



SAFETY HAZARD ALERT

OXYGEN SAFETY IN REFUGE ALTERNATIVES

A portable Refuge Alternative, Shelter, or Chamber will provide miners protection in the event of a mine emergency. The unit can sustain miners for 96 hours as they await rescue. In order to provide the 96 hours of breathable air for miners, the refuge alternatives are equipped with high-pressure compressed oxygen cylinders. The oxygen delivery system remains in a "ready state" until it is "deployed" by miners during a mine emergency.



A dangerous condition can occur if the compressed oxygen system is damaged during movement of the refuge alternative. Sudden jerks, impacts, or improper handling may result in a leak in the compressed oxygen system. A slow leak can occur resulting in accumulations of oxygen. During the stress of a mine emergency, an improperly adjusted oxygen flow rate or unintentional damage to the system by miners can result in an oxygen enriched atmosphere inside of the refuge alternative. An

oxygen enriched atmosphere increases the chances of spontaneous ignitions of materials, such as rags, miners' clothing, papers, or cardboard boxes, containing coal dust, oil, or grease

BEST PRACTICES

- ❖ Train all miners in the proper deployment and operation of the breathable air system during a stressful situation.
- ❖ Train all miners on the dangers of an oxygen enriched atmosphere and how to determine if a dangerous condition exists in the refuge alternative during deployment, and
- ❖ Train miners on methods of eliminating oxygen enriched atmospheres including adjusting flow rates, replacing plumbing components, or purging the unit.
- ❖ Use persons trained in the proper procedures to move the refuge alternatives.
- ❖ After the move is completed, make a thorough examination of the atmosphere inside access panels and near the refuge alternative for accumulations of oxygen that would indicate a leak in the compressed oxygen system.
- ❖ If an oxygen leak is discovered, shut off the source of the leak and ventilate the area to remove the oxygen enriched atmosphere. Report any damage that occurred during the move.
- ❖ Conduct proper preshift examinations of the refuge alternative, as per the manufacturer's recommendation, to determine the condition of the compressed oxygen cylinders and plumbing.
- ❖ Remove coal dust, grease, and oil from the interior of the refuge alternative or areas near any oxygen system components using appropriate cleaning materials because they can ignite in an oxygen enriched atmosphere.
- ❖ Use electrical components inside of the refuge alternative that are MSHA approved as intrinsically safe or housed in an explosion proof enclosure.

❖ Never re-fill oxygen cylinders underground.

REMEMBER: The risk of accidental ignition is present with all oxygen systems!

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