

Reform Requirements for Worker Safety in Reduced Oxygen Environments

Summary

Low oxygen fire safety systems are designed to protect cold storage and other controlled environments by maintaining oxygen levels below the threshold needed to sustain combustion, while still being safe for human occupancy. OSHA's Respiratory Protection Standard currently requires U.S. workers in these environments to wear full SCBA equipment. After conducting a rigorous study, GCCA recommends allowing lighter equipment in place of full SCBA gear, while maintaining appropriate oxygen provision for worker safety.

Background

Fire prevention systems for temperature-controlled warehouses may utilize oxygen reduction to condition enclosed spaces, maintaining a continuously reduced oxygen level in order to minimize or eliminate fire risk. This "Low Ox" environment constitutes a moderate isobaric hypoxic atmosphere. Moderate isobaric hypoxia (approximately 15.5 to 16.5 vol-%) is widely employed for fire prevention across a range of facilities, including storage rooms and server facilities. This level of hypoxia is comparable to conditions experienced by passengers on long-haul flights or by skiers and mountaineers at alpine altitudes. Approximately two billion air passengers annually, alongside several million skiers and mountaineers, demonstrate that this degree of hypoxia does not present a danger to individuals without severe cardiac or pulmonary conditions.

Nevertheless, working in oxygen-reduced environments falls within the purview of the Occupational Safety and Health Administration (OSHA) in the United States. The current Respiratory Protection Standard (29 CFR 1910.134) requires workers in such environments to wear full SCBA equipment, which can be heavy and put warehouse workers at risk of trips and falls. Other countries, including most European countries, do not require such equipment, making operations in these regions more cost competitive and attractive for additional cold storage investment by comparison.

As of August 2026, GCCA is undertaking a low-oxygen observational study in cold storage environments operating under reduced-oxygen conditions. The purpose of this study is to establish an evidentiary basis for the industry to engage with OSHA regarding means of compliance with the Respiratory Protection Standard (29 CFR 1910.134).

Policy Recommendation

Require SCBA Lite – such as nose cannulas – for oxygen flow to workers in reduced-oxygen (15.5 to 16.5 vol-%) cold storage environments rather than full SCBA equipment.

OSHA must consider the regulatory burden which has not been updated with technology and poses a greater hazard to workers in those environments. Note that GCCA does not suggest that OSHA remove all requirements for oxygen provision in "low oxygen" cold storage environments. Instead, GCCA asks for lower weight, less cumbersome equipment for the supply of individual oxygen in this environment.