

Health Standards for safe working in Confined Space.

**By
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1. Introduction.

There are many types of confined space, all of which are hazardous. Because of the hazardous nature of confined space work, very good control measures are required to minimize the associated health and safety risks. Hazards associated with confined space include oxygen deficient atmosphere, fire and explosion, chemicals, dust, noise, manual handling, limited room space restricting mobility, deficient lighting, working at heights, electricity, radiation etc. Work in confined space is normally strenuous and it can be aggravated by heat stress. Another important characteristic of confined space is the difficulty in entry and egress. One control measure to address the hazardous nature of confined space work is the application of Permit To Work (PTW) Procedure in all activities associated with confined space work. Because of the characteristics of confined space and its inherent hazardous nature, it is very important that those involved in confined space work be required to meet certain health standards as part of the control measures to ensure operational safety.

2. Health Requirements for safe working in Confined Space

Candidates with any of the medical conditions listed in Table 1. should not be allowed to work in confined space. Confined space workers with acute medical conditions particularly if they are on medications that can result in drowsiness, should be advised not to work in confined space until they have recovered from their condition.

3. Health Requirements and Permit To Work Procedure

Medical examination for confined space work should be made compulsory. This is to be included in the PTW procedure.

4. Medical Surveillance

Confined space workers who are exposed to chemicals hazardous to health under Schedule II (Subregulation 27(3)) of the Use and Standards of Exposure of Chemicals Hazardous To Health Regulations 2000, are required to undergo annual medical surveillance. This medical surveillance examination is organ specific with the objective of identifying early medical changes that could be caused by the chemical exposure.

4. Frequency of Medical Examination.

Safety oriented medical examination for confined space work is to be conducted at the following frequency:

1. Up to 35 years of age: once every 5 years
2. 36-45 years of age: once every 2 years
3. 46 years and above: once every year.

Medical surveillance examination is to be conducted annually.

Table 1
Health Requirement for safe working in Confined Space.

1	Acute Medical Problems	Remarks
	1.1 Severe Upper & lower respiratory tract infections	E.g. Pneumonia, Pharyngitis
	1.2 Other infectious diseases	E.g. Conjunctivitis, Otitis etc
2	Conditions that limit mobility	
	2.1 Gross Obesity	BMI 30 or greater
	2.2 Upper & lower limbs abnormalities	E.g. chronic arthritis, limbs amputations, hemiplegias & acute injuries.
	2.3 Spinal abnormalities	Spondylitis, Scoliosis, chronic backache, back surgery
3	Conditions affecting sense organs & effective communications	
	3.1 Monocular vision & blindness, severe visual impairment (visual acuity > 6/18 both eyes, uncorrected for those needing to use SCBA)	Persons with spectacles/contact lenses will have difficulty/problems in using SCBA
	3.2 Moderate to severe hearing Impairment	
	3.3 Loss of sense of smell	E.g. Chronic Rhinitis
	3.4 Abnormal Speech	E.g. Cleft palate/lips – may affect communications and effectiveness of PPE
4	Mental Conditions	
	4.1 Mental disorders	E.g. Psychosis, Depression
	4.2 Phobias	E.g. Phobias of enclosed space height phobias & darkness, panic attacks

5	Chronic Medical Problems	
	5.1 Fits & Fainting attacks	E.g. Epilepsy
	5.2 Dizzy spells	E.g. Meniere's diseases
	5.3 History of cardiac diseases	E.g. Angina, heart attack, heart failure
	5.4 Chronic obstructive lung diseases	E.g. Chronic asthma, COAD,
	5.5 Uncontrolled Hypertension with/without complications	
	5.6 Uncontrolled diabetes with/without complications & diabetics on insulin	
	5.7 Chronic rhinitis with loss sense of smell	
	5.8 Chronic skin disorders	E.g. Psoriasis, severe dermatitis
	5.9 Malignancies – terminal cases	
6	Alcohol & Drugs – Suspected or under the influence of drugs and alcohol	

DOCUMENT 2

HEALTH GUIDELINES FOR WORKING IN CONFINED SPACE

Definition: "Confined space" generally describes a space having a relatively small volume with unfavourable natural ventilation and one into which infrequent or irregular entry is made for purposes of maintenance, repair and/or cleaning. (From "Encyclopaedia of Occupational Health and Safety"). Examples of such spaces include tanks, boilers, silos, sewers, compartments of ships, etc.

Introduction

There are a number of occupational health and safety hazards associated with working in confined space.

