

Reducing Ex risk

IECEX complements health-care certification programmes

When asked to name hazardous or explosive areas, most people will mention the oil and gas industry, mining and fuelling stations as obvious cases of high explosion risks. There are many more. Sugar refineries, flour mills, grain silos and the paper and textile sectors also belong in this category...as do hospitals.

High-risk areas

High-risk areas in hospitals include storage rooms that contain flammable gas tanks and operating rooms and anterooms. Risks of fire and explosion are high in these areas because flammable gases are in abundant supply due to anaesthesia requirements.

Operating rooms also have flammable materials that can fuel a fire, such as drapes, sponges and packaging. The main ignition sources are electrosurgical or laser equipment. Ignition of anaesthetic vapours can occur as a result of a spark due to unsuspected static electrification of the equipment. The use of oxygen, while a non-flammable gas, is an accelerant in fires and at high pressure poses similar risks.

Flammable or explosive?

Mixtures of ether and air in the concentrations used for anaesthesia are flammable, but mixtures of ether and air (whatever the concentration) are not explosive. Mixtures of ether with oxygen or nitrous oxide are explosive.

When flammable gases are in use, the most likely sources of combustion are the surgical diathermy machine and other electrical apparatuses. Static electricity is unlikely to start a fire but may trigger an explosion if an oxygen-rich gas mixture is present. To minimize the risk of explosion, the use of diathermy should not be permitted on a patient anaesthetized with ether. Other substances used in the operating room, such as alcoholic skin preparations, also present a risk of fire or even explosion in the presence of high concentrations of oxygen.

Hospital staff should be aware of the risks of fire or explosion – not just the operating room staff, but also those in charge of the handling, care and storage of compressed gases, cylinders, distribution systems and devices.

IECEX – increased safety for hospital staff

While certification programmes for personnel are customary in the health-care sector, they won't take into account the specificities associated with Ex areas.

Through its IECEX Certification of Personnel Competence Scheme, [IECEX](#), the IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres, can complement the general health-care certification programmes.

The CoPC (Certificate of Personnel Competence) gives independent proof that the certificate holder has the required qualifications and experience to work on electrical equipment located in hazardous areas such as operating rooms and gas storage facilities in hospitals.

To obtain a CoPC, a person submits an application to an approved IECEX Certification Body. Regular re-assessment also ensures that the certified person maintains these competencies. The certificate is personal, non-transmittable and valid across international borders.

In terms of the IECEX CoPC Scheme, competence is defined as "the ability to apply knowledge" rather than simply assessing knowledge. In this sense the assessments of persons include assessing their ability to perform certain Ex-related tasks.

Along with the other IECEX Certification Schemes, all IECEX CoPC Certificates are issued via the IECEX "On-Line" certificate System enabling full public view on the IECEX website at:

www.iecex.com



Surgical diathermy machines

Electrosurgical units (diathermy machines) were first introduced during the early 20th century to facilitate haemostasis and the cutting of tissue during surgical procedures. This is achieved by passing normal electrical current via the diathermy machine and converting it into a HFAC (high-frequency alternating current). This HFAC produces heat within body tissues to coagulate bleeding vessels and cut through tissue.

Find out more

- **IECEX**
IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres