

## Part 2

### UK Government: DU questions, answers and denials re suspected use in guided weapons and the Afghan War

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**1. Letter to Sir Paul Beresford MP**, 16 October 2001 requesting information from the UK Government after first reports of Bunker Buster bombing in Afghanistan.

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Sir Paul Beresford MP  
House of Commons  
Westminster  
LONDON SW1A 0AA

16 October 2001

Dear Sir Paul

**Information request:  
Use of Depleted Uranium in Guided Weapons in Afghanistan**

I watch events in Afghanistan with grave concern. I would appreciate your help on one issue that has received no public discussion - the probable use of Depleted Uranium in guided weapons systems in the current conflict.

This possibility is of considerable importance to the welfare of UK and other ground troops expected to follow through in ground operations in the immediate future, as it was for KFOR troops entering Kosovo after the Balkans War. It is of obvious concern to civilians in target areas and to the personnel of aid organisations already operating in the region, or likely to go there as soon as hostilities cease.

**I ask your help to ascertain exactly what the "dense metal" (or combination of metals) is that is used in most guided weapons systems with hard target penetration capabilities.** There are two main possibilities: Depleted Uranium or Tungsten, both with densities approximately 1.7 times greater than lead.

"Dense metal" is used because these weapons rely on kinetic energy for their effectiveness. However I am unable to find any public source of information to identify the materials used. The weapons concerned are in use by both the US and UK armed forces.

Some of these munitions have been developed or manufactured by British Aerospace Royal Ordnance. I therefore consider it reasonable the UK public to ask what materials are used, where they have been tested and where they have been used in combat.

**Context**

I have researched the use of Depleted Uranium in weapons systems since the start of the Balkans War. This is a personal interest as a humanitarian concern, perhaps heightened by my awareness of toxicological hazards from my past work in the oil industry. I helped to introduce an occupational health monitoring scheme in Shell Canada in 1982-3. As an Occupational Psychologist I have an ongoing interest in Occupational Health.

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Depleted Uranium (DU) is known to be used by US, UK and several other countries mainly in armour piercing munitions e.g. 30 mm anti-tank shells and larger tank shells.

## Use of DU in guided weapons

The use of DU in guided weapons systems e.g. cruise missiles and smart bombs was questioned by the media during the Balkans War but official sources denied that they had been used except in field trials of cruise missiles as a substitute for nuclear warheads. At the time this explanation was accepted by DU researchers and the media.

However, on **Jane's Defence** website (the world's leading authority on global weapons systems) the following quote is given in their section on Depleted Uranium - FAQ's:

**"It is true that some guided weapons use depleted uranium to increase their penetration effect".** See attached web page.

In January this year I came across the following report on the FAS (Federation of American Scientists) website:

**High penetration weapon system concepts / plans** [Air Force Mission Area Plan (MAP)] ANNEX F Common Solution/Concept List (U) [as of 11 July 1997 - Rev 10]

This appeared to be a procurement list for development of new guided weapons systems. It has been in the public domain on the Internet for some time.

The common theme to at least 9 weapons systems - smart bombs and cruise missiles - is the use of "**dense metal**" penetrators or ballast. See attached **report "Tip of the Iceberg"** that I compiled from the website.

Some of the systems described have been manufactured and used in combat e.g. the Boeing AGM 86C cruise missile. British Aerospace developed the Broach warhead for this system in 1998 and it was used in competitive trials in 1998-99, though the final contract was won by Lockheed Martin's Advanced Unitary Penetrator in Dec 99. Boeing's website says that this missile was used in Desert Fox and the Balkans War. It seems very likely that prototype versions of the AGM 86D (hard target penetration version) were field tested in both conflicts.

How many of the 9 systems listed went into production or combat use? I do not know but it is evident is that "dense metal" penetrators are an integral part, in fact the prime component, of a whole generation of cruise missiles and smart bombs.

The GBU-28 "Bunker buster" bombs used last week in Afghanistan are another high penetration, smart bomb weapons system. Their penetrator weighs 4400 lbs. If this is made of, or includes Depleted Uranium it would generate a substantial quantity of DU oxide dust that would disperse over a wide area, contaminating soil and water supplies.

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According to Janes the exact material specification for metal penetrators is often not published by manufacturers. They know it to be used in some anti-tank missile systems (e.g. the TOW system). "In some cases Copper and Depleted Uranium have been used interchangeably. Even the military are not always aware which metals have been used".

Janes are not aware of DU use in hard target systems but say they use hardened steel casings for structural strength. In view of the variable use of the terms "penetrator" and "ballast" in weapons descriptions it seems very likely that these contain DU as dense metal ballast to increase their kinetic effect, together with its incendiary effect on detonation.

### **Request for full disclosure of DU use**

In view of the potentially adverse health and environmental effects of Depleted Uranium I would ask that it seems important that the UK and US Governments should investigate and disclose all weapons systems that contain Depleted Uranium.

This is a matter for immediate concern in Afghanistan. It also raises serious questions about the extent to which DU was used in the Balkans war, in addition to the 10 tonnes of 30 mm anti-tank shells declared by the US Government, and where.

As my local MP I would be grateful if your could seek clarification from the Government on these questions.

Yours sincerely

Dai Williams

**2. Letter to the Prime Minister** before the House of Commons debate about bombing in the Afghan War on 1<sup>st</sup> November 2001.

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The Rt. Hon Tony Blair MP  
10 Downing Street  
LONDON SW1A 2AA

1 November 2001

FAX MESSAGE

Dear Prime Minister

**Use of Depleted Uranium in the Afghan War:  
Potential hazards to civilians and ground forces**

I respect the moral support you have given to the people and government of the USA following their tragedies on September 11<sup>th</sup> and the remarkable energy you are putting into international diplomacy at this time.

I do not doubt your sincerity but I was saddened by your decision to support the USA in large scale military action in Afghanistan. I wrote to you on 9<sup>th</sup> March regarding priorities for "stabilising crises in the UK, Middle East and potentially the USA ... through the next 6 months" based on psychological forecasts in my Power or Peace study. The downside-risk scenarios of international terrorism and war in the forecasts have occurred creating new hazards and opportunities.

**Is Deleted Uranium being used in guided weapons systems?**

This letter concerns the current bombing campaign from an occupational and public health perspective. My researches indicate a high probability that most of the smart bombs and cruise missile systems with "hard target capability" being used by US and possibly UK forces may contain Depleted Uranium.

The basis for this suspicion is given in my attached study ***Depleted Uranium in the Afghan War*** completed on Tuesday, updating researches earlier this year. I asked my MP Sir Paul Beresford to raise these concerns with the Ministers involved on 16 October so some staff in the MoD or No.10 may already be aware of them. I wonder if you have been told?

In the last week I have made further searches and discovered several upgraded guided weapons systems that are most likely to be based on DU penetrators. These include the GBU 37, GBU-24 and GBU-32 smart bombs and AGM 86D and Tactical Tomahawk Penetration Variant cruise missiles. These match several procurement specifications published in 1997 using "dense metal" penetrators, ballast or shaped charge warheads e.g. AUP-113, AUP-116, P31 and UK developed BROACH / MWS variants.

I have also studied reports of the munitions used in the first 3 weeks of the Afghan bombing and correlated these with earlier data. The attached report sharpens the concerns sent to my MP. I think it requires a Government statement.