- Heat stress
- Dust associated with grit blasting
- Falling objects
- Falling from heights
- Hydrocarbon vapour including additives and aromatic compounds like benzene and MTBE
- Organic lead (TEL/TML) in leaded tank
- Oxygen deficient atmosphere

Relevant training, procedures, personal protective equipment and recovery measures should be in place to ensure that work in confined space could be carried out safely. Equally important, workers must be free from medical conditions which may compromise their safety. It is therefore important that workers involved in confined space work must first undergo health screening and be certified fit before they start work.

HEALTH REQUIREMENTS

Any medical condition, which may affect the health and safety of the individual worker, his/her colleagues or the safety of the operations, would result in disqualification. Workers involved in confined space work must be in good general health.

Arising from the foregoing, the following procedures or steps should be taken:

1. General Requirements

- a) Ensure work is covered by Permit-to-Work system.
- b) That the temperature in the confined space is monitored to ensure that the heat stress threshold limit values are not exceeded at all times when work is being carried out.

2. Non-leaded Confined Space Work

- a) Workers involved in the confined space entry are to undergo a general health screening conducted by a Medical Practitioner using Form A.
- b) However, the Medical Practitioner will proceed carrying out medical examination if any item in Form A is answered in the affirmative.

3. **Leaded Confined Space Work***

- a) The medical examination should be carried out by a Medical Practitioner.
- b) A urine test should be conducted to determine the lead level before and after the project is completed.

*Leaded confined space is defined as a confined space with the presence of organic lead

4. **Medical Certificate**

Medical fitness certificate must be obtained before a worker is allowed entry into a leaded confined space.

- A medical certificate is valid for one year, i.e. the worker is allowed entry into leaded confined space anytime within one year-validity period (subject to all other conditions in the Permit-to-Work system being met). However, during the validity period of the certificate, if there is doubt as to the health status of a particular worker, then a subsequent check-up is warranted.
- The urine test should be carried out for every leaded confined space entry (N.B. Blood sample is collected for inorganic lead estimation). The test should be carried before and repeated after completion of each project even though the medical certificate is still within its one-year validity period.

MEDICAL/HEALTH GUIDELINES

1. **General Health**

Not suffering from acute illness
BMI not greater than 30
Not suffering from any malignancy

2. **Medication**

Taking of the following medication which may affect alertness would result in disqualification:

- cough and cold medication
- tranquilisers
- hypnotics
- other drugs including cytotoxic agents (cancer treatment), anti-coagulants and immunosuppressants.

3. **Eyes**

Poor visual acuity. Visual acuity must be at least 6/12 (corrected). Use of contact lens is discouraged but may be allowed following medical consultation.

4. **Ear, Nose and Throat**

Severe inner ear disease with recurrent vertigo.

5. **Cardiovascular (heart & blood vessels) System**

Must be free from:
Ischemic heart disease
Hypertension (uncontrolled)
Arrhythmia

Acute phlebitis

Heart failure

Congenital disease accompanied by cardiomegaly, ECG abnormality or evidence of inadequate oxygenation.

6. Respiratory (lung) System

Asthma if not under good control

Chronic obstructive pulmonary disease

Acute pulmonary infection including TB

7. Gastrointestinal System

Acute peptic ulcer

8. Haemopoietic (blood and blood forming) System

Anaemia – if Hb below 8gm %

9. Endocrine

Diabetes (poorly controlled)

10. Renal (kidney) System

Chronic condition like nephritis

Renal failure

11. Musculoskeletal System

Deformity or amputation of body or limb likely to significantly reduce mobility or interfere with performance of duties or affect effective use of PPE would result in disqualification. Chronic or recurrent disease of muscle, bones or joints significantly affecting mobility, balance, co-ordination.

12. Dermatological (skin) System

Inflammatory skin conditions (both acute and chronic) if it interferes with the wearing of PPE and also if there is increased risk of absorption of toxic substances.

13. Nervous System

Motor function loss

Epilepsy – unfit if there is history of convulsion in the last 2 years with or without medication.

Disease affecting co-ordination like Parkinson.

14. Psychiatric

Depression

Manic depressive

Anxiety states

Psychosis

Drug and alcohol dependent, current or past

Claustrophobia

INVESTIGATIONS/LABORATORY TESTS

- **Additional Requirement for Leaded Tank Desludging Work**

As TEL/TML is very toxic, workers carrying out desludging of leaded tank must undergo a urine test for lead before (for establishing baseline) and after (to detect any significant lead absorption) they have completed the desludging work. It is important that this test be conducted by a laboratory that has the expertise and experience to carry out tests for organic lead.

