

# Ministry of Defence

## The Second Consultative Document on the Introduction of a Voluntary Screening Programme for Depleted Uranium



### **An invitation to comment on MOD proposal**

Issued on behalf of the Ministry of Defence by

The Surgeon General  
Room 8110  
Ministry of Defence  
Main Building  
Whitehall  
London SW1A 2HB  
Telephone (Direct Dialling): 020-7807-8774  
(Switchboard): 020-7218-9000  
Facsimile: 020-7807-8834

Date Issued: 11 April 2001  
Date responses required: 4 Jul 01

## CONTENTS

(In Word, Click on Page Number to go straight to the item)

<b>Contents</b> .....	i
<b>Summary</b> .....	1
<b>Consultation process</b> .....	3
Date for responses.....	3
<b>DU – recent developments</b> .....	3
<b>Non-technical factors raised as a result of first consultation document</b> .....	5
The military context.....	5
The relationship between screening and research. ....	6
Terminology .....	7
Transparency, public trust and timescales .....	7
Management of positive results.....	8
Risk communication and ethics.....	9
NHS interface .....	9
Wider application of testing .....	9
<b>Technical issues</b> .....	10
<b>MOD proposals</b> .....	11
Biological monitoring.....	11
Retrospective exposure assessment .....	12
Medical assessment .....	14
Summary of MOD proposals.....	14
<b>Taking the proposals forward</b> .....	15
Biological monitoring.....	15
Retrospective exposure assessment .....	15
<b>A list of questions</b> .....	A - 1

In the Word Version, this [↑](#) will bring you back to the Contents page.

This Consultation Document is based on the “Cabinet Office Code of practice on written consultation<sup>1</sup>”

---

<sup>1</sup> The code of practice is available at <http://www.cabinet-office.gov.uk/servicefirst/index/consultation.htm>

11 April 2001

**THE INTRODUCTION OF AN APPROPRIATE VOLUNTARY SCREENING PROGRAMME AS A RESULT OF CONCERNS ON DEPLETED URANIUM**

**An invitation to comment on MOD's proposed screening programme.**

**SUMMARY**

1. On 9<sup>th</sup> January, the Minister for the Armed Forces announced the introduction of an "appropriate voluntary screening programme". The programme was to take account of the best available science and advice from various national and international bodies. On 13<sup>th</sup> February, MOD issued an initial Consultation Document inviting comment on technical issues prior to making firm proposals. This Consultation Document now outlines MOD's proposals for a screening programme. MOD wishes to give the public and interested parties (professional, commercial, national and international) the opportunity to comment on its proposal.
2. MOD is making four firm proposals, and invites comment upon these:
  - a. To introduce biological monitoring, based on measurement of total urine uranium, for those assessed at risk from DU exposure whilst on current and future military operations. This will form part of the Ministry of Defence's Health and Safety arrangements for Depleted Uranium, and will be put in the context of MOD's Health & Safety policy.
  - b. To let a contract for urine testing for uranium isotopes to assess past, historic, exposure. The results will be used in an epidemiological study in order to answer the question "Has DU harmed the health of those who were in the Gulf or the Balkans?". In addition to those in the study, the test will also be made available on demand to Servicemen or MOD employees who served in the Gulf or Balkans and who are particularly concerned that exposure to DU has made them ill.
  - c. To constitute an Oversight Board composed primarily of external members, including Veterans representative(s), to oversee the whole process of letting the contract and undertaking the testing.
  - d. To assess the need for a permanent mass testing programme for historic exposures when the results of the testing and epidemiological study outlined above are available.
3. MOD seeks views on the role and function of a Veterans Assessment Centre (VAC) in the management of those exposed and potentially exposed to DU. It also seeks views on how independent scrutiny can be achieved, particularly for historical testing, and invites nomination for members of an "Oversight Board".
4. Timetable:
  - a. Nominations submitted for membership of Oversight Board by 1 June 2001.
  - b. Consultation period runs to 4 July 01.
  - c. Subject to final decisions following the consultation period we envisage:
    - (1) The Oversight Board constituted by the end of July 2001.
    - (2) The Statement of Requirement for the contract for testing for past, historic, exposure agreed by Oversight Board by mid September 2001.

(3) The contract let in December, with testing beginning as soon as the Oversight Board was satisfied that a robust and scientifically valid test was available.

5. In the remainder of the document we:

- a. Outline the [issues](#) raised in this Consultation Document.
- b. Provide information on the [consultative process](#), including details of [how](#) and [when](#) to respond.
- c. Describe DU and outline recent [DU developments](#).
- d. Discuss some of the [non-technical factors](#) that we believe are important in shaping our recommendations. We also briefly refer to some of the technical issues.
- e. Outline our [proposals](#) and then indicate how we will take them [forward](#).

6. A list of questions to which MOD seeks a response is at [Annex A](#). The question numbers are also shown alongside the text to which they refer.

## ISSUES

7. Claims of an alleged excess of leukaemia amongst Italian troops deployed in the Balkans during the Kosovo and Bosnia conflicts were linked by the media in January 2001 to the use of ammunition containing Depleted Uranium (DU)<sup>2</sup>. These claims led to a general concern in Europe over the potential health effects of DU, both on the local civilian population in Kosovo and on participating Servicemen. As a result of these concerns, on 9<sup>th</sup> January the Minister for the Armed Forces announced that MOD would identify an “additional appropriate voluntary screening programme for our service personnel and civilians who have served in the Balkans. We will do this on the basis of the best available science. We will consult appropriate national bodies including the UK national screening committee of the UK Departments of Health”. He stated that MOD would take into account the views of the Royal Society, where a working group was taking an independent look at DU, and that UK would also seek to co-ordinate its approach with allies, many of whom are addressing the same issues.

8. On 13<sup>th</sup> February MOD issued<sup>3</sup> as a Consultation Document “*An invitation to professional and official bodies to comment on technical issues*”. Representatives of Gulf Veterans also reiterated the view that DU might be the cause of their illnesses. This Consultation Document therefore addresses screening issues both for those who may have been exposed to DU in the Balkans and/or in the Gulf War. It takes account of responses (a summary of which are published on the Internet at <http://www.mod.uk/index.php3?page=1819>) to the first Consultation Document of 13<sup>th</sup> February, and other reports published by various bodies since then (such as the World Health Organisation).

9. The major issue is whether testing should be undertaken as a result of potential exposure to DU and, if so, what testing. There are also a number of subsidiary issues. These include the nature of any testing, the development work required to produce valid tests, the action to be taken in the event of a positive test, the place of a medical assessment for potentially exposed Veterans, and the role of MOD in any testing or medical assessment.

---

<sup>2</sup> For a description of DU use by MOD see <http://news.mod.uk/factsheet.htm>.

<sup>3</sup> D/SG(Pol)350/6/7 dated 29 Mar 01 available at <http://www.mod.uk/index.php3?page=1819>



## CONSULTATION PROCESS

10. In this document, MOD seeks comment on its proposals for screening. As is described below, MOD believes that in some circumstances screening tests are justified whilst in others the value of widespread screening tests is questionable. Where the value of widespread screening is questionable, MOD is proposing a more limited programme of testing as part of a research study. MOD is seeking the views of national bodies and academic institutions with an interest in the issues raised, Veterans' organisations and those representing them, and the general public. We will also be drawing the document to the attention of our NATO allies, non-NATO nations who have deployed troops alongside in the Balkans and Gulf, and international organisations.

11. To facilitate the process, this document is published on the Internet at <http://www.mod.uk/index.php3?page=1819> in Acrobat Reader and Word format. Electronic responses should be sent to [dmedperspol@lillywhi.demon.co.uk](mailto:dmedperspol@lillywhi.demon.co.uk) to whom any questions for clarification should also be sent. Written responses should be sent to the following address, from which paper copies can also be obtained:

Surgeon General's Department  
Room 9386  
Ministry of Defence  
Main Building  
Whitehall  
London SW1A 2HB

## DATE FOR RESPONSES

12. Responses are required by **4<sup>th</sup> July 2001**. MOD will consider the responses and thereafter announce its policy. A summary of responses to this Consultation Document will be published and those responding should indicate if they **do not** wish their responses, or extracts, published.

13. In view of the apparent desire for MOD to act expeditiously, we have already initiated preparatory work (described later) that will not prejudice the outcome of the consultation process. We are also asking for nominations for the external Oversight Board by **1<sup>st</sup> June 2001**. This should enable us to move quickly to implement the policy that emerges from the consultation process.



## DU – RECENT DEVELOPMENTS

14. Uranium is a metal that is a normal constituent of soil and is present in food and in the body. In excess, it poses two known risks to health, one chemical one radioactive. There are a number of different types of uranium, known as isotopes. These isotopes have the same chemical properties but vary in the amount of radioactivity they emit. DU has had some of its more radioactive isotopes removed and thus poses a **smaller** radioactive risk than natural uranium. DU's chemical risk is the same as that of natural uranium. Although little work has been done on exposures to DU, there is a considerable body of work on exposure to natural uranium and this may be applied to DU, if account is taken of the smaller radiation risk of DU. There are published limits for maximum quantities of natural uranium in food, for the public and for uranium workers. Risk assessments for DU show that the only significant risk to Servicemen is if they are in the vicinity of a DU projectile or round when it strikes a hard metal target, or if they enter and remain for a protracted time in an area where such a strike has occurred. Through its policies and practices, MOD seeks to reduce the risk from its use of DU as far as is reasonably practicable. Since the Minister's statement on 9<sup>th</sup>

January there have been a number of authoritative reports on DU. Both the BMJ<sup>4</sup> and the Lancet<sup>5</sup> have published editorials that support MOD's view on DU's potential health risks.

15. As a result of the widespread concerns in Europe, the European Commission (EC) commissioned an opinion from a Group of Experts who reported on 6<sup>th</sup> March<sup>6</sup>. It addressed a wide range of possible exposures, including those in a military environment and those arising from fires involving DU material. It concluded that exposure to DU could not produce any detectable health effects under realistic assumptions of the doses that might be received. However, it also commented that the possibility of a combined effect of exposure to toxic or carcinogenic chemicals and to radiation "*can not a priori be excluded but there is no evidence to support this hypothesis*". It commented on the use of urine tests for the estimation of uranium in urine for those who are working with DU, although it stated that "*individual monitoring would usually be indicated only if environmental monitoring give significant levels of contamination or if such (environmental) monitoring cannot be carried out*".

16. On 13<sup>th</sup> March, the United Nations Environment Programme (UNEP), responding to the same concerns as the EC, published its report<sup>7</sup> following a scientific mission to Kosovo in November 2000. They found DU at a number of sites where US A-10 aircraft had attacked ground-based targets. With respect to widespread contamination they concluded, "*the corresponding radiological and chemical risks from all points of view are consequently insignificant*". For highly localised areas of DU contamination, normally measuring about 20 x 20 centimetres, or where DU fragments were present, they concluded "*The only risk of any significance . . . would be from the possibility that someone came into direct physical contact with the contamination point and thereby contaminated their hands or directly ingested contaminated sand/soil. However, even if gram quantities of soil are ingested, the resulting exposure is insignificant with regard to the radiation from ingested uranium.*"

17. Finally, on 12 March, the World Health Organisation (WHO) published its report of its DU Mission to Kosovo<sup>8</sup>. It commented adversely on the different and uncoordinated approach being taken by different agencies and military groups. It commented that there is no convincing evidence "*to indicate any health impacts to the Kosovo population associated with the use of DU*". It concluded, "*it is not justified to establish a Kosovo-wide mass-testing programme. If to reassure the public some form of testing is still sought . . . then a limited programme should be considered perhaps for communities near to attack sites*". We also note that testing options are being considered by WHO Headquarters in Geneva and we will be consulting them on our proposals.

