



LEAFLET 5

HAZARDOUS SUBSTANCES AND RESTRICTED MATERIALS

AMENDMENT RECORD

Amendment	Date	Text Affected	Authority

REVISION NOTE:

Apr 2012

Leaflet 5 has been revised to update to current EU Directives and UK Legislation that impacts management of hazardous substances and restricted materials. It also details current MOD Policy for compliance with that legislation.

HISTORICAL RECORD:

Last Update: September 2010

This policy has been equality and diversity impact assessed in accordance with Departmental policy.
This resulted in a Part 1 screening only completed (no direct discrimination or adverse impact identified) This policy is due for review in February 2015

HAZARDOUS SUBSTANCES AND RESTRICTED MATERIALS

Contents

Para

- 1 Introduction
- 4 Definitions
- 6 MOD Policy
- 11 Implementation of MOD Policy
- 19 Responsibility of Users


Annex

- A Legislative Overview
- B Exemptions and Technical Dossiers
- C Batteries
- D Persistent Organic Pollutants (POPs)
- E Volatile Organic Compounds (VOCs)
- F Perfluorooctane Sulphonate (PFOS) and Perfluorooctanoic Acid (PFOA) - types of Perfluorinated Chemicals (PFCs)
- G Assurance Questions

INTRODUCTION

1. Hazardous Substances and Restricted Materials have a detrimental effect on the environment, and human health. Many are natural, but more recently the number of man made substances being manufactured has risen significantly. The scale of impact depends on the type and quantity of material being used and whether the impact is direct or indirect. Concentrations can ultimately reach levels where the damage is difficult to repair.
2. Many of the substances are persistent in the environment and will accumulate over a period of time, entering supply and food chains. They can enter an animal's body in a variety of ways (ingestion, inhalation or contact with skin) and become more concentrated after each transfer thus increasing the damage caused. Some of the noted effects include poisoning, burns, chronic health problems, organ failure, foetal damage and reduced fertility. They can also have carcinogenic or mutating effects. Several notable environmental issues have been connected to the release of certain substances - acid rain, global warming and general contamination are just some of them. Long term consequences are less likely to be accounted for compared with acute injury which becomes immediately evident. Equipments and products procured for the MOD are, or may contain, hazardous substances which may result in exposure to users or others during normal use (eg maintenance activities) or in accidental circumstances.
3. Due to the variety and nature of the MOD's activities we are heavily influenced by policy and legislation in this area. This leaflet covers some of the key legislation relating to hazardous substances; however project teams should still contact suppliers and manufacturers directly for more specific information on their products.

Definitions

4. The Health and Safety Executive (HSE)¹ defines a Hazardous Substance as:
 - any substance which is listed in [Table 3.2 of part 3 of Annex VI of the CLP Regulation](#)  and for which an indication of danger specified for the substance is very toxic, toxic, harmful, corrosive or irritant;
 - Any preparation (mixture) that is dangerous for supply, as above;
 - Any substance which has a Workplace Exposure Limit (WEL);

¹ <http://www.hse.gov.uk/coshh/detail/substances.htm>

- Any biological agents used at work;
- Any dust other than one with a WEL at a concentration in air above 10 mg/m³ averaged over 8 hours, or any such respirable dust above 4 mg/m³ over 8 hours;
- Any other substance that creates a risk to health because of its properties and the way it is used or is present in the workplace.

5. A Restricted Material is one that has been banned by legislation, but the legislation allows the material to continue to be used for specific uses or below a certain quantity/volume. These uses and volumes/quantities will be clearly stated within the legislation. A full list of applicable legislation is at Annex A.

MOD POLICY

6. For all hazardous substances and restricted materials, it is MOD policy to comply with UK and EU policy and legislation. In certain cases there may be exemptions, derogations or dissapplications relating to type of product or use. In line with the Secretary of State (SofS) for Defence policy statement on Safety, Sustainable Development and Environmental protection, maximum efforts should be made to abide by the legislation where possible and subsequently these exemptions should be used sparingly and only when fully justifiable in order to maintain operational capability.

7. MOD policy requires that all new uses of hazardous substances and restricted materials should be avoided. Additionally, the legacy use of these should be minimised and cease as soon as possible. This requirement applies even where derogations or exemptions for Military purposes have been established.

8. In summary MOD policy on the use of Hazardous and Restricted Materials is:

- Where Regulations or Legislation is applicable to the product to be delivered to the UK MOD, the equipment must be compliant with that legislation;
- Where restrictions exist within legislation, substances/materials should not be used outside of the allowed uses and then only used where there is no suitable and adequate alternative to meet operational capability;
- Any substance benefiting from a Defence exemption can only be used on Defence platforms/equipment where there is no suitable and adequate alternative to meet operational capability.

9. Where no suitable alternative materials are available, use must only be where allowed by legislation. Use must be justified through the production of a technical dossier (See Annex B) which explains the technical reasons why the substance/material is the only suitable option, how it is to be managed through life and what procedures are in place to manage risks. Technical Dossiers must be approved at the following levels:

- Where an exemption is specifically for the use of defence i.e. either for national security or military equipment; use must be justified through the completion of a technical dossier, or the REACH exemption process as appropriate. Approval will be through the Restricted Material Steering Group (RMSG) and ultimately SofS. Requests for exemption must be submitted to the DE&S Hazardous Substances and Restricted Materials safety team in the Safety & Environmental Protection group;
- Use of Restricted substances must only be where allowed through legislation and the justification for use must be through the production of a technical dossier (See Annex B Appendix 1) signed by the project team leader;
- In the exceptional circumstance that there is an urgent operational requirement to use hazardous substances that are not permitted by legislation, a justification letter and technical dossier must be produced and endorsed by the team leader and Operating Centre 2* for consideration by the RMSG and ultimately SofS for Defence.

10. When the use of Hazardous Substances or Restricted Materials is approved, the MOD Project Team must implement measures to reduce the risk and negative impacts. This can be done by:

- Planned phasing out;
- Supporting research to identify alternative options;
- Monitoring Technology for alternative solutions;
- Risk assessment and putting measures in place to reduce emissions, pollution or preventing harm.

IMPLEMENTATION OF MOD POLICY

11. MOD has taken a number of steps to implement policy and reduce the use of hazardous substances and restricted materials. The Restricted Materials Steering Group (RMSG) is hosted by Defence Equipment and Support, which catalyses and monitors the removal of restricted materials from the defence inventory. It also acts as the scrutiny Board for REACH and all other exemption applications. Information on the REACH exemption application process can be accessed via:

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/HealthandSafetyPublications/SSDCD/SustainableDevelopmentPolicy/ReachregistrationEvaluationAuthorisationAndRestrictionOfChemicals.htm>

12. The RMSG has introduced the HAZMAT database to aid the management of restricted materials in the MOD. Details on the use of, and access to, the HAZMAT database can be obtained from DESSESEPSystemsman@mod.uk.

13. JSP 515, the Hazardous Stores Information System (HSIS) is a repository for safety data sheets (SDS) for MOD procured items. Project Teams are responsible for ensuring that their SDS are passed to the HSIS management team and updated where appropriate. DEFCON 68 (Commercial Toolkit, AOF) requires contractors to supply SDS and Safety Information. It should be noted that despite being subject to regular review and update, HSIS may not always contain the most comprehensive and current information. Any specific issues or concerns should be addressed directly with the relevant supplier and/or manufacturer and updates passed to the HSIS management team.

14. Legislation requires that the safety data sheets shall contain information under the following 16 headings:

- Identification of substance/preparation and manufacturer.
- Hazard identification of product.
- Composition of item.
- First aid measures.
- Fire fighting measures.
- Accidental release measures.
- Handling and storage.
- Exposure controls and personal protection.
- Physical and chemical properties.
- Stability and reactivity.
- Toxicological information.

- Ecological considerations.
- Disposal considerations.
- Information regarding transportation.
- Regulatory information.
- Other general information.

HSIS can be accessed via:

<http://www.transportsafety.dii.r.mil.uk>.

15. It is MOD Policy to “carry out sustainability appraisals and environmental assessments, as appropriate, for new or revised policies, programmes (including acquisition programmes) office relocations, new projects and training activities”. Therefore, to ensure compliance with MOD policy, the Sustainability and Environmental Appraisal Tool should be used; further information can be found on the DIO website http://defencestates.cis.r.mil.uk/Organisation/Directorates/Strategy_and_Policy/SusApp.asp

16. In DE&S the Acquisition Safety and Environmental Management System (ASEMS) is the mandated method of compliance with MOD policy for implementation of S&E management systems. ASEMS comprises of three parts; Policy, Instructions Guidance and Support and Assurance and Audit.

17. The use of ASEMS is mandated for all DE&S projects. By applying the policy, instructions and guidance, projects will be able to demonstrate the implementation of effective and efficient safety and environmental management process which satisfy legislation and departmental policy and ensure that all appropriate precautions are taken to prevent harm to personnel and protect the environment, consistent with an effective providing the operational.

18. At the core of ASEMS Part 2 are two Systems Manuals, [Project Oriented Safety Management System \(POSMS\)](#) and [Project Oriented Environmental Management System \(POEMS\)](#). Each manual contains a number of procedures designed to assist projects, and contractors, suppliers and advisors, to manage safety risks and environmental impacts and to apply the appropriate mitigation measures. Hazardous substances and restricted materials are to be captured within these management systems.

<http://www.aof.dii.r.mil.uk/aofcontent/tactical/safety/index.htm>

RESPONSIBILITIES OF USERS

19. MOD Project Teams (PTs) and Design Authorities must ensure as far as reasonably practicable that any equipment brought into service meets both UK and EU legislative requirements and MOD policy through life.

20. Incorporation of hazardous substances and restricted materials into new designs and equipment should be avoided where possible. Consultation with Industry to identify safer alternatives should be undertaken at the earliest opportunity and where identified and proven to meet MOD specifications they should be substituted, so far as is reasonably practicable. Particular care should be taken when purchasing Commercial off the Shelf (COTS) equipment, especially where this is sourced from outside the EU as legislative and safety standards may not be as stringent. The PT can contact DESSESEP-RMRad1@mod.uk or further advice on the approval process.

21. If no suitable alternatives are available and the incorporation of hazardous substances and restricted materials is unavoidable, then the risks posed to operators, maintainers and any other persons who may be affected must be considered, assessed and minimised through design and delivery of appropriate process and procedure to prevent harm through life or until technology enables suitable alternatives that can be used where reasonably practicable.

22. Where quality standards, requirements or legacy/‘call-off’ contract specifications require the use of specific hazardous substances and restricted materials, particular care should be taken. When such a material is specified, the PT should provide evidence (justification and Technical dossier) of the continuing

need to use it. If necessary, the standard, requirement or contract specification should be amended, where possible, or the use of the quality standard appropriately qualified.

23. PTs must ensure the use of hazardous substances and restricted materials in their projects is actively managed and investigations into alternatives must not cease once design work is completed and equipment brought into service. Continuous review of extant and upcoming legislation and technology is also necessary to ensure that the MOD does not unwittingly act illegally. Evidence of active investigation must be documented along with current knowledge of relevant new technologies that could eventually meet the need. Developments in the relevant legislation can be followed from many of the commercially available tracking products and the websites of the Health and Safety Executive and Environment Agency, as well as internal legislation websites.

24. Defence Industry Partners (DIPs) have a responsibility to actively monitor legislation and investigate alternatives for the hazardous substances and restricted materials they supply. However, where alternatives are identified, they must satisfy the appropriate MOD safety and performance criteria and must not be incorporated until such time that agreed tests are successfully completed and written approval is obtained from the MOD. Once approved, the alternative solution must be implemented as soon as possible, so far as is reasonably practicable.

25. Where DIPs supply alternatives which do not contain restricted materials, it is the PTs responsibility to ensure that NATO Stock Numbers (NSNs) differentiate between hazardous items non-hazardous alternatives. Project teams are to effectively track the fitting of the replacement parts which is particularly important where Regulators require this information. Legacy stocks containing the material should be removed from store and disposed of in accordance with MOD policy and any relevant legislation or recognised disposal route.

26. Where contractors supply alternatives which do not contain restricted materials, it is the PTs responsibility to ensure that appropriate NATO Stock Numbers (NSNs) are assigned to prevent hazardous items being inadvertently procured or used. Project teams are to effectively track the fitting of the replacement parts which is particularly important where Regulators require this information. Legacy stocks containing the material should be removed from store and disposed of in accordance with MOD policy and any relevant legislation or recognised disposal route.

27. Where legislation allows for derogations or exemptions, PTs and Defence Industry Partners who wish to enact it must ensure that they comply with any conditions detailed therein. Where an exemption requires the approval of the Secretary of State, PTs and Defence Industry Partners must not proceed until such time that they have received appropriate written authority to do so. The decision to enact the exemption and the approvals process undertaken, where applicable, must be well documented and robust enough to withstand scrutiny from an Enforcing Authority (such as the HSE).

28. PTs must be able to demonstrate that hazardous substances and restricted materials are being effectively managed either separately or together as part of a Safety and Environmental Management System. It should also be managed from the earliest opportunity in the CADMID cycle, developing the 'cradle to grave' concept and harnessing current Acquisition principles. For further information see the Acquisition Operating Framework (AOF)

29. PTs have a responsibility to ensure that their through life management disposal plan identifies the correct disposal route and associated financial provision is managed for both the equipment and any hazardous substance. The disposal strategy should be subject to continuous review to ensure currency with legislation and to plan for the potential increasing costs associated with it. Engagement with the DSA is essential and advice and guidance on disposal can be obtained through JSP 886 Vol 9

30. TLBs are responsible for providing assurance of compliance in line with the MOD assurance requirements as laid down in JSP 815.

LEGISLATIVE OVERVIEW

INTERNATIONAL

Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

1. PIC legislation entered into force on 24 February 2004. It was founded on the voluntary PIC procedure that Governments adhered to in the 1980s.
2. The Convention covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons and its objective is to promote shared responsibility and cooperation among Parties in the international trade of certain hazardous chemicals. It aims to protect human health and the environment from potential harm and to contribute to their environmentally sound use. This Convention gives importing countries the tools and information they need to identify potential hazards and exclude chemicals they cannot manage safely. If a country agrees to import chemicals, the Convention promotes their safe use through labelling standards, technical assistance, and other forms of support. It also ensures that exporters comply with the requirements.
3. Annex III of the text of the Convention lists a total of 40 chemicals subject to the Prior Informed Consent (PIC) procedure. Among these chemicals: 25 are pesticides, 11 are industrial chemicals and 4 are severely hazardous pesticide formulations.
4. For more information, including links to Annex III see:

<http://www.pic.int/home.php?type=t&id=5&sid=16>
5. General information and guidance about legislation governing chemicals can be found at the following website:

<http://www.chcs.org.uk/>

UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP) on Heavy Metals

6. The Protocol aims to cut emissions from industrial sources, combustion processes and waste incineration. It sets limits for emissions from stationary sources and suggests use of Best Available Technique (BAT), such as special filters, scrubbers, or mercury-free processes, to achieve these limits. The Protocol introduces measures to lower emissions of mercury from products such as batteries.
7. For full Protocol text, please see:

<http://www.unece.org/env/lrtap/full%20text/1998.Heavy.Metals.e.pdf>

EU LEGISLATION

Directive on the Registration, Evaluation, Authorisation and Restriction of CHemicals (REACH) (1907/2006/EC)

8. REACH is a European Community Regulation on chemicals and their safe use which entered into force on 1 June 2007. Its aim is to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances.
9. REACH requires the compulsory registration of all substances (existing and new) that are sold, imported, manufactured or used in the EU in quantities equal to or exceeding one tonne per year. Data on the hazardous nature of the substances and their uses must be collected with the responsibility now falling on industrial manufacturers and users. The sharing of data is compulsory in order to minimise the number of tests required. Routes of exposure have to be identified, and recommended risk management measures have to be given to downstream users. If the substance is found to be one of high-concern, authorisation requirements and restrictions or bans may be imposed on its use.

10. For further information and guidance on REACH please see Annex C

Regulation concerning Export and Import of Dangerous Chemical (2003/304/EC), with latest amendment Regulation 2006/777/EC

- The aim of this Regulation is to improve the information exchange about the characteristics of chemicals banned for use, or subject to severe restrictions within the Community. Its objectives are;
 - to implement the Rotterdam Convention (often going beyond its provisions), and
 - to impose the same packaging and labelling requirements for exports of all dangerous substances within the EU.
11. Annex I to this legislation consists of lists of chemicals which:
- Are subject to export notification procedure.
 - Qualify for PIC notification.
 - Are subject to the PIC procedure in accordance with the Rotterdam Convention.
12. For more information, including the original regulation, amended text and Annex 1; see:
- <http://edexim.jrc.it>

The Treaty of Lisbon 2009 (Article 346)

(Replaces the Treaty of Amsterdam 1997)

13. Article 346 allows any Member State to take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production of or trade in arms, munitions and war material; such measures shall not adversely affect the conditions of competition in the internal market regarding products which are not intended for specifically military purposes. Based on this and UK MOD policy on compliance with legislation the following should still be complied with:

- No banned substance or material should be used on any new Defence Platform/equipment
 - Where restrictions exist, substances/materials should not be used outside these restricted uses
 - Any substance benefiting from a defence exemption can only be used on Defence platforms/equipment where there is no suitable alternative.
14. **Neither the MOD nor its Defence Industry Partners should use Article 346 to enable the use of banned or restricted materials in MOD equipment/platforms.**

European Regulation on the Classification, Labelling and Packaging of Substances and Mixtures (Preparations) COM (2007)355 (known as the CLP Regs)

15. The CLP Regs came into force in January 2009 and relate to the criteria and labelling rules for classifying substances based on the UN's GHS. It introduces new criteria, hazard symbols (pictograms) and labelling phrases for different substances while taking into account elements which are part of the current EU legislation.

16. The CLP Regs are being introduced via a transitional arrangement – it will apply to the classification of substances from 1 December 2010, and the classification of mixtures from 1 June 2015. They will replace the Dangerous Substances Directive (67/548/EEC), the Dangerous Preparations Directive (1999/45/EC) and The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP 4) in the UK. Additionally, the CLP Regs will take over the notification of classifications, the establishment of a list of harmonised classifications and the creation of a classification and labelling inventory provisions currently part of the REACH Regulation.

