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[www.eiga.eu](http://www.eiga.eu)

This leaflet contains only a summary of the hazards with an oxygen enriched atmosphere and methods that can be used to control the risks in the workplace.

Visit the EIGA website to obtain more information on the hazards of oxygen enrichment and how to avoid it. [www.eiga.eu](http://www.eiga.eu)

<b>NL 79</b>	<b><i>The hazards of oxygen enriched atmospheres</i></b>
<b>TP 12</b>	<b><i>Fire hazards of oxygen enriched atmospheres</i></b>
<b>Doc 4</b>	<b><i>Fire Hazards of Oxygen and Oxygen Enriched Atmospheres</i></b>
<b>Doc 10</b>	<b><i>Reciprocating Compressors for Oxygen Service</i></b>
<b>Doc 13</b>	<b><i>Oxygen Pipeline and Piping Systems</i></b>
<b>Doc 27</b>	<b><i>Centrifugal Compressors for Oxygen Service</i></b>
<b>Doc 33</b>	<b><i>Cleaning of Equipment for Oxygen Service</i></b>
<b>Doc 154</b>	<b><i>Safe Location of Oxygen and Inert Gas Vents</i></b>
<b>Doc 200</b>	<b><i>The Safe Design, Manufacture, Installation, Operation and Maintenance of Valves Used in Liquid Oxygen and Cold Gaseous Oxygen Systems</i></b>
<b>Info 15</b>	<b><i>Safety Principles of High Pressure Oxygen Systems</i></b>

These will help you to train your staff and create safe systems of work in your operations when using oxygen.

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**EIGA**



I am **invisible ... !**

I am **silent ... !**

I have **no smell ... !**

I help to **burn fiercely ... !**

**Hazard !**  
**Oxygen Enrichment**

# Oxygen Enrichment – A Critical and Hazardous Situation

## Common risks and hazards –

### Be aware and be safe!

The air we breathe contains about 21% oxygen. Without oxygen we would die in a matter of minutes. It may be hard to believe, but oxygen can be also dangerous! Every year several incidents are reported where workers' oxygen enriched clothing catch fire. Fires in oxygen enriched atmosphere start easily and are very intense, so people suffer very serious burns, which are often fatal.

### Cause and effect

Most cases of injury caused by fire in oxygen enriched atmospheres are the result of failure of safety procedures. Most failures follow a familiar pattern and reveal:

- Incorrectly applied working procedures
- Insufficient training and supervision
- Inadequate management controls

### Know the hazard of oxygen enriched atmosphere

- Oxygen gives no warning – the human senses do not detect oxygen enrichment
- Normally, air contains 21% oxygen, but becomes hazardous when the concentration increases. There is no sharp limit even a few percent more increases the hazard
- Clothing and hair can easily catch fire in an oxygen enriched atmosphere
- Textiles can burn fiercely when they are enriched with oxygen
- Clothing, skin and equipment should be free of oil or grease



EIGA believes that all workers should be aware of fire hazards whenever dealing with oxygen... never deviate from the procedures and be sure to maintain cleanliness for oxygen service.  
*EIGA Life Saving Rule*

## Observe the regulations –

### Know your responsibilities

### Oxygen enrichment is often the result of:

- Leaks from damaged or poorly maintained equipment
- Leaks from poor connections
- Opening valves deliberately or accidentally
- Using an excess of oxygen in welding, flame cutting or similar process
- Poor ventilation where oxygen is being used

Before entering a confined space, a safe system of work must ensure workers are not exposed to oxygen enriched atmosphere.

A safe system of work would typically be in the form of a comprehensive “permit to work” and would include considerations of:

- Risk assessment and method statements
- Physical isolations
- Safe access and egress
- Gas oxygen monitoring
- Standby man and rescue equipment
- Firefighting equipment

### Examples of improper uses of oxygen:

- Powering pneumatic tools
- Inflating vehicle tyres, rubber boats etc.
- Cooling or freshening air in confined spaces
- Cooling persons
- Replacing air or inert gas
- Pressurising and purging systems
- Dusting benches, machinery or clothing
- Starting diesel engines

### Never use oxygen in equipment not designed for it!