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## Implications for the current bombing campaign

I do not have precise details of how many smart bombs and cruise missiles with hard target capability have been used. Over 1000 tons of munitions have been used to date (basis CDI and other reports). If only a third of these were based on Depleted Uranium enhanced penetrators then the total tonnage of DU used already could be match the total in the Gulf War.

A new issue is that these munitions (from 1000 - 4000 lbs. each) may contain far larger quantities of DU per target location (50-100x more) than in previous campaigns using 30 mm anti-tank shells. Potential contamination for humans in target zones may be far higher and hence potential toxic and radiological effects may be faster and more severe.

These implications for UK special forces, follow-up forces, local communities and other civilians including international aid and media workers are far more immediate and serious than those in the Balkans War.

## Immediate conclusions

In this situation I draw several immediate conclusions:

1. You will need full disclosure of the "dense metals" used in all hard target guided munitions from the MoD and DoD.
2. If these metals include Depleted Uranium you will need:
  - a) an **immediate environmental impact and health hazard assessment** of all hard target munitions target zones in Afghanistan. This will need on-the-ground as well as theoretical assessment.
  - b) to decide whether or not to call for **immediate cessation to the use of all DU munitions** in Afghanistan until their effects have been fully assessed. This to include any prototypes being evaluated in combat.
  - c) to ensure that all **ground forces** expected to enter DU target zones are fully equipped and subject to frequent occupational health monitoring.
  - d) to decide **what precautions are needed to protect civilians** in target zones e.g. immediate evacuation, with potential refugee considerations.
  - e) to decide **what specialist decontamination and medical support is needed for civilians** already exposed in DU target zones.
  - f) to assess the **likely wider spread of DU contamination throughout Afghanistan** subject to prevailing wind and weather conditions such as dust storms. The spread and persistence of contamination in Southern Iraq gives some indication of the scale of this hazard.
  - g) to **re-assess the military and political objectives of the Afghan war** in the light of potentially widespread DU contamination and the re-location of civilian populations this may involve.

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## International political implications

If DU has been used in considerable quantities in Afghanistan this is likely to have significant humanitarian and political implications.

The use of cluster bombs and the effects of collateral damage to civilian communities are morally abhorrent to many people. Fighting terror with terror seems to me a tragic error of judgement, though not surprising in view of the severe trauma and stresses on yourself, President Bush and your respective administrations.

If it transpires that DU has been used on a similar scale to the Gulf War the potential long-term public health disaster that may follow is appalling. It could involve many thousands of innocent victims directly through cancer and other disorders and indirectly through birth defects as seems the case in Iraq. These victims may include UK troops and civilians as well - as happened after the Gulf War.

Your advisers may recommend trying to cover up the suspected use of DU in hard target guided weapons systems in Afghanistan. But if it has been used this will only delay the possibility of limiting health hazards to troops and civilians.

What's done is done. I hope that DU has not been used in any operations in Afghanistan. If I am correct however, this raises serious occupational health issues for UK forces and civilians involved. Its potential repercussions for the health of civilian communities would invalidate any moral basis for the current military response to international terrorism.

I respect your real concerns about the threat of international terrorism. However I ask you to develop Plan B. Psychologically this alternative could be more effective based on the principles of peace and justice with aid and poverty reduction\*. This would stabilise communities in crisis whilst marginalising the terrorist elements they currently tolerate. Military force must be a last resort, best used for peacekeeping, detecting and apprehending suspect terrorists as in Northern Ireland and the Balkans.

Yours sincerely

Dai Williams, M.Sc C.Psychol

attached in same fax:

***Depleted Uranium in the Afghan War, 30 October 2001 (see Part 1)***

### 3. UK Government denials

19 November 2001

#### Reply from Dr Moonie to Sir Paul Beresford, regarding use of DU weapons in Afghanistan and the 'dense metal' in guided weapons.

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From: **Dr Lewis Moonie MP**,  
Under Secretary of State for Defence and Minister for Veterans Affairs,  
Ministry of Defence, London

To: **Sir Paul Beresford MP**

Thank you for your letter of 24 October to Adam Ingram enclosing correspondence from Mr Dai Williams of 32 Send Road, Send, Woking about the use of depleted uranium (DU) in munitions used in the conflict in Afghanistan. I am replying as this matter falls within my responsibility.

First and foremost, let me make it clear that to date no DU-based munitions have been used in the current operations in Afghanistan. Further, we are not aware of any plans for them to be used. However, that does not rule out the use of DU munitions.

Two types of DU-based munitions are available to British Forces, a 120 mm anti-tank round and 20 mm round used by some Royal Navy ships. DU-based anti-tank ammunition was brought into service by the Ministry of Defence for use against the most modern types of main battle tank armour because of its unique capability as a kinetic (or moving) penetrator. At present, no satisfactory alternative material exists to achieve the level of penetration needed to defeat the most modern battle tanks, although research is continuing into more effective alternatives. The use of DU-based ammunition remains an important option in military operations conducted by the UK armed forces. If the safety of British troops in any operation were to require such a capability against Main Battle Armour, DU-based ammunition would be deployed and used. The Phalanx DU round is currently being replaced by a superior tungsten variety and DU stocks will be exhausted by 2004.

In his letter, Mr Williams provides a summary of information extracted from the Internet containing details on guided bombs and asks for information concerning the use of the term "dense metal". The Ministry of Defence cannot confirm the specific composition of these types of munitions. However, there is a range of heavy metals that could be considered under that term including hardened steel and titanium. However, one heavy metal most associated with that term is, as Mr Williams mentions, tungsten, which is available in a number of varieties - the most common being tungsten heavy alloy. These types of metal are used in order to maintain the ground (or concrete) penetration capability of the munition, an option not suited to the softer DU metal. Therefore, DU would not be expected to be used for this capability. There are suggestions that DU might be used in small quantities to act as ballast in some munitions, however, we are unable to confirm whether or not this is the case at this time.

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Whether DU is used in munitions for the United States forces is a matter for the US Government. However, the legality of weapons is assessed by reference to international treaties and principles of International Humanitarian Law. Weapons containing DU are not banned by a specific international treaty. Further, it is considered that weapons containing DU are not "of a nature to cause superfluous injury or unnecessary suffering" within the meaning of Article 35 of the first Protocol additional to the Geneva Conventions of 1949. Neither are they considered illegal by virtue of Article 55 of the same Protocol which prohibits the use of weapons that are intended or may be expected to cause "widespread, long term and severe damage" to the natural environment. The use of all weapons in armed conflict is subject to legal restrictions on the circumstances in which they are deployed.

DU is not a new issue: DU-based ammunition has been around in the UK since the early 1980's, and the risks (minimal as they are) have been acknowledged and handled throughout that period. There are two potential hazards arising from the use of DU: a low level radiation hazard, (DU's level of radioactivity is lower than most man-made radionuclides, such as the americium used in domestic smoke detectors); and a chemical toxicity hazard, similar to that posed by other heavy metals such as lead. So far there is no scientific or medical evidence linking DU with the ill health of Gulf veterans or with ill health in Balkan peacekeepers, although we continue to remain open minded.

Many independent reports have been produced that consider the battlefield effects of using DU munitions. These include work by the US RAND Corporation, the US Agency for Toxic Substances and Disease Registry, the US Institute of Medicine, the Royal Society, the European Commission, the United Nations Environment Programme and the World Health Organisation. (Assessments on the environment and personnel were also undertaken by a number of nations contributing troops to Kosovo). None have found a connection between DU exposure and leukaemia or other illnesses, and none have found widespread DU contamination sufficient to impact the health of the general population or deployed personnel.

