



DSEAR Risk Assessment

Risk Assessment Title	
School/ Department	
Location(s) of laboratory	
Assessment Reference (local)	
Responsible Person	

DSEAR pre- risk assessment checklist for Laboratories

This assessment is to enable researchers to take a proportionate approach to the application of DSEAR for their areas of activity. It is recognised that most research laboratories will not require a full DSEAR risk assessment to be undertaken if they are operated safely. The following checklist will assist to review if an area would require to undertake a full risk assessment

The dangerous substances and explosive atmosphere regulations are mostly concerned with the creation of areas where an explosion is possible or likely. In the context of the University this means bulk stores of flammable solvents, local exhaust ventilation carrying dust, use or production of gasses and experiment where the conditions make an explosion more likely.

If the answer to any all of the questions are YES then no further DSEAR risk assessment is required. This is a general piece of guidance based on HSE advice for 'Storage of flammable liquids in process areas, workrooms, laboratories and similar working areas' which can be found here: [Storage of flammable liquids in process areas, workrooms, laboratories and similar working areas - HSE Website](#)

	YES - all must indicate yes	NO
Quantity of flammable/ highly flammable solvents under 50L?		
Flammable solvents stored in vented cupboards or 30-90 minute rated fire safety cabinets?		
Flammable solvents segregated from oxidising agents, acids and highly reactive species?		

Laboratory has general mechanical ventilation (not including Local Exhaust Ventilation (LEV))?		
Experiments involving flammable substances performed within suitable LEV?		
No flammable gasses in use or stored outside of LEV?		
No flammable substances being mixed with oxygen/ air in sealed vessels?		
All experiments have a suitable COSHH risk assessment in place?		
Once completed, you can evidence that you have reviewed the need for a risk assessment in the laboratory and it was not required. It must be signed, dated and dated with a review date.	No further risk assessment is required Signed/Dated Dated	If any are no proceed to full DSEAR risk assessment

The HSE guidelines referenced above are very general and do not specify size of workspace or technical details such as air changes or ventilation rates. The risk assessor is responsible for completing an appropriate risk assessment, where they judge that the size of a space or other mitigating factor means that a full DSEAR risk assessment is not required they should record that justification.

Details of dangerous substance(s) involved in the activity¹

Include details of all of the dangerous substances that are involved in the process or that might be generated as products (or byproducts). Include flammable substances, compressed gas cylinders (even if the gas itself is not flammable e.g. argon) combustible dusts and large quantities of substances corrosive to metals.

Substance Name	Physical Form (e.g. solid, dust, liquid, vapour, gas, aerosol)	Hazard Type(s)					LEL (Vol %)	UEL (Vol %)	Auto-ignition Temp. (°C)
		 Explosive	 Flammable	 Oxidiser ²	 Cylinder	 Corrosive ³			

1. If the activity does not involve any substances with one or more of the five hazard types listed above (including any substances generated during the activity) it is unlikely that a full DSEAR risk assessment will be required unless a dust is used or generated during the process. The risk of fire and explosion should still be considered in the general risk assessment for the activity
2. Oxidising agents (oxidisers) act as a source of oxygen and may react with combustible substances or intensify fires.
3. Substances that are corrosive to metals should be included as they can damage metal containers / pipework causing leaks (or in some cases react with metals to generate flammable gases).

Brief description of activity

Describe the activity being undertaken and give an overview of any equipment that will be used. It is acceptable to refer to any relevant standard operating procedures, risk assessments and other supporting documents. Where such documents are used there is no need to reproduce them here so long as these are easily available to relevant staff and students. Note the general environment of the area the activity is taking place including secondary hazards such as gas cylinders and cryogenic vessels.

Brief description of activity

Details of the activity

Record the key hazard information that applies to the activity being undertaken, summarise how risks of fire or explosion might arise and who could be affected if an incident were to take place. Consider in particular how much flammable / explosive material is used, stored or generated, what ignition sources might be present in the area (e.g. electrical equipment, open flames, static electricity) and the likelihood of a fire or explosion occurring.

