

# DSEAR Risk Assessment

## Guidance Notes



All facilities which either **handle**, **process** or **store** materials which fall within the scope of The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) are required to carry out a risk assessment.

Materials which fall within the scope of DSEAR are classified as:

- Explosive
- Oxidising
- Flammable
- Highly flammable
- Extremely flammable

in the Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP 4).

Any other materials which may present an explosion hazard and in-compatible chemicals which may react together to present a hazard should also be included in the risk assessment.

Depending on the outcome of the risk assessment further activities such as conducting a *hazardous area classification* may be required.

The DSEAR Risk Assessment is a multi stage process and very much a team effort.

The client's representatives are the experts for the workplace and need to be actively involved in partnership with the TAS consultant who is well versed in the subject and has wide experience in many different types of operation.

The TAS consultant will work with the client's representatives to conduct a Risk Assessment in accordance with **Regulation 5** of the **Dangerous Substances & Explosive Atmospheres Regulations (2002)** – DSEAR

This is completed by a process of site survey and interview of staff:

- Identify all substances handled, processed and stored that fall within the scope of DSEAR (explosive, oxidising, flammable, highly flammable, extremely flammable and in-compatible chemicals)
- Identify and review all work activities and equipment involving dangerous substances
- Make an up to date plan or layout drawing of the relevant facilities available, if appropriate make material flow sheets, process flow sheets available.



## The Process

Research and collate the relevant physical properties of the dangerous substances. This includes Material Safety Data Sheets, BS EN 60079, laboratory testing, etc.

Assemble the team and hold a DSEAR Risk Assessment meeting:

- ✓ Brief / train the team, establish the ground rules.
- ✓ Record names and job titles of team members.
- ✓ Go through and validate the table of hazardous materials and their properties.
- ✓ Identify any missing materials etc.
- ✓ Identify the function(s), failure(s), effect(s), cause(s) and control(s) for each item or process to be analysed.
- ✓ Evaluate the risk associated with the issues identified by the analysis.
- ✓ Calibrate the risk assessment matrix (See example *fig 2*)
- ✓ Complete a risk assessment for each activity / equipment.
- ✓ Recommend risk mitigation measures where appropriate:
  - This could include:
    - process changes to reduce the inventory of dangerous substances
    - equipment upgrades
    - procedure development
    - training
- ✓ Identify if there is a need to undertake a formal hazardous area classification assessment.

## The TAS Consultant

Will write up the DSEAR risk assessment and issue a draft DSEAR Report with corrective actions and present this to appropriate client personnel

Collate feedback and issue final report

Perform corrective actions and then hold a review meeting to re-evaluate the risks.

### Useful links

HSE DSEAR in detail <http://www.hse.gov.uk/fireandexplosion/dsear/background.htm>

HSE How safe is your workplace <http://www.hse.gov.uk/PUBNS/indg370.pdf>



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The DSEAR Risk assessment will say if an area is hazardous or is non-hazardous (i.e. whether an area does / does not warrant special precautions to prevent ignition).

If the DSEAR risk assessment declares all areas to be non-hazardous then hazardous area classification is not necessary. However, if the DSEAR risk assessment declares *some* areas to be hazardous then a hazardous area classification exercise for those areas should be carried out.

This is a multi disciplinary process which can be facilitated by the TAS consultant but which will require input by client personnel.

Occupational health requirements often supersede hazardous area considerations by several orders of magnitude.

If a material is *harmful to health* then the limit values are usually measured as parts per million.

If the controls in place achieve these levels there will not be a problem with hazardous areas as flammability levels are usually orders of magnitude higher than toxicity levels.

**Fig 1 - To establish the Residual Risk Rating and the Action Outcome Required multiply the Severity of the Event Score by the Likelihood of the Event Score**

Action Band	Action Required	Interpretation
E	Stop work, improve or increase controls immediately	Prohibition notice
D	<b>Improve</b> or increase control measures <b>as a matter of urgency</b>	Improvement notice
C	Improve or increase control measures	Need to demonstrate good progress against an improvement plan
B	Monitor existing control measures for continued effectiveness	Keep good control. Don't slip backwards!
A	No action required. Monitor situation	Keep under review

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Fig 2 - Typical Risk Assessment Scoring Matrix - Injuries to People versus Probability

Severity of the Event		Likelihood of the Event Occurring		Residual Risk Rating	Outcome	
Definition	Score	Definition	Score		Action Required	Band
Slightly harmful ( <i>cuts, bruises, bumps, etc.</i> )	1	Highly Improbable (extremely unlikely to occur)	a	1a, 1b, 2a	No action required. Monitor situation	A
Harmful ( <i>fractures, burns. L.T.A.</i> )	2	Improbable (small chance of occurring)	b	1c, 1d, 2b, 3a, 4a, 5a	Monitor existing control measures for continued effectiveness	B
Very harmful ( <i>amputations, loss of eyesight</i> )	3	Possible (could occur sometime)	c	1e, 2c, 2d, 3b, 4b, 5b	Improve or increase control measures	C
Single Fatality	4	Probable (not be surprised if it happened)	d	2e, 3c, 3d, 4c, 5c	Improve or increase control measures as a matter of urgency	D
Multiple Fatalities	5	Highly probable (bound to happen at some point)	e	3e, 4d, 4e, 5d, 5e	Stop work, improve or increase controls immediately	E