18. We note that some respondents to the 1<sup>st</sup> Consultative Document were concerned that the current international consensus view underestimates radiation risks. These concerns need to be contrasted with the views of the majority of respondents who support the consensus view expressed in recommendations of the International Commission on Radiological Protection and the articles we have just summarised. However, we accept that in some of the areas highlighted (in particular the way the lungs handles inhaled DU) further research may be required. We also accept that, whenever possible, the computer simulations that are used to model the effect of radioactivity on the body should reflect the

---

<sup>4</sup> BMJ 2001; 322:123-124 (20 Jan 2001) available at <http://www.bmj.com/cgi/content/full/322/7279/123>

<sup>5</sup> The Lancet; Vol 357, 27 January 27 2001

<sup>6</sup> Opinion of Group of Experts Established According to Article 31 of Euratom Treaty: Ad Hoc Committee on DU, Report dated 6 Mar 01 available on NATO website at <http://www.nato.int/du/reldocs.htm>

<sup>7</sup> United Nations Environmental Programme: DU in Kosovo – Post Conflict Environmental Assessment available at <http://balkans.unep.ch/du/reports/report.html>

<sup>8</sup> Report of the World Health Organisation Depleted Uranium Mission to Kosovo dated 12 Mar 2001 available at <http://www.who.it/docs/durptmar01.pdf>

actual results of experimental work on DU munitions residues rather than use default parameters.



19. Summary of Recent Developments:

**QUESTION 1**

a. The recent authoritative reports mentioned above continue to support MOD's view on the nature and magnitude of the potential risks from DU munitions. There is support for urine testing, in conjunction with environmental monitoring, for those potentially exposed to DU **at present**. There is no support for widespread testing of individuals who may have been exposed **in the past**, other than for a limited programme for those who may have had higher exposures to provide reassurance.

b. However, we acknowledge that the conclusions are based on the known radiological and toxicological effect of DU and that the implications of future scientific advances will need to be considered. We also note the Veteran's concern of an indirect effect of DU on the immune system. We will return to their concerns later.



**NON-TECHNICAL FACTORS RAISED AS A RESULT OF FIRST CONSULTATION DOCUMENT**

20. The first Consultation Document issued by MOD on 13<sup>th</sup> February "*An invitation to professional and official bodies to comment on technical issues*" addressed mainly technical issues, such as the specific tests that might be used to test for DU. It is not appropriate in this document to address a number of the more technical issues arising as a result of that consultation; these will be taken into account when we implement our policy. However, there were some generic issues raised in the first Consultation Document, a number of more general points made by respondents and informal comments made to the Surgeon General's Department by telephone and email. It is considered appropriate to address these prior to outlining our proposals. The issues are:

**QUESTION 2**

- a. The military context.
- b. Relationship between screening and Research.
- c. Terminology.
- d. Transparency, public trust and time-scales.
- e. Management of positive results.
- f. Risk Communication and Ethical Issues.
- g. NHS Interface.
- h. Application outside MOD.

21. This section will address each of these in turn.



**THE MILITARY CONTEXT**

**QUESTION 3**

22. MOD is concerned that health issues resulting from military operations are put into the correct context. Almost all military operations pose risks to health from a variety of hazards that either do not normally exist in civilian life or, where they exist, are carefully controlled. Hazards include those posed by the enemy, or through the absence or breakdown of civil order. Water and food borne infection, sexually transmitted diseases and environmental extremes have in the past inflicted heavy losses on all armed forces and today considerable effort is made to minimise such losses.

23. Modern operations pose additional risks, as our Servicemen deploy to areas where they also encounter major industrial or environmental hazards (for example hazards from smoke and lead have required addressing in the Balkans). At the same time that Servicemen face these additional risks, health and safety in the normal workplace in the developed world improves, and there seems to be a resulting expectation that such improvements should be mirrored in the armed forces on operations.

24. MOD accepts the principle that the standards of health care, and of health and safety, on operations should be as close as possible to those existing in peace. However, when translating this principle into practice, care has to be taken not to inadvertently give the enemy an advantage. A change of policy because of environmental or health concerns might paradoxically increase the number of our own troops killed and thereby extend the length of a conflict. Also, by focussing attention on one potential hazard, there is a danger of troops being distracted from hazards that have a much more severe and immediate consequence for health.

25. The corollary of placing our troops at risk from a potential hazard such as DU (even though the combined risk of an enemy plus DU munitions used against that enemy is much less than if DU were not used) is that MOD should nevertheless seek to minimise that risk and quantify any residual risk.



#### **THE RELATIONSHIP BETWEEN SCREENING AND RESEARCH.**

26. Some respondents to the 1<sup>st</sup> Consultation Document appeared unclear of the relationship between research and screening, and criticised us for not developing methods that would answer questions such as “Is DU harming health?”. However, screening programmes are not intended to be primarily a research tool, though as a by-product they may contribute to improving our knowledge and indicating areas for research. In this respect, a number of respondents made the point that we should record the health status or carry out a medical assessment of any that are voluntarily screened.

27. Generally, research involves posing a question (in the form of a hypothesis) and seeking an answer. To answer the question “Is DU harming health?” requires a rigorous, scientifically validated, study. Individuals selected for such a study will normally have to meet particular criteria. For example, there is a need to ensure that those tested include both those who may have been exposed as well as (for comparison) those who have not been exposed. A voluntary screening programme cannot be such a study as there is no selection of those who are to be tested.

28. The responses to the 1<sup>st</sup> Consultative Document perhaps indicate that priority should be given to designing a research project to test the question “Is DU harming health”, rather than designing a screening programme that would simply answer the question “Was I exposed to DU?”. We develop later this line of argument.

29. Two final, and relevant points in respect of DU, are that:

- a. Responses to the 1<sup>st</sup> Consultative Document suggest prior research will be required for developing a screening programme, and

b. MOD is also examining what other work (other than testing for DU) might be

**Biological Monitoring** (Called *Occupational Screening* in the 1<sup>st</sup> Consultative Document). The measurement and assessment of hazardous substances or their metabolites in exposed individuals in order to confirm the effectiveness of Health & Safety control measures, to monitor and thereby control an individual's exposure to a health hazard or to otherwise support an occupational health surveillance programme.

**Retrospective Exposure Assessment** (Called *Population Screening* in the 1<sup>st</sup> Consultative Document): The use of a test or tests on individuals who may have been exposed at some time in the past, to assess whether they were exposed and if so, the degree of exposure. The degree of exposure can then be used to allow counselling about any residual risk to health.

**Medical Assessment:** The provision of a clinical assessment, supported by medical tests and possibly a retrospective exposure assessment, to investigate patients' medical complaints and, so far as possible, to diagnose what they are suffering from and recommend appropriate management, or provide reassurance if no illness is found.

#### Box 1: Definitions

undertaken, not only to answer the question "Is DU harming health?" but also the related question "Does service in the Balkans lead to any specific ill health?". It needs emphasising, though, that the scientific and medical evidence continues to show that the use of DU munitions will not cause a detectable increase in ill health in potentially exposed populations.



#### TERMINOLOGY

##### QUESTION 4

30. A number of respondents to our first Consultative Document commented adversely upon our terminology. The original terminology was used to be consistent with MOD's use of the term "screening". We agree that although we are still proposing "screening" we should now use more generally accepted terminology, as shown in the box.

31. A point made by a number of respondents on our use of *Population Screening* was that we should change the term as we would be unable to meet the criteria laid down by the National Screening

Committee (NSC) of the UK Departments of Health. Whilst we have changed the terminology (See Box 1), we reject the inference that we can thereby avoid the issues that arise from our inability to meet the NSC criteria. The NSC criteria are designed to protect the public from inappropriate mass testing, and we are under a duty to take account of those criteria when making recommendations. Indeed, one respondent told us that "we should be bold and give these reasons for not performing population screening in the first place" and others echoed this although less explicitly.

32. Thus we use "screening" as a generic term covering the three sub-programmes of Biological Monitoring, Retrospect Exposure Assessment and Medical Assessment.

33. Two of these sub-programmes, Biological monitoring and Retrospective Exposure Assessment, involve testing for DU. As the tests each serve different purposes and use different techniques, we urge respondents to be specific and make clear which parts of the proposal they are commenting on.



#### TRANSPARENCY, PUBLIC TRUST AND TIMESCALES

##### QUESTION 5

34. The responses to the 1<sup>st</sup> Consultation Document from representatives of Veterans organisations make it quite clear that they have many reservations about MOD involvement in the development of a screening programme. The potential impact of these views is also stressed by a number of institutions. Their responses therefore call for the development to be taken forward by an independent project team and secondary scientific committees (similarly independent). On the other hand, MOD finds itself in different fora criticised for not making its uniformed resources available to ex-Servicemen, and in particular to War Pensioners.

35. Some one also has to have financial, ethical, managerial and political responsibility for any testing that is undertaken and for any programmes required to develop such testing.

MOD is in any case unable to abrogate its responsibility for statutory Health & Safety control measures of which biological monitoring forms only one part. It would thus be inappropriate for MOD to abrogate responsibility for the screening programmes. However, this does not mean that MOD will necessarily undertake the testing itself. MOD also recognises the necessity for independent scrutiny of any scientific work.

36. In respect of retrospective exposure assessment, MOD does not in any case have the facilities to carry out appropriate testing, which will therefore have to be contracted out. MOD does have the resources to carry out some of its own biological monitoring in support of Health & Safety control measures, although whether or not it would do so rather than contract out depends on a number of factors that are currently being examined.

37. The various conflicting views and positions are best resolved by:

- a. MOD retaining overall responsibility for testing and programme development.
- b. The establishment of an independent Oversight Board to monitor both programme development and testing, at least for the retrospective exposure assessment that is of particular concern to Veterans.
- c. Putting in place appropriate, open, and transparent audit and quality assurance procedures overseen by the independent oversight board acceptable to both MOD and veterans.
- d. Where appropriate, seeking to publish the results of any research in quality, peer-reviewed, scientific or medical journals.

38. Time-scales. There was acknowledgement amongst many respondents to the 1<sup>st</sup> Consultation Document that it would take some time to set up a high quality programme for retrospective exposure assessment, but that the time spent to produce a good programme would not be wasted. Indeed, one respondent remarked that the speed with which we were moving demonstrated a superficial approach to the issues. However, most Veteran responses felt that MOD's claim that time was required to set up a programme as evidence of a lack of commitment by MOD. We will invite veterans or their representatives to participate in the arrangements described above in order to help reduce these concerns.



## MANAGEMENT OF POSITIVE RESULTS

### QUESTION 6

39. As the evidence is that there will be no detectable increase in illness amongst troops potentially exposed in either the Gulf or the Balkans, we argued in our first Consultation Document that nothing that could or need be done for any who tested positive for DU, as long as the total amount of uranium in the body (including DU) was within normal limits. A number of respondents took us to task for this statement, arguing that there were tests being developed (for example, tests that look for early damage to DNA) that enabled cancers caused by radiation to be picked up early. They also pointed out that there were various life-style adjustments (such as stopping smoking) that could be made that would neutralise any increased risk from DU, and that repeated examination might lead to cancers being picked up early when they are treatable. However, for the levels of exposure likely to have been encountered by Bosnia or Gulf Veterans there will be no measurable difference between the number of cancers normally seen and the additional number of cancers likely to occur due to the assessed DU exposures. In any case the tests being developed for the early identification of cancer are at an early stage, and certainly cannot be recommended until we know how accurate they are.