17. For more information see:

http://ec.europa.eu/enterprise/reach/docs/ghs/ghs_prop_vol_i_en.pdf

Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (2002/95/EC)

18. This directive is implemented in the UK through the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2008 (the "RoHS Regulations"). which bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants. RoHS is a partner directive to the WEEE Directive (Waste in Electrical and Electronic Equipment) that controls the disposal and recycling of EEE in the UK

19. There are a number of exemptions for the use of the hazardous substances for specific technical uses where alternatives do not presently exist. There are also permissible maximum concentration values which allow for any trace presence. The full list of these exemptions can be found at:

<http://www.rohs.gov.uk/content.aspx?id=15>

20. The ROHS directive was recently recast and will be transposed into UK law by 2 January 2013. The main change for Defence is the addition of a Defence exemption for Military specific equipment. To view the new directive please go to: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:EN:PDF>

21. For further information on the RoHS regulations please go to:

<http://www.bis.gov.uk/nmo/enforcement/rohs-home>

Directive on Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons (PAHs) in Ambient Air (2004/107/EC)

22. Strict limits on the total allowable levels of the so-called heavy metals have now been set for arsenic, cadmium, nickel, and PAHs. Mercury emissions will be monitored and a European Commission on acceptable levels for mercury is to be followed.

23. For consolidated text of the directive please see:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004L0107:EN:NOT>

Waste Electrical and Electronic Equipment (WEEE)

24. *Please note that as of July 2011 WEEE is undergoing review and due to be recast by the European Commission.*

25. For information on WEEE please refer to the Controlled Waste leaflet (Leaflet 3).

Pesticides and Biocides Legislation

26. The European Directives **Plant Protection Products Directive** 1107/2009/EC and the **Biocidal Products Directive** 98/8/EC were introduced to harmonise the registration of plant protection products across the EU, to enable the development of a common market for biocidal products across all Member States in Europe.

27. The Plant Protection Products Directive covers 'active substances...intended to protect plants or plant products against all harmful organisms or prevent the action of such organisms', (broadly speaking this covers agricultural pesticides). It has been translated into UK legislation as the Plant Protection Products Regulations 2005 / Plant Protection Products Regulations (Northern Ireland) 1995 (as amended) (PPPR) and the Plant Protection Products (Scotland) Regulations 2005 (as amended).

28. The Biocidal Products Directive, adopted by the Biocidal Products Regulations 2001/Biocidal Products Regulations (Northern Ireland) 2001 (BPR) relates broadly to non-agricultural biocidal control products.

29. The parent European Union Directives of the PPPR and BPR provided for a review of all pesticide and biocide products on sale at the time of implementation of the legislation ("existing pesticides") so that all substances will eventually be covered by PPPR or BPR.

30. For further information please see either:

<http://www.pesticides.gov.uk/home.asp> or

[DE&S Biocidal Products.](#)

NATIONAL LEGISLATION

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP 4)

CHIP, currently in its fourth iteration, was introduced to protect people and the environment from the effects of chemicals by requiring suppliers to provide certain information about them and to package them safely. The European [Regulation on Classification, Labeling and Packaging of Substances and Mixtures](#) will replace CHIP 4 on completion of the transitional arrangements in 2015.

46 CHIP requires the supplier of a dangerous chemical to:

- identify the hazards (dangers) of the chemical. This is known as 'classification';
- give information about the hazards to their customers. Suppliers usually provide this information on the package itself (e.g. a label);
- package the chemical safely.

Note: CHIP no longer covers provision of Safety data sheets (SDS) which is now enforced under the [REACH Regulation](#)

More detailed information can be found on the HSE website at:

<http://www.hse.gov.uk/chip/>

ANNEX B

EXEMPTIONS AND TECHNICAL DOSSIERS

MOD POLICY

The uses of materials and substance mentioned in this annex are restricted; MOD policy is as follows:

- No banned substance or material should be used on any new Defence Platform/equipment
- Where restrictions exist substances/materials should not be used outside these restrictions. Restricted substances must only be used where no suitable alternative exists. Where no alternatives exist use must be justified by a Technical Dossier signed by the project team leader
- Any substance benefiting from a defence exemption can only be used on Defence platforms/equipment where there is no suitable alternative. Use must be justified through the completion of a technical dossier, or the REACH exemption application process as appropriate. Approval will be through the RMSG and ultimately SofS.
- Where there is legacy usage, alternatives should be researched and used at the earliest available opportunity.

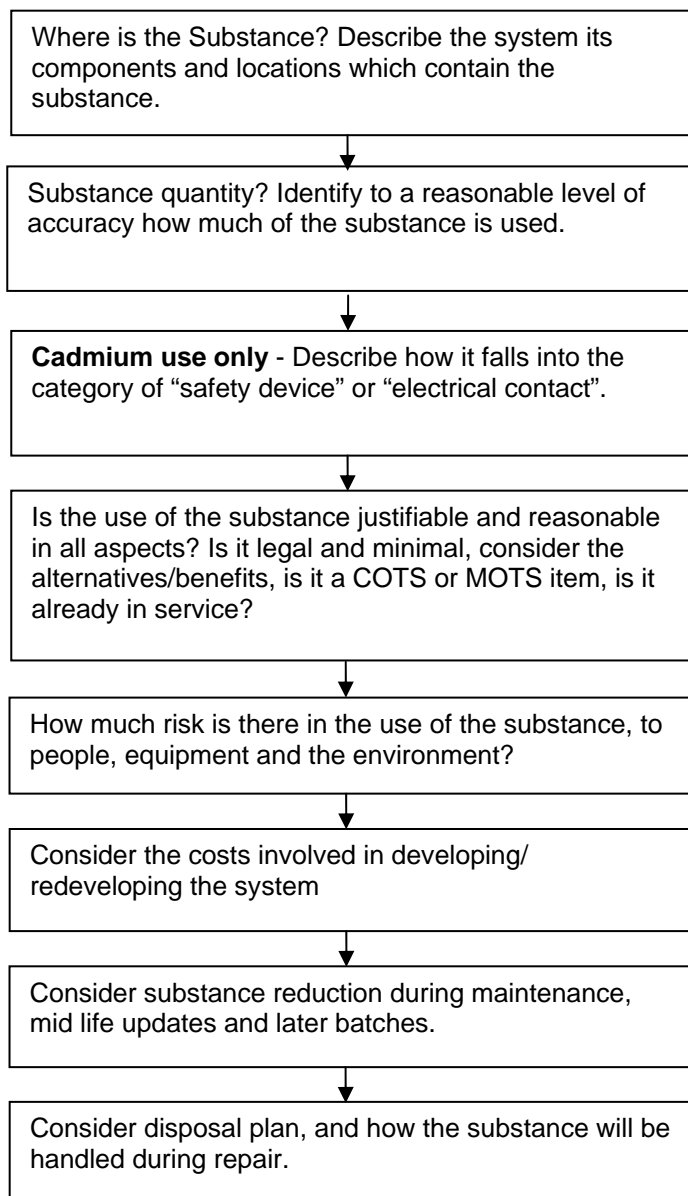
Legislation containing Defence Specific Exemptions

- Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulations 2004 (this also now covers Cadmium and Asbestos under Annex XVII restrictions)
- Waste Electrical and Electronic Equipment (WEEE) Directive 2002
- Batteries Directive
- Restriction of Hazardous Substances (RoHS) Directive 2011
- Biocidal Products Regulations – Incoming 2011/12

ANNEX B – APPENDIX 1

TECHNICAL DOSSIER GUIDANCE AND TEMPLATE

1. When it has been decided that use of a restricted material is unavoidable (i.e. make use of an legislatively allowed use), a technical dossier, recording the arguments for the use of the substance, will need to be written before the component is approved. The document should be sent to the Approving authority within the PT (usually the Project Team Leader) when complete. The following diagram shows the main aspects to be included in the dossier:



2. The following questions should be answered when making a case for the use of Hazardous and Restricted Substance in UK MOD equipment. The list is not definitive and other aspects may also be relevant. All answers may be subject to either MOD or external audit.

<u>Questions</u>	<u>Notes</u>
<u>Where is the Substance?</u>	<u>Note 1</u>
1. Identify the System containing the substance	
2. Identify the Components containing the substance within the System	<u>Note 2</u>
3. Identify quantities of Items	
4. Identify locations of Components within either the System or platforms, as applicable	
<u>Quantity of the substance?</u>	
5. Identify the quantity used.	<u>Note 3</u>
<u>Purposes for which the substance is used</u>	
6. Describe the purpose for which the substance is used on each Component or Component Group	<u>Note 4</u>
<u>Why is the use of the substance considered to be justifiable and reasonable (All aspects)?</u>	<u>Note 5</u>
7. Cadmium use only: Do the Components fall into one of the legally permissible uses of cadmium?	
<ul style="list-style-type: none"> Safety components Electrical contacts 	
8. Are there supply issues?	<u>Note 7</u>
<ul style="list-style-type: none"> Are either the System or its Components "Off the Shelf", either COTS or MOTS? Are either the System or its Components only available from foreign suppliers? 	
9. Are there logistic issues?	<u>Note 8</u>
<ul style="list-style-type: none"> Are either the System or its Components already in service with UK forces? Are either the System or its Components already in service with coalition forces? 	
10. What benefits arise from the use of the substance?	<u>Note 8</u>
<ul style="list-style-type: none"> Physical Operational 	
11. Has the amount of the substance used been minimised?	<u>Note 9</u>
<ul style="list-style-type: none"> Only used where necessary? Not used on similar components in non-critical areas? 	

12. Which alternative materials have been considered?

Note 10

-

Costs

Note 12

13. What are the costs of introducing alternative components?

- Development/redevelopment (non-recurring)
- Qualification/requalification (non-recurring)
- Rebuild/replacement during maintenance (non-recurring)
- Recurring costs

Cadmium Reduction

Note 13

14. Is Reduction or Elimination of the substance planned?

- During routine maintenance
- During Mid Life Update
- From later batches
- How will alternative components be identified?

Disposal

15. What is the disposal plan for the components?

- Removed during repair
- Out of Service

How much risk from the use of the substance?

16. What level of risk is there from the use of the substance?

Note 14

- To Personnel
- To the Environment

17. What controls are in place to limit exposure to the substance?

Note 15

ALARP Argument for the use of the substance in the system and its components

18. Based on the above information is the substance being used for a normally permissible purpose and has the level of risk been reduced to levels which are As Low as Reasonably Practicable (ALARP)?

- Risk vs. Benefit
- Cost vs. Risk

Guidance Notes

- Note 1. In order to support a justifiable case for the continued use of the substance, the MOD first needs to be able to demonstrate that quantities and locations of components containing restricted substances have been identified and recorded. The answers to Questions 1 to 4 should provide this information in an easily understandable form.
- Note 2. It is recommended that at this stage Items should be identified at LRU or assembly level (e.g. VHF radio) rather than as individual components (e.g. electrical connector).
- Note 3. Generic Groups of Items may be used, e.g. "General Assembly Items" (nuts and bolts), "Paints and Coatings", "Weld Consumables".
- Note 4. The MOD needs to be able to demonstrate that where restricted substances remain in use the quantities have been minimised. It is recognised that resources for determining the amounts of restricted substances may be limited and it is accepted that only an estimate may be achievable, at least on an initial survey. The quantity of the substance is therefore to be defined to a reasonable but defined level of accuracy, e.g. within a factor of 5 for small quantities such as plating on electrical connectors. Better accuracy would be expected for larger quantities of restricted substances.
- Note 5. Hazardous substances have historically been used for a wide range of purposes but many of these are now not permissible. The MOD needs to be able to state for what purposes restricted substances are still being used.
- Note 6. The use of the substance in MOD equipment must be justified against Questions 7 - 12
- Note 7. Systems and Components may have been sourced from foreign markets where use of the particular is permitted. The justification for supply from such sources should be summarised.
- Note 8. Systems and Components may already be in service with either UK or Coalition forces. The justification for commonality should be stated. The use of this argument for UK-only items should be challenged, as else there is little incentive to seek non-Cadmium replacements.
- Note 9. The benefits to the MOD from the use of the substance in the System and its Components should be clearly defined, both at the physical (conductivity, corrosion resistance) and operational (reliability, performance, safety) levels.
- Note 10. Evidence should be provided that the substance has only been used where its characteristics are necessary, and that it is not used on components in non-critical areas.
- Note 11. Evidence should be provided that alternative materials and coatings have been considered, and reasons given for their rejection.
- Note 12. Costs
- Note 13. The measures being taken to reduce the amount of the substance in use should be defined
- Note 14. An assessment of the level of risk to Personnel and the Environment should be provided and should cover both normal and extraordinary conditions. For example:
- "Cadmium is used in small quantities plated onto the conducting surfaces of electrical connector bodies. These surfaces are not exposed in use, and are disconnected and connected only for maintenance. Most installations are not exposed to salt environments. Risk from fire is very low because of small quantities and ability of personnel to evacuate the area. Risk to operating personnel is minimal: risk to maintenance personnel is very

low. Risk to the environment is very low as the LRUs with the connectors are to be returned through the logistic chain for disposal"

- "Cadmium is used as plating on mechanical fasteners for undercarriage components, which may be exposed to salt environments. There is a risk of environmental contamination from liquids used for washdown."

