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ASSOCIATION DES
PRODUCTEURS DE
FILMS ET DE
TÉLÉVISION DU
QUÉBEC

Compressed air

Compressed air used as a source of energy

1. The head of a department that uses compressed air must ensure that the lines do not obstruct the site, particularly if they are under pressure. In all cases:
 - their location must be clearly indicated;
 - they must be protected from impact, as for example, by covering them with a protective mat if they are on the ground; and
 - avoid walking over them or passing over them with a vehicle or in transporting equipment, particularly if they are metal pipes.

2. Before disconnecting a compressed air line or repairing it, take the necessary precautions. For example, bring the pressure in the line to atmospheric pressure before disconnecting it from the source.

3. If the line is flexible, it must be equipped with:
 - couplings connected by a chain on each side of a connection;
 - a self-locking device; or
 - a connection equipped with a locking device.

Pipes and connections for the compressed air supply system must be in good condition, meaning that they must not be deformed or cracked.

4. It is forbidden to use compressed air to clean yourself or someone else. There is a risk of ruptured eardrums, of getting dust or particles in eyes, or of being contaminated (contaminants can penetrate the skin). When cleaning machines or equipment, the air pressure must be less than 200 kPa (30 psi).
5. When compressed air is used for special effects (as for example, to produce an explosion in a pipe or a confined area), personal protective equipment must be made available for all personnel on the site, and the safety coordinator must ensure that they use it.
6. When an internal combustion motor is used as a source of energy for a pressurization device, the exhaust gases must be exhausted from the motor to the outdoors in order to avoid carbon monoxide poisoning.

Compressed air as a source of breathing air

7. To eliminate the risks of explosion, make sure that the concentration of flammable vapours or gases is below the permissible limits, namely below 10% for enclosed spaces and below 25% for other areas. These spaces may then be occupied if the air quality is also confirmed.

When it is impossible to ensure workplace air quality, personal respiratory equipment listed in the IRSST *Guide des appareils de protection respiratoire utilisés au Québec* must be used. Equipment selection is based on the standard pertaining to the selection, use and care of respirators (CSA Z 94.4-1993) and on the existing danger.

8. An air-line respirator must be used in the following cases:
 - exposure to a known contaminant at a concentration equal to or greater than a concentration that is an immediate danger to life and health;
 - exposure to a known contaminant at an unknown, but potentially toxic, concentration;
 - an oxygen deficiency;
 - during certain work, as for example, the spraying of paint containing isocyanates, abrasive blasting, etc.

There are several types of air-line respirators: half masks, full masks, hoods or full suits. The tighter the respirator fit, the more efficient the respirator. In the case of abrasive blasting, the hood must also provide protection against dust and projected particulates (type CE).

9. The air supplying the respiratory protective equipment must comply with the standard on compressed breathing air and systems (CSA Z 180.1-M-1985).
10. The purity of the air from compressed air equipment must be checked in a laboratory at least every six months and every time that this equipment is modified or repaired. When the equipment comes from a rental company, the latter must supply the producer with a certificate confirming that their system has undergone an air purity analysis in the previous six months.

11. The inlet into compressed breathing-air production systems must be located in such a way as to supply air that is free of impurities. When an internal combustion motor is being used as a source of energy, precautions must be taken to prevent the exhaust gases from entering the compressor's air supply pipe.
12. Compressed breathing-air distribution systems must only be used for this purpose; they must not be used to supply tools, for example. The distribution system must comply with the standard mentioned in point 9 and include mechanisms that primarily prevent accidental connection with a pipe containing argon or carbon dioxide.
13. The flow in the respiratory protective equipment's hood or face piece must be sufficient to create positive pressure and limit the penetration of contaminants, in compliance with the manufacturer's recommendations. The flow must be at least 115 litres per minute for a face piece, or 165 litres per minute for a hood, but not greater than 430 litres per minute.
14. Compressed breathing-air production and distribution systems must be kept in good operating condition and be maintained according to the manufacturer's instructions. They must also be inspected regularly as well as every time that a problem is noted. They must be kept in perfect condition. Except in emergencies, respiratory protective equipment must be regularly cleaned and disinfected, particularly before another worker uses it. It must also be stored in a clean location.
15. The safety coordinator must ensure that users of protective equipment and compressed breathing-air production equipment have the necessary knowledge about their operation and use as well as about their related risks.

When a gas other than compressed air is used (nitrogen, for example) for cleaning work in a confined space, proper ventilation or a source of breathing air must be provided.

References

- Selection, Use, and Care of Respirators* (CSA Z 94.4-1993).
Compressed Breathing Air and Systems (CSA Z 180.1-M-1985).
Guide des appareils de protection respiratoire utilisés au Québec, 2^e édition, IRSST (DC 200-1634-2 (03-09)).

Note. – The information contained in this guideline is not exhaustive and does not replace current standards, laws and regulations.