

Top 10 Failings of a DSEAR Review

Businesses from a variety of industries have come a long way in terms of understanding and implementing DSEAR regulations.

Although most organisations are now aware that DSEAR will be applicable to them if they handle flammable materials, many don't understand when a DSEAR should be reviewed or if the current review is extensive enough to ensure regulatory compliance.

When should a DSEAR be reviewed?

A DSEAR Risk Assessment must be regularly updated and assessed at proper intervals, just like any other risk assessment.

When any potentially flammable or explosive materials are identified, a DSEAR Assessment should be completed. Ideally this should be achieved in the process design stage, but it's far more common for DSEAR assessments to be undertaken when a process is already in place.

The HSE recommends that DSEAR is updated every 3-5 years dependent upon the risk levels of the operations. A high-risk site will need to be revisited every 1-2 years and all other sites between 3-5 years. However, if there are alterations to a process, then a DSEAR may need to be reviewed sooner.

Change of personnel, competence management and site contractor risk:

- Operator and supervisor competence and training review
 - Hazard and risk awareness of shutdown and start-up processes
- Gap analysis of competence and expertise following loss of skilled personnel following retirement or staff reduction
- Assessment of on-site contractor safety training
 - Review of incident and near miss records
- Review of contractors risk assessment prior to non-routine repairs (probably the cause of more incidents in industry than any other process risk)



Changes to a process:

If any aspect of a process has changed, then the inherent operational output of that process would have changed. There may be the need for new controls to be added to a process design if there is a change to your raw material supplier. Even if the material is fundamentally similar, additional contaminants, concentrations, particle size distribution and moisture content could change the safety profile for the existing 'basis of safety'. Some considerations for changes in processes include:

- New plant equipment added or modified
- Change of supplier for raw materials
 - Variability in the materials supplied for processing (size, moisture content, pre-processed treatment)
- New product lines introduced through existing plant or new plant brought in stream
- Electrostatic hazard changes
 - Insulating or conductive properties of the materials being processed
 - Earthing equipment, transfer pipes, IBC/FIBC, Personal Protection Equipment (PPE), overshoes, etc.
- Dust and Powder hazard changes
 - Thermal decomposition hazards
 - Industrial hygiene hazards
 - Dust extraction systems and explosion hazards (basis of safety)
- Non-routine operational changes in maintenance/cleaning, changes in production cycles
 - Suitability of maintenance/inspection equipment for hazardous areas
- Changes in material handling and storage units such as waste containers and waste material disposal systems



Sigma-HSE have undertaken numerous DSEAR assessments and DSEAR reviews and during the course of this work we have found a number of common errors on assessments that make the site non-compliant and put staff at risk. This is particularly worrying as should an incident occur it is the sites responsibility to ensure the assessment is adequate and fit for purpose. Always have the DSEAR assessment and any updates reviewed by a competent engineer or process safety specialist.

The top 10 failings we find when we carry out DSEAR reviews on site:

- 1. Inadequate housekeeping – piles of combustible dusts present around equipment**
 - a. *Poor awareness of the hazard – potential for secondary dust explosions*
 - b. *Ineffective extraction at source – extraction under sized or operating below specification*
 - c. *Inadequate maintenance routines*
 - d. *No cleaning routines*
 - e. *Insufficient reporting of leaks and dust build up*

- 2. Lack of hazardous zone awareness**
 - a. *No signage indicating the presence of hazardous zones*
 - b. *No understanding of operators*
 - c. *No training or refresher training in DSEAR with personnel*
 - d. *Not covered in the site induction*

- 3. Maintenance personnel not specifically competent**
 - a. *Site electrician maintaining ATEX equipment*
 - b. *No stock or use of spark proof tools*

- 4. Lack of specific explosibility/flammability data**
 - a. *Unaware of whether substance is explosible/flammable or not*
 - b. *No laboratory test data for specific substances used – how can process equipment be correctly designed without this knowledge*

- 5. Lack of understanding of electrostatic hazards**
 - a. *Equipment not clearly earthed*
 - b. *Testing of earth continuity not included in maintenance routines*
 - c. *Deposit build-up on flooring*
 - d. *Insulating protective shields (plastic and cardboard) used on equipment, rather than cleaning routines*

- 6. No record of ATEX certified equipment on asset registers**
 - a. *Not able to state if extraction fan located in ductwork is ATEX certified*
 - b. *No available access to check whether combustible dust are being deposited within ductwork*

- 7. Insufficient explosion protection**
 - a. *No explosion relief panel on dust collectors handling combustible powders*
 - b. *Explosion panel installed on clean side of filters*
 - c. *No data of opening pressure of explosion panel*
 - d. *Single small area explosion panel on large dust collection systems*
 - e. *Low inertia explosion panel installed – will not open quick enough*

- 8. Explosion panels sited in inappropriate locations**
 - a. *Explosion panels on equipment that vent into rooms or across pedestrian routes*
 - b. *Unaware that a large flame is emitted from an explosion panel*

- 9. Inadequate or no installed isolation devices**
 - a. *Lack of appreciation that flame fronts able to travel from one item of processing plant to adjacent units (even if explosion panel installed)*

- 10. Management of change or Permit to Work documentation that does not include specific DSEAR aspects**

If you feel that any of the above may be relevant to your organisation, call Sigma-HSE on +44 (0)1962 840570 or email info@sigma-hse.com to obtain practical and cost-effective advice on ensuring DSEAR compliance.