POSITION PAPER

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Odorization of Atmospheric Gases

Odorization has been used for many years in fuel gases and its success as a warning indicator is linked to the fact that its presence in air is always an indication of a hazardous situation. Fuel gases can only be admitted safely to the atmosphere if it is a component in a combustion process, and this process destroys the odorant

Following serious incidents in nitrogen atmosphere in confined spaces or burn injuries in an oxygen enriched atmosphere, odorization of atmospheric gases is considered by some users. In connection with that EIGA would like to stress the following:

- Any application of odorised gas shall have to consider the process by which the gas is disposed of so as neither to cause an unnecessary alarm nor to odour nuisance complaints from within or outside the site using the gases.

- Once gas cylinders have been used for carrying odorised gas such as liquefied petroleum gases, they cannot be used for other gases because the stenchant odour persists in the cylinder thus requiring a dedicated population of cylinders.

- The recognition of odorised gas depends upon:

    - sensitivity of the individual to the smell;
    - time exposure to the smell;
    - concentration of the odorant; and
    - existence of masking smells, for example, welding fumes.

- If both an odorised and non-odorised type of a gas is used at one site, the workforce shall be alerted on this.

- Odorization shall not permit any relaxation of normal risk assessment and supervision. When using odorised gas, users should carry out an adequate risk assessment and ensure that a safe system of work is in place to minimize the risk to personnel. The system shall include training, maintenance and leakage test of the equipment, adequate ventilation, use of gas monitoring system and/or personnel protection equipment. In many European countries, these actions are required to satisfy health and safety laws.

  NOTE Odorization of gases can affect the purity of the product

Odorization of nitrogen

Nitrogen is mostly used because it is an inert gas and will not be a chemical reactant in most of its applications so that once odorised the gas remains permanently odorous. The difficulty to eliminate the odorant could cause operators to become used to the smell and considering it as an accepted part of the background.

If odorization is used, immediate corrective action shall be taken in the event of a leak to avoid confusion with an asphyxiation hazard.

If asphyxiation hazard identification depends upon odorization, a system shall be in place to warn of any failure of the odorization equipment, exhaustion of the stenchant or cessation of odorization for any other reason.

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Considering the elements above, EIGA does not recommend the odorization of nitrogen and other atmospheric and inert gases to decrease the asphyxiation hazard; the main difficulty would appear to be the inevitable venting of the gas from the confined space at the conclusion of the work. Generally, asphyxiation fatalities occur during the transient phases of construction and maintenance work and are due to failure of management and training. Odorization is not a substitute for sound engineering and good practices in controlling the risk of using nitrogen

Odorization of oxygen

Oxygen is widely used in conjunction with a fuel gas for metal heating and cutting. With appropriate controls the use of oxygen/fuel gas systems is considered to be safe. However, in confined spaces the risks may be significantly increased.

All persons should be warned of the hazards of misusing oxygen, for example, dusting of clothes, freshening the atmosphere and driving pneumatic tools.

Hoses and all welding and cutting equipment shall be removed from confined spaces when the work is finished or interrupted for any reason.

When odorised oxygen is used in an oxygen/fuel gas process, the odorising substance will be destroyed in the combustion process. Oxygen used for other applications shall not be odorised.

The commonly used odorising substances are flammable and the odorising equipment shall be designed, manufactured and installed to achieve a safe and reliable odorization.

EIGA has noted that some customers are using odorised oxygen to give warning of an oxygen enriched atmosphere. Considering the above, EIGA is of the opinion that provided a safe system of work as described above is implemented, odorization is not required but to be seen as a complementary measure when used in combustion processes only.

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