

# THE IDENTIFICATION, DOCUMENTATION AND RETENTION OF MUNITION FRAGMENTS SURGICALLY REMOVED FROM UK PERSONNEL

Reference:

A. Surgeon General's Policy Letter 10/09.

## SUMMARY

1. The purpose of analysing surgically removed munition fragmentation is to ascertain their composition through laboratory analysis and determine if fragments remaining in a casualty might be toxic to the individual. This leaflet supersedes the previous policy on this issue released as SGPL 10/09.

## INTRODUCTION

2. Personnel injured by exploding or fragmented munitions may have fragments of the device embedded within their bodies, some of which may subsequently be surgically removed. In many cases, it is unlikely that all fragments will be recovered and, depending on their chemical composition, those retained in the body may constitute a long term hazard to health. Therefore, it is important to identify and document the nature of removed fragments and to retain them in order to allow assessment of these hazards.

3. Fragments are only to be removed from the deceased in the following circumstances:

- a. When directed by the Coroner, who will arrange for any analysis required.
- b. By Service Investigators, in conjunction with the Home Office Pathologist, who request removal for evidence purposes.

If a casualty subsequently dies from their injuries within 24 hours following the removal of munition fragments, the Coroner (in conjunction with Service Investigators and the Home Office Pathologist) will determine the analysis and disposal route of these fragments. Where death occurs 24 hours or more after the removal of fragments the Coroner (in conjunction with Service Investigators and the Home Office Pathologist) can request the return of the fragments (or parts thereof) from the Institute of Naval Medicine (INM).

4. This leaflet defines the process for analyzing fragments removed from UK personnel<sup>1,2</sup> to determine their composition and the policy for documentation and retention of those fragments.

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<sup>1</sup> UK personnel include all UK military personnel (including attached Foreign Force personnel), MOD civil servants, UK contractors and UK civilians.

<sup>2</sup> Fragments removed from non UK personnel are not to be processed in line with this leaflet. Collected fragments should be packaged and forwarded with the patient for analysis / retention in line with National Policy. For greater clarity UK medical staff should discuss with the relevant national LO and manage accordingly.

## POLICY EXPLANATION

5. All fragments removed from UK personnel either in deployed Medical Treatment Facilities (MTF), UK Role 4 (R4) and NHS establishments are to be retained for analysis by the INM. Where specific incidents are subject to Service Investigation, fragments may become part of the chain of evidence and will be subject to a strict handling protocol not detailed in this leaflet<sup>3</sup>. All fragments retained by Service Investigators should be returned directly to INM for toxicology analysis at the earliest opportunity. Once the investigation is complete (or the fragments are no longer required), all material is to be packaged and forwarded in accordance with this leaflet. Where full or partial ammunition rounds are recovered, the item is to be retained and Service Investigators notified of its presence<sup>4</sup>. Service Investigators will advise on the correct disposal route for ammunition rounds.
6. Medical Officers and Civilian Medical Practitioners referring patients on for further surgery are to make it known to referral centres the requirement of this policy and where required are to supply a request form. Non-military establishments can send the fragment as a pathological specimen to INM with the completed request form.
7. All fragments are to be cleaned by the sending unit to remove any human tissue or blood<sup>5</sup>. Once clean, all fragments are to be placed in appropriate sample containers<sup>6</sup>; INM is to provide suitable sample cases and labels<sup>7</sup>. Once packaged the samples are to be sent to INM at the following address:

Environmental and Industrial Hazards Laboratory  
The Institute of Naval Medicine  
Crescent Road  
Gosport  
Hants  
PO12  
2DL
8. The form 'Request for Fragment Analysis'<sup>8</sup> will be supplied with the sample case and is to accompany the fragment/s. One form is to be completed per patient. MTFs are to note that the non-operational parent unit and address of the patient are required on the form.
9. INM is to undertake the analysis as listed at Annex B<sup>9</sup>. In the event of analysis being beyond the existing capability of the INM laboratories, INM is to make arrangements for analysis at other suitable Government or civilian laboratories.
10. The patient's records are to indicate if any fragments remain within the patient.

