to commit genocide.

It is also anthropocide: this new word is needed to designate this new crime against humanity, one that destroys individuals by attacking their DNA, destroys families by attacking their descendants, destroys groups by attacking their genome, and destroys the species by contaminating their biological niche.

That is why all humankind, beginning with the Palestinian and Israeli peoples, must mobilise to denounce this crime, to demand punishment for the culprits and reparation for the victims, and to take all proper measures to prevent a repetition of it, be it in Palestine, the Middle East or anywhere in the world...

All radioactive, atomic, thermonuclear and uranium weapons, whatever their formula, must be banned and dismantled.

For ACDN

Jean-Marie Matagne, President

REPORT
On the use of radioactive weapons
in the Gaza Strip
during « Operation Cast Lead »
(27 December 2008 - 18 January 2009)
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