Dr Lewis Moonie MP

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### **Analysis of Dr Moonie's reply** (re Dai Williams questions)

There are several curious inconsistencies and errors of fact in Dr Moonie's reply:

**a) Unsound denial**

How can Dr Moonie be confident that DU weapons have not been used in Afghanistan if the Ministry of Defence "cannot confirm the specific composition of these types of munitions"? This either means they don't know or are unwilling to tell Sir Paul Beresford, a member of the UK Parliament.

**b) Complacency**

How can the UK Government protect the health and safety of UK troops and civilians in Afghanistan if they take the view that "Whether DU is used in munitions for the United States forces is a matter for the US Government"?

**c) Errors of fact re dense metals**

We are told that the Ministry of Defence is "unable to confirm" the nature of the "dense metal" in hard target guided weapons. But Dr Moonie then states that "there is a range of heavy metals that could be considered under that term including **hardened steel** and **titanium**." These are not high-density metals.

The increased penetration effectiveness of these new weapons (double that of previous versions) relies on the basic physics that they must be at least 2x the density of previous hardened steel warheads of the same total weight.

Uranium 238 is 2.1 times heavier than Nickel or Cobalt and 2.4 times heavier than Iron. These are the main components of the alloy outer casing (Air Force 1410) of the AUP-116 advanced penetrator used in the GBU-24 guided bomb. U238 is 4.2 times heavier than Titanium. The density of U238 is approximately 19.0 compared to 19.25 for Tungsten. Military DU alloy (U-0.75Ti) is 18.6.

Is Dr Moonie, or whoever wrote the letter for him, unaware of the design principles for the new generation of hard target weapons used by US forces in Afghanistan, purchased by the UK Government, and manufactured by BAE-Royal Ordnance? If so how can they make reliable judgements and statements about the potential use and hazards of Depleted Uranium weapons in the war?

The MoD must know the facts about its weapons and materials. Does this data represent the briefings that Dr Moonie and Geoff Hoon have been given? Has the MoD misled Ministers of Defence Geoff Hoon and Dr. Moonie?

Or is the MoD and the UK Government represented by Dr Moonie well aware of the facts? If so why have they deliberately misled Sir Paul Beresford MP in replying to my questions? Misleading or deceiving a Member of Parliament indicates that the MoD and UK Government are unwilling to tell the truth about DU to MPs and the public. Why such secrecy about this metal?

Since Tungsten and DU are the only practical options for the dense metal in question this deception suggests that DU **is** the dense metal concerned.

**d) Errors of fact re the hardness of DU**

Another error of fact is the statement that "These types of metal are used in order to maintain the ground (or concrete) penetration capability of the munition, an option not suited to the **softer** DU metal."

Even basic Uranium 238 is a **hard** metal, the second hardest common metal to Tungsten apart from rare metals like Osmium. It is 2 times harder than Titanium and 3 times harder than Iron, depending on the type of hardness being tested. These are Vickers hardness figures. The hardness and strength of military grade DU is increased in various alloys e.g. with 0.75% of Titanium for maximum hardness in anti-tank penetrators. DU is also alloyed with Molybdenum or Niobium. The harness, strength and ductility of DU alloys are controlled by special manufacturing processes e.g. heat treatment or forging. DU alloy is used for anti-tank penetrators and for armour plating in tanks because of its hardness.

A Jane's representative also told me that DU was too "soft" for hard target missiles. Perhaps this is a standard mis-information briefing given to the arms industry to discourage questions about the use of DU in hard target weapons systems. From Dr Moonie's reply it may be part of the briefing for politicians who don't know about, or have to deny the use of DU in new hard target warheads.

**e) Errors of fact about quantities of DU ballast**

Another error of fact in Dr Moonie's reply is in this statement: "There are suggestions that DU might be used in small quantities to act as ballast in some munitions, however, we are unable to confirm whether or not this is the case at this time."

The term "ballast" is vague. But it is used several times in the project specification for hard target weapon upgrades in the US **Air Force Mission Area Plan (MAP) ANNEX F Common Solution/Concept List**, 11 July 1997 quoted in Tip of the Iceberg (see pages 15-20). For example in:

**WPNS114 -- 1000 lb Dense or Ballasted Penetrator in GBU-32**

This concept is a 1000 pound dense or ballasted penetrator integrated with a GBU-32 guidance kit using compressed carriage for internal carriage in advanced fighters (F-22, JSF) or carriage in cruise missiles (JASSM, CALCM, ACM, ATACMS, Tomahawk.) The warhead would either be designed with a dense metal case or contain dense metal ballast for maximum penetration.

The dense metal ballast or casing in new warheads has to be 50-70% of their mass to increase their overall density. In warheads weighing up to 2 tons in the GBU-28 Bunker Buster this is not a "small" quantity.

Ballast may also refer to the casing involved in shaped charge warheads see Part 3, page 79. Smaller quantities than in the guided bombs, but still much potentially a much larger DU load than 5 kg anti-tank penetrators.

As with factual errors about the density and hardness of the "mystery metal" involved this statement suggests ignorance of the technology or a deliberate attempt to mislead Sir Paul Beresford by understating the significance of DU or whatever the mystery metal is in guided weapons used in Afghanistan.

**f) Acknowledgement that DU might be used**

Dr Moonie's acknowledgement that there "are suggestions that DU might be used" contradicts his first statement - "let me make it clear that to date no DU-based munitions have been used in the current operations in Afghanistan."

How can he make that assertion if he is aware of suggestions that it might be used even in small quantities? Geoff Hoon has also firmly denied the use of DU in Afghanistan - once in the House of Commons and several times in written answers recorded in Hansard (see following Hansard reports).

It is almost certain that DU armour piercing munitions have been used in ground support operations in Afghanistan by the **AC-130U Spooky** gunship. DU armour piercing rounds are standard ammunition for the **25 mm GUA-12 cannon** on that aircraft and would be first choice in attacking light armoured targets in combat.

**g) Legality of DU as weapons of indiscriminate effect**

It is interesting that Dr Moonie wanted to emphasise that DU weapons are legal. If they have not been used this would not be an issue. "Weapons containing DU are not banned by a specific international treaty. Further, it is considered that weapons containing DU are not 'of a nature to cause superfluous injury or unnecessary suffering' within the meaning of Article 35 of the first Protocol additional to the Geneva Conventions of 1949."

But if DU is used in explosive warheads the resulting radioactive contamination by uranium oxides will cover large areas in ways that cannot be economically cleaned up. The US Government has abandoned plans to clean up DU on the Jefferson Proving Ground due to the estimated cost of \$7.8 billion. If DU weapons have been used to bomb underground aqueducts that supply drinking and irrigation water then the permanent radioactive and toxic contamination would be a clear demonstration that DU warheads are weapons of indiscriminate effect. (see New Scientist report in Part 1).

Dr Moonie's denials suggest that the Government and MoD are already assessing the risk of international legal action against governments using DU weapons. This is likely to follow if widespread use of large DU guided weapons is proved in Afghanistan and in areas of Iraq and the Balkans.

#### **h) Obsolete basis for assessing health risks?**

Dr Moonie's re-assures Sir Paul about the potential health hazards of DU-based ammunition "minimal as they are". But he acknowledges "the two potential hazards arising from the use of DU: a low level radiation hazard, and a chemical toxicity hazard, similar to that posed by other heavy metals such as lead." Like lead the most hazardous toxic form of Uranium is its oxide dust.

Dr Moonie's comments imply doubts about the safety of DU: "So far there is no scientific or medical evidence linking DU with the ill health of Gulf veterans or with ill health in Balkan peacekeepers, although we continue to remain open minded."

He says that "many independent reports have been produced that consider the battlefield effects of using DU munitions. None have found a connection between DU exposure and leukaemia or other illnesses, and none have found widespread DU contamination sufficient to impact the health of the general population or deployed personnel". Dan Fahey's report [Don't Look, Don't Find](#) explains why.

Several of these reports are not actual medical studies but literature searches. Very little systematic medical research has been done on Gulf veterans. See Professor Malcolm Hooper's analysis of the UK Royal Society report at: <http://cadu.members.gn.apc.org/malchooprs.htm> ). The only extensive observations of DU effects on civilians are by doctors in Iraq. Dr Moonie, a Community Health Physician, seems unaware of their grave concerns. An Inquiry into the effects of DU weapons in Iraq was voted down by the United Nations, opposed by the US Government with UK Government support.

Most medical studies have been impaired by long delays before medical assessments of personnel at risk or with DU-related illnesses. Studies of KFOR troops were conducted 18 months after the Balkans War. As at October 2001 the MoD had not started to assess DU levels for UK troops assigned to the Balkans. UK studies of health effects on troops at land-to-sea DU training grounds are not relevant to hazards for humans in DU target locations.

The UNEP study was severely limited in several ways: it was delayed for over a year by the US Government refusing to disclose DU target locations. They only sampled 11 of 112 reported DU target sites. The sites had been visited (and cleaned?) by up to 10 military survey teams before UNEP was allowed access to them (refer US DoD Information Paper, October 2001, [TAB C](#) , page 99). UNEP did not sample target vehicles, or bomb or cruise missile target locations. The final

report was edited to remove references to "DU hot spots" identified in the survey data. See Dr Chris Busby's review at <http://www.llrc.org/du/subtopic/uneprept.htm>

Most official studies of DU exposure and medical effects had severe limitations even before suspicions of DU use in large warheads. DU exposure assumptions in all previous studies may be invalidated if DU has been used in large hard target guided weapons, in locations that have not been tested.

## Conclusions

Dr Moonie's reply is a useful indication of the UK Government's level of awareness about suspected DU in hard target guided weapons. It gives no convincing evidence to deny the suspected use of DU weapons in Afghanistan. Its errors of fact and reliance on reports that have multiple flaws only increase suspicion that DU is used in these weapons and has been used in Afghanistan.

The errors of fact are so blatant that they suggest deception, not incompetence. Either the MoD has deceived Dr Moonie or Dr Moonie was trying to deceive Sir Paul. Overall they suggest a four level justification of DU use in Afghanistan: 1) direct denial, 2) if DU has been used then only very small quantities are involved, 3) if DU has been used it is legal and 4) DU only represents minimal health hazards anyway.

These conclusions have **potentially serious implications for UK and other nations' troops and civilian personnel** already in Afghanistan or soon to be posted there for peacekeeping and aid operations.

It remains to be seen whether the UK Government and MoD are taking any operational precautions on behalf of UK personnel in Afghanistan, or whether they have briefed troops and aid organisations to do so. On 5<sup>th</sup> November 2001 UK Minister of Defence Geoff Hoon promised Parliament that such warnings would be given if necessary (see page 60).

UK forces should have conducted their own NBC assessments in Afghanistan over the last 2 months so the **UK Government should know by now if DU weapons have been used in Afghanistan**. Like the US Government, they may have **gravely underestimated the likely health and environmental effects of using large DU warhead weapons** on the scale actually deployed in Afghanistan.

If DU has been widely used in Afghanistan this has serious legal, political and humanitarian implications. These include decisions about troop deployment and the repatriation of refugees. The mystery metal in hard target weapons has been kept secret for 5-10 years. But now it is being questioned denial is only a short-term option. If the MoD and Government have recognised serious DU contamination in Afghanistan they are probably trying to build a case to justify their previous denials.

## Government acknowledgement

Apart from Dr Moonie's reply two recent decisions give some hope that the UK Government is beginning to acknowledge these problems:

1. The delay in sending follow-up forces to Afghanistan - giving time for airborne DU dust to settle and for winter conditions to consolidate it for a few months.
2. It may be significant that the Government have announced they will withdraw UK forces after 3 months i.e. as climatic conditions - thaw and wind - increase the risk of redistributing widespread DU oxide contamination. These are calculated risks.

The welfare of the Afghan population and other nationals is not Dr Moonie's concern. These aspects of suspected DU use in Afghanistan need to be pursued by other Government departments particularly the Foreign Office and Ministry for International Development - if they can get reliable information from the Ministry of Defence.

### **Need for international co-operation on DU in Afghanistan**

International co-operation is needed to assess potential effects of DU weapons in Afghanistan and neighbouring states. The most optimistic scenario is that DU has not been used at all, or only in local AC-130 strikes. This can only be established if the US Government discloses the materials used in all guided weapons warheads, which use DU, how much is involved per weapon, how many have been used in Afghanistan and where. Such disclosure is not expected.

**Key issues for international co-operation** include:

- a) It is important to ensure that the UNEP PCAU (Post Conflict Assessment Unit) is allowed to operate quickly, with maximum international support and rigorous safeguards to ensure no political interference in the publication of their results.
- b) Other countries involved in staffing the Afghan peacekeeping force need to check whether their governments have been briefed on the risks of suspected DU contamination. Are they aware? If so what procedures have been adopted for briefing personnel (e.g. exempting pregnant women) and for DU health and environmental monitoring? If these subjects have been discussed why have they not been reported in the media?
- c) If DU contamination has been found what precautions are being taken to protect the civilian population and returning refugees? It is suspected that DU studies in Kosovo were delayed so that refugees could be repatriated at the first opportunity, regardless of the health hazards they might face. The health and welfare of refugees returning to potentially contaminated environments in Afghanistan may create a major ethical dilemma for the international community and aid organisations.

I understand that Dr Moonie is by profession a community health physician and that his current responsibilities include Depleted Uranium and Veterans affairs. In theory he should be the best informed and most rigorous advocate of the health and safety of past and present UK military personnel. He should be well aware of epidemiological methods and toxicological hazards. He should be someone that UK military personnel and Members of Parliament can trust implicitly for his professional judgement.

Sadly Dr Moonie's reply to my questions only increase my suspicions about the potential use of DU in undisclosed weapon systems, including those used extensively in Afghanistan. Whoever advised him about DU or hard target weapons or drafted his reply cannot be trusted by MPs, troops, veterans or the public. This must be a matter of serious concern to MPs, Gulf and Balkans War veterans exposed to DU, and to UK troops deployed in Afghanistan. If he has been deceived by Ministry of Defence advisers this will be a concern for Dr Moonie and the Government. Perhaps it should also be a matter of concern for the British Medical Association.

Dai Williams  
24 December 2001.

#### 4. Recent extracts from Hansard (1) - Sept 11 - Nov 11, 2001

##### Internet search for recent questions and answers regarding Government statements and policy on military use of depleted uranium on November 11<sup>th</sup>.