Note 15. The controls put in place to limit exposure to the substance should be defined. These may include Standing Orders, maintenance procedures and precautions, and disposal instructions.

Note 16. The ALARP argument should define why the use of the substance is believed to be acceptable and the risk from its use ALARP.

ANNEX C

BATTERIES

INTRODUCTION

1. Batteries are an essential energy source used in a wide variety of products and appliances. They are usually divided into two groups:

- Portable batteries (normally weighing less than 1kg)
- Industrial and automotive batteries (usually weighing more than 1kg).

2. Although each type is very different in its composition, they all pose a serious and significant risk to both environment and human health. As nearly all contain lead, cadmium and mercury, they are considered to be hazardous waste when spent, and should be disposed of appropriately.

3. Legislation is already in place to deal with certain types of batteries. However the Government is currently reviewing new proposals for a directive that should cover all types of batteries.

PORTABLE BATTERIES

4. These are batteries used in household applications or other applications by either consumers or professional users. This sector consists of three main types:

- General purpose non-rechargeable batteries. There are usually composed of zinc carbon or alkaline manganese chemistries. They are commonly used in items such as clocks, portable stereos, torches and cameras.
- Non-rechargeable button cells containing zinc air, silver oxide, manganese oxide or lithium. These items are used in products such as hearing aids, watches and calculators.
- Rechargeable batteries (also referred to as accumulators). These include compounds such as nickel-cadmium, nickel-metal-hydride, and lithium-ion or sealed lead-acid. They are commonly used in mobile phones, power tools, emergency lighting, laptops and household appliances.

AUTOMOTIVE BATTERIES

5. These are mainly lead-acid batteries used for starting, lighting and ignition power for vehicles.

INDUSTRIAL BATTERIES

6. These usually consist of lead-acid or nickel-cadmium compositions. They are used for functions such as standby or traction power in telecommunications and rail applications.

EU LEGISLATION

Batteries and Accumulator Containing Certain Dangerous Substances (Council Directive 91/157/EEC)

7. This states that batteries containing mercury, cadmium or lead should possess identifying labels and be collected separately when spent. Permissible heavy metal limits are set.

See below link for further information:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0157:EN:HTML>

NOTE

This was amended by Commission Directive 93/86/EEC and Commission Directive 98/101/EC.

Commission Directive 93/86/EEC is concerned with the labelling of batteries using appropriate symbols (including chemical ones). For further information please see:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61996J0236:EN:HTML>

Commission Directive 98/101/EC has changed the permissible levels of mercury allowed within batteries: For further information please see:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31998L0101:EN:HTML>

8. For procurement of batteries for MOD contact use see Defence Standard 61-21 series:

<http://www.dstan.dii.r.mil.uk/61-21e.htm>

:

ANNEX D

PERSISTENT ORGANIC POLLUTANTS (POPS)

INTRODUCTION

1. POPs are toxic, resistant to normal breakdown processes, bioaccumulative, and can travel great distances on wind and water currents. They are found mainly in pesticides, industrial chemicals and by-products of industrial processes. The list of POPs is endless, however, at present, some of those under considerable scrutiny (mentioned below) include:

- Aldrin
- Chlordane
- Chlordecone
- Dichlorodiphenyltrichloroethane (DDT)
- Dieldrin
- Dioxins and furans
- Endrin
- Heptachlor
- Hexabromobiphenyl
- Hexachlorobenzene
- Hexachlorocyclohexane (HCH)
- Hexachloroethane
- Methyl Bromide
- Mirex
- Nonyl Phenols (NPs) and Nonyl Phenol Ethoxylates (NPEs)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polybrominated Biphenyls (PBBs)
- Polybrominated Diphenyl Ethers (PBDEs)
- Polychlorinated Biphenyls (PCBs)
- Toxaphene
- Trichlorobenzene

MOD POLICY

2. It is MOD policy to minimise the use of POPs where technically feasible and use substances which are less harmful.

Chemicals

Chemical	Description	Uses	Hazardous Properties and Handling
Aldrin	<ul style="list-style-type: none"> • Colourless crystal • Not combustible, however liquids containing it may be flammable • Decomposes on heating <p>Corrosive due to the gradual evolution of hydrogen chloride</p>	<ul style="list-style-type: none"> • Pesticide 	<ul style="list-style-type: none"> • Decomposes on heating producing toxic corrosive fumes • Bio accumulates and enters food chains • Becomes more concentrated and causes damage to the environment and human health • For maintenance sweep spilled substances into containers and dispose of carefully • Do not allow into watercourses or sewers
Chlordane	<ul style="list-style-type: none"> • Odourless, thick, clear/amber liquid • Chlorine like odour • Insoluble in water • Aliphatic in aromatic hydrocarbon solvents • Decomposes at high temperatures <p>Corrosive and non combustible but may ignite in a mixture</p>	<ul style="list-style-type: none"> • Pesticide 	<ul style="list-style-type: none"> • Gives off toxic gases on decomposition • Carcinogen and mutagen in animals and humans • Damage to animals organs (no links to human cancer as of yet) • Prolonged contact is linked with organ failure and damage as well as damage to the central nervous system <p>Water spray and alcohol resistant foams are best to control fires containing the substance</p>
Chlordecone	<ul style="list-style-type: none"> • Tan to white coloured solid • In the anhydrous form is soluble in organic solvents • Readily soluble in acetone • Stable and does not degrade 	<ul style="list-style-type: none"> • Insecticide 	<ul style="list-style-type: none"> • Affects humans and animals • Causes neurological and liver damage • Causes reproductive failure and fetotoxicity • Stable and persistent, and has a bio accumulative <p>Should be managed in the same way as Chlordane</p>