40. On the other hand, if there were found to be a significant correlation between DU exposure and ill health in veterans, it would lead to research. Therefore, whilst we still

maintain that positive results would not lead immediately to any active treatment, we see merit in such testing as a research tool. However, the limitation of testing would need to be made clear, through appropriate counselling, to those who requested testing.



## RISK COMMUNICATION AND ETHICS

### QUESTION 7

41. It was pointed out to us that by introducing a programme of retrospective exposure assessment, MOD might be putting out conflicting messages. On the one hand MOD is stating that, with appropriate precautions, there is no evidence that DU causes significant ill health. On the other hand, setting up a programme to retrospectively assess exposure, as desired by some, suggests that there is reason to be concerned. One respondent tells us that this conflicting message also occurred as a result of civilian organophosphate pesticide monitoring. However, this is not a reason to reject retrospective assessment exposure, although it needs to be taken into account when delivering the testing.

42. A major medical ethical issue is the fact that screening for a condition for which there is no agreed treatment has the potential to cause anxiety in those who test positive whilst posing little, or no, benefit in return. This is one reason why the NSC criteria for a screening test include the requirement for a recognised health condition for which an effective treatment is available. As described above, there is currently no significant health risk from DU in the doses likely to have been encountered in military service. On the other hand, Veteran's representatives believe that there may be other mechanisms by which DU causes ill health and only by screening can we confirm the association between DU and ill health. However, as we pointed out above, screening is not designed to answer a research question of the nature "Does DU cause ill health?". This is more appropriately answered by properly designed research and is [described later](#).



## NHS INTERFACE

### QUESTION 8

43. In our 1<sup>st</sup> Consultation Document we sought a view on whether referral for testing should be via an individual's general practitioner (GP) (whether civilian or military) or be by self-referral, and were left in no doubt that any involvement of GPs would need to be fully justified. Unfortunately, we did not fully expose the factors that needed to be considered.

44. We acknowledge that if retrospective exposure testing could be undertaken remotely, for example by sending off a urine sample by post, there would be no need to involve an individual's GP. However, if any counselling is required or health assessment made, a GP can undoubtedly add value. Clearly, whether or not an individual's GP is involved in the test itself, the GP will (with the patient's consent) need to be informed of a positive result so that it can be taken into account in the course of the GP's normal care for his patient.

45. We certainly believe that referral for a medical assessment without the involvement of an individual's GP could be detrimental to the patient as it might lead to the same condition been investigated twice and, for example, resulting in a double exposure to x-rays. Therefore, even if individuals can self refer for medical assessment there is an argument for obtaining a report from the patient's GP (with the appropriate consent) before undergoing medical assessment. If we also accept the advice given to us by some in response to our 1<sup>st</sup> Consultation Document that we should link retrospective exposure testing with a medical assessment, it follows that GPs will also be involved in retrospective exposure assessment. Clearly, if this is the case we will have to provide GPs with appropriate information.



## WIDER APPLICATION OF TESTING

### QUESTION 9

46. Many non-MOD personnel have been deployed in the Balkans in the last 10 years, some of whom are public servants working for Other Government Departments (OGDs), some working under contract for OGDs, some for Non Governmental Organisation (NGOs)

such as the British Red Cross and some in an individual capacity. The issue of extending any testing to them has been raised.

47. The duty of care rests with an individual employer, who may wish to consider in the light of this Consultation Document whether they should extend testing to their employees on the same basis as we propose for MOD personnel. MOD is prepared to consider whether, and under what circumstances, the proposals in this Consultation Document could be extended to non-MOD employees.

48. There has also been representation that MOD employees involved in the test firing of DU rounds or working with DU in other industrial settings should be considered eligible for the screening programmes. The risk assessments for these employees are different and they are already subject to full Health and Safety and environmental monitoring systems, including where appropriate biological monitoring. Therefore, it would seem inappropriate to make any additional arrangements for them.



## TECHNICAL ISSUES

### QUESTION 10

49. It is not proposed to discuss in detail technical issues in this Consultation Document. We wish to simply summarise the general conclusions that we have come to following responses to our 1<sup>st</sup> Consultation Document on Technical Issues.

50. In our 1<sup>st</sup> Consultation Document we considered a number of tests that might be appropriate for screening. These included analysis of bone, hair, blood, faeces, urine and tooth enamel. Whilst a number of these tests might be appropriate in a research context, only urine testing appears suitable for biological monitoring or retrospective exposure assessment.

51. However, for retrospective exposure assessment, there was also almost universal agreement that further work was needed to develop and identify an appropriate test and its associated protocol. We all excrete uranium as a result of ingesting it from food, water, air and cigarette smoke. In order to determine whether any of the uranium originates from DU, there is a need to measure the isotopes of uranium. If an individual has absorbed DU in the past, and is still excreting it in his urine, the proportion of the various isotopes in his urine will be altered and may be detectable, thus indicating past exposure to DU. Establishing such changes requires very sensitive testing and there is thus preliminary work needed to establish the capabilities and limitations of the various laboratories that might carry out isotopic urine analyses, and the methods they would use. A key requirement is to address the problems of dealing with such a complex substance as urine and the need to standardise procedures and provide quality assurance. This is a technical task for analysts specialising in low level uranium and uranium isotope measurements by techniques termed "mass spectrometry". There are a number of such techniques in an area that is developing quickly, but where currently there is limited capacity to test large numbers of samples.