- **General Procedure for Collecting Urine Specimen for Organic Lead Test**

Urine specimens should be collected in a clean environment. The worker is required to wash his hands thoroughly with soap and water before the test to prevent contamination and for personal hygiene reason. The specimen is to be collected at the Clinic and supervised by a trained medical staff.

3

- **Urine Collection**

Use only lead free containers. 100ml wide-mouth polyethylene containers (with screw cap) can be used.

Clean the containers with 6N nitric acid to remove contaminants.

Then wash the containers with water a few times and rinse it with distilled water.

Collect a minimum of 10ml of urine.

Add a few drops of analytical grade HCL (2N) to prevent bacterial growth during transportation.

Label the specimen bottle with the worker's name, NRIC, staff number (if any), date of birth and date of collection.

Store the sample in a refrigerator at 4 degrees C until the specimen is despatched.

RESULTS TRANSMISSION & INTERPRETATION

The examining doctor should receive the results and communicate with the concerned worker if required.

SOAL JAWAB KESIHATAN KONTRAKTOR

Sila isikan butir-butir dalam huruf besar. (TO BE COMPLETED WITH THE HELP OF A NURSE OR DOCTOR)

NAMA:		TEMPAT PEKERJAAN:			
NO KAD PENGENALAN:		TARIKH LAHIR:			
KEWARGANEGARAAN:		NEGARA DILAHIRKAN			
ALAMAT:		MELAYU []	CINA []		
		INDIA []	LAIN-LAIN BANGSA []		
LELAKI	KAHWIN				
PEREMPUAN	BELUM KAHWIN				
	BERPISAH/BERCERAI				
	JANDA/DUDA				
PEKERJAAN:					
		Ya	Tidak		
1. Pemasangan kurang jelas				25. Penyakit buah pinggang	
2. Masalah telinga				26. Darah dalam kencing	
3. Asthma/bronchitis				27. Sakit bila kencing	
4. High fever/alahan				28. Penyakit kencing manis	
5. Penyakit kulit				29. Pening kepala/migrain	
6. Tibi				30. Pening/pitam	
7. Sesak nafas				31. Sendi/sakit tulang belakang	
8. Batuk/muntah darah				32. Pembedahan	
9. Sakit perut – tenat				33. Kemalangan/patah tulang	
10. Ulser perut				34. Takut dgn tempat tinggi	
11. Penghazaman kurang baik				ADAKAH ANDA:	
12. Sakit kuning/hepatitis				Tidak diterima untuk pekerjaan atau membeli insurans kerana kesihatan	
13. Penyakit hempedu				Menerima imbuhan untuk kecederaan/kesakitan	
14. Kelainan pergerakan usus				Menerima rawatan untuk sakit otak seperti tekanan?	
15. Darah di dalam najis				Menerima rawatan untuk masalah meminum arak atau penagihan dadah?	
16. Urat timbul				UNTUK WANITA SAHAJA. ADAKAH ANDA:	
17. Kanser				Pap smear kurang baik	
18. Sakit jantung				Rawatan sakit puan	
19. Penyakit reumatik				Mengandung?	
20. Kadar jantung tidak teratur				ADAKAH ANDA MENGALAMI SEBARANG PENYAKIT YANG TIDAK DISEBUT DI ATAS?	
21. Darah tinggi				Adakah anda menerima rawatan perubatan?	
22. Lumpuh akibat darah tinggi				Adakah anda mengalami sebarang alahan perubatan?	
23. Sakit dada					
24. Penyakit perdarahan					

Latarbelakang keluarga

Kencing manis [] Tibi [] Gila babi [] Asthma []
 Sakit jantung [] Darah tinggi [] Stroke [] Kanser [] Penyakit darah []

Pekerja yang sentiasa terdedah kepada benzene perlu kajian darah, hemoglobin dan "total white blood count". Sila lampirkan keputusan.

SILA TANDATANGAN JIKA ANDA BERSETUJU DENGAN KETERANGAN BERIKUT:

Saya mengesahkan keterangan yang saya berikan adalah betul dan saya bersetuju keputusan pemeriksaan peubatan saya boleh diberi kepada majikan yang berkenaan dan butir-butir kepada doktor peribadi saya jika diperlu.

Tarikh:

Tandatangan: