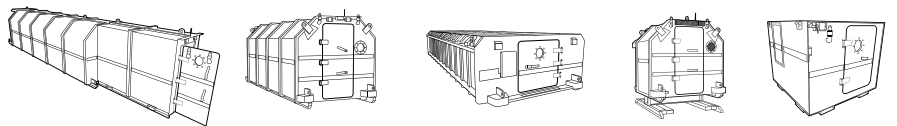


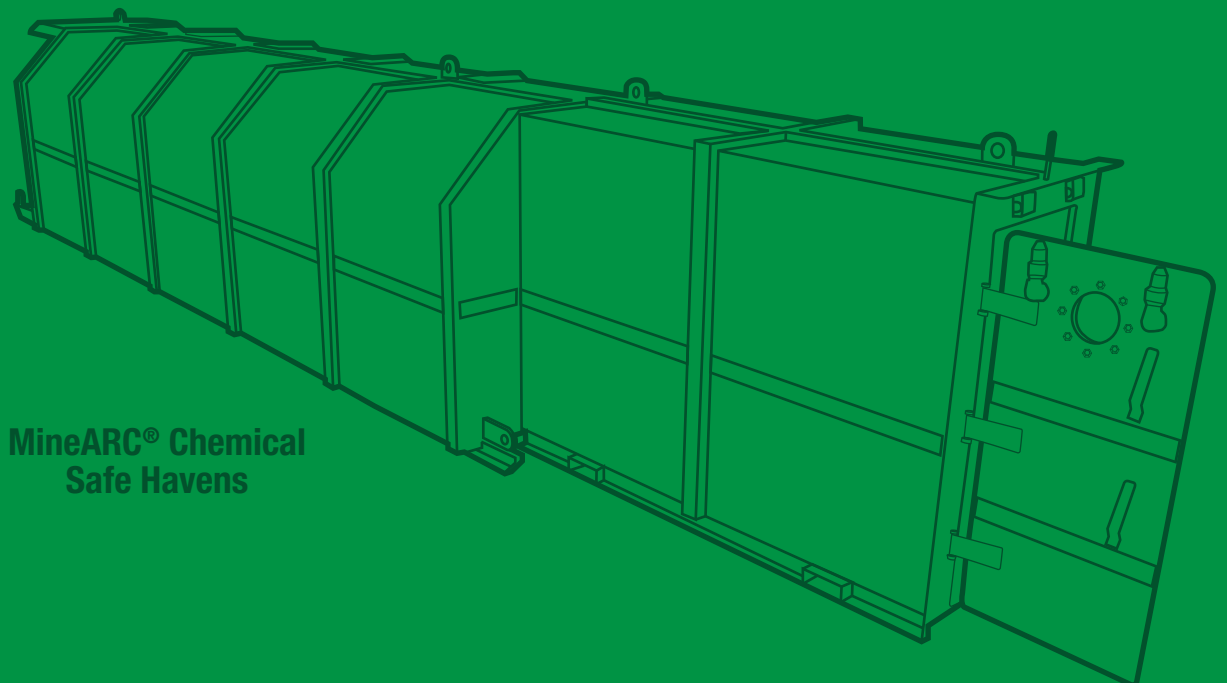
MineARC® Systems

Chemical Safe Havens

Designed to provide a refuge or 'safe-haven' for personnel suddenly trapped in a hazardous or toxic environment.



The world's leading manufacturer of emergency life-saving refuge
MineARC® Systems



MineARC® Chemical
Safe Havens



MineARC® Systems Company Profile

MineARC Systems is the global leader in the manufacture and supply of emergency safe-refuge to the underground mining, tunnelling, and chemical processing industries.

With over 15 years experience in the industry, our dedication to ongoing research and development has kept us at the forefront of safe-refuge technology.

MineARC refuges have been successfully used around the world in multiple mine and tunnelling emergencies to save lives.

MineARC has offices and manufacturing facilities in Perth, Western Australia, Pretoria in South Africa, Santiago, Chile, Fushun in China and Dallas in the United States, as well as a strong distribution network worldwide.

In total, MineARC supplies refuge chambers and safe havens to operations in over 25 countries.

All MineARC Refuges comply with the highest international industry regulations and guidelines. MineARC manufactures to 2009 ASCE: Design of Blast Resistant Buildings in Petrochemical Facilities.

MineARC is the only refuge manufacturer in the world with an ISO: 9001 quality rating.

MineARC was a finalist in the 2010 Australian Exporter of the Year Awards.

www.minearc.com



European CE Certified to Machinery Norms



Australian C-Tick Standards:
AS4100-1998, AS3570.1-18,
AS2208, AS3000, AS1716-15



United States
National Electrical Code (NEC)
2011



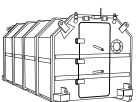
MineARC® HRM Refuge Live Risk Assessment Testing



Bureau Veritas ISO 9001:2008 Quality Management Systems



2009 ASCE Design of Blast Resistant Buildings in Petrochemical Facilities



Why A MineARC® Safe Haven?

MineARC understands that emergency response requirements differ depending on a site's processing conditions, location of personnel, surrounding land use, dangerous goods inventory and a host of other important factors.

The common practice of modifying existing site buildings to function as safe havens can often prove a timely and costly exercise, resulting in a non-flexible solution as a site expands and production requirements shift over time.

Building modification can also prove ineffective - with numerous air entry/exit points to consider (doors/windows/vents, etc) not to mention blast proofing, if required.

MineARC has developed a fully sealed, robust, transportable and cost effective muster point alternative to site building modification – The MineARC Safe Haven.

MineARC units offer a safe and secure 'go-to' area for multiple personnel in the event of a toxic chemical release, fire, explosion or other hazardous emergency response scenario:

- Self-sustaining for up to 100hrs if required – operating fully, even when cut off from site power.
- Made from solid steel plate reinforced to resist a 5PSI overpressure blast.
- A 100% fully sealed environment - guaranteed 0% external Air Change Rate (ACH).
- Fully transportable by crane or forklift – meaning they can be positioned and then re-positioned to virtually anywhere on site.
- Can act as a stand-alone muster point/safe room or be custom engineered to be used in conjunction with (attached to) existing site buildings.



Suitable For:

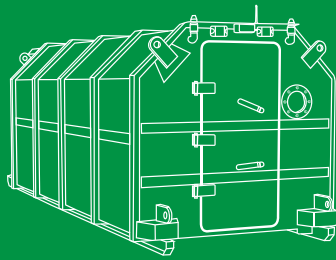
- Onshore/offshore petrochemical and natural gas facilities
- Fertilizer plants
- Food processing and storage facilities
- Major transport and manufacturing depots
- Construction sites
- Other chemical processing and handling facilities



Safe Haven Configurations

Standard Model:

Designed as a stand-alone unit incorporating main refuge area and entry airlock/compartments. The unit can be engineered to suit various occupancy requirements.



| Model | Capacity (persons) | Height (m/ft) | Width (m/ft) | Length (m/ft) | Weight (kg/lbs) |
|------------------|--------------------|---------------|--------------|---------------|-----------------|
| SH 8 / SH-PL 10 | 8 / 10 | 2.4 / 7' 9" | 2.3 / 7' 7" | 3.7 / 12' 1" | 3000 / 7800 |
| SH 12 / SH-PL 14 | 12 / 14 | 2.4 / 7' 9" | 2.3 / 7' 7" | 4.9 / 16' 0" | 3600 / 9300 |
| SH 16 / SH-PL 18 | 16 / 18 | 2.4 / 7' 9" | 2.3 / 7' 7" | 6.1 / 20' 0" | 4800 / 12500 |
| SH 20 / SH-PL 22 | 20 / 22 | 2.4 / 7' 9" | 2.3 / 7' 7" | 7.4 / 24' 3" | 6000 / 15700 |
| SH 26 / SH-PL 28 | 26 / 28 | 2.4 / 7' 9" | 2.3 / 7' 7" | 9.7 / 31' 9" | 7400 / 19210 |

Note: Capacity based on 0.65 m² (7 ft²) per person

Note: MineARC Safe Havens are available in two distinct power configurations: Electrically Powered (**SH**) and Powerless, 'Intrinsically Safe' (**SH-PL**) (powered by liquid CO₂). See 'Safe Haven Technology' on the following pages.

Custom Engineered Models:

Virtually all aspects of the Safe Haven's design can be customized by MineARC engineers, including; dimensions, structural integrity, volume, occupancy, and minimum entrapment durations.

MineARC can also engineer the Safe Haven to double as a control room, workshop area or office space.



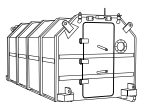
Stand-Alone Safe Haven



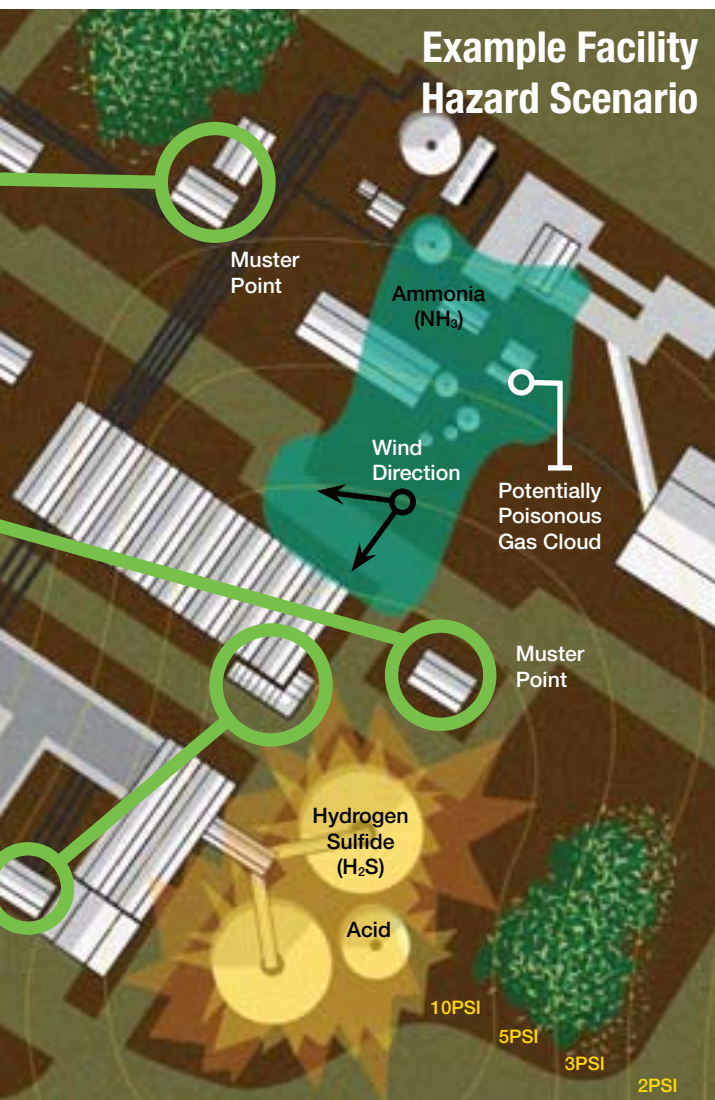
Incorporating Airlock / Vestibule



Adjoined Airlock / Vestibule



Client Testimonial: PotashCorp



“ All PCS Lima Safe Haven structures are independently tested to determine acceptable air changes per hour (ACH), or leakage, for each structure – which is dependent upon proximity to various piping and vessel systems throughout the facility.

Our new Central Control Room/BR Building passed its ACH requirement, however not by a significant margin. As a result, PCS Lima decided to utilize portable MineARC Safe Havens in conjunction with (attached to) buildings in areas where ACH modifications have become cost prohibitive.

The addition of MineARC Safe Havens (with an outstanding leakage rate of 0.0 ACH) immediately guaranteed achievement of ACH ratings with no further need for modification to adjoining structures.

With the current successful implementation of MineARC Safe Havens here at our Ohio facility, our Facility Siting projects for 2011 include strategies for Blast Resistant (BR) buildings for operator safety, and MineARC Safe Haven buildings located throughout our site as “go-to” areas in the event of release of toxic gases (NH₃).

Through the design capabilities of MineARC Systems we look forward to exploring custom Safe Haven configurations for our new Product Area Operators Building and our Administration Building, both of which have inherent space limitations.

We look forward to working with MineARC throughout 2011 - 2012.”

Sincerely,

Chip Kelley
Project Engineer
PotashCorp Nitrogen, Ohio L.P.



Safe Haven Technology

Inside a MineARC Safe Haven, a number of vital life support systems combine to create a safe and secure ongoing environment for occupants:



Construction

Every MineARC Safe Haven has been meticulously engineered to ensure ease of transport and a robust design. Constructed from 5mm (1/4") steel plate with external steel support wraps as standard, the Safe Haven also comes equipped with a skid base, lifting lugs and forklift slots to the sides. The steel structure can be further reinforced to withstand a 5psi overpressure blast. The Safe Haven features a separate airlock compartment with push-button flushing to ensure 0% external air exchange.



CO₂ Scrubbing with Gas Monitoring

The Safe Haven uses active chemicals and MineARC's patented scrubbing system to remove the buildup of harmful CO₂ (carbon dioxide) gas from inside the refuge as the occupants expire the air. The Safe Haven's gas monitoring systems continuously monitor and alert occupants to the internal / external levels of CO₂, O₂ (oxygen) and other gases within the air. Gas Monitoring Systems can be customised to onsite standards.



Oxygen Supply and Air Conditioning

Every MineARC Safe Haven is equipped with onboard medical grade oxygen cylinders which will continue to supply oxygen to the refuge once sealed.

Air conditioning is vital to combat the potentially fatal affects of heat-stress; caused by the build-up in each occupant's own metabolic activity, as well as any transient (external) heat affecting the Safe Haven's internal temperature. All MineARC Electrical Safe Havens are therefore fitted with quality reverse cycle air conditioners. In Powerless (intrinsically safe) Safe Havens, the air conditioning is powered by onboard liquid CO₂ cylinders.



Service and Maintenance

MineARC Safe Havens are easy to inspect and maintain, performing its own electrical checks and requiring minimal preventative maintenance. The Safe Haven also has a low ongoing cost of ownership with consumables (such as the active chemicals used in the scrubbing system) having extended shelf lives.

Power Configurations and UPS

MineARC Electrical Safe Havens are designed to run off a facility's 'mains' electrical power supply, operating indefinitely once connected. However, in the event that mains power is lost, the Safe Haven is equipped with its own battery UPS (Uninterruptable Power Supply), capable of powering the internal life support systems for a minimum of 12hrs, stand-alone.

For Powerless Safe Havens no connection to mains power is required. Instead all life support systems are powered by the Safe Haven's onboard bank of liquid CO₂ cylinders – also providing a minimum of 12hrs stand-alone duration.



Rear view showing UPS compartment



Features Summary

MineARC Electrical and Powerless Safe Havens

- ▶ **5mm (1/4")** Steel Plate Construction
- ▶ **Separate Airlock / Vestibule**
- ▶ **2 Sources** of Air Supply
- ▶ **CO₂ Scrubbing & Gas Monitoring**
- ▶ **Air-Conditioning**
- ▶ **12hrs** Minimum Stand-Alone Duration
- ▶ **0% ACH** (Air Changes per Hour)
- ▶ **5PSI** Blast Resistance



Optional Remote Monitoring

STANDARD FEATURES

- ✓ 5mm (1/4") Steel Plate Construction
- ✓ 2 Sources of Air (Oxygen) Supply
- ✓ Carbon Dioxide (CO₂) Scrubbing with Gas Monitoring
- ✓ Air Conditioning and Dehumidifying
- ✓ UPS Battery /Liquid CO₂ for 12hrs Minimum Duration
- ✓ Separate Fully Flushing Airlock/Vestibule Compartment
- ✓ Viewing Portal
- ✓ Rear Escape Hatch
- ✓ Fire Resistant Structure
- ✓ Ergonomically Designed Seating
- ✓ Surround Package (reinforced construction)
- ✓ Lifting and Towing Lugs
- ✓ Forklift Slots
- ✓ Non-Slip Flooring
- ✓ Chemical Toilet
- ✓ Internal and External Fire Extinguishers

OPTIONAL FEATURES

- ✓ 5 PSI Blast Resistant Construction
- ✓ Separate Fully Flushing Airlock/Vestibule Compartment
- ✓ Skids Transport Configuration
- ✓ First Aid Kit (Standard on US Models)
- ✓ Step-Down Transformer
- ✓ Receptical Plug (Trailing Cable Connecting Plug)
- ✓ Remote Monitoring Inside the Chamber
- ✓ Oxygen Candles for Backup Oxygen Supply
- ✓ Additional UPS Battery/CO₂ for up to 100hrs Minimum Duration



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