Hansard is the official transcript of UK Government proceedings. Source: **Online Hansard**. Use this link for references to DU, missile systems etc:

<http://www.parliament.the-stationery-office.co.uk/cgi-bin/empower?DB=ukparl>

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#### Hansard spoken questions and answers in the House of Commons re DU since September 11th, 2001

##### 4 Oct 2001

**Mr. Robert N. Wareing** (Liverpool, West Derby): I speak from the left and this is my first opportunity to express publicly in the House my heartfelt sympathy with the American people, among whom I have personal friends, for the barbaric attack that took place on 11 September. It was probably the worst act of terrorism in world history and it deserves a very firm response from us all.

I am pleased that the Prime Minister and President Bush have embarked on attempts to develop diplomatic contacts with many different countries to combat terrorism. Economic and financial actions have been taken, and I happen to believe that we cannot exclude military action. However, I would support military action only on the condition that it is very carefully targeted. I do not want to return to the House in two or three weeks time and find that we are debating whether it was right for the international community, in taking military action, to have used **depleted uranium** or cluster bombs, as were so disgracefully used against the people of Yugoslavia.

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##### 1 Nov 2001

**Mr. Elfyn Llwyd** (Meirionnydd Nant Conwy): The right hon. Gentleman mentioned armour-piercing ordnance. Can he tell us whether **depleted uranium** is now being used?

**Mr. Hoon**: It is not being used at present. As I said a moment ago, I shall return to the question of cluster bombs.

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#### Hansard written questions and answers re DU since September 11<sup>th</sup> 2001

##### 24 Oct 2001

##### Afghanistan

**Mr. Chaytor**: To ask the Secretary of State for Defence if he will make a statement on the possible uses of **depleted uranium** in respect of British Forces' engagements in the conflict in Afghanistan. [8238]

**Mr. Hoon** [*holding answer 22 October 2001*]: No British forces currently engaged in operations around Afghanistan are armed with **depleted uranium** ammunition. However, we do not rule out the use of **depleted uranium** ammunition in Afghanistan, should its penetrative capability be judged necessary in the future.

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## 5. Analysis of DU questions and answers in the UK Parliament

Message to other DU researchers on 13 Nov 2001.

This message analyses specific Hansard references to depleted uranium or missile systems since 1999. Other references to DU re the Balkans War and UNEP report are available in Hansard but not included here.

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To date (13 Nov 01) I have had no reply from the UK Government to questions about suspected use of DU in guided weapons systems and in the Afghan War. However DU has been discussed quite frequently in Parliament earlier this year.

### 1. UK Government information about DU

I have searched the **Hansard** archives (at <http://www.parliament.uk/>) to check on Depleted Uranium (DU) and related references as they affect the UK Government, UK forces and weapons development and manufacture.

The results are interesting. At least 17 MPs have raised questions about DU in the last 3 years. Most detail is available in written questions and answers. They include DU safety precautions, awareness of Dirty DU issues and leads to UK weapons systems past present or future that are likely to include DU.

### 2. Examples of DU questions to Government in 2001

Hansard answers highlight how tightly framed questions to Government about DU must be to get a serious answer e.g.

**Question:** "How many DU shells were fired in Wales in each of the last 10 years?" - Hansard, 7 March 2001

**Answer:** "No depleted uranium rounds have been fired in Wales in the last 10 years".

It might have been better phrased as "How many weapons or warheads containing DU have been fired or tested in Wales in the last 10 years?" (e.g. the BROACH warhead).

and on 7 March 2001:

**Question** "How many weapons dropped by the RAF on Iraqi installations since the UK began patrolling the no-fly zone have had depleted uranium tips...?"

**Answer** "None of the weapons dropped by the RAF on Iraqi installations since the UK began patrolling the no-fly zone have had depleted uranium tips."

The question could have been: "How many weapons containing depleted uranium hard target penetrators have been used by British and US forces in their patrols of Iraq no-fly zones?"

"Tips" is not a technical term. In common use it just means the bit at the front which may be a discardable windshield, or outer casing using tungsten or other alloys. For example in the Maverick AGM-65G the "tip" is its guidance system. According to FAS the "heavyweight warhead" is contained in the centre section see

<http://www.fas.org/man/dod-101/sys/smart/agm-65.htm>

/ continued ...

### 3. New questions to the UK Government

A range of much more specific questions are needed as follows:

-re weapons systems

1. What dense metals are used in the hard-target penetrators of the following guided weapons systems: GBU-24, GBU-32 (upgraded), GBU-37, AGM-86D, AGM-65G, AGM-154C, M220-TOW, Storm Shadow and Tactical Tomahawk Penetrator Version?
2. What dense metals are, or have been, used in the development, testing and operational use of BAE-RO BROACH MWS warhead systems? Where have they been tested in the UK and overseas?
3. How many of each of the munitions in (1) are in use, under development or on order for UK forces?
4. Do the dense metals in (1) and (2) include Depleted Uranium or alloys including DU and if so how much? If not then what dense metal do they use to achieve their increased kinetic energy effects?

And re the Afghan War

5. What and how many armour-piercing munitions containing DU penetrators have been used in the Afghanistan conflict to date?
6. How many of these weapons have been used in Afghanistan since 7th October 2001 including prototype versions of new systems under development for the UK and US Governments?
7. What is the total tonnage of DU munitions used to date in the Afghanistan war?
8. How many locations in Afghanistan have been attacked with hard-target guided weapons and where are they?
9. What warnings and precautions about DU hazards have been given to UK and other Allied forces troops (operating in Afghanistan)?
10. What warnings and precautions about DU hazards have been given to UK and international aid or media organisations (operating in Afghanistan)?
11. What environmental monitoring and DU clean-up operations are in place or planned in Afghanistan?
12. What warnings, precautions and specialist medical resources have been given to local civilians, communities, political and military organisations likely to be exposed to DU contamination in Afghanistan?

Hansard is an important UK source. These points may be useful for DU researchers and MP's Research Assistants.

*/continued ...*

#### 4. Contamination levels in DU supplied to the UK since 1990

I was specially interested the following question and answer about Dirty DU on 7 Feb 2001. Can DU researchers in the USA check DU contamination figures quoted for Starmet supplies to UK weapons manufacturers. Are these consistent with US Data? Did these figures apply at the time of the Gulf War?

**Question:** To ask the Secretary of State for Defence how much (a) plutonium and (b) other highly radioactive particles was contained in the **depleted uranium** shells fired by Britain during the Gulf War. [147379]

**Answer: Mr. Spellar:** Information obtained from **Starmet Corporation**, the firm who supply Royal Ordnance with the DU they use to make ammunition, tells us that each gram of DU contains:

	<b>Hansard entry: Grammes</b>	<i>Equivalents in a 1 ton warhead* &gt;&gt;</i>	<b>Kilograms per ton*</b>
Uranium-238	0.997 9		997.900
Uranium-235	0.001 99		1.990
Uranium-234	0.000 01		0.010
Uranium-236	0.000 003		0.003
Technecium-99	0.000 000 71		0.000 7
Neptunium-237	0.000 000 22		0.000 22
Plutonium-239/240	0.000 000 001 2		0.000 0012
Americium-243	0.000 000 001		0.000 001
Americium-241	0.000 000 000 017		0.000 000 17
Plutonium-238	0.000 000 000 005 2		0.000 000 052

Any significant increase in the quantity of highly radioactive particles would be detected by our routine radiation monitoring. DU used in the manufacture of the CHARM 1 round, used at the time of the Gulf conflict, came from the same source. " (end of Hansard quote)

Is this data accurate?

