W. M. KECK OBSERVATORY
On the summit of Mauna Kea, Island of Hawai'i

HIGH ALTITUDE HEALTH HAZARDS

The W. M. Keck Observatory is located near the summit of Mauna Kea at 13,600 feet elevation, where the atmosphere has only 60 percent of the oxygen found at sea level and about 10 percent of the moisture, and where the average temperature is about 32°F / 0°C).

The human body reacts to high altitude in a variety of ways. **Individuals who are pregnant, have a head cold or suffer from cardio-pulmonary disease should not attempt to work at or visit the summit. SCUBA divers** should not go to Mauna Kea (Hale Pohaku altitude) within less than 24 hours of diving. This can lead to the bends (decompression sickness / nitrogen narcosis). If you have made repetitive or deep dives or are in any doubt, you should extend this interval to at least 48 hours.

One of the body's reactions to high altitude is water dumping to allow the blood to carry more oxygen