Category of use of potentially flammable / explosive substances or the generation of explosive atmospheres (mark all that apply)	Small Scale		Large Scale		Storage Only		Generation of Material	
	Please give relevant details:							
Frequency of use (or generation) of dangerous substances during activity	Daily		Weekly		Monthly		Other	
	Please give relevant details:							
Amount of substance used during the activity (maximum).	Low (<1l/kg)		Medium (<10l/kg)		High (>10l/kg)		Other (specify)	
	Please give relevant details (include concentrations where relevant)							
Give details of any high temperature or high pressure equipment or activities involved in the process.	Please give relevant details:							

Potential ignition sources which may be present in the workspace during the activity?	Please give relevant details and type (e.g. thermal, electrical, mechanical, chemical)						
Explanation of how substance(s) stored, used or generated could cause fire or explosion.	Please give relevant details:						
Who might be placed at risk? Consider individuals who are not involved in the work but may still be affected.	Please give relevant details:						
How might individuals be placed at risk?	Please give relevant details:						
Assessment of risk (prior to application of control measures)	Negligible		Low		Medium		High
	Please give relevant details:						

Summary of risk control measures

Workplace / process design systems (relevant to the nature of the activity)

Consider how the workspace and/or process equipment involved in the activity might have an effect on the level of risk and the likelihood of a fire or explosion. Both should be designed with safety in mind and consideration given to making reasonable changes to existing systems where safety improvements are possible.

Workspace designed, constructed and maintained for adequate fire resistance?	Yes		No		N/A	
Workspace designed, constructed and maintained for adequate explosion relief?	Yes		No		N/A	
Explosion resistant plant / equipment used in the activity?	Yes		No		N/A	
Is there sufficient separation from other hazards? e.g. cryogenic vessels	Yes		No		N/A	
All equipment designed to minimise the risk of fire and explosion?	Yes		No		N/A	
Is intrinsically safe / ATEX rated equipment used where needed?	Yes		No		N/A	
Is equipment operated in such a manner to minimise the risk of fire and explosion?	Yes		No		N/A	
Safe systems of work developed and communicated to all relevant persons?	Yes		No		N/A	
Lone working procedures developed and communicated to all relevant personnel	Yes		No		N/A	
Please give relevant details:						
Is a permit to work (PTW) system required and is it strictly enforced?	Yes		No		N/A	
Please give relevant details:						

Procedural controls

Consider how the risk of fire / explosion can be controlled through the use of appropriate procedural control measures, or in other words how can you carry out the activity in a safer way. This may require you to consider redesigning your process or making changes to your workspace before you begin.

Quantity of dangerous substance reduced to minimum amount required?	Yes		No		N / A	
Regular cleaning of workplace to prevent accumulation of combustible material?	Yes		No		N / A	
Avoid or minimise releases (planned or unintentional)?	Yes		No		N / A	
Control potential releases at the source?	Yes		No		N / A	
Formation of explosive atmosphere controlled / prevented?	Yes		No		N / A	
Any releases of flammable materials contained / removed (e.g. ventilation)?	Yes		No		N / A	
Control measures to avoid adverse conditions (e.g. exceeding temperature limits)?	Yes		No		N / A	
Are incompatible substances separated during storage and use?	Yes		No		N / A	
Number of people in hazard area reduced to minimum?	Yes		No		N / A	
Measures in place to control spread of fire / explosion?	Yes		No		N / A	
Has suitable PPE been provided and staff trained in its use (see also section 4.8)?	Yes		No		N / A	
Have all ignition sources been removed from hazard area or adequately controlled?	Yes		No		N / A	
Has the risk of electrostatic discharge been eliminated?	Yes		No		N / A	
Is the risk of electrostatic discharge controlled where it cannot be eliminated?	Yes		No		N / A	

Please give relevant details:

Monitoring of potentially flammable / explosive atmospheres

Where there is a risk that a flammable material may leak (or be spilled) giving rise to the risk of a flammable or explosive atmosphere monitoring systems may be required. The nature of the risk will help to determine the type of equipment required.