Dai Williams, UK

#### \* DW comments re Dirty DU data presentation and reliability

The Starmet data quoted for Hansard shows contamination per gram of DU. In large warheads it is more relevant to consider kg per ton e.g. "0.001 99" of **U235** per gram of DU (0.2%) adds up to **4 kilograms in a 2000 kg warhead e.g. if DU is used in the GBU-28 Bunker Buster.**

There is a wide variation in contamination levels between different samples (production batches) of DU. In a reply to these questions Dr Sharma quoted a sample with 0.003% of **U236**, 10 times more than the 0.0003% declared by Starmet in the Hansard quote above - 60 grams not 6 in a 2000 kg warhead. Also U236 produces 195x more Alpha counts per gram than U238. So radiation output is more relevant than weight.

**There needs to be an international database of isotopic mixes (i.e. contamination) in civilian and military grade DU from all known production plants and all available production dates. This would be a reference source for fingerprinting DU.**

End of section & notes

## 6. Latest extracts from Hansard - 12<sup>th</sup> Nov to 31<sup>st</sup> January 2002.

These include several questions from MP's seeking clarification on issues raised in the previous section, pages 61-63, that were circulated on the Internet.

12 Nov 2001

### Depleted Uranium

**Llew Smith:** To ask the Secretary of State for Defence, pursuant to his answer of 29 October 2001, *Official Report*, column 519W, which categories of nuclear weapons contain **depleted uranium**; and what the purpose is of including **depleted uranium** in these weapons. [14271]

**Dr. Moonie:** The UK Trident warheads for our nuclear deterrent contain **depleted uranium**. The purpose of this material is ultimately associated with the functioning of the warhead and the details are classified. For this reason I am withholding this information under Exemption 1 of the Code of Practice on Access to Government Information.

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23 Nov 2001

### Depleted Uranium

**Dr. Jack Cunningham:** To ask the Secretary of State for Defence what (a) guns and (b) gun barrels used for the test firing of **depleted uranium** shells at Eskmeals have been removed to another range not licensed for the testing of **depleted uranium**; who authorised such transfers; whether this complied with health and safety regulations; and if he will make a statement. [16885]

**Dr. Moonie:** I believe my right hon. Friend may be referring to two Challenger 2 tank gun barrels used for test firing **depleted uranium** (DU) ammunition at the Kirkcudbright training area, but stored at the QinetiQ Eskmeals range. These were transferred on 6 November to the firing range at Shoeburyness, for test firing of non-DU ammunition, to support a Challenger 2 tank safety trial to determine acceptable limits of gun barrel erosion. The transfer was carried out by QinetiQ. A risk assessment by the radiation protection adviser showed that the levels of DU in the two barrels were so low and the DU so inaccessible that the material is not a radioactive substance within the meaning of the Ionising Radiation Regulations. These are the regulations that protect workers and members of the public who maybe exposed to ionising radiation and radioactive material from work activities.

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26 Nov 2001

### Public Bodies

**Mr. Andrew Turner:** To ask the Secretary of State for Defence (1) if he will list those public bodies to which his Department appoints members and which are not listed in Public Bodies 2000; [17579]

(2) if he will list those public bodies which are the responsibility of his Department and which are not listed in Public Bodies 2000. [17580]

**Dr. Moonie:** Public Bodies 2000 sets out information on Non Departmental Public Bodies (NDPBs), certain public corporations (including nationalised industries) and NHS bodies. There are four types of NDPB: executive NDPBs; advisory NDPBs; tribunal NDPBs; and boards of visitors to penal establishments. The next edition will be published around the end of the year. Information about task forces, annual reports and ad hoc advisory groups is set out in an annual report published by the Cabinet Office. Copies of Public Bodies 2000 are in the Library of the House and may be accessed via Cabinet Office's website: <http://www.official-documents.co.uk/document/caboff/pb00/pb00.htm>. Copies of the annual report on task forces and similar bodies have also been placed in the Library of the House and the report is being made available on Cabinet Office's website.

The Ministry of Defence currently sponsors 33 Non Departmental Public Bodies (seven executive NDPBs and 26 advisory NDPBs): <list cut>

The MOD currently sponsors the following reviews/ task forces:

**Depleted Uranium Oversight Board**

Independent Panel on Vaccines Interaction Research  
Services Families' Task Force.

**27 Nov 2001**

**Depleted Uranium**

**Chris Ruane:** To ask the Secretary of State for Defence how many depleted uranium shells have been used in the Afghan conflict.

**Mr. Ingram:** None.

**3 Dec 2001**

**Depleted Uranium**

**Chris Ruane:** To ask the Secretary of State for Defence how many (a) armour piercing and (b) hard target penetrator warheads containing depleted uranium have been tested in Wales in each of the last 10 years.

**Mr. Ingram [holding answer 27 November 2001]:** No depleted uranium rounds have been tested in Wales in each of the last 10 years.

**4 Dec 2001**

**Depleted Uranium**

**Dr. Jack Cunningham:** To ask the Secretary of State for Defence (1) for what reason test firing using depleted uranium contaminated gun barrels from Eskmeals was carried out at Shoeburyness; who authorised the transfer of the gun barrels; and if he will make a statement;

(2) pursuant to his answer of 23 November 2001, *Official Report*, column 514W, on depleted uranium, how many rounds were fired in the tests; and how many were recovered;

(3) pursuant to his answer of 23 November 2001, *Official Report*, column 514W, on depleted uranium, what environmental impact assessment was carried out, and by whom, before depleted uranium contaminated gun barrels from Eskmeals were used in test firing at Shoeburyness;

(4) pursuant to his answer of 23 November 2001, *Official Report*, column 514W, on **depleted uranium**, who was the radiation protection adviser; for which organisation he or she worked; whether the Defence Radiology Protection Service was (a) consulted and (b) involved; and if he will make a statement.

**Dr. Moonie** [*holding answer 30 November 2001*]: Test firing using **depleted uranium** (DU) contaminated gun barrels is required as part of the effectiveness and safety trials to determine the effect of firing a variety of rounds through worn barrels. The Challenger II tank worn barrel trial is planned to commence in January 2002. The trial involves firing a range of non-DU based ammunition natures such as high explosive and training rounds. The trial will involve the use of barrels that have not fired DU rounds as well as those that have. More recently, between 20 to 29 November, one gun barrel stored at QinetiQ Eskmeals, that had fired DU in the past, was used in a CHARM 3 Training Round (a non-DU round) trial at the Shoeburyness ranges. Test firing is being carried out at Shoeburyness because it meets the minimum firing distance required and provides a round recovery facility and a suitable cost-effective solution. There is no reason on health and safety grounds why the work cannot be carried out at this site.

No specific authorisation to transfer barrels allocated to support these trials is needed. Each barrel that has fired DU in the past has a record annotated accordingly and is accompanied with appropriate precautionary advice.

In the November trial, 71 rounds were fired and none were recovered. The worn barrel trial in January is planned to use 184 rounds and it is planned to recover some rounds to ascertain any effects on the round's stability and performance. Recovered rounds fired will be monitored for DU.

No environmental impact assessment was undertaken immediately before the CHARM3 training round trial and none is planned for the worn barrel trial. However, a risk assessment for the routine use of DU contaminated barrels was carried out by the Department's Radiation Protection Adviser, the then DERA Radiation Protection Services, in May 2000. Although this assessment concludes that no DU will be released from the barrel, environmental monitoring was conducted at the start, during and after the firings on 20 November. This involved a base line survey taking soil and grass samples and monitoring around the gun, passive air sampling, and a swab sample of the inside of the barrel when firing was complete. The monitoring will also be conducted in support of the worn barrel trial.

The barrels used at Shoeburyness were monitored before transfer. The monitoring in this case showed that the barrels contained less than 10 kilobecquerels of DU and thus confirmed that the material presented very little risk. This conclusion is based on the generic risk assessment conducted in May 2000, which is applicable to all barrels containing less than 10 kilobecquerels of DU.

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#### 4 Dec 2001

##### **Depleted Uranium**

**Mr. Russell Brown:** To ask the Secretary of State for Health if he will list the United Kingdom academic research groups with experience in reviewing the risks associated with **depleted uranium**. [16282]

**Ms Blears** [*holding answer 24 November 2001*]: The Department knows of four academic groups which have been active in reviewing the risks from **depleted uranium**, the Royal Society **Depleted Uranium** Working Group, the British Geological Survey, the University of Bristol Department of Earth Sciences and the Southampton Oceanic Centre.

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5 Dec 2001

**Depleted Uranium**

**Mr. Peter Duncan:** To ask the Secretary of State for Defence how many armour piercing and hard target penetrating warheads containing **depleted uranium** have been tested in (a) Scotland and (b) Dumfries and Galloway in each of the last 10 years. [18233]

**Dr. Moonie** [holding answer 26 November 2001]: The number of **depleted uranium** projectiles fired in Scotland in each of the last 10 years is listed. These tests have all taken place at the Kirkcudbright training area in Dumfries and Galloway.

<b>Year</b>	<b>Number</b>
1991	666
1992	781
1993	682
1994	455*
1995	280
1996	147
1997	749
1998	134
1999	111
2000	272
2001	<sup>(26)</sup> 109

<sup>(26)</sup> To date \*corrected figure, Hansard 8 Jan 2002

**Mr. Laws:** To ask the Secretary of State for Defence if he will list the (a) items of equipment, (b) munitions and (c) all other property of his Department (i) which contain **depleted uranium** and (ii) in which **depleted uranium** has been used in each of the past 10 years; and if he will make a statement.

**Dr. Moonie:** I refer the hon. Member to the answer I gave on 29 October 2001, *Official Report*, column 519W, and the answer on 12 November 2001, *Official Report*, column 523W, to my hon. Friend the Member for Blaenau Gwent (Llew Smith) which indicate the uses to which **depleted uranium** is put by the Ministry of Defence (MOD) in munitions and in other ways which mirror the widespread use of this material in the United Kingdom. No central record exists of where DU is or has been used or held over the past 10 years--in view of the nature of its use in MOD, the information requested could be provided only at disproportionate cost. However, I can say that DU in munitions will at various times have been found in ammunition depots at Kineton, Longtown and Dean Hill, on ships fitted with Phalanx weapons systems, at the ranges at Eskmeals and Kirkcudbright, and at locations involved in nuclear weapons programmes. DU used for other purposes has been present in a number of the aircraft listed in the earlier answer that are the property of MOD, at RAF Stafford, at the research establishment at Fort Halstead, at sites involved in the naval propulsion programme, and at the Royal hospital, Haslar.



6 Dec 2001

### Weapons

**Mr. Laws:** To ask the Secretary of State for Defence what dense metals are used in the hard-target penetrators of the (a) GBU-24, (b) GBU-32 (upgraded), (c) GBU-37, (d) AGM-86D, (e) AGM-65G, (f) AGM-154C and (g) M220-TOW weapons systems. [20340]

**Mr. Ingram:** Only two of the weapons listed--a variant of the GBU-24 and a variant of the AGM-65--are in service with UK armed forces. Neither use depleted uranium or any other "dense metal" in their warheads.

**Mr. Laws:** To ask the Secretary of State for Defence what dense metals (a) are and (b) have been used in the (i) development, (ii) testing and (iii) operational use of the BAE/RO BROACH MWS warhead systems. [20333]

**Mr. Ingram:** The only dense metal contained in the BROACH MWS is a tungsten-based alloy. No other dense metal is or has been used in its development or testing. The BROACH MWS is not forecast to enter service before August 2002.

10 Dec 2001

### Depleted Uranium

**Mr. Laws:** To ask the Secretary of State for Defence what warnings about depleted uranium hazards have been given to (a) UK and other allied forces troops, (b) UK and international aid and media organisations and (c) civilian communities and military organisations likely to be exposed to depleted uranium contamination in Afghanistan. [20341]

**Mr. Ingram** [*holding answer 6 December 2001*]: We are not aware that DU has been used in the current conflict by the Coalition, nor are we aware of any plans for it to be used. We have no information about the use of DU in previous conflicts in Afghanistan.

In the event that it is used in future, suitable guidance will be available to UK deployed forces. It will be for other nations to take similar actions with their own forces as they see necessary. The Coalition will also liaise with the Afghan authorities and human relief agencies in the event that there is a need to issue guidance to the Afghan population.

12 Dec 2001 debate

**Dr. Jenny Tonge (Richmond Park):** Will the hon. Gentleman give way?

**Mr. Viggers:** Yes. I look forward with great enthusiasm to discovering whether the hon. Lady has recanted from her previous position on urging a delay in bombing during Ramadan.

*<exchanges between Jenny Tonge and Mr Viggers cut >*

**Jeremy Corbyn:** Will the hon. Gentleman pause for a moment in his triumphalism and consider the consequences of the bombing of Afghanistan? Depleted uranium bombs, cluster bombs and daisy-cutters have been used and there have been civilian and military casualties. In addition, atrocities have been committed by all sides during the taking of prisoners and particular towns. Does the hon. Gentleman honestly think that Afghanistan is now in that much a better position than it was a couple of months ago? [No further references to DU in this debate]

13 Dec 2001

**Depleted Uranium**

**Mr. Laws:** To ask the Secretary of State for Defence how many (a) UK military personnel and (b) UK defence industry employees have been (i) confirmed as suffering from and (ii) suspected of suffering from **depleted uranium** poisoning, in each year from 1980 to 2001-02; and if he will make a statement. [22317]

**Dr. Moonie:** Although a number of people may suspect that they are suffering from ill health as a result of exposure to **depleted uranium**, including personnel in the Gulf and Balkans campaign, I am unaware of any individual who has been confirmed as suffering from ill health arising from exposure to DU over the period 1980 to 2001-02.

**Mr. Laws:** To ask the Secretary of State for Defence what assessment his Department has made of the health risks associated with material containing **depleted uranium** in the last 10 years; if he will publish the results; and if he will make a statement. [22315]

**Dr. Moonie:** I refer the hon. Member to the answer given on 25 January 2001, *Official Report*, column 653W, by my right hon. Friend the Secretary of State for Defence, to my hon. Friend the Member for Gedling (Vernon Coaker), in which the Ministry of Defence published a paper that explained the MOD's position on the risks posed by **depleted uranium** (DU). This paper included reference to the MOD's earlier paper published on 19 March 1999, entitled: "Testing for the Presence of **Depleted Uranium** in UK Veterans of the Gulf Conflict: the Current Position". Copies of both papers are available in the Library of the House and on the MOD's website at [www.gulfwar.mod.uk](http://www.gulfwar.mod.uk).

