

Advancements in Confined Space Training: NIOSH Malaysia's Innovative Approach



Self Introduction

MOHD RAZMAN BIN ISMAIL

Resident Trainer
019-3381278

mohd.razman@niosh.com.my



Academic Qualification

- 1) Bachelor of Science with Honors (Microbiology)
- 2) Master of Occupational Safety and Health Risk Management (MOSHRM)



Competency

Penguji Gas Bertauliah dan Penyelia Kemasukan - **HQ/14/AGTES/00/2072**



Trainer's Experience

- Authorised Entrant & Standby Person (AESP)
- Authorised Gas Tester & Entry Supervisor (AGTES)
- Oil and Gas Safety Passport (OGSP)
- NIOSH TNB Safety Passport (NTSP)
- NIOSH TM Safety Passport (NTMSP)
- NIOSH CENVIRO Safety Passport (NCSP)



Introduction



Established in 1992, NIOSH Malaysia leads in Occupational Safety and Health (OSH) training.

To be a leading center of excellence in Occupational Safety and Health in Malaysia

Evolving with technology, NIOSH ensures relevance in OSH training methodologies.

Utilizes cutting-edge technology for effective training and skill development.

Strategic management plan focuses on infrastructure and equipment enhancement for comprehensive OSH training.



Confined Space Major Incident



Major confined space incident in Malaysia in June 2001.

Fire on the "New Renown" - a supertanker being repaired at a Malaysian shipyard.

9 workers killed – suffocated due to the fire

NIOSH Malaysia's establishment of a task force for safety and health in confined space entry.



Regulatory Involvement

In October 2001, DOSH issued the Code of Practice for Safe Working in Confined Spaces, with NIOSH Malaysia contributing as part of the working group.

These initiatives aim to ensure the safety and health of all involved in confined space entry.

NIOSH Malaysia's efforts contribute to raising awareness and competence in confined space safety practices nationwide.

Offers comprehensive training involving confined space



**Industry Code of Practice
For Safe Working In A
Confined Space 2010
(ICOP CS 2010)**



Definition of Confined Space

An enclosed or partially enclosed space;

Is at atmospheric pressure during occupancy;

Is not intended or designed primarily as a place of work, AND

Is liable at any time to:

- Have an atmosphere which contains harmful levels of contaminants;
- Have an oxygen deficiency or excess; OR
- Cause engulfment AND

Could have restricted means for entry and exit



Hazardous Atmosphere



Oxygen content is below 19.5%

- a person can be asphyxiated @ choked to death



Oxygen level above 23.5%

- fires will burn ferociously



Accumulation of flammable or explosive gas greater than 10% of its LEL

- introduction of a spark can lead to fire or explosion



Accumulation of toxic gases equal to or exceeding its permissible exposure limit (PEL)

- people can be poisoned



Any other atmospheric condition that is immediately dangerous to life or health (IDLH);

- e.g. presence of any toxic, corrosive, or asphyxiation substance



NIOSH Confined Space Training

1) Authorised Entrant and Standby Person (AESP)

2) Authorised Gas Tester and Entry Supervisor (AGTES)

3) Confined Space Rescue (CSR)

4) Inert Entry Training (IET)

5) Confined Space Trainers' (CST) Program.



Framework to Become a Competent Person for Confined Space in Malaysia

AESP

Attended a training course for AESP and passed the examination.

AGTES

Attended a training course on safe working in confined space for AGTES and passed the test or examination and registered with DOSH

CS TRAINER

Attended a training course for Confined Space Trainer (CST) and passed the test or examination and registered with DOSH

CS RISK ASSESSOR

The proposal stage :
 Attended a training course for Confined Space Risk Assessment (CSRA) and passed the test or examination.

BASIC



Syllabus

- Legal requirements
- Hazards in confined space.
- Entry procedure and equipment

INTERMEDIATE



Syllabus

- Legal requirements
- Hazards in confined space.
- Procedure of entry.
- Emergency preparedness and response plan.
- Gas detection system.
- Ventilation system.
- Respiratory protection devices.
- Introduction of CSRA

ADVANCE



Syllabus

- Overview of confined space and Legal requirements.
- Confined Space Risk Assessment (CSRA).
- Usage and maintenance of gas detection.
- Usage and maintenance of breathing apparatus.
- Ventilation system.
- Mobile Training Unit usage.

EXPERT



Syllabus

- Introduction of CSRA.
- Risk assessment technique.
- Technical of gas detection system.
- Technical of ventilation system.
- Preparation of CSRA report.