Will fixed monitors equipment for flammable / explosive atmospheres be used?	Yes		No		N/A	
Please give relevant details:						
Will portable monitors for flammable / explosive atmospheres be used?	Yes		No		N/A	
Please give relevant details:						
Are monitoring systems linked directly to alarm systems?	Yes		No		N/A	
Please give relevant details:						

Storage of dangerous substances

Flammable substances are often stored in workspaces and dedicated storage facilities. Stored materials may pose a risk of fire or explosion due to vapour release from containers in normal storage or spillages following an accident. It is worth noting that HSE ACoP L138 recommends that quantities of flammable liquids stored in workspaces are restricted (<50l for flammable liquids and less than 250l for combustible substances with flashpoints >60°C).

Please give relevant details:

Transport of dangerous substances

Where there is a need for flammable substances to be transported from one location to another (whether by hand or using a vehicle) the risks of a release should be considered as part of the activity. Remember that accidents which happen outwith the normal workspace may pose risks different risks and require additional control measures / equipment to manage safely.

Is there a need for dangerous substances to be transported between locations?	Yes		No		N/A	
Are vehicles to be used in the transportation of dangerous substances?	Yes		No		N/A	
Will suitable secondary containment / packaging be used?	Yes		No		N/A	
Has a DGSA* been consulted for vehicle transportation?	Yes		No		N/A	
Are vehicles used fitted with any required placards?	Yes		No		N/A	
Emergency procedures (and associated equipment) for transport incidents in place?	Yes		No		N/A	
Has transportation been fully considered in supporting risk assessments?	Yes		No		N/A	
Have personnel involved in transport received appropriate instruction and training?	Yes		No		N/A	

Please give relevant details:

***Advice from a qualified Dangerous Goods Safety Adviser (DGSA) can be arranged via the Estates Department, Waste Manager**

Waste management and disposal

When a process generates flammable waste consideration must be given to segregating, storing and disposing of this waste safely and responsibly to minimise the risk of adverse chemical reactions, fire and explosion. Remember that flammable waste must be treated with the same precautions as other flammable chemicals

Type of Waste (please include details of substances present in mixed waste)	Physical Form (e.g. flammable liquid)	Expected Quantity					
Have safe systems / locations for the storage of waste been identified?	Yes		No		N/A		
Is incompatible waste segregated effectively?	Yes		No		N/A		
Are appropriate waste containers available?	Yes		No		N/A		
Are waste containers / cabinets properly labelled?	Yes		No		N/A		
Is an accurate waste inventory maintained?	Yes		No		N/A		
Has a safe disposal route been identified (e.g. use of an approved contractor)?	Yes		No		N/A		
Please give relevant details:							

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Information, instruction, training and supervision

It is a requirement that staff and students are given suitable and sufficient information, instruction, training and supervision to work safely (this includes working with dangerous substances).

Has information, instruction and training been provided appropriate to the risk?	Yes		No		N/A	
Please give relevant details:						
Are special instructions / procedures required to carry out this task safely?	Yes		No		N/A	
Please give relevant details:						
Is special training required to safely carry out this task?	Yes		No		N/A	
Please give relevant details:						
Is direct, personal supervision from a competent person required for this task?	Yes		No		N/A	
Please give relevant details:						

Can work be carried out without advice / approval from manager or supervisor?	Yes		No		N/A	
Please give relevant details:						
Is lone working / out of hours working permitted?	Yes		No		N/A	
Please give relevant details:						
Contact details for supervisor / competent person(s) responsible for approval						
Name	Role / Position		Email Address			

Personal protective equipment (PPE)

Personal protective equipment should be used in conjunction with other control measures and is usually considered a last resort in the hierarchy of risk control. Consider all required PPE for the procedure (including PPE which is needed for risks other than fire / explosion).

