



Hazardous Area Classification: Avoiding Over-Zoning

In most organisations risk assessments err on the side of safety. Whilst this is not an issue in itself, it can result in large hazardous areas being designated and, in some cases, a higher than necessary classification of zoning (i.e. Zone 1 instead of Zone 2).



Standard IEC 60079-10-1 (International Standard: 'Explosive Atmospheres, Part 10-1, Classification of Areas, Explosive Gas Atmospheres', 2008 IEC) states:

"...Zone 0 or Zone 1 areas should be minimised in number and extent by design or suitable operating procedures. In other words, plants and installations should be mainly Zone 2 or non-hazardous. Where release of flammable materials is unavoidable, process equipment items should be limited to those which give secondary grade releases or, failing this (that is where primary or continuous grade releases are unavoidable), the releases should be of very limited quantity and rate. In carrying out area classification, these principles should receive prime consideration. Where necessary, the design, operation and location of process equipment should ensure that, even when it is operating abnormally, the amount of flammable material released into the atmosphere is minimised, so as to reduce the extent of the hazardous area."

Therefore, when preparing a risk assessment report you should seek to identify the possible sources of release and their bearing on the hazardous area classification, and ensure that any Zones identified are a realistic interpretation of the actual situation, and not an over specification.

The general report format for assessing the Unit Operations is laid-out in sections as follows:

1. **Overview:** The Unit Operation is defined and the presence of a flammable atmosphere in normal, or foreseeable abnormal, operation is considered. If it is not possible for a flammable atmosphere to occur, then the assessment stops there.
2. **Presence of an Ignition Source:** It is not the intention, at this stage, to determine all potential ignition sources, but just to confirm that there is at least one. This should also take into consideration the possibility of an unintentional ignition source being brought into the hazardous area (i.e. maintenance or measuring equipment).
3. **Discussion of Risk:** If there is a potential for a flammable atmosphere and an ignition source, then there is a discussion to determine the risk to people and whether actions are required.
4. **Basis of Safety:** The chosen basis of safety for the unit operation is considered along with its implications on adjacent units and their basis of safety and its physical location in the site.
5. **Hazardous Area Classification (HAC):** If there is a requirement in the Basis of Safety to control ignition sources, then the next section, Hazardous Area Classification (HAC), gives the relevant zones.
6. **Recommendations:** Finally, there are recommendations. Once the recommendations have been implemented, as far as reasonably practicable, then they can be considered to 'drop off the page' leaving the Basis of Safety 'sound'.

Additionally, there is **Auditing of the Implementation of the Recommendations**, which is usually a follow-on. It should however be undertaken on regular occasions to ensure that the Basis of Safety for each operation is being maintained, or whether another assessment is required to verify the Basis of Safety or to determine whether the Basis of Safety has changed and whether it is acceptable from a reasonably practicable aspect.

Benefits: The correct application of Hazardous Area Classification results in an appropriate budget spend on safety in the workplace. Minimising the use of expensive Ex rated equipment and if it is required then helps to reduce the level of equipment down from potentially a Category 2 to a Category 3, reducing installation costs and replacement component stock levels.

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We at Sigma-HSE (UK) are passionate about process safety and aim to partner with our clients to provide long term support and knowledge in the field of process safety consultancy and fire & explosion testing from our ISO 17025 accredited laboratory.

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Our range of Process Safety Consultancy services includes:

ATEX / DSEAR

- Hazardous Area Classification (HAC)
- Hazard & Risk Assessment
- Basis of Safety Definition
- Electrostatic hazards
- Data Interpretation
- Dust Vent Calculations

- Vapour Calculations
- EPD
- Mechanical & Electrical Equipment Ignition Risk Assessment

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- Major Accident Prevention Policy (MAPP)
- Occupied Building Risk Assessment (OBRA)
- Safety Management Systems (SMS)
- Environmental Assessment
- Emergency Response
- Safety Report Assessment Manual (SRAM)

Specialist Safety

- Quantative Risk Assessment (QRA)
- Hazards & Operability Study (HAZOP)
- Process Hazard Assessment (PHA)
- Hazard Identification Study (HAZID)
- Layers of Protection Analysis (LOPA)
- Incident Investigation / Expert Witness

Health & Safety

- Occupational Safety
- Control of Substances Hazardous to Health (COSHH)
- Provision and Use of Work Equipment Regulation (PUWER)

Technical Training

- Dust Explosion Hazards
- Fire & Explosion Hazards
- Electrostatic Hazards
- ATEX / DSEAR
- Hazardous Area Classification (HAC)

For further information on how Sigma-HSE (UK), can solve your process safety issues and become an active partner in site safety, please call our Technical Manager on +44 (0)1962 840570 or email your enquiry to info@sigma-hse.com.

A full list of services including specialist Environmental contamination testing for soil, groundwater, leachate and commercial waste discharge can be found on our website at www.sigma-hse.com.

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