

## Briefing: **depleted uranium weapons, a need for precaution**

*This briefing provides additional background to the arguments set out in ICBUW's sign-on letter currently being circulated among MEPs, which urges EU Member States to support a resolution on depleted uranium weapons that will be tabled at the UN First Committee this October. The full text of the new, and fourth, resolution will not be available until after October 6<sup>th</sup> but it is hoped that it will include a reference to the need for a precautionary approach to the weapons. Excerpts from ICBUW's letter are highlighted in grey. Previous UN resolutions, positions and reports are available at:*

*<http://www.bandepleteduranium.org/en/united-nations>*

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## **1. DU weapons: the need for a precautionary approach.**

**We the undersigned urge all EU Member States to support calls from international agencies<sup>1</sup> and civil society for a precautionary approach to the use of depleted uranium (DU) weapons.**

European states play an influential role in international arms control, thus the EP and its members have a crucial place in these debates. This is particularly true in the case of inhumane and indiscriminate weapons, whose use is generally seen as unacceptable to the European public. That few European militaries use or stockpile these weapons is indicative of their intrinsic unacceptability and broader objections to the uncontrolled release of radioactive and toxic materials during conventional warfare or weapons testing.

In the last few years, a ‘common sense’ narrative based on precaution has been developed as a means of assessing the acceptability of DU weapons. The approach echoes calls made by the UN Environment Programme following their research on DU use in the Balkans<sup>2</sup>. The first test of this approach will come at this October’s UN First Committee, and the support of EU Member States is required for its success. The Precautionary Principle is the foundation of EU health and environmental protection regulation and EC’s guidance on integrating the principle into national law has informed ICBUW’s precautionary narrative.

ICBUW argues that a precautionary approach requires that a thorough assessment of DU’s properties, the nature of its use in conflict and the constraints on the post-conflict management of contamination be made. Further guidance should come from a critical appraisal of its costs to civilians and affected governments and the benefit militaries claim from its use.

DU munitions are not currently banned by arms control law and militaries argue that their usefulness outweighs any concerns over their potential humanitarian and environmental impact. Similar arguments were made by militaries in support of cluster bombs and land mines – in both cases, militaries had failed to collect data on their civilian impact.<sup>3</sup> A similar situation exists for DU munitions. There has been little interest from DU users in undertaking health studies on civilian populations who live, work or play in contaminated areas. Conscious that the weapons would prove controversial, their users have consistently overstated their effectiveness in order to deflect criticism of their use<sup>4</sup>.

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<sup>1</sup> The United Nations Environment Programme has repeatedly called for a precautionary approach to DU and the World Health Organisation and British Royal Society have both issued precautionary guidelines for the post-conflict management of DU.

<sup>2</sup> E.g. UNEP. *Depleted Uranium in Bosnia and Herzegovina - Post-Conflict Environmental Assessment*  
[http://postconflict.unep.ch/publications/BiH\\_DU\\_report.pdf](http://postconflict.unep.ch/publications/BiH_DU_report.pdf)

<sup>3</sup> Landmine Action. *Out of Balance: The UK government's efforts to understand cluster munitions and international humanitarian law* <http://www.landmineaction.org/resources/resource.asp?resID=1008>

<sup>4</sup> ICBUW. *Overstating the case: an analysis of the utility of depleted uranium in kinetic energy penetrators*  
<http://www.bandepleteduranium.org/en/overstating-the-case-an-analysis-of-the-utility-of>

## 2. UN General Assembly resolutions are helping to stigmatise DU use

This October, the United Nations First Committee will consider a fourth resolution on the impact and acceptability of DU weapons. Previous resolutions in 2007, 2008 and 2010 have accepted the potential health risks posed by the weapons; called for more field research and requested that states that use the weapons provide detailed targeting data to governments to help facilitate this<sup>5</sup>. The 2010 resolution was supported by 148 states and opposed by just four – the US, UK, France and Israel.

Although UN General Assembly resolutions are legally non-binding, they have a significant normative effect. With the passage of each resolution, state interest in the issue has increased and there are signs that the stigmatisation of the use of DU munitions is growing. The process of stigmatisation has been crucial in the campaigns against anti-personnel landmines and cluster munitions and can lead to reductions in the operational usage of controversial weapon systems. This process has been particularly important in reducing usage by states that are not party to the international agreements banning their use.

## 3. EP resolutions have influenced the DU debate globally

The European Parliament has repeatedly called for a moratorium on these weapons<sup>6</sup>, most recently in 2008, where resolution P6\_TA(2008)0233 was supported by 94% of MEPs. The text strongly reiterated its call on all Member States and NATO countries to impose a moratorium on the use of DU weapons and to redouble efforts towards a global ban, as well as systematically to halt production and procurement of this type of weaponry.

Conscious of the concerns of the public and civil society, the EP has consistently questioned the acceptability of DU weapons. Since 2001, the EP has passed four resolutions on the matter, calling for EU and NATO moratoria. As with UN General Assembly resolutions, members should not underestimate the normative effect of these resolutions. For example, their passage was influential in building support for the passage of Costa Rica's 2011 domestic ban on DU<sup>7</sup>, and elements of the text were echoed by the Latin American Parliament in its 2009<sup>8</sup> call for a regional moratorium. They have also been raised in parliamentary debates on DU ban legislation in Belgium, Ireland<sup>9</sup> and New Zealand<sup>10</sup>. EP resolutions have also been used as the basis for calls from the US Army's environmental think tank for the military to accelerate efforts to replace DU munitions<sup>11</sup>.

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<sup>5</sup> *Effects of ammunition and armour containing depleted uranium* resolutions: 62/30, 63/54, 65/55 available at: <http://www.bandepleteduranium.org/en/united-nations>

<sup>6</sup> EP resolution texts from 2001, 2003, 2006 and 2008 are available at: <http://www.bandepleteduranium.org/en/european-parliament>

<sup>7</sup> ICBUW. Costa Rica bans depleted uranium weapons <http://www.bandepleteduranium.org/en/costa-rica-bans-depleted-uranium-weapons>

<sup>8</sup> ICBUW. Parlatino calls for a moratorium on uranium weapons <http://www.bandepleteduranium.org/en/parlatino-calls-for-a-moratorium-on-uranium-weapon>

<sup>9</sup> ICBUW: Irish depleted uranium ban bill sails through Senate with cross party support <http://www.bandepleteduranium.org/en/irish-depleted-uranium-ban-bill-sails-through-sena>

<sup>10</sup> ICBUW: National MPs block New Zealand depleted uranium bill at first reading <http://www.bandepleteduranium.org/en/national-mps-block-new-zealand-depleted-uranium-bi-2>

<sup>11</sup> ICBUW: US Army think tank urges Army Secretariat to accelerate search for alternatives to DU <http://www.bandepleteduranium.org/en/a/281.html>

#### **4. DU's problems are intrinsic to its physical properties**

A by-product of uranium enrichment, DU is used in a class of armour-piercing weapons called kinetic energy penetrators because of its high density and other properties. However, when used it readily burns, creating fine particles that present an inhalational hazard for civilians.

The debate over the acceptability of cluster munitions saw militaries argue that technological fixes – such as self-destruct mechanisms could reduce their humanitarian impact. Research in the field demonstrated that this was not the case<sup>12</sup>. All DU munitions contain DU and as it is the DU and its properties that are the problem, thus there are no simple fixes that could render them acceptable.

Research indicates that DU's behaviour in the environment – and therefore its potential for getting into humans – is highly variable, depending on soils, climate and the form of uranium. The fine particles generated by the high temperatures of DU impacts have been shown to be highly resistant to corrosion so present a long-term health inhalational health risk to civilians. Intensive use of DU munitions has the potential to contaminate soils, civilian infrastructure and groundwater.

#### **5. Concern over civilian health from DU contamination**

There is considerable concern, particularly in Iraq, that DU exposure is implicated in a rising incidence of cancer and congenital malformations.

Reports of increasing rates of illness among Iraqi civilians first began to emerge in the late 1990s, some years after the use of 280,000kg of DU munitions by the US and UK in the 1991 Gulf War. Doctors noticed an increase in the rates of certain cancers, such as leukaemia, saw patients presenting with multiple cancers and found that the age of onset of certain cancers had decreased. Simultaneously, hospitals began reporting that rates of congenital malformations were also increasing. That Iraq's environment had been heavily polluted by the 1991 conflict was not disputed, but physicians strongly felt that DU was a possible risk factor for these health problems.

The concerns of doctors were compounded in 2003 when significant quantities of DU were used again, with large quantities expended in populated areas, thereby increasing the risk to civilians.

There is also a growing recognition of the profound psychological burden faced by civilians living in areas with radioactive contamination from DU munitions and efforts are now underway to quantify this psycho-social impact.

#### **6. The diminishing political acceptability of a toxic Cold War weapon**

The UK and France are the last two EU Member States to retain the weapons; others, such as Germany and Sweden, long ago recognised the intrinsic public and political unacceptability of the use of DU in conventional weapons.

In the 1970s, West Germany took part in joint firing trials for DU with the US and UK. Even though the DU tank ammunition outperformed alternatives made from tungsten, West Germany recognised that the use

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<sup>12</sup> Colin King Associates Ltd et al: *M85: An analysis of reliability*  
<http://www.landmineaction.org/resources/resource.asp?resID=1086>

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of radioactive materials in conventional weapons would never be politically acceptable. Similarly Sweden, Switzerland and Norway all considered DU but reached similar conclusions.

The US, UK and France's development of DU munitions was the product of Cold War military thinking. Today's political and combat environments are very different. In contemporary conflicts fighting is often concentrated in populated areas, with civilians bearing the brunt of hostilities. It could therefore be argued that DU's use has become less, and not more acceptable, since the 1970s.

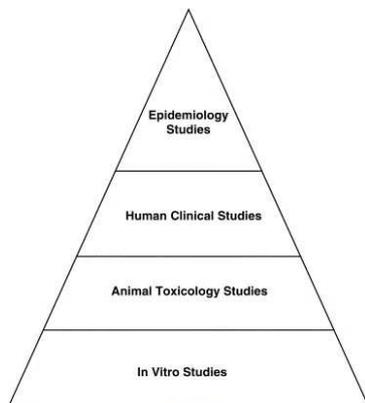
## 7. DU is recognised as a hazardous material by militaries and regulators

DU is recognised as a hazardous material by militaries and regulators and a growing body of research – much of it undertaken by the military itself - is revealing new mechanisms through which DU's radioactivity and chemical toxicity can damage human health.

As a chemically toxic and radioactive heavy metal, DU is recognised as a hazardous material by domestic regulatory agencies across the EU. Its use and disposal is tightly regulated. For example:

*“On the basis of reports by the Royal Society and others, the [UK] MoD does not consider DU is ‘safe’. It is hazardous (making the accepted health and safety distinction between a hazard and a risk).”<sup>13</sup>*

Military guidelines exist among all EU and NATO militaries in order to prevent exposures<sup>14</sup>. Nevertheless, DU users continue to argue that no evidence exists that it causes problems among civilians.



The reason that they can say this is that no one has undertaken the required research into civilian health. Reasons for this include the difficulty in of undertaking detailed epidemiological survey work in fragile and insecure post conflict environments, a lack of interest from the states that use the weapons and the refusal by the US to reveal data on where it has fired the weapons. The lack of transparency poses so many problems for clearance, management and research that in 2010 148 states called for users to transfer accurate data to affected states when requested to do so in a UN General Assembly resolution<sup>15</sup>.

As the pyramid diagram (*left*) suggests, epidemiology would be the strongest data we could find, but as outlined above, gathering this data has been rendered nearly impossible by the circumstances in Iraq. Below that, human clinical studies are the next most powerful but naturally, ethical constraints ensure that these cannot be undertaken with DU.

Thus we are required to instead focus on the bottom two study types to assess the likelihood of harm stemming from civilian exposure to military-origin DU. Research undertaken at the US military's Armed Forces Radiation Research Laboratory (AFRRI) has used animal and in vitro studies on DU and has found:

<sup>13</sup> D/S of S/LF MC00767/2011 correspondence between UK Secretary of State for Defence Rt Hon Liam Fox and Bill Wilson MSP. February 2011.

<sup>14</sup> IKV Pax Christi: *HAZARD AWARE Lessons learned from military field manuals on depleted uranium and how to move forward for civilian protection norms*

<sup>15</sup> UNGA 65/55: <http://www.bandepleteduranium.org/en/docs/157.pdf>

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Internalised chronic DU exposure <i>in vivo</i> <sup>16</sup> :	Conclusions from <i>in vitro</i> studies <sup>17</sup> :
<ol style="list-style-type: none"><li>1. Causes uranium re-distribution to multiple organs.</li><li>2. is associated with mutagenicity.</li><li>3. Induces chromosomal damage.</li><li>4. Induces leukaemia development in mice.</li><li>5. Causes preconceptional paternal exposure to induce genomic damage in unexposed offspring.</li><li>6. Induces germ cell DNA damage</li></ol>	<ol style="list-style-type: none"><li>1. DU induces neoplastic transformation, mutagenicity, and genotoxicity <i>in vitro</i>.</li><li>2. DU is involved in uranium-induced genomic instability.</li><li>3. Alpha particles similar in energy and distribution to those resulting from cellular uranium exposure to DU are sufficient to transform cells.</li><li>4. Radiation bystander effects are involved in uranium-induced neoplastic transformation and genomic instability.</li></ol>

The data suggest that uranium exposure can damage DNA and has the potential to induce changes that can lead to cancer. European Commission guidelines on the Precautionary Principle<sup>18</sup> recommend that risk managers not allow an acceptable daily intake for substances recognised as genotoxic<sup>19</sup> or carcinogenic. Much of the work by AFRI and others post-dates assessments by the World Health Organisation and other agencies.

### 8. An EC risk assessment failed due to data gaps and uncertainties

In spite of this, a 2010 European Commission risk assessment<sup>20</sup> was unable to accurately quantify the risk the weapons pose to civilians due to a lack of key data.

Such was the concern over the methodology and findings of the 2010 risk assessment on DU by the EC's Scientific Committee on Health and Environmental Risks (SCHER) that the EP's SEDE Committee organised a hearing to consider its findings and take evidence from independent experts and civil society. Critiques and commentaries on SCHER's *Opinion*<sup>21</sup> are available from independent expert Dr Keith Baverstock<sup>22</sup> and ICBUW<sup>23</sup>.

Analysis of SCHER's findings highlighted how key data gaps and uncertainties should have prevented them reaching a conclusion of low risk, these included a lack of data on the amount of DU that civilians are exposed to and uncertainties about the amount of exposure needed to cause negative effects in

<sup>16</sup> A Review of Depleted Uranium Biological Effects: In Vivo Studies Dr Alexandra Miller: [www.usuhs.mil/afri/outreach/pdf/50thMiller\\_in-vivo.pdf](http://www.usuhs.mil/afri/outreach/pdf/50thMiller_in-vivo.pdf)

<sup>17</sup> A Review of Depleted Uranium Biological Effects: In Vitro Studies. Dr Alexandra Miller: <http://dodreports.com/pdf/ada539809.pdf>

<sup>18</sup> Communication from the Commission on the precautionary principle /\* COM/2000/0001 final \*/ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52000DC0001:EN:NOT>

<sup>19</sup> Damaging to DNA: pertaining to agents known to damage DNA, thereby causing mutations, which can result in cancer.

<sup>20</sup> Report on SEDE hearing and all documents available at: <http://www.bandepleteduranium.org/en/meps-hear-criticism-of-european-commissions-deplet>

<sup>21</sup> [http://ec.europa.eu/health/scientific\\_committees/environmental\\_risks/docs/scher\\_o\\_123.pdf](http://ec.europa.eu/health/scientific_committees/environmental_risks/docs/scher_o_123.pdf)

<sup>22</sup> <http://www.bandepleteduranium.org/en/docs/168.pdf>

<sup>23</sup> <http://www.bandepleteduranium.org/en/docs/169.pdf>

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different body tissues. It was also shown that they had failed to follow their own methodology for dealing with genotoxic substances<sup>24</sup>. It is unclear why the SCHER reached the conclusions that it did.

### 9. The lack of transparency over DU use has increased the risk to civilians

Research shows that these risks are compounded by the inability of states to adequately manage contamination following conflict, the refusal of DU users to reveal firing data, the use of DU in civilian areas and against civilian objects and a lack of effective hazard awareness programmes.

As noted above, the US, which has used the largest quantity of DU in conflict, has refused to share its targeting data with third parties, including the UN Environment Programme<sup>25</sup>. This has logical implications for decontamination and civilian hazard awareness programmes. Furthermore, in spite of only being legally approved for use against armoured vehicles, DU munitions fired by aircraft have been repeatedly used against civilian objects such as buildings and radio transmitters, and as noted above, the majority of DU use in Iraq in 2003 is thought to have taken place in civilian areas. All these factors significantly increase the risk of civilian DU exposure.

### 10. Military DU use breaches radiation protection and management norms

The uncontrolled release of DU during conflict clearly contravenes domestic and European environmental and health protection norms.

EU Member States typically view the uncontrolled release of radiation in the environment as undesirable. For example: *The [UK] Government considers that the unnecessary introduction of radioactivity into the environment is undesirable, even at levels where the doses to both human and non-human species are low and, on the basis of current knowledge, are unlikely to cause harm*<sup>26</sup>.

