



## **LEAFLET 56**

# **DANGEROUS SUBSTANCES AND EXPLOSIVE ATMOSPHERES**

**AMENDMENT RECORD**

Amendment No.	Date	Text Affected	Authority
1	Sept 2011	New roles & responsibilities para 3.2 inserted – Infrastructure Provider	DBR-SSDC-Safety3
1	Sept 2011	Para 3.4 integrated into 3.3 – initial assessment using parts 1&2 of MOD Form 5014 added	DBR-SSDC-Safety3
1	Sept 2011	Para 6.1 – Bullet points removed and guidance box added.	DBR-SSDC-Safety3
1	Sept 2011	Annex A – MOD Form 5014 tick list replaced with free text & title changed	DBR-SSDC-Safety3
1	Sept 2011	Annex C Added – Supporting Records/Documents	DBR-SSDC-Safety3

**REVISION NOTE**

This leaflet follows a similar format to the Health and Safety Executive (HSE) Approved Code of Practice (ACoP) with guidance contained in boxes separating it from policy.

This leaflet has been extensively rewritten to provide policy and guidance for the assessment and management of dangerous substances and explosive atmospheres.

**HISTORICAL RECORD**

Original introduced April 2003

Revised: May 2011 (total revision)

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 July 2014

## LEAFLET 56

### DANGEROUS SUBSTANCES AND EXPLOSIVE ATMOSPHERES

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#### FOREWORD

This JSP 375 leaflet is published under the authority of the Director of the Defence Safety & Environment Authority (DSEA) following consultation with departmental stakeholders and is to be applied across all areas of MOD and the Armed Forces to ensure compliance with legislation and/or MOD policy.

#### 1. SCOPE

1.1 This Leaflet supplements the guidance given in JSP 375 Vol. 2 Leaflet 39 (Risk Assessment) and provides guidance for all MOD staff, both Service and civilian, who are involved in the specification and management of dangerous substances and explosive atmospheres, within the procurement, supply and disposal process; or use or manage such substances and atmospheres on MOD establishments, vessels, aircraft and land vehicles. It does not provide in depth detail and control procedures of specific hazards, therefore JSP 375 Vol. 3 Chapters 2, 3, 5 & 8 and other relevant JSPs should be referred to. The manufacture, handling, use, storage and transport of explosives are also excluded from the scope of this leaflet.

1.2 When used within this Leaflet, the term "Line Manager" refers to the person (Service or civilian) with responsibility for the work activity; for military activities this will usually lie within the chain of command.

## 2. INTRODUCTION

2.1 The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) requires the MOD to assess the risks of harmful physical effects involving dangerous substances in the workplace caused directly or indirectly by fires or explosions. These risks must be eliminated or reduced so far as is reasonably practicable. The aim is to prevent harm to staff, visitors and members of the public, who may be put at risk and minimise collateral damage.

2.2 The Regulations complement the requirement to manage risks under the Management of Health and Safety at Work Regulations and transposes two European Directives (the Chemical Agents Directive (98/24/EC) and the Explosive Atmospheres Directive (99/92/EC)) into UK legislation. It also replaces a number of older regulations dealing with flammable substances safety.

## 3. ROLE & RESPONSIBILITIES

### 3.1 Procurement or Acquisition

3.1.1 As 'suppliers' or 'importers', Design Authorities, Project Teams (Equipment Sponsors) Maintenance Management Organisations (MMO) and Defence Acquisition Teams have the responsibility to ensure that equipment and infrastructure procured or maintained is safe to use.

#### GUIDANCE

Hazard analysis carried out at project level has the benefit of being able to consider prevention or control measures at an early stage allowing design alterations and the identification and calculation of DSEAR zones. This may be carried out by or in conjunction with the manufacturer/supplier who should have the competences required (having the added benefit of improving the user interface and user acceptance of equipment/facilities).

3.1.2 Organisations/persons responsible for the procurement of plant, equipment and/or facilities which uses, stores, transports or distributes hazardous substances as a function of its process or in maintenance thereof shall ensure that hazard analysis, Hazardous Area classification Drawings, ratings of equipment etc, Material Safety Data Sheets (MSDS) and information on required/recommended control measures are provided to the customer (e.g. unit/establishment) for inclusion in DSEAR risk assessments.