CS Training Facilities - HQ

- Location: Main Office Building, NIOSH Bandar Baru Bangi
- Provide space for practical training activities for confined space programs
- Developed according to industry standards (1 silo unit and 1 tank unit)
- Construction cost of RM435,000 covered by RMK10 allocation



CS Training Facilities - Branch

- Location : All branch offices across Malaysia
- Purpose: Fulfill JKKP registration requirements as a Confined Space Training Center
- Design: Aligned with JKKP guidelines, compact, and portable
- Funding: Construction cost of RM3.2 million sourced from internal allocations and RMK



CS Training Simulator



NRO PENANG



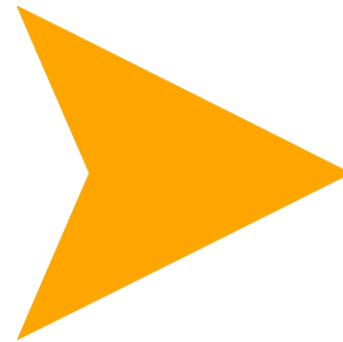
ECRO TERENGGANU

CS Training Evolution

From In-building Simulator to Mobile Training Unit (MTU)

Improved Designs Based on Feedback from Industry and CS player

Compliance with Safety and Health Standards Established by JKKP



Evolution of Mobile Training Unit (MTU)

Transformation from 4WD-Towed Unit to Single-man-Operated truck



Staff directly engaged in Confined Space Training (a Driver and a Trainer cum Assessor)



Incorporating Industry Feedback and Design Team Input – as similar as possible



Following JKKP Safety and Health Guidelines



Thorough Examination by JKKP Officers Before Approval



MTU Models and Innovations



MTU 1.0

Model	MTU 1.0
Year	2010
Unit Produced	2 Units
Features / Innovations	<ul style="list-style-type: none"> • 1st Mobile Simulator Unit • Compact design • Side and top entry • Tripod and winch mounting • Towed by 4WD



MTU Models and Innovations



MTU 2.0

Model	MTU 2.0
Year	2016
Unit Produced	5 Units
Features / Innovations	<ul style="list-style-type: none"> • 8-Ton truck unit • Larger and more comprehensive • LOTO Simulator • Blinding / Spading Simulator • Smoke Machine • CCTV • Multiple manhole (side and top entry) • Tripod and winch mounting



MTU Models and Innovations



MTU 3.0

Model	MTU 3.0
Year	2019
Unit Produced	2 Units
Features / Innovations	<ul style="list-style-type: none"> • 3-Ton truck unit • Compact design • Smaller and easier to handle • LOTO Simulator • Blinding / Spading Simulator • Smoke Machine • Multiple manhole (side and top entry) • Tripod and winch mounting



MTU Models and Innovations



MTU 3.1

Model	MTU 3.1
Year	2022
Unit Produced	6 Units
Features / Innovations	<ul style="list-style-type: none"> • 3-Ton truck unit • Enhanced and compact design from 3.0 model • Smaller and easier to handle – improvements from 3.0 model • LOTO Simulator • Blinding / Spading Simulator • Smoke Machine • Multiple manhole (side and top entry) • Tripod and winch mounting

Key Safety Features in MTU



LOTO Simulation



CCTV



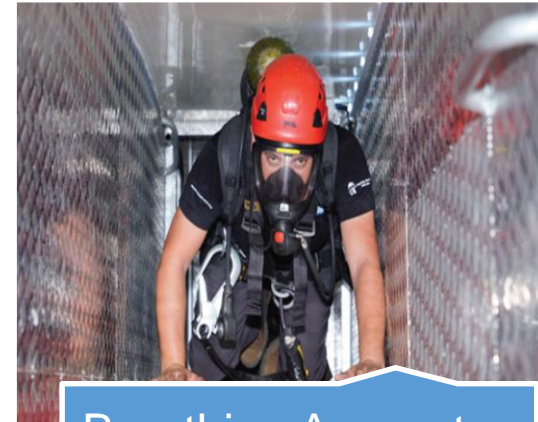
Smoke Machine



Blinding Simulation



Tripod and Winch Mounting



Breathing Apparatus Entry Option



MTU and CS Training – The Way Forward

Interactive Simulations



Confined Space Safety Training Using VR

Virtual Reality (VR) simulations or Immersive Training Environments

Scenario-Based Learning



Develop scenario-based learning modules that replicate real-world confined space situations

Advanced Equipment Training



The use of latest equipment, gadgets and technology in the CS training

Multi-Disciplinary Approach



Combining other related safety training such as Working at Height inside the Confined Space



Conclusion

1. Emphasize Hands-On Training

- Prioritize interactive simulations and scenario-based learning to provide practical experience in confined space scenarios.

2. Enhance Safety Preparedness

- Strengthen rescue training, risk assessment skills, and emergency response protocols to ensure readiness for confined space incidents.

3. Foster Continuous Improvement

- Encourage ongoing evaluation, regulatory compliance, and collaboration to evolve training programs and promote a culture of safety in confined space work.





Come and meet us
at the NIOSH
Mother Booth and
we will be happy
to answer all your
questions
regarding the
Confined Space
Mobile Training
Unit.



COSH
2024
24th CONFERENCE AND
EXHIBITION ON
OCCUPATIONAL
SAFETY AND HEALTH

SCICOSH
6th SCIENTIFIC CONFERENCE ON OCCUPATIONAL SAFETY AND HEALTH

THANK YOU