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<sup>3</sup> Guidelines for handling medico-legal specimens and preserving the chain of evidence. Royal College of Pathologists, 2008, London. [www.rcpath.org](http://www.rcpath.org)

<sup>4</sup> In Theatre SIB are to be contacted through established communication channels. In the UK HQ SIB (RMP) Forensic Department (94321 3666) are to be contacted.

<sup>5</sup> Cleaning by the use of de-ionised/distilled water or 'tap' water is all that is required to remove blood or other material.

<sup>6</sup> Containers will be forward-loaded to deployed MTFs and UK R4. Resupply will be on a one for one as received at INM or by Unit J4 staff requesting from INM.

<sup>7</sup> POC at the INM are: Dr David Lewis e-mail: INM-EMS-EIHSp Gp Lab MgrLabs Head (Lewis, Dave C1), Telephone: 9380 68082 OES Laboratory group e-mail: [oes\\_despatch@inm.mod.uk](mailto:oes_despatch@inm.mod.uk)

<sup>8</sup> See Annex A

<sup>9</sup> INM may receive multiple fragments from the patient and may produce protocols to ensure that a representative sample is analysed that is based on appearance and/or morphological parameters. If there is a high degree of confidence that fragments have the same composition, it may not be necessary to analyse each fragment.

## RESULTS

11. Following analysis, the INM will contact the Defence Patient Tracking System Staff<sup>10</sup> (DPTS) to obtain the address of the medical facility holding the patient. INM will then to send copies of the results to the following:

- a. The current medical facility holding the patient<sup>11</sup>.
- b. The Defence Professor of Surgery<sup>12</sup>.
- c. The Academic Department of Military Emergency Medicine (Joint Theatre Trauma Registry)<sup>13</sup>.
- d. The patient's parent unit for inclusion within the patient's DMICP records.
- e. An anonymised copy to Dstl<sup>14</sup>.

12. The analyzed fragment(s) and a copy of the results are to be packaged in line with Central Health Records Library (CHRL) requirements<sup>15</sup>, and forwarded under a covering letter for storage<sup>16</sup> to:

- a. Central Health Records Library (CHRL)  
DMSD  
Building B1  
MOD Shoeburyness  
Southend-on-sea Essex  
SS3 9SR
- b. The container with the fragments is to be labelled with the following details:
  - i. Service Number and date of birth of patient.
  - ii. Location of incident (if known).
  - iii. Date of the incident.
  - iv. Operation name.
  - v. Location on body where fragment(s) are removed from.

## DATABASE

13. INM is to maintain a database of all results. The data set is to include patient details, unit, location, operational name as well as date of incident, size and shape of the fragments and results of analysis. INM will allocate a unique number to each sample.

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<sup>10</sup> Telephone contacts are 95238 extn 7054 or 7309 or 7060.

<sup>11</sup> On receipt of the results the clinician responsible for the patient's care is to inform the patient of the results and the possible long term effects to health. Where clarification is required on potential health implications, sS Occupational Health staffs should be contacted. All results and guidance given are to be recorded in the patients DMICP record.

<sup>12</sup> See Annex B (b)

<sup>13</sup> See Annex B (c)

<sup>14</sup> See Annex B (f)

<sup>15</sup> Sent to CHRL inside sealed plastic containers with details as listed at paragraph 9.

<sup>16</sup> Fragments will be retained in accordance with JSP 400 and held for 100 years from the patient's date of birth.

Annexes:

- A. 'Request for Fragment Analysis'
- B. Minimum Requirement for the Analysis of Metal Fragments

**RESTRICTED MEDICAL (when completed)**

OES 250

Fragment Request Form v1.

Nov 08



**Institute of Naval Medicine**  
 Environmental and Industrial Hazards Laboratory  
 Crescent Road, GOSPORT, Hampshire, PO12 2DL

Phone: 023 92 768082    Mil Net: 9380 68082    Fax: 023 92 504823  
 Email: OES\_despatch@inm.mod.uk    MOD Email: INM-OES Despatch

**OES LABORATORY: REQUEST FOR FRAGMENT ANALYSIS**

1. Complete sections A, B and D of the request form giving **as much detail as possible**. When possible contact the laboratory by phone or email before sending samples.
2. Fragments should be placed into suitable sterile container(s), with each fragment in a separate container, and packaged as pathological specimens in the case provided. The case must be returned to INM first class post or sent by courier.

