

HYPOXIC ENVIRONMENTS SIMPLE CHECKLIST

Normal air contains approximately 21% oxygen. This hypoxic environment contains approximately 15% oxygen. In terms of available oxygen, being in a 15% oxygen environment is similar to being on a commercial airplane, or at a high-altitude location of around 2,400m (eg Mt Kosciuszko, Aspen Colorado).

The great majority of people will not experience any adverse reaction or discomfort in a hypoxic environment. If you consider that it would be safe for you to travel on a commercial aircraft flight, it is likely that the hypoxic environment will not pose a risk to you.

However, in the event that you experience discomfort or shortness of breath, you should leave the hypoxic environment. If the hypoxic environment is the reason for this discomfort or shortness of breath, it will resolve rapidly following exposure to normal air.

You should not enter the hypoxic environment if you have any of the following medical conditions:

- Severe or unstable heart or lung disease. Stable angina and well-controlled asthma are not contra-indications.
- Severe anemia.
- If you have had a stroke of any sort in the past 12 months.
- Pregnancy (third trimester).
- If you have experienced any of the following adverse effects during previous stays at altitudes of 2000-3000m (6,500-10,000ft) or during airplane flights:
 - Troublesome, persistent headache
 - Nausea or vomiting.
 - Abdominal, chest or joint pains.
 - Shortness of breath at walking pace or severe fatigue.
- Any other medical issues that you are concerned may affect you working in a reduced oxygen environment.

If one of the above applies to you, you will need an expert evaluation should you need or want to work or visit a hypoxic environment.

HYPOXIC ENVIRONMENTS IN-DEPTH CHECKLIST

STAGE 1: Questionnaire for persons likely to enter a hypoxic environment	Yes/No
1. Do you have any known heart disease?	<input type="checkbox"/>
2. Do you have any known lung or airway disease?	<input type="checkbox"/>
3. Do you have anemia?	<input type="checkbox"/>
4. Do you have, or have a family history of, inherited blood disease, low blood count, anemia or sickle-cell anemia?	<input type="checkbox"/>
5. Did you experience any pains (with the exception of headaches), such as abdominal, chest or joint pains, nausea, vomiting, shortness of breath or fatigue during previous stays at high altitude (mountains) or during airplane flights?	<input type="checkbox"/>
6. Have you ever had a stroke or a “mini” stroke (transient ischemic attack)?	<input type="checkbox"/>
7. Have you ever been treated for rhythm problems of the heart?	<input type="checkbox"/>
8. Have you had any episodes of dizziness within the last 3 months that have prevented you from pursuing your normal daily activities?	<input type="checkbox"/>
9. Do you have to pause during your daily activities at work or at home because of shortness of breath?	<input type="checkbox"/>
10. Have you experienced any chest pain within the past 3 months while at rest, or while under physical or mental stress?	<input type="checkbox"/>
11. Have you woken up in the past 3 months because of shortness of breath?	<input type="checkbox"/>
12. If female, are you currently pregnant?	<input type="checkbox"/>
13. Are there any known medical issues that you think might affect you working in a low-oxygen environment? If so, please specify.	<input type="checkbox"/>
14. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?	<input type="checkbox"/>

If the person responds with “YES” to any of the above statements, they should be referred to a qualified physician to determine whether they should be allowed to enter the hypoxic environment and, if so, under what limitations (if any).

STAGE 2: Further examination by a qualified physician

It is important that this clinical evaluation is performed by a Physician who has relevant environmental physiology knowledge experience and the technical equipment necessary to simulate a low-oxygen environment if needed. The Physician should provide a report to the organization and advise on any controls or limitations required to ensure that safe practices are maintained.

HYPOXIC ENVIRONMENTS

FREQUENTLY ASKED QUESTIONS

TOPIC	COMMENT
PREGNANCY: WHAT IF I AM PREGNANT?	PREGNANT WOMEN SHOULD NOT BE EXPOSED TO RISK CLASS 3 OR 4 HYPOXIA. THEY CAN BE EXPOSED TO RISK CLASS 2 HYPOXIA, BUT FOR MINIMAL WORKLOAD ONLY (E.G. INSPECTION, SUPERVISION).
COMPARISON WITH AIR TRAVEL: HOW DOES THE HYPOXIC ENVIRONMENT COMPARE WITH AN AIRCRAFT CABIN?	FOR RISK CLASSES 1 AND 2 THE HYPOXIA DOES NOT EXCEED THE PERMITTED DEGREE OF HYPOXIA OF AN AIRCRAFT CABIN. THIS GIVES THE PERSON AN IDEA HOW HE/SHE WILL EXPERIENCE THE ENVIRONMENT.
INFLOW EXPOSURE RISK:	DELIBERATE AND DIRECT INHALATION OF GAS FROM THE DEVICES CAN BE EXTREMELY HAZARDOUS. STAY AT LEAST 1.0 M FROM THE INJECTOR ORIFICES. THIS PROVIDES FURTHER SAFETY, PARTICULARLY IN RELATION TO NITROGEN INJECTION SYSTEMS.
ACUTE MOUNTAIN SICKNESS (AMS) SYMPTOMS:	<p>HEADACHE DIZZINESS, OR NAUSEA MAY OCCUR IN SOME PEOPLE WHO ARE SUBJECT TO CLASS 2 HYPOXIA FOR A PERIOD OF HOURS. THESE SYMPTOMS SHOULD RESOLVE WITHIN 30 MINUTES OF LEAVING THE HYPOXIC ENVIRONMENT. IF SYMPTOMS ARE SIGNIFICANT AND NON-RESOLVING, MEDICAL ADVICE SHOULD BE SOUGHT. IF SYMPTOMS REAPPEAR AFTER RETURN TO HYPOXIA, SPECIFIC ADVICE BY A PHYSICIAN TRAINED IN ALTITUDE MEDICINE/HYPOXIC ENVIRONMENTS IS NECESSARY BEFORE ENTERING THE HYPOXIC ROOM AGAIN.</p> <p>AMS SYMPTOMS ARE MORE FREQUENT AND CAN BE MORE SEVERE IN CLASS 3 AND CLASS 4 HYPOXIC ENVIRONMENTS BUT THESE ARE NOT PRESENTLY BEING USED IN AUSTRALIA.</p>
ALARM SYSTEM/EMERGENCY EXIT:	IF THERE SHOULD BE ANY ALARM SIGNAL GENERATED BY THE HYPOXIA SYSTEM, LEAVE THE HYPOXIC AREA IMMEDIATELY (BUT DO NOT RUN IN AN UNCONTROLLED MANNER, TO AVOID ADDITIONAL DANGER OR ACCIDENTS). ANY FURTHER INVESTIGATION, PROCEDURE OR ACTION SHOULD BE DISCUSSED OUTSIDE THE ROOM (IN NORMOXIA).

CLASS OF HYPOXIA EXPOSURE

1	>17% OXYGEN
2	16.9% - 14.8%
3	14.7% - 13%
4	12.9% - 11.1%