#### GUIDANCE

Suppliers to MOD may have carried out DSEAR risk assessments as part of maintenance studies and for their own use during commissioning, trials, maintenance, repair and overhaul. These assessments and any other relevant safety documentation should be provided to MOD to assist subsequent DSEAR risk assessments.

## 3.2 Infrastructure Provider

3.2.1 For activities conducted in the provision and maintenance of the infrastructure of the MOD estate/establishment, the responsibility for maintaining the infrastructure and associated site plans, building/facility drawings, fixed signage, etc. rests with the infrastructure providers Duty Holder (e.g. DIO – Chief Operating Officer). Assurance that the correct category of fixed assets/electrical systems etc. within a DSEAR hazardous area zone are compliant and appropriate for the hazardous area classification shall be provided by the infrastructure provider to the Commanding Officer / Head of Establishment (CO/HoE).

## 3.3 Commanding Officer/Head of Establishment (CO/HoE)

3.3.1 As the Duty Holder for activities conducted in the operation of the unit/establishment, the CO/HoE owns the risk and the responsibility to ensure that all areas where explosive atmospheres are liable to be present are identified, assessed and controlled in accordance with DSEAR; this includes conducting DSEAR assessments, establishing hazardous area zones, etc. and providing information to the infrastructure provider to allow drawings to be updated, signs to be moved/erected etc.

### GUIDANCE

The CO/HoE may appoint a Hazardous Area Manager to co-ordinate this function and monitor compliance.

3.3.2 Where the MOD shares the workplace with a lodger organisation, contractor or private individual/organisation, arrangements shall be put in place to co-ordinate the implementation of the measures required by these Regulations and JSP 375 Volume 2 leaflet 32 (Health and Safety on Multi-Occupier sites) and leaflet 34 (4C System: the management of visiting workers and contractors).

3.3.3 Known/suspected DSEAR activities/processes shall be assessed using parts 1 & 2 of MOD Form 5014 (the line manager of the activity/process with input from others, e.g. Establishment Safety Adviser, process operators, should have the competence required) to identify whether the process / activity produces an explosive atmosphere and identify if a full DSEAR assessment is required.

3.3.4 Where the need for a full DSEAR assessment has been identified, competent persons shall be formally appointed by the CO/HoE to undertake comprehensive DSEAR assessments including risk assessments of the likelihood, extent, force and collateral effect for any potential explosion or fire and determination of the correct classification and boundaries of DSEAR hazardous area Zones.

**GUIDANCE**

Those deemed competent to undertake a full DSEAR assessment will need to be able to demonstrate adequate:

- knowledge of the work activities, maintenance operations, dangerous substances stored, used and transported within and adjacent to the areas identified as DSEAR zones.
- knowledge and experience of explosive atmospheres and associated regulations,
- knowledge and experience of the flammable materials/substances/processes involved.
- professional competence (preferably gained through an accredited scheme e.g. International Electrotechnical Commission Explosive Atmospheres (IECEx) Personal Competencies Scheme).

3.3.5 Before any facility/workplace that has been classified as hazardous area under DSEAR is used for the first time, the CO/HoE shall ensure that verification of its overall explosion safety and fire safety has been carried out by competent person(s).

3.3.6 DSEAR risk assessments and the control measures relating to process fire precautions shall be brought to the attention of the fire safety risk assessor(s) for evaluation of any impact on the wider general fire precautions for the unit/establishment and to ensure compliance with fire safety legislation.

### **3.4 Line manager (LM)**

3.4.1 Any hazardous activity/process/area under the line manager's control shall be assessed and maintained to ensure compliance with DSEAR.

3.4.2 Line managers shall ensure that safe systems of work are in place to minimise the likelihood of an accidental release of a substance and the presence of potential ignition sources within zoned areas; and that all staff and visitors are provided with relevant information, instructions and training which shall include:

- the dangerous substances present in the workplace and the risks they present including access to any relevant safety data sheets and information on any other legislation that applies to the dangerous substance;
- the findings of the risk assessment and the control measures put in place as a result (including their purpose and how to follow and use them);
- emergency procedures; and
- the control of contraband items (smoking materials, mobile phones, radios, MP3 players etc.).

3.4.3 Appropriate work clothing minimising the risk of electrostatic discharges that could ignite an explosive atmosphere or fire shall be provided and the LM shall put in place checks to ensure it is maintained and used when working in hazard zones. Routine checks on the effective control of contraband and other control measures identified by the DSEAR risk assessment shall be conducted by the LM.

3.4.4 Line managers responsible for maintenance operations shall ensure that all personnel undertaking such work are aware of the additional hazards and control measures for working in a zoned area and are competent; this may be achieved through such schemes as the IECEx Certified Persons Scheme.

### **3.5 Staff**

3.5.1 Staff shall undertake such training as is required to enable them to understand and shall comply with all instructions provided for the safe management, maintenance, operation use, handling or storage of plant, equipment or substances as defined in the DSEAR risk assessment and safe systems of work or as otherwise communicated by line management including the correct use of control measures.

## **4. DANGEROUS SUBSTANCES**

4.1 Dangerous in the context of DSEAR are substances or mixtures of substances (called “preparations” in DSEAR) that could create risks to people’s safety from fires and explosions or similar events, such as ‘thermal runaway’ from chemical reactions. Liquids, gases, vapours and dusts that may be found in a workplace can all be dangerous substances; these include:

- substances or mixtures of substances classified as explosive, oxidising, extremely flammable, highly flammable, or flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations (CHIP) and Classification, Labelling and Packaging of Substances and Mixtures Regulation (CLP);
- dust, gases or vapours that when airborne may form a potentially explosive cloud (solvents, paints, varnishes, flammable gases - such as liquid petroleum gas (LPG), dusts from machining and sanding operations and dusts from foodstuffs etc.);
- any other substances, or mixtures of substances, which because of their physical properties and the way in which they are present in the workplace create a risk to safety from fires and explosions, but which may not be covered by CHIP or CLP; and
- materials which would not normally be regarded as hazardous but may become hazardous when pumped or stored/used under pressure.

## **5. HAZARD ZONES**

5.1 The identification of facilities (pipes, tanks etc.), activities, areas (refuelling points, pits, trenches etc.) and buildings within the workplace where explosive atmospheres may occur must be recorded in the site risk assessment (JSP 375 Volume 2 leaflet 23) and the 4C Area Hazard Register (JSP 375, Volume 2, Leaflet 34), and classified as hazardous (a place in which an explosive atmosphere may occur in such quantities as to require special precautions to protect the health and safety of the workers) or non-hazardous (a place in which an explosive

atmosphere is not expected to occur in such quantities as to require special precautions).

5.2 Hazardous places are classified in terms of zones on the basis of the frequency and duration of the occurrence of an explosive atmosphere and must be marked with signs (fig. 1) at entry points along with any other hazard signs/information identified in the risk assessment. The classification of Zones is as follows:

- For gas, vapour or mist:
  - **Zone 0** - A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.
  - **Zone 1** - A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.
  - **Zone 2** - A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.
- For combustible dust:
  - **Zone 20** - A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.
  - **Zone 21** - A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally.
  - **Zone 22** - A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Notes:

- i. Layers, deposits and heaps of combustible dust must be considered as any other source which can form an explosive atmosphere.
- ii. "Normal operation" means the situation when installations are used within their design parameters.



Figure 1.