**A. Contact details for originating Medical Treatment Facility (MTF)/NHS Trust.**

<b>Contact name:</b>	<b>Address for report:</b>
<b>Phone No:</b>	
<b>Fax no:</b>	
<b>Email:</b>	

**B. Details of patient and incident - one form should be completed per patient.**

<b>Operation:</b>			
<b>Date of injury:</b>	<b>Location of injury</b> (Grid Reference (GR)) can be obtained from SINCREP)		<b>Cause of injury:</b>
<b>Service no:</b>	<b>Rank:</b>	<b>Name:</b>	<b>DOB:</b>
<b>Unit in theatre:</b>		<b>Home Unit if IA: (Include full address):</b>	
<b>Date case received by MTF:</b>		<b>Date dispatched to INM:</b>	
<b>Sample Case Number:</b>	<b>Prepared by:</b>	<b>Dispatch No.:</b>	
<b>Date dispatched from INM:</b>		<b>Courier:</b>	
<b>Job No:</b>	<b>Date/Time received at laboratory:</b>		
<b>Custodian:</b>	<b>Analysis agreed: (Initials / date)</b>	<b>Deadline:</b>	
<b>Approved for issue by:</b>		<b>Date Issued:</b>	

**C. For laboratory use only****RESTRICTED MEDICAL (when completed)**

RESTRICTED MEDICAL (when completed)

**D. – Complete the labels provided and attach one to each container then summarise fragment details below.**

<b>MTF / R4 reference</b>	<b>Short description of fragment</b> (Size (dimensions and mass) Shape)	<b>Date collected</b>	<b>Comments</b> (Incident details (time, location) if known, where fragment(s) was removed from body )	<u>Lab use only</u> J..... Page .... Of ...

**RESTRICTED MEDICAL (when completed)****Minimum Requirements for the Analysis of Metal Fragments**

- 1 Laboratory analysis of metal fragments will include:
  - a. Screening of each fragment for:
    - (1) Radioactivity: all radiological active samples to undergo isotopic characterisation
  - b. Other potentially harmful metals as a start point:
    - (1) Tungsten.
    - (2) Iron.
    - (3) Tin.
    - (4) Copper.
    - (5) Uranium (natural and depleted, if indicated).
    - (6) Lead.
    - (7) Cobalt.
    - (8) Nickel.
    - (9) Antimony.
    - (10) Chromium.
  - c. Qualitative analysis, to identify metals present or quantitative analysis, to determine their quantity. Quantitative analysis will aim to determine the amount of those metals present at a level of at least one percent by mass and coefficient of variation of  $\leq 10\%$ .
  - d. Reporting the results within 30 days of receipt to the distribution list below. All results should include:
    - (1) Location.
    - (2) Operation.
    - (3) Date of Incident.
    - (4) Time of Incident (if known).
    - (5) Type of Incident (if known).
    - (6) Size of fragment(s) (dimension and mass).
    - (7) Shape of fragments.
    - (8) Results of analysis.
    - (9) Location on body where fragment(s) removed from.
5. Distribution list for results:
  - a. Central Health Records Library (CHRL) (including fragments) SGD  
Building B1  
MOD  
Shoeburyness  
Southend-on-sea  
Essex  
SS3 9SR

**RESTRICTED MEDICAL (when completed)**

- b. Defence Professor of Surgery  
Academic Department of Military Surgery & Trauma  
RCDM  
Birmingham Research Park  
Vincent Drive  
Birmingham  
B15 2SQ
  
- c. RCDM (JTTR)  
Academic Department of Military Emergency Medicine  
Birmingham Research Park  
Vincent Drive  
Birmingham  
B15 2SQ
  
- d. MTF where patient is being treated (details obtained from DPTS).
  
- e. Patient's Home Unit Medical Centre.
  
- f. Injury Modelling  
Room 1A  
245 Building  
Dstl  
Porton Down  
Salisbury  
Wiltshire  
SP4 0JQ