

Introduction

Water and wastewater treatment works are sites where potentially dangerous substances are being used and produced daily. The DSEAR (Dangerous Substances and Explosive Atmosphere Regulations) require employers to find out what dangerous substances are in their workplace and what fire and explosion risks are present – typically in the water industry this might include chlorine gas (for disinfection), methane and hydrogen sulphide produced from sludge. The DSEAR requires the following of the employer:

- Find out what dangerous substances are in the workplace and what the fire & explosion risks are
- Put control measures in place to either remove those risks, or, where this is not possible, control them
- Put controls in place to reduce the effects of any incidents involving dangerous substances
- Prepare plans & procedures to deal with accidents, incidents & emergencies involving dangerous substances
- Make sure employees are properly informed about & trained to control or deal with the risks from the dangerous substances
- Identify and classify areas of the workplace where explosive atmospheres may occur & avoid ignition sources (from unprotected equipment, for example) in those areas

MMI works across the water, oil & gas and process and power industries and has strong experience in DSEAR. We can help employers ensure they comply with these regulations.

Identifying the Risks

We can assess the hazardous properties of substances associated with on-site processes, including explosibility, flammability and toxicity. Risks can then be assessed by looking at working practices, maintenance activities, likelihood and persistence of explosive mixtures and presence of ignition sources.

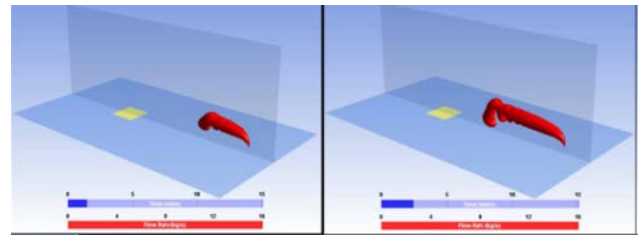


Figure 1: A flammable gas plume develops over time and is drawn to the ground by the 'starting vortex'

Hazardous Area Classification

Hazard Area Classification classifies hazardous zones as worst case or least onerous. Equipment and protective systems for all places where explosive atmospheres may occur must be selected in accordance with the 'Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations, 1996'.

Training

Where a dangerous substance is present, employers are required to provide those at risk with suitable information, instructions, and training on precautions and actions they need to take to safeguard themselves and others. MMI can ensure that these requirements are met.

Example – Anaerobic Digestion

Biogas is generated during anaerobic digestion and there is the potential for CH₄ and H₂S to accumulate and be vented. This poses a number of risks. Methane is flammable and hydrogen sulphide is both flammable and highly toxic. This is becoming increasingly important for wastewater treatment works viewed as "resource recovery" centres with increased biogas generation, e.g. in thermal hydrolysis processes for power supply and feed into the national grid.

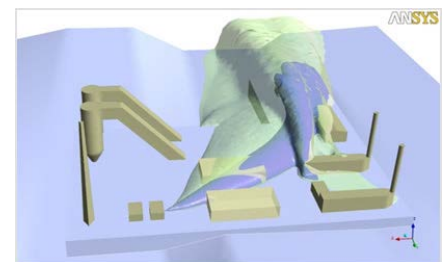


Figure 2: Multiple sources of hazardous substances can combine to create significant hazardous areas