5.3 The identification and classification of zones must be completed by a competent person(s) who has sufficient training, knowledge and experience of relevant explosive atmospheres as well as the environment and the processes/activities to be assessed. Calculating the parameters of zones can be very complicated as there are many factors to be considered; these will include:

- the release rate, size and density of the particles that form the vapour, mist, fumes or cloud;
- constraints of building design;
- the amount of ventilation;
- if the topography of the area is such that any release would not be constrained by natural or artificial barriers;
- if any pits, trenches or ditches are present in the locality that may trap and contain any release;
- where tanks are being vented and vapours are being released;
- the linking of adjacent hazardous Zones for uniformity and clear demarcation purposes between hazardous and safe areas;
- weather conditions including breezes, which may extend the hazard area, or hot weather that may increase the production of vapour; and
- Ambient temperature/humidity in buildings/facilities

5.4 The zones surrounding some vehicles and installations may have already been calculated for temperate climates (up to 30°C) to allow a direct example approach to be applied. However, the process/activity being assessed must not differ from the examples in layout, equipment design, climate, or degree of ventilation. If there are any changes to these parameters, a competent person shall need to re-calculate using appropriate industry based codes of practice as guidance. Once identified, all hazard zones shall be clearly marked on site plans denoting the classification of each zone.

#### GUIDANCE

Guidance on DSEAR Risk Assessments for Bulk Fuel Installations can be found in JSP 317 Part 2 Chapter 1 (Storage and Handling of Fuels and Lubricants).

5.5 Pipes, containers, valves, joints, take offs etc that transport or store substances designated as dangerous or flammable must be zoned and identifiable so as to alert employees and others to the presence of dangerous substances. These shall also be included in hazardous area drawings.

5.6 Where a temporary process or activity is to be implemented and it is identified that an explosive atmosphere will or might occur, the process/activity must be risk assessed by a competent person, an appropriate temporary zone established, suitable controls implemented and the CO/HoE notified.

## 6. ASSESSING THE RISK

6.1 If an explosive atmosphere has been identified from the initial risk assessment (parts 1 & 2 of MOD Form 5014) then a formal risk assessment shall

be carried out assessing the fire and explosion risks that may result from the ignition of dangerous substances. Risk assessments must cover normal operation, maintenance and other work on or with plant, equipment and facilities and will include associated refuelling and decanting operations. Risk assessments must include the identification, consideration and careful examination of:

- the hazardous properties of the substance;
- information on safety provided by the supplier, including information contained in any relevant safety data sheet;
- the circumstances of the work including –
  - the work processes and substances used and their possible interactions;
  - the amount of the substance involved;
  - where the work will involve more than one dangerous substance, the risk presented by such substances in combination; and
  - the arrangements for the safe handling, storage, transport and disposal of dangerous substances and of waste containing dangerous substances.
- activities, such as maintenance, where there is the potential for a high level of risk;
- the effect of measures which have been or will be taken;
- the likelihood that an explosive atmosphere will occur and its persistence;
- the likelihood that ignition sources, including electrostatic discharges, will be present and become active and effective;
- the scale of the anticipated effects of a fire or explosion;
- any places which are or can be connected via openings to places in which explosive atmospheres may occur; and
- any such additional safety information

GUIDANCE

Examples of existing processes / records that may be required to assist / support a DSEAR risk assessment is at Annex C.

NOTE: The list in Annex C is not exhaustive.

6.2 The collateral effect of explosions from vapour/dust clouds are determined not only by the amount of fuel, but more importantly by the combustion mode of the cloud. Significant overpressures can be generated by both detonations and deflagrations. Most vapour/dust cloud explosions are deflagrations, not detonations. Flame speed of a deflagration is subsonic, with flame speed increasing in restricted areas and decreasing in open areas (typically less than 100m/s and an overpressure below 0.5 bar). Significantly, a detonation is supersonic, and will proceed through almost all of the available flammable vapour/dust at the detonation reaction rate creating a far more severe peak over-pressures (normally over 200m/s and several bar) and much higher amounts of blast energy.

## 7. MITIGATION AND CONTROL MEASURES

7.1 The control measures identified in the risk assessment must be put in place to eliminate risks from dangerous substances, or reduce the probability of the risk occurring as far as is reasonably practicable and mitigate the effects of any fire or explosion. The best solution is to eliminate the risk completely by replacing the dangerous substance with another substance, or employing a different work process. Where the risk cannot be eliminated, DSEAR requires control measures to be applied in the following priority order:

- reduce the quantity of dangerous substances to a minimum;
- avoid or minimise releases of dangerous substances;
- control releases of dangerous substances at source;
- prevent the formation of a dangerous atmosphere;
- collect, contain and remove any releases to a safe place (for example, through ventilation);
- avoiding ignition sources in zoned areas, in particular those from electrical and mechanical equipment (including lightning protection);
- avoid adverse conditions (for example, exceeding the limits of temperature or control settings) that could lead to danger; and
- keep incompatible substances apart.