Beyond this, the International Commission on Radiation Protection and International Atomic Energy Agency<sup>27</sup> agree that any exposure to radiation must confer some benefit to the individual or society as a whole e.g. use in medical imaging. This is because it is accepted that any exposure to radiation carries with it some risk<sup>28</sup>. The uncontrolled release of DU in conflict, and the civilian exposures associated with it, challenges this fundamental principle of radiation protection. It is part of the unbalanced cost/benefit equation that sees certain militaries reaping the benefits from DU while leaving civilians and affected governments to bear the financial, health and psychological costs of its use.

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<sup>24</sup> SCENIHR. Risk assessment methodologies and approaches for genotoxic and carcinogenic substances. [http://ec.europa.eu/health/archive/ph\\_risk/committees/04\\_scher/docs/scher\\_o\\_113.pdf](http://ec.europa.eu/health/archive/ph_risk/committees/04_scher/docs/scher_o_113.pdf)

<sup>25</sup> Mario Burger, The risks of depleted uranium contamination post-conflict: UNEP assessments: [www.unidir.org/pdf/articles/pdf-art2760.pdf](http://www.unidir.org/pdf/articles/pdf-art2760.pdf)

<sup>26</sup> UK strategy for radioactive waste discharges 2009. [http://www.decc.gov.uk/Media/viewfile.ashx?FilePath=What%20we%20do\UK%20energy%20supply\Energy%20mix\Nuclear\radioactivity\1\\_20090722135916\\_e\\_@@\\_dischargesstrategy.pdf&filetype=4&minwidth=true](http://www.decc.gov.uk/Media/viewfile.ashx?FilePath=What%20we%20do\UK%20energy%20supply\Energy%20mix\Nuclear\radioactivity\1_20090722135916_e_@@_dischargesstrategy.pdf&filetype=4&minwidth=true)

<sup>27</sup> Fundamental Safety Principles IAEA Safety Standards Series No. SF-1: <http://www-pub.iaea.org/mtcd/publications/PubDetails.asp?pubId=7592>

<sup>28</sup> The linear no-threshold model (LNT) is a model used in radiation protection to estimate the long term, biological damage caused by ionizing radiation. It assumes that this damage is directly proportional to the dose at all dose levels. In other words, radiation is always considered harmful with no safety threshold, and the sum of several very small exposures are considered to have the same effect as one larger exposure (response linearity).

## **11. Lack of a causal link to civilian harm cannot be used to justify inaction**

It is widely acknowledged that DU is a hazardous material but recent attempts to accurately quantify the risk it poses to civilians have failed because of critical gaps in the data; as such, European Commission policy supports recourse to the Precautionary Principle<sup>29</sup>.

*Once the scientific evaluation has been performed as best as possible, it may provide a basis for triggering a decision to invoke the precautionary principle... The absence of scientific proof of the existence of a cause-effect relationship, a quantifiable dose/response relationship or a quantitative evaluation of the probability of the emergence of adverse effects following exposure should not be used to justify inaction<sup>30</sup>*

In the face of evidence suggesting that DU has the potential to harm human health and is a long-term environmental contaminant, EC guidelines are clear that, even without a direct causal link to ill health, and after analysis of the costs and benefits of inaction, action should be taken on a precautionary basis.

## **12. EU Member States must move towards consensus on DU**

We therefore strongly urge all EU governments, particularly those that have historically abstained on previous resolutions: Bulgaria, Czech Republic, Denmark, Estonia, Hungary, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia, Spain and Sweden to support 2012's Non-Aligned Movement resolution *Effects of ammunition and armour containing depleted uranium*, which will be tabled at this October's United Nations First Committee.

Austria, Belgium, Cyprus, Finland, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands and Slovenia – together with a further 136 states - voted in favour of 2010's UN General Assembly resolution calling for greater transparency from DU users. It was opposed by just the UK, France, Israel and the US. The majority of UN Member States clearly support further action on DU weapons. The EU has a chance to demonstrate global leadership on this issue and the parliament has a role to play in encouraging this.

At issue is whether or not the EU believes that the principles of health and environmental protection that its citizens enjoy are not applicable to others beyond its borders. In particular to vulnerable civilian populations in post-conflict scenarios who happen to live, work or play in areas contaminated with the residues from DU munitions.

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<sup>29</sup> Communication from the Commission on the precautionary principle /\* COM/2000/0001 final \*/  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52000DC0001:EN:NOT>

<sup>30</sup> Communication from the Commission on the precautionary principle /\* COM/2000/0001 final \*/  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52000DC0001:EN:NOT>