 Eye Protection	 Face Shield	 Gloves	 Footwear	 Protective Clothes
 Dust Mask	 Respirator	 Powered Respirator	 Breathing Apparatus	 Other (specify)

DSEAR Zones / Control of Explosive Atmospheres*

Consider the need for storage areas or workspaces to be formally designated under the DSEAR Regulations due to the risk of flammable / explosive atmospheres being generated when working with flammable gases, liquids or combustible dusts. For flammable gases and liquids use zones 0, 1 or 2, for combustible dusts use zone 20, 21, 22. Further guidance on zones can be found in the DSEAR Guidance Note.

Is hazardous area classification (zoning) required to determine the level of risk?*	Yes		No		N/A	
*Please contact the Health, Safety and Wellbeing Department for initial guidance on zone classification						
Description of Area	Classification of Zone					
Is specialist equipment (e.g. ATEX rated equipment) required to work safely?	Yes		No		N/A	
Please give relevant details:						
Is appropriate "Ex" signage clearly visible at the entrance areas zoned under DSEAR?	Yes		No		N/A	
Please give relevant details:						
Are personnel trained in use of specialist equipment and emergency procedures?	Yes		No		N/A	
Please give relevant details:						

*Note: Where an area needs to be formally classified to a DSEAR Zone it is advisable to take advice from the Health, Safety and Wellbeing Department to advise on the process and any additional safety equipment / procedures needed.

Describe safe systems of work to be implemented. It is acceptable to refer to procedures / documents (e.g. Standard Operating procedures so long as these include relevant safety information. Where such documents are available there is no need to reproduce them here so long as these are available to relevant staff and students.

Please give relevant details:

Have emergency procedures been developed (and clearly communicated) for the following?

Adverse process conditions (e.g. exceeding expected temperature limits)	Yes		No		N/A	
Fire and explosion	Yes		No		N/A	
Detection and response to spillages and releases of dangerous substances	Yes		No		N/A	
Failure of pressurised containers / equipment	Yes		No		N/A	
Evacuation of hazard areas in the event of a dangerous occurrence	Yes		No		N/A	

Emergency plans (including evacuation) clearly understood and regularly tested?	Yes		No		N/A	
Please give relevant details:						
Spillage or release of material						
Gas / vapour detection system in place, tested regularly and maintained)?	Yes		No		N/A	
Spill control / mitigation equipment available in the workspace?	Yes		No		N/A	
Ventilation strategy in place (where safe to do so)?	Yes		No		N/A	
Inform competent person (e.g. safety coordinator, principal investigator)	Yes		No		N/A	
Inform security / emergency services if necessary (major release*)	Yes		No		N/A	
Please give relevant details:						
*A major release is considered to be any incident that cannot be safely contained using one standard spill control kit						
Fire (and explosion) safety precautions						
Automatic fire detection system (specify type)	Yes		No		N/A	
Fire alarm system linked to alarm system?	Yes		No		N/A	
Automatic fire / explosion suppression system installed (specify type)?	Yes		No		N/A	
Manual / portable fire-fighting equipment (e.g. fire extinguisher*)	Yes		No		N/A	
Automatic or manual shut-off for flammable gas / liquid supply present?	Yes		No		N/A	

***Specify type of fire-fighting equipment (tick all that apply in the boxes below)**

Water	Foam	Carbon Dioxide	Dry Powder	Fire Blanket	Other (Specify)

Please give relevant details:

Emergency Contacts

Name	Position / Role	Contact Number	Contact e-mail

Assessment verification

Assessed by		Date	
Checked and approved by		Date	
Date of next review			

Document version

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2.0	Complete refresh after consultation	17/09/26 C Harrison

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