7.2 In addition to the above controls, mitigation measures shall be put in place to minimise casualties and collateral damage as well as of the risk being realised. These measures should be consistent with the risk assessment and appropriate to the nature of the activity or operation and include:

- reducing the number of employees exposed to the risk;
- providing plant that is explosion resistant;
- providing explosion suppression or explosion relief equipment;
- taking measures to control or minimise the spread of fires or explosions; and
- providing suitable personal protective equipment (anti-static).

7.3 The site emergency procedures (JSP 375 Volume 2 leaflet 1) must be developed to cover any potential emergencies identified in the risk assessment process covering regular safety drills, first aid and suitable communication and warning systems in proportion to the risks. If an emergency occurs, workers tasked with carrying out repairs or other necessary work must be provided with the appropriate equipment to allow them to carry out this work safely. The information in the emergency plans and procedures, site plans and DSEAR risk assessments etc. must be made available to the Emergency Services in advance and be available on entry to the site to allow them to develop their own plans as necessary.

7.4 All plant, equipment, fixtures, fittings and tools etc. (including lighting, computers etc. in office spaces) used within a hazard zone shall be rated as suitable for use in that zone classification or to a higher standard. The hazardous area zone classification and corresponding equipment categories are:

- Zone 0 or Zone 20 - Category 1 equipment
- Zone 1 or Zone 21 - Category 2 equipment
- Zone 2 or Zone 22 - Category 3 equipment

7.5 The primary concern when maintaining plant and equipment shall be that it remains in a "fit for purpose" condition for the life of the installation and the replacement of any components is carried out by competent persons only using parts designed to be safe for use in an atmosphere compliant with or to a higher standard to that of the zone classification in which it is installed.

## 8. RELATED DOCUMENTS

### MOD Policy:

- Secretary Of State for Defence Statement Policy for Health, Safety and Environment.
- JSP 317 Storage and Handling of Fuels and Lubricants.
- JSP 319 Storage, Handling and Use of Gases.
- JSP 375 Leaflet 5 - Management of Hazardous Substances.
- JSP 375 Leaflet 13 - Management of Personal Protective Equipment.
- JSP 375 Leaflet 23 - Site Risk Assessment.
- JSP 375 Leaflet 39 - Health & Safety Risk Assessment.
- JSP 375 Vol. 3 Chapter 2 - Common Requirements.
- JSP 375 Vol. 3 Chapter 3 - Electricity.
- JSP 375 Vol. 3 Chapter 5 - Petroleum.
- JSP 375 Vol. 3 Chapter 8 - Tuition, Training and Site Familiarity.
- JSP 482 - MOD Explosives Regulations.
- ESTC Standard N<sup>o</sup> 6.

### Legislation:

- Health and Safety at Work Act 1974.
- OPSI - Dangerous Substances And Explosive Atmospheres Regulations
- Control of Substances Hazardous to Health Regulation.
- Chemicals (Hazard Information and Packaging for Supply) Regulations (CHIP).
- European Regulation - Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation).
- Management of Health and Safety at Work Regulations.
- The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations.
- The Regulatory Reform (Fire Safety) Order.

**Guidance:**

- HSE - Approved Code of Practice L133 – Unloading petrol from road tankers.
- HSE - Approved Code of Practice L134 – Design of plant, equipment and workplaces.
- HSE - Approved Code of Practice L135 – Storage of dangerous substances.
- HSE - Approved Code of Practice L136 – Control and mitigation measures
- HSE - Approved Code of Practice L137 – Safe maintenance, repair and cleaning procedures.
- HSE - Approved Code of Practice L138 - Dangerous substances and explosive atmospheres.
- BS 60079 series - Electrical apparatus for explosive atmospheres.
- BS EN 61241/3 - Electrical apparatus for use in the presence of combustible dust.
- BSEN 1127-1:2007 Explosive Atmospheres – explosion prevention and protection.
- Crown Fire Standard 10.
- Energy Institute – Model Code of Safe Practice Part 15: Area Classification Code for Installations Handling Flammable Fluids.

**DSEAR RISK ASSESSMENT SUMMARY** MOD Form 5014  
Rev 09/2011

**Part 1 (to be completed by the process/activity owner)**

Work Activity or Process:	Assessment Serial No.:
	Initial assessment date:
Location	Assessor:
Zone Classification	Review Date:
Site Plan Ref.	Assessors Signature:
No. of Personnel at Risk	LM's Signature

**Part 2 (to be completed by the process/activity owner)**

***If the Activity/Process involves substance(s) that are flammable, highly flammable, oxidising, explosive, AND/OR capable of producing an explosive atmosphere when, used or stored, this risk assessment must be completed in conjunction with the COSHH assessment.***

List by Name the products, preparations or substances being handled, stored or produced:

a.	Quantity:	COSHH Assessment No.:
b.	Quantity:	COSHH Assessment No.:
c.	Quantity:	COSHH Assessment No.:
d.	Quantity:	COSHH Assessment No.:
e.	Quantity:	COSHH Assessment No.:
f.	Quantity:	COSHH Assessment No.:

	Yes	No	
If a proprietary product or substance, does the hazard information contained within the material Safety Data Sheet, or on the labelling on the product packaging denote that it is (tick box):	Explosive	<input type="checkbox"/>	<input type="checkbox"/>
	Oxidising	<input type="checkbox"/>	<input type="checkbox"/>
	Extremely Flammable	<input type="checkbox"/>	<input type="checkbox"/>
	Highly Flammable	<input type="checkbox"/>	<input type="checkbox"/>
	Flammable	<input type="checkbox"/>	<input type="checkbox"/>
	<b>AND/OR</b> have a flash point lower than 55 °C	<input type="checkbox"/>	<input type="checkbox"/>
<b>AND/OR</b> react with other products/substances in use or present in the working environment which may result in producing an explosive atmosphere	<input type="checkbox"/>	<input type="checkbox"/>	
If a substance/product is produced as a result of an in-house process, or as a bi-product of such a process, is that substance/product (tick box):	Explosive	<input type="checkbox"/>	<input type="checkbox"/>
	Oxidising	<input type="checkbox"/>	<input type="checkbox"/>
	Extremely Flammable	<input type="checkbox"/>	<input type="checkbox"/>
	Highly Flammable	<input type="checkbox"/>	<input type="checkbox"/>
	Flammable	<input type="checkbox"/>	<input type="checkbox"/>
	<b>OR</b> has the substance/product a flash point lower than 55 °C	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to <b>ANY</b> of the above questions is <b>YES</b> ; is there the potential (intentionally or unintentionally) for a release of sufficient quantity to produce an explosive atmosphere or fire of a vapour, gas or dust; <b>OR</b> release of a mist or spray of flammable liquid irrespective of flashpoint (see note)	<input type="checkbox"/>	<input type="checkbox"/>
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If the answer to the above questions is **NO**, the DSEAR risk assessment may be terminated at this point,

**Note. Mists vapours and sprays can occur during abnormal conditions (leaks etc), and such conditions should be considered in any R.A. Mists vapours sprays in the right concentration can ignite when accompanied by an ignition source at temperatures below the Flash Point.**

**Part 3 – RISK ASSESSMENT DOCUMENTATION & SUPPORTING EVIDENCE**

*(See examples at Annex C)*

Document Title	Reference No.

**Part 4 – Summary of residual Hazards and Risks.**

<b>Part 5 –Risk Assessment Sign Off.</b> <i>(to be completed by the lead assessor and process/activity owner)</i>					
Assessment Serial No.:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30px; text-align: center;"><input type="checkbox"/></td> <td><b>The process/activity is unsafe and the process/activity must cease immediately</b></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td><b>The zone/process/activity meets the requirements of DSEAR and may continue.</b></td> </tr> </table>	<input type="checkbox"/>	<b>The process/activity is unsafe and the process/activity must cease immediately</b>	<input type="checkbox"/>	<b>The zone/process/activity meets the requirements of DSEAR and may continue.</b>
<input type="checkbox"/>	<b>The process/activity is unsafe and the process/activity must cease immediately</b>				
<input type="checkbox"/>	<b>The zone/process/activity meets the requirements of DSEAR and may continue.</b>				
<u>Assessor:</u>					
Signature:.....	Date:				
<p>The risk(s) from the hazard potential of the dangerous substance and/or explosive atmospheres identified in this risk assessment must be to the lowest level reasonably practicable, are you satisfied that this is the case?</p> <p style="text-align: right;">Yes <input type="checkbox"/>      No <input type="checkbox"/></p>					
<u>Line Manager:</u>					
Name:	Date:				
Signature:.....	Post:				
<b>Part 6 – Review</b> <i>(to be completed by the process/activity owner)</i>					
This document and <u>all</u> supporting documentation is to be reviewed annually or following any significant changes to the activity/process or the working area.					
Name:	Date:				
Signature:.....	Post:				
Name:	Date:				
Signature:.....	Post:				
Name:	Date:				
Signature:.....	Post:				
Name:	Date:				
Signature:.....	Post:				



**DSEAR ZONE SAFE SYSTEM OF WORK**

The following safe system of work must be adhered to at all times

<b>Location</b>	<b>Site</b>	<b>Date:</b>
<b>Activity/Process:</b>		<b>Issue:</b>
The following substance(s) that are used in the workplace, could, if not managed correctly and are present in the right form and quantity, result in an explosive atmosphere.		
a.		
-----		
b.		
-----		
c.		
-----		
d.		
<b>Description of Activity</b>		
<b>Summary of Hazards</b>		
<b>Working Practices to be Adopted</b>		
<b>Protective Clothing and Equipment</b>		
<b>Emergency Situation(s) – Actions to be taken</b>		
Name:	Post:	
Signature:.....	Date:	
No variations to the stated safe system of work practices will be permitted without written authority of the Line Manager. Before authorising any deviation from this safe system of work, all relevant risk assessments must be re-evaluated.		
This document will be reviewed annually or following any significant changes to the activity or the working area.		

### Supporting Records/Documents

Sources of existing information that may be required to assist/support a DSEAR risk assessment are listed below:

Issue	Existing Records/Documentation	Reference
Materials Used	COSHH Forms	JSP 375 Vol 2 Lflt 5
	Material / Hazardous Safety Data Sheets	JSP 515
PPE / RPE	Health Surveillance Reports	JSP 375 Vol 2 Lflt 2 JSP 375 Vol 2 Lflt 13
	Health & Safety RA	JSP 375 Vol 2 Lflt 39
Operating Procedures for the Process / activity in normal / start-up/ shutdown /abnormal operations	SOPs Operator before use / after use inspections / maintenance	Operating Manuals (APs, AESPs, BRs and Manufacturers Operating Manuals)
Details of operator training	Personnel Training Records	JSP 375 Vol 2 Lflt 39 Trade / service specific documents (e.g. JSP 317, JSP 319)
Details of fire plans including escape routes	Fire Safety Management Plan	JSP 375 Vol 1 JSP 426
Details of high risk emergency actions as applicable	MACR	JSP 498
Details of spillage plans as applicable	Unit Spill Response Plans	JSP 317 Part 2, Part 5 JSP 418
Details accident reporting as applicable	IRIS, DINC, AINC, NSIR02 ,SPILLREP, POLLREP	JSP 375 Vol 2 Lflt 14 JSP 317 Part 5
Details of Hazardous Area Classification Drawings and identification marking of Hazardous area Zones		
Coherent Periodic Equipment Inspection regime	DIO PG 01/09	
	Equipment Audits	
Structured Preventative Maintenance Programme	RPC maintenance records Equipment / Platform maintenance regimes	DIO DMGs APs AESPs BRs JSP 375 Vol 3
Regular Audits and reviews	Audit regime as required	JSP 375 Vol 4 JSP 317