DDT	<ul style="list-style-type: none"> • Colourless to white crystalline powder • Forms hydrogen chloride on combustion • Soluble in organic solvents • Reacts with organic and inorganic bases including iron and aluminium • Ignites only when mixed with flammable substances 	<ul style="list-style-type: none"> • Insecticide • Malarial control 	<ul style="list-style-type: none"> • On combustion lets off toxic and corrosive fumes • Toxic to aquatic organisms • Hazardous to the environment • Toxic to humans causing liver damage and damage to the nervous and reproductive systems • Evidence suggests that it is not as damaging as certain other insecticides • Should be managed in the same way as chlordane
Dieldrin	<ul style="list-style-type: none"> • Behaves similarly to aldrin, sharing many of its characteristics • Aldrin breaks down in humans and animals to become dieldrin 	<ul style="list-style-type: none"> • Insecticide • Timber preservation 	<ul style="list-style-type: none"> • Similar to aldrin
Dioxins and Furans	<ul style="list-style-type: none"> • Chloro organic compounds • No specific use: by products of industrial processes • Can travel long distances • Increase in concentration in fatty tissue as they move high up the food chain 	<ul style="list-style-type: none"> • Industrial by-product 	<ul style="list-style-type: none"> • Toxicity varies greatly
Endrin	<ul style="list-style-type: none"> • Closely related to aldrin and dieldrin 	<ul style="list-style-type: none"> • Insecticide • Rodenticide 	<ul style="list-style-type: none"> • More toxic than the other two, has a much larger impact on the aquatic environment
Heptachlor	<ul style="list-style-type: none"> • White crystalline solid • Soluble in acetone and benzene • Partial solubility in various alcohols 	<ul style="list-style-type: none"> • Insecticide 	<ul style="list-style-type: none"> • Toxic to human and animals • Little known about health hazards but has been linked with liver damage

Hexabromo-biphenyl	<ul style="list-style-type: none"> Family to polybrominated biphenyls Persistent 	<ul style="list-style-type: none"> Flame retardant 	<ul style="list-style-type: none"> Enters and remains in food chains Little toxicological data available Suggests endocrine disrupting activity and links to carcinogenicity
Hexachloro-benzene	<ul style="list-style-type: none"> White crystalline solid Chlorinated hydrocarbon industrial chemical (waste product) Previously used as a fungicide Insoluble in water, soluble in benzene, carbon disulphide, chloroform and ether Chemically stable and resistant to biodegradation 	<ul style="list-style-type: none"> Fungicide Contaminant in pesticides 	<ul style="list-style-type: none"> Very persistent environmental chemical Carcinogenic to animals and anticipated for humans also, however there is inadequate evidence.
HCH	<ul style="list-style-type: none"> Organic compounds White solid with musty odour, evaporates easily <p>Most common form is gamma-HCH known as lindane</p>	<ul style="list-style-type: none"> Timber insecticide Domestic and agricultural insecticide 	<ul style="list-style-type: none"> Release to water damages insects and fish Persists and accumulates in environment and can travel long distances <p>Adverse health effects include blood disorders, dizziness, headaches, and damage to the liver and kidneys</p>
Hexachloro-ethane	<ul style="list-style-type: none"> Colourless solid Gradually evaporates in air <p>By product in production of some other chemicals</p>	<ul style="list-style-type: none"> Fungicides, insecticides, insecticides Lubricants and plastics Military smoke producing devices 	<ul style="list-style-type: none"> Mild irritant with organ damage at excessive levels only Evidence of tumour growth in animals <p>Insufficient evidence to suggest carcinogenic effects on humans</p>
Methyl Bromide	Please refer to Annex C		
Mirex	Similar properties to chlordane	<ul style="list-style-type: none"> Insecticide 	See above

NPs and NPEs	<ul style="list-style-type: none"> • NPEs are liquids or waxy solids • Colourless to light amber • Varying degree of water solubility • Primary degradation product is NPs <p>NPs belong to a class of chemicals called alkylphenols</p>	<ul style="list-style-type: none"> • Detergent and cleaning agent • Degreasing products • Stabilisers • Pharmaceuticals and pesticides • Plastics, synthetic rubber • Textiles paints and varnishes • Oil additives 	<ul style="list-style-type: none"> • Toxic to wildlife especially aquatic • Controls fertility and sexual development • Links with abnormal sexual development in fish and other aquatic animals • No human effects identified yet <p>Please visit the link for Defra's Risk Reduction Strategy concerning Nonylphenols</p>
PAHs	<ul style="list-style-type: none"> • Hydrocarbon compounds with multiple benzene rings • Best known PAH is benzo[a]pyrene, B[a]P <p>Natural or man made</p>	<ul style="list-style-type: none"> • Typical components of asphalt, fuels, oils and greases 	<ul style="list-style-type: none"> • Causes cancer, birth defects and mutations in wildlife • Cancer and genetic damage to humans <p>Carried over long distances and impact much further away than expected</p>
PBBs	<ul style="list-style-type: none"> • Consists of 209 possible isomers <p>Chemical and physical properties depend on the compound</p>	<ul style="list-style-type: none"> • Not many uses • Flame retardant 	<ul style="list-style-type: none"> • Persistent bio accumulators <p>Evidence to suggest carcinogenetic and toxicity particularly in aquatic animals</p>
PBDEs	<ul style="list-style-type: none"> • Have replaced PCBs and PBBs as fire retardants • Physical and chemical properties depend on the isomer present • Three most common are penta, octo and decaBDEs <p>DecBDEs are the most commonly used worldwide</p>	<ul style="list-style-type: none"> • Flame retardant used in electronics, furniture, textiles, cables. 	<ul style="list-style-type: none"> • Environmental presence is increasing exponentially (over the last 2-5 years) • PentaDBEs are the most bio accumulative and can be absorbed and built up in organisms • PBDEs are linked with damaged health including neurological and behavioural in both humans and animals • Significant risk to fetuses • Please use links to view Defra's Risk Reduction Strategy for PentaBDE² and OctaBDE³ <p>See below for legislation information</p>

² http://www.defra.gov.uk/environment/chemicals/pdf/penta_bdpe_rrs.pdf

³ http://www.defra.gov.uk/environment/chemicals/pdf/octa_bdpe_rrs.pdf

<p>PCBs</p>	<ul style="list-style-type: none"> • Man made organochlorine chemicals • Chemically stable, fire resistant, do not generate vapours easily • Insoluble in water, soluble in fatty acids and oils • 209 possible isomers <p>Oily liquids or solids, colourless to light yellow, sometimes exists as vapour</p>	<ul style="list-style-type: none"> • Can be found in older products • Used in transformers, capacitors and electrics as coolants and lubricants 	<ul style="list-style-type: none"> • Persistent and bio accumulative • Concentration increases up the food chain (especially in aquatic creatures) • Heavily bind with soils and organic particles <p>Manufacture of PCB containing equipment is forbidden but it is a by product of other industrial processes</p>
<p>Toxaphene</p>	<ul style="list-style-type: none"> • Also known as camphechlor • Yellow or amber waxy solid • Soluble in acetone, benzene and organic solvents • Broken down by sunlight, high temperatures and biodegradation <p>Penetrates soil and binds, remaining stagnant</p>	<ul style="list-style-type: none"> • Insecticide 	<ul style="list-style-type: none"> • Toxicity varies • Widespread contaminant of aquatic ecosystems <p>Poisonous to humans when ingested</p>

ANNEX E

VOLATILE ORGANIC COMPOUNDS (VOCs)

INTRODUCTION

1. VOC sources can be found both indoors and outdoors. They are known to have an adverse affect on both health and the environment. Some examples of products that emit VOCs include household products (including paints, paint strippers, and other solvents), wood preservatives, aerosols, cleansers, disinfectants, air fresheners, stored fuels, vehicle emissions and dry-cleaned clothing.

2. Some major emissions include benzene; a range of phenols, ethers, alcohols and their derivatives; PAHs and 1, 3-butadiene. The list is endless but some major contributors can be found at the following website:

<http://www.epa.gov/iaq/voc.html>

3. VOCs are a major contributor to low level ozone, which unlike stratospheric ozone, is a known common air pollutant that has been proved to be a public health hazard. Ozone is created in the atmosphere via a photochemical process when VOCs react with oxides of nitrogen in the presence of sunlight. Low level ozone is a highly reactive gas that restricts the functionality of lungs, making it harder for humans to breathe.

4. It is impossible to avoid the complete use of VOC emitting objects. However, it is possible to reduce their emissions. Alternatives for some of the high-emitting products are available with further research currently being done to bring emissions in line with legislation. Many of the alternatives contain low-emission VOCs.

5. Information about their effects and further information on sources can be found at the following website:

<http://www.epa.gov/air/toxicair/newtoxics.html>

6. Please refer to Leaflet 2 on Pollution Prevention in JSP 418 for more information, including relevant legislation.

MOD POLICY

7. Where possible, minimise use of VOCs and use less harmful substances, e.g. water-based paints instead of paints containing high-levels of VOCs for decorating.

ANNEX F

PERFLUOROOCTANE SULPHONATE (PFOS) AND PERFLUOROOCTANOIC ACID (PFOA) - TYPES OF PERFLUORINATED CHEMICALS (PFCs)

INTRODUCTION

1. PFCs are used in a variety of chemical applications. PFOS is specifically used mainly in:

- Fire fighting foams
- Hydraulic fluid additives
- Surface treatments
- Metal plating
- Paper/textile protection
- Photographic industry and
- In semiconductors

2. PFOS and PFOA are two of the most persistent chemicals present within our atmosphere. Currently there is relatively little knowledge and understanding of the consequences of this. However, their bio accumulative and toxic nature makes them a cause for concern.

3. The use of PFOS by 3M, the world's largest producer of PFOS, was phased out voluntarily due to concerns over its carcinogenic and toxic properties. After this, several Organisations for Economic Co-operation and Development (OECD) countries agreed to work together. The purpose was to gather information on the effects of PFOS to human health and the environment. Simultaneously, Defra has commissioned a consultation on risk reduction strategy for PFOS related substances.

4. Detailed information regarding PFOS/PFOA can respectively be found at:

<http://www.fluorideaction.org/pesticides/pfos.final.report.nov.2002.pdf>

<http://www.fluorideaction.org/pesticides/pfos.epa.dev.tox.apr.2003.pdf>

MOD POLICY

5. It is MOD policy to avoid the use of PFCs where technically feasible. Where they are currently used, research alternatives and make use of them at the earliest available opportunity.

ANNEX G

ASSURANCE QUESTIONS

The purpose of these question sets is not for delivery bodies to provide answers to each question. However, they should be useful for the delivery body in stating their assurance level. If full assurance cannot be given, a short explanation of the problem area/s and the actions which are being taken to improve the assurance level is required.

Questions

1. How are legislative requirements identified, met and updated?
2. How many project teams during the last annual reporting audit period received either no assurance or limited assurance for hazardous and restricted material management? How is this being remediated?
3. How is the TLB/TFA monitoring and managing the usage of HSRMs?
4. How are the responsible authorities ensuring:
 - minimisation the use of HSRM;
 - that environmentally acceptable alternatives to HSRM are used where technically and economically feasible;
 - that new designs, re-designs do not incorporate or use HSRM as far as reasonable practical?
5. How will the disposal of any HSRM be managed?
 - Is the disposal included in through life costing?
 - What evidence is available to support the management of HSRM?
6. On the basis of your responses to the questions, and the guidance that is provided in JSP 418, what level of assurance do you believe applies for your compliance with this policy area?

DIA Assurance Classifications

- **Full assurance** - The frameworks of governance, risk management and control should ensure effective, efficient and economic achievement of the business objective. Risks that threaten the achievement of that objective are adequately managed.
- **Substantial Assurance** - Weaknesses identified in governance, risk management or control frameworks. Achievement of the business objective is threatened by inadequate management of medium or low category risks.
- **Limited Assurance** - Weaknesses identified in governance, risk management or control frameworks. Achievement of the business objective is threatened by inadequate management of high category risks.
- **No Assurance** - The frameworks of governance, risk management and control do not support effective, efficient and economic achievement of the business objective