52. Developing a suitable test for screening a large number of personnel also requires a system that can handle large numbers of samples quickly. On the other hand, a test developed for research purposes is required to be very accurate, but does not necessarily have to be able to handle large numbers. We mention this as some respondents to our first document were considering a screening test, others were considering a test for research purposes, with only a few differentiating between the two.

53. There are also particular difficulties associated with collecting samples for low level uranium analysis. Care must be taken to avoid the sample being contaminated with natural uranium that is present throughout the world; this tends to the requirement for such samples to be professionally collected. Different considerations also apply to a test that will be used

as a research tool compared to one that is to be used for widespread screening, with the former being easier and quicker to develop.

54. Finally, there is a need to determine what is a normal value of uranium and its isotopes in the urine (this applies both to biological monitoring and retrospective exposure assessment). Without knowledge of what is normal, it is not possible to identify what is abnormal. Only limited work has been carried out on determining the normal values of urinary uranium, and none on the ratio between isotopes of uranium in urine. We know that place of living, diet, etc affects the normal values. Thus, part of a programme to develop tests must include work to ascertain the normal values for the predominantly military population we would be testing.



## MOD PROPOSALS

### BIOLOGICAL MONITORING

#### QUESTION 11

55. We are conscious that DU will almost certainly to be encountered on a future battlefield either by UK, coalition or enemy forces, in addition to its use in the Gulf and the Balkans. We thus believe that appropriate biological monitoring, already in use in peace, may be a useful part of overall Health & Safety arrangements to minimise exposure on operations. In this respect biological monitoring for DU is in principle no different from other occupational biological monitoring programmes.

56. An overall strategy to control exposure to DU must be based on the principle of assessing risk and then applying the accepted Health & Safety principles for controlling that exposure in order to ensure individuals have as low an exposure as possible. Biological monitoring provides a means of evaluating whether the overall strategy is adequate.

57. MOD believes that testing for total uranium in urine (rather than its isotopes) is likely to be an appropriate test to use when a risk assessment indicates that biological monitoring is desirable on current and future operations. This is because recent exposures result in more easily detectable increases in total urinary uranium that can, if raised, be followed up by measurement of uranium isotope ratios. However, Biological Monitoring should only be used when indicated to support the other measures described above, and not be the main measure. Here it is part of an overall strategy to continue to reduce exposure to DU and is consistent with our policy of reducing the overall health risk to our employees.

58. Looking specifically at the potential for DU exposure in the Balkans, MOD is already undertaking an environmental monitoring programme in which DU is one of the materials that is specifically tested for. If the results indicate a need, we will carry out Biological Monitoring forthwith. So far the levels of DU detected both by the MOD and by other countries have been reassuringly low. Neither has any nation that has instituted biological monitoring in the Balkans (and in particular the Germans<sup>9</sup> who have used a test that is likely to meet our standards) yet reported a single instance where DU exposure is a concern. However, we continue to watch developments in other Nations through the forum set up by NATO for this purpose and would carefully evaluate any positive results to ascertain if they have any significance for UK personnel.

59. Further Work. As with any other hazard, such a policy has to start from an acceptance of what is an acceptable maximum exposure. For peacekeeping operations, such as those in the Balkans, a maximum exposure might be the same as in peacetime in the UK, taking into account the policy of keeping radiation doses as low as reasonably practical. However, the strict use of such a limit on war fighting operations might pose

---

<sup>9</sup> GSF Report 3/01: A study of Uranium excreted in urine – An assessment of protective measures taken by the German Army KFOR Contingent, GSF National Centre for Environment & Health, Institute of Radiation Protection, Neuherberg, January 2001.

significant operational penalties. Clearly, we need to be careful not to develop a policy that minimises future risk from DU, but increases the more immediate threat from an enemy. Similarly, biological monitoring may well be easy to implement in peace-keeping operations but may pose significant challenges during major warfighting, where conditions on the battlefield make the collection and transporting of urine samples difficult. Therefore, whilst the development of an occupational screening programme in peace and on peacekeeping operations such as those in the Balkans should pose little practical difficulty, the development of a suitable programme for a major conflict such as the Gulf will be a significant challenge. In addition to the further work outlined here, other work is also required as outlined in the section on “Technical Issues” prior to developing a comprehensive policy. However, were we to identify potential DU exposures in the Balkans that posed a significant risk to our personnel, we would implement Biological Monitoring very quickly in advance of a fully developed comprehensive policy. We have already commenced work to identify suitable laboratories that could carry out such work.



## RETROSPECTIVE EXPOSURE ASSESSMENT

### QUESTION 12

60. If retrospective exposure assessment is being used as a form of population screening, it should comply with accepted criteria for such screening. As a general rule, such screening programmes cause some harm, some provide benefit, and of those that provide benefit, in a few the benefits outweigh the harm<sup>10</sup>. Screening causes harm through causing anxiety and such anxiety is heightened if there is no specific treatment or where there is uncertainty or disagreement over the usefulness of any treatment in the event of a positive result. This potential for harm has led the National Screening Committee (NSC) of the National Departments of Health to lay down criteria before such programmes are introduced.

61. Comparing a testing programme for DU, based on testing of urine for the isotopes of Uranium, against NSC criteria (showing whether or not they meet the criteria):

- a. *The condition should be an important health problem:* The evidence is that DU does not pose a significant health risk (Does not meet criterion).
- b. *The progress of the condition should be known and understood:* The radiological and toxicological hazards are well understood, but there is currently no evidence of other alleged effects (On balance, meets criterion).
- c. *There should be a simple, safe, precise and validated screening test:* Although none exists at present, one ought to be capable of being developed using analysis of urine. (Could meet criterion).
- d. *The normal values should be known:* Whilst these are not known yet, they could be determined. (Could meet criterion)
- e. *The test should be acceptable to the general population:* Urine testing is acceptable. (Meets criterion)
- f. *There should be a clear policy about what should be done in the event of a positive:* There is disagreement over what could be done in the event of a positive. (Does not meet criterion).
- g. *The test should either lead to an improvement in health, a reduction in mortality, or (where the test is used to enable choices to be made) accurately measures risk:* There is no evidence that the test will do any of these things. (Does not meet criterion).

---

<sup>10</sup> 2<sup>nd</sup> Report of the UK National Screening Committee available on <http://www.nsc.nhs.uk/>

h. *The benefit from the test should outweigh any physical or psychological harm arising from the testing programme:* For those most concerned the test will probably provide benefit, but there would be no obvious benefit for those not initially concerned. (Not clear if meets criterion).

i. *There must be a plan for managing and monitoring the programme and an agreed set of quality assurance standards:* Whilst these do not exist at present, they could be put in place. (Could meet criterion)

62. We believe that the gap between the NSC criteria and the proposed programme is so great as to make a permanent, extensive programme of screening for retrospective exposure assessment unsupportable, at least at present.

63. Nevertheless, we recognise that we need to address the concern of some Gulf Veteran's, and perhaps some Balkan's Veterans, that DU is injurious to their health, through some as yet unknown mechanism. We note the suggestion that the impact of DU projectiles on a hard target producing DU particulate might be inhaled thus leading to a concentration in the lymph glands of the chest and thereby affect the body's immune system. The suggestion is that the variable symptoms of those that were in the Gulf and now have multiple non-specific symptoms might result from an effect on the immune system.

64. As there is no evidence to support this claim, it is more appropriate to respond to these concerns through research rather than the establishment of a permanent-screening programme of indefinite duration. We thus propose to develop a testing protocol that will enable a retrospective exposure assessment to be made and link it with an epidemiological study, comparing those who are ill with a control group who are not ill. This is termed a case control study and it will also enable us to offer testing to Gulf Veterans and others who are concerned that DU is affecting their health without committing ourselves to a permanent and expensive screening programme that does not meet NSC criteria. It has been put to MOD that any testing should include a medical assessment, so that the relationship between any positive results and health status can be assessed. We accept this view. In broad terms such an assessment could be questionnaire based, based on existing health records, or be a medical examination. We prefer the latter as it will provide a more robust linkage to ill health for the case control study. We will be discussing with the Medical Research Council what form this medical examination should take.

65. The development of a test to support a research project is also, as we said earlier, easier and quicker. However, whilst such a test would enable us to identify whether or not an individual has at some point been exposed to DU, we are not yet certain that we will be able to calculate the extent of the past exposure. Nor, prior to the research been completed, will we be able to advise individuals about the possibility of a measurable increased risk; the current evidence is that there is none. Those volunteering for such a test will need to be clear that testing is not "a cure", and that even if small amounts of DU are discovered (amongst the much larger quantities of natural uranium we would expect) there is currently no "cure" or a requirement for one. Even if (and we expressly say "if") research did demonstrate an association between DU and ill health, further work would be required to explore and understand the relationship. We stress this, as comments we received in response to the 1<sup>st</sup> Consultation Document suggest that some see the demonstration of a relationship (if one were to exist) between DU and ill health as an end in itself.

66. How we take this forward, in a way that meets the wish of those who are suspicious of any MOD involvement in the work, we discuss in the final section.



## MEDICAL ASSESSMENT

### QUESTION 13

67. In the first consultation document we raised the question of a Veterans Assessment Centre (VAC) on a similar basis to the existing Gulf War Medical Assessment Programme (MAP). Few comments were received on this aspect of the consultation. There was some support for a VAC, but those that did respond emphasised that it should not replace testing, nor be a pre-requisite for voluntary testing.

68. MOD seeks further views on what place a VAC could play in respect of DU. For instance it could :

- a. Investigate veterans who think they are unwell using medical examination and tests that include a test of exposure.
- b. Develop an understanding of, and provide a focus for research on, Veterans illnesses.
- c. Provide a focus for following up any positive results from the retrospective exposure assessments for DU.
- d. Support relevant research work by, for example, conducting the medical assessment as part of the case control study outlined above.

69. A VAC would need to cater both for those who are suspicious of anything provided by MOD as well as those (including, possibly, personnel still serving) who clearly welcome contact with health professionals who have the same experience of military operations as themselves. A possible model that would meet both needs would involve contracting with an academic institution or NHS department to provide a VAC, but seconding uniformed health professionals (for example, an occupational physician and, in view of the experience for the MAP, a psychiatrist) to the academic or NHS organisation.

70. Views would also be welcome on the model outlined and its location.



## SUMMARY OF MOD PROPOSALS

71. MOD is proposing the use of biological monitoring on operations where it is appropriate as a means of ensuring the effectiveness of Health and Safety control measures. Although only outline arrangements exist at present, were we to identify a significant risk to our personnel on operations now we would immediately introduce biological monitoring. We have already undertaken initial work to identify appropriate laboratories. Currently, no such risk exists in those areas where UK troops are deployed.

72. Whilst we do not believe that we should introduce a large scale programme of retrospective exposure assessment testing, we propose to develop such a test and use it as a research tool to seek to answer the question "Does DU harm health in the circumstances encountered on the battlefield". This will also allow us to offer testing to those Veterans who are most concerned that DU might have harmed their health.

73. We seek views on the part that a Veterans Assessment Centre (VAC) might play in our proposals.

## TAKING THE PROPOSALS FORWARD



### BIOLOGICAL MONITORING

#### QUESTION 14

74. MOD believes that its proposals for biological monitoring are uncontentious and has already tasked the EAG with developing proposals for Biological Monitoring for use on operations. These are being developed in the broader context of all Health & Safety concerns on operations.

75. In developing our policy we will seek the views of external authorities, and in particular the Health and Safety Executive and Departments of Health.

### RETROSPECTIVE EXPOSURE ASSESSMENT

#### QUESTION 15

76. A number of respondents emphasised the importance of an independent element in the testing programme to give it credibility. We accept this view, although in the absence of an alternative body, we believe MOD must retain overall control. We also believe the inclusion of independent representatives on the Oversight Board and the contracting out of the testing arrangements meets the concerns that have been expressed.

77. We therefore propose to take forward retrospective exposure assessment by inviting tenders from interested organisations to:

- a. Identify and validate a test for urinary uranium isotopes to be used as a research tool.
- b. Identify the normal range of excretion of natural uranium (also required for Biological Monitoring) and its isotopes for unexposed military personnel.
- c. Test for DU as part of an epidemiological case control study described below.

78. We will be discussing with the Medical Research Council (MRC) the design of a case control study to answer the question "Did exposure to DU in the past cause ill health?". We would expect such a study to include a medical assessment and thus would expect that general practitioners would be involved. To what extent and how will depend on the detail of the case control study, and once we know these we will discuss the implications, if any, with the Department of Health.

79. We will also make arrangements for testing of individuals who are not part of the case control study, but are concerned that exposure to DU in the Gulf or Balkans may have affected their health.

#### Question 16

80. We will establish an independent "Oversight Board" to ensure transparency and maintain public trust. This Board will need to agree the Statement of Requirement for testing and for the research, and act as an independent auditor. Comment on appropriate arrangements for such an Oversight Board would be welcome, as would nomination for individuals to be appointed as Board Members. We would clearly welcome the involvement of Veterans or their representatives in these oversight arrangements. Clearly, those on the Oversight Board could not also be involved in the development of the test or the routine testing programme. In order that the setting up of the Oversight Board does not delay the proposed programme, we are seeking nominations for the Board by 1 June 2001.

81. We propose evaluating the requirement for introducing a further retrospective exposure testing for mass screening in the light of the results of the epidemiological case control study. This means that until we know the results of this research we will not be developing or putting in place a large scale mass screening programme. We realise that

some may criticise us for not immediately seeking to introduce a mass screening programme.

82. In determining the protocol for testing (and the case control study) we are also conscious of the criticism of the World Health Organisation (WHO). This criticism is that the uncoordinated actions by individual nations is counter productive and misses an opportunity to co-ordinate research efforts thus increasing the probability of successfully answering the research question. We will therefore seek to involve the WHO in further work, probably via the MRC.

83. Although we will wait for responses to this Consultative Document before setting in place the arrangements for the contract for testing, we are conscious of the desire for speed. We have thus already initiated discussions with the MRC on the design of research. We will during the consultation period seek to start identifying those who might form part of such a study, for which purpose we will need the assistance of Veterans organisations and/or their representatives. We will develop a draft statement of requirement for the proposed contract for submission to the Oversight Board when it is constituted. We would therefore hope to be able to move very quickly to implement policy once it is decided following the end of the consultation process.

84. Clearly, there are various contractual, legal and ethical procedures and processes that we cannot ignore when taking forward our proposals. However, taking into account the work we can do during the consultation period, and assuming a decision on these proposals in July, we would hope to constitute the Oversight Board in July, submit a Statement of Requirement for the contract for testing in September, complete the contractual process (inviting and assessing bids, and signing the contract) by December with testing commencing as soon as the Oversight Board confirmed the availability of a robust scientifically valid test that meets the Statement of Requirement



**A LIST OF QUESTIONS**



1. The following are a list of question to help readers respond and to assist MOD in collating responses. There is no need to answer all, or indeed any, of the questions and all responses are welcome. The questions (in the Word Document) are hyper-linked to the relevant part of the document.

Question 1: Do you consider that the document objectively summarises the current situation in respect of our knowledge of DU.

Question 2: Are there any issues that have not been addressed in this document?

Question 3: Is our analysis of the relationship between peacetime standards of Health & Safety and the need to modify such standards for operations reasonable?

Question 4: Is our terminology clear?

Question 5 (and elements of Question 15): We welcome views on the major issue of how we can take forward our work, particularly on retrospective exposure assessment, in a manner that attracts the confidence of the public.

Question 6 and Question 7: Although we had concerns about testing for the presence of DU in the absence of “treatment” we have concluded that this should not be a barrier to testing. Is our view reasonable?

Question 8: We would welcome comment on the involvement of the GPs of veterans who wish to be tested or who wish to have a medical assessment at a VAC.

Question 9: In the light of this Consultative Document we would specifically value views from other organisations with individuals who are, or were, deployed in the Balkans.

Question 10: We are not specifically seeking views on technical issues as these were obtained in response to our 1<sup>st</sup> Consultative Document. Nevertheless, comment on technical issues is still welcome.

Question 11 and Question 14. We seek views on MOD’s proposals for Biological Monitoring and the way forward in developing them as part of a wider Health & Safety strategy. Do the proposals appear logical, coherent and reasonable?

Question 12. MOD has concluded that it should not introduce a screening test, but instead should develop such a test and use it to answer the research question “Does DU cause ill health?”. Is such an approach reasonable?

Question 13. MOD is still undecided of the merits of setting up a Veterans Assessment Centre (VAC). Views are invited on the role and function of such a centre, and whether it would provide anything that the NHS cannot currently provide.

Question 15. Are our proposals for taking forward retrospective exposure assessment logical, reasonable and coherent?

**Question 16.** We seek views on what arrangements we could put in place to ensure confidence in the results that we obtain. We also seek expressions of interest from

those who might wish to become actively involved in such arrangements or from bodies who may wish to nominate an individual to become part of the independent Oversight Board.