I also refer the hon. Member to my letter of 24 March (reference: D/US of S/LM 0291L/01/I) to my hon. Friend the Member for Stroud (Mr. Drew), which includes the review paper: "**Depleted Uranium**--Safety Guidance to UK Armed Forces and MOD Civilians"; and my letter of 17 April (reference: D/US of S/LM PQ 0346L/01/M), to my hon. Friend the Member for Stoke-on-Trent, North (Ms Walley), which discusses and lists risk assessments associated with DU. I also refer the hon. Member to my letter of 7 June 2001 (reference: D/US of S/LM PQ 0679L/01/Y) to my hon. Friend the Member for Blaenau Gwent (Llew Smith), which lists reports on **depleted uranium** commissioned by the MOD from DERA and contains some additional relevant material. All three letters are available in the Library of the House.

**Mr. Laws:** To ask the Secretary of State for Defence what investigations his Department has made in the last 10 years into whether (a) UK military personnel and (b) employees within the defence industries of the United Kingdom, have suffered from (i) **depleted uranium** poisoning and (ii) other medical conditions caused by exposure to **depleted uranium**; and if he will make a statement. [22316]

**Dr. Moonie:** The Ministry of Defence is funding a programme designed to establish whether a scientifically rigorous test can be developed to determine historical exposures to **depleted uranium** (DU). Given such a test is developed, epidemiological studies will be undertaken to establish whether there is any correlation between ill-health and exposure to DU. As part of the MOD's Gulf Veterans' Medical Assessment Programme, which has so far seen over 3,000 service personnel and a small number of defence industry employees who served in the Gulf, a very small number of tests for total **uranium** have been carried out in cases where physicians believed that such tests would assist in treatment of their patients. All these tests showed that the signs and symptoms displayed by these patients were not due to any form of **uranium** exposure. In the early 1990s, a small number of UK troops concerned they had inhaled DU dust while conducting work in the Gulf conflict had their lungs monitored--no detectable DU contamination was found.

There are established systems within the United Kingdom for monitoring the health and safety of those who are exposed to **depleted uranium** as part of their work activities.

These systems are, and always have been, employed throughout the MOD and involve monitoring of personnel and the working environment. Some individuals also receive annual health reviews. These measures ensure that exposures to **depleted uranium** are as low as reasonably practicable and do not exceed statutory limits. Therefore there is no reason for investigations of the type mentioned for these employees.

Other than those mentioned above, the health of those employed within defence industries is a matter for the employers concerned and for the Health and Safety Executive.

**19 December 2001**

### **Depleted Uranium**

**Mr. Laws:** To ask the Secretary of State for Trade and Industry what assessment she has made of the (a) volume and (b) value of **depleted uranium** and products containing **depleted uranium**, imported into the United Kingdom in each year since 1985; and if she will make a statement. [22312]

**Nigel Griffiths** [*holding answer 13 December 2001*]: Data on imports of **depleted uranium** and **depleted uranium** products since 1985 are not readily available and could be obtained only at disproportionate cost.

**Mr. Laws:** To ask the Secretary of State for Trade and Industry what regulations there are to control the importation of (a) **depleted uranium**, (b) munitions containing **depleted uranium** and (c) other products containing **depleted uranium**; and if she will make a statement. [22313]

**Nigel Griffiths** [*holding answer 13 December 2001*]: I refer the hon. Member to the answer I gave on 30 October 2001, *Official Report*, column 587.

**19 December 2001**

### **Hansard debate**

**Jeremy Corbyn (Islington, North):** Last Sunday, I went to the Edith Cavell statue, just outside the church of St. Martin-in-the-Fields and just north of Trafalgar square. I joined a couple of hundred other people. For an hour, we took turns to read out the names of people--there were 1,100 in total--who have died in the past year in the conflict in Israel and Palestine.

< comments re Palestine peace process >

I hope that after the bombing campaign in Afghanistan, there will be peace, some self-determination and genuine support for the clean-up operation in the wake of the use of **depleted uranium**, cluster bombs, daisy-cutters and all the other horrific accoutrements of modern warfare. I hope that there will be an examination of human rights abuses by the Taliban and the Northern Alliance, especially the killing of so many prisoners at Mazar-e-Sharif in the early part of the allied campaign against the Taliban.

**8 January 2002**

### **Depleted Uranium**

**Mr. Laws:** To ask the Secretary of State for Health what research his Department has conducted in the last 10 years into illnesses caused by exposure to **depleted uranium**; what assessment has been made of the risks to health from exposure to **depleted uranium** used in munitions and military equipment; and if he will make a statement.

**Ms Blears** [*holding answer 13 December 2001*]: The Department is advised on matters of radiation risk by the National Radiological Protection Board (NRPB). NRPB has not carried out any research specifically into illnesses caused by exposure to **depleted uranium**. However, NRPB has carried out research that is relevant to the assessment

of the risks to health from such exposures. In particular NRPB has carried out extensive research into the distribution of **uranium** between body organs, its retention and excretion, following inhalation of a wide range of **uranium** compounds. It has also developed computer models that enable the concentration of **uranium** in the various organs and resulting radiation doses to be calculated. Depleted **uranium** is mildly radioactive, and NRPB's research programme on the effects of ionising radiation in general is therefore relevant to assessment of the radiological risks from exposure to depleted **uranium**.

NRPB staff have also contributed to studies of the risks to health from exposure to depleted **uranium** carried out by working groups set up by the European Commission, the Royal Society, and the World Health Organisation. Reports from each have been published during 2001.

The Department also knows of four academic groups which have been active in reviewing the risks from depleted **uranium**; they are the Royal Society Depleted **Uranium** Working Group, the British Geological Survey, the University of Bristol Department of Earth Sciences and the Southampton Oceanic Centre.

15 January

### Tungsten Armour Piercing Round

**Mr. Swayne:** To ask the Secretary of State for Defence (1) what effect the decision to purchase a tungsten armour piercing round will have on existing use of depleted **uranium** rounds; and if he will make a statement; [27495] (2) what factors contributed to his decision to procure a tungsten armour piercing round; and if he will make a statement. [27494]

**Dr. Moonie:** The Ministry of Defence already has tungsten armour piercing rounds which are used by Challenger 2 tanks. The further purchase of tungsten ammunition has been proposed for the test and calibration firing of Challenger 2 tanks. Such a buy would have no effect on the use of depleted **uranium** rounds, since the rounds are used in different roles. The Charm 3 round, which incorporates a depleted **uranium** penetrator, is a war fighting round, while the tungsten rounds are used in the calibration of the Challenger 2 weapons system.

21 January

### Depleted Uranium

**Llew Smith:** To ask the Secretary of State for Trade and Industry what quantity of depleted **uranium** is in use in civil non-nuclear applications in the United Kingdom; to what uses the DU is put; what disposal facilities exist for waste DU metal and its undiluted compounds; and in what quantities and where unused DU is stored. [28501]

**Nigel Griffiths:** A report on depleted **uranium** has recently been published by the Environment Agency: "Depleted **Uranium**: A Study of its Uses within the UK and Disposal Issues" (Reference R&D Technical Report

P3-088/TR), copies of which are available from the Environment Agency. This report provides details on the quantities, uses and storage of depleted **uranium** in civil non-nuclear applications in the United Kingdom, and describes, among other areas, the safeguards arrangements for the depleted **uranium**. Issues relating to the disposal of radioactive materials, including waste depleted **uranium** metal and its undiluted compounds, are a matter for the Environment Agency. [search up to 31 January]

### Following the DU debate in the UK Parliament

**Online Hansard** provides a valuable way to keep up to date with questions and answers about depleted uranium and any other issues in the UK Parliament. Use this search link:

<http://www.parliament.the-stationery-office.co.uk/cgi-bin/empower?DB=ukparl>

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