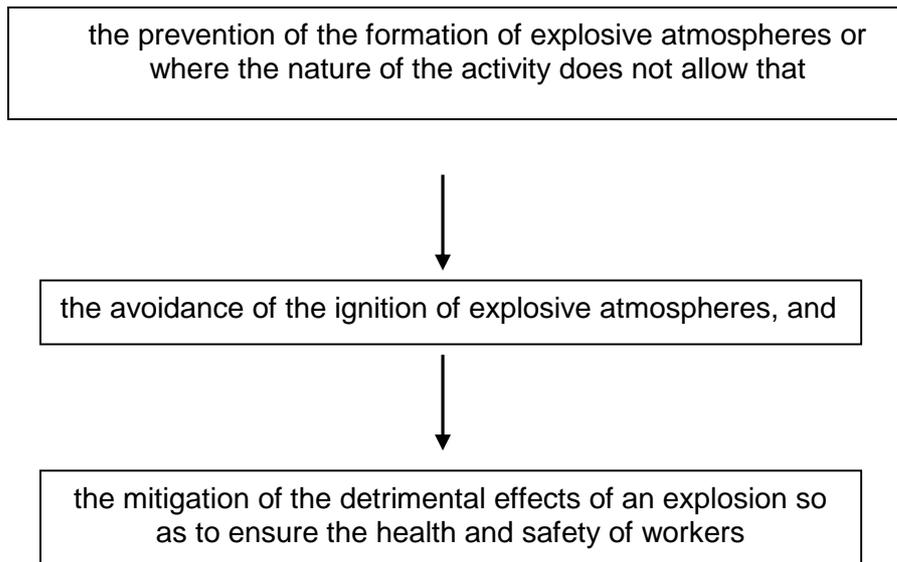


## POINT OF VIEW OF EXPLOSION PROTECTION DOCUMENT

The explosion protection document is part of Directive 1999/92/EC and it shall respect the philosophy of Itself Directive.

With a view to preventing and providing protection against explosions, the explosion protection document shall take technical and/or organizational measures appropriate to the nature of the operation, in order of priority and in accordance with the following basic principles:



These measures shall where necessary be combined and/or supplemented with measures against the propagation of explosions and shall be reviewed regularly and, in any event, whenever significant changes occur.

## THE EXPLOSION PROTECTION DOCUMENT IN BRIEF

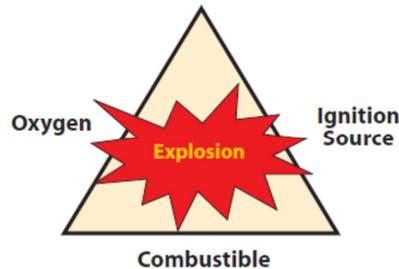
The explosion protection document is required by 99/92/EC and it could meet the following issues:

- those places which have been classified into zones
- that the explosion risks have been determined and assessed
- that adequate measures will be taken to attain the aims of the Directive
- those places where the minimum requirements (set out in Annex II of the Directive) will apply
- that the workplace and work equipment, including warning devices, are designed, operated and maintained with due regard for safety
- that (in accordance with Directive 89/655/EEC) arrangements have been made for the safe use of work equipment

## CONDITIONS LEADING TO AN EXPLOSION

Uncontrolled combustion may lead to an explosion and can take place provided three components are present simultaneously and in the right amount. The components are: dust combustible material (fuel), oxygen, source of ignition.

This can be illustrated by the well known fire triangle.



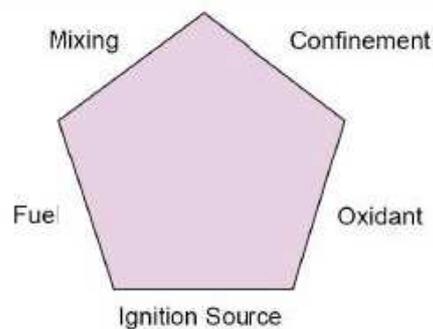
For combustion/explosion, the fuel/oxygen ratio must be within a specific range. Also, the ignition energy must be sufficiently high to initiate combustion.

Prevention of fires and explosions is generally accomplished by removing one or better two sides of the fire triangle.

A more accurate analysis of the combustion phenomenon leads to consider five components instead of three. The new components are the followings:

- Mixing (dust dispersion)
- Confinement (by equipment or building)

This can be illustrated by the following shape:



All the sides of the previous shape must be investigate to reach a high level of safety regarding the explosions

## REFERENCES

- Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres
- Directive 94/9/EC of the European Parliament and of the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres