

## Escaping from a mine – how to extract yourself from an unforeseen situation?

We all want our workplace to be as safe as possible. Any accident, even a minor one, can endanger our health, that of our colleagues or anyone else in the vicinity. In addition, any interruption to the production process costs money. Unfortunately, there is always a risk that something may go wrong. In such cases, we want to ensure that the life and health of the miners are not endangered.

Mining is a risky industry. We deal with flammable substances, toxic gases, high pressures, explosives and unpredictable Mother Earth. If the atmosphere becomes toxic, the first step is to evacuate all personnel from the danger zone. To make this possible, all employees must carry emergency respirators known as 'self rescuers' or 'escape devices'.

### History

Respiratory protection in underground mining is a subject almost as old as mining itself. In fact, the first respirators were designed for military purposes, primarily for Navy divers, but the mining industry also became aware of the benefits of respirators in the 19th century. Mine Safety Appliances (MSA) in the USA has been developing respiratory protection apparatus based on potassium superoxide since 1936. It is called Chemox Oxygen Breathing Apparatus and works completely independently of ambient air. Since then, MSA has developed a full range of escape devices which either function using ambient air (filter self rescuer) or which can be used in scenarios where there is not sufficient breathable air available (self-contained self rescuer).



Depending on the risk assessment, and based on the length of their escape route combined with the expected danger, the user may choose devices for 20 minutes to 60 minutes for SCSR and devices with a minimum duration of 120 minutes for FSR.

### Choosing the right equipment

A self rescuer is a device intended to be used rarely or, ideally, never!

That is why when choosing a self rescuer, optimum ergonomics should be considered as well as the maximum necessary protection level.

As is the case with other respiratory protection devices, there are two major types of self rescuer – filter and self-contained devices. Filtering devices usually require little or no maintenance and are of a compact size, but they have few limitations in use.

### Filtering solution

If we know what we need to protect against, we must ensure that the escape procedures do not require us to stay in confined spaces. Toxic gases may build up in closed rooms or chambers and oxygen deficiency may occur. If the concentration of toxic agents becomes too high, an air-purifying self rescuer may not be able to filter it adequately. Nor can it provide the user with supplementary oxygen.

## **Self-contained solution**

The other type of device is the supplied-air self rescuer. This type of self rescuer has an independent source of air or a means of refreshing exhaled air. This means they are of universal use, with the choice between one self rescuer and another being motivated mostly by ergonomics and cost, not the type of risk. Cost here refers not only to the purchase price, but also the cost of ownership. The various technologies have their advantages and disadvantages, but there should be something on the market to meet all possible requirements.

## **Be on the safe side!**

Having to escape from a mine is something we all would like to avoid. Nobody wants an accident to happen, but if one does, we would like to ensure that everybody is able to escape safely and return to their families unharmed. Providing your employees with the right kind of escape device and ensuring that they are all properly maintained is one of the key factors in lowering these risks. After all, is there anything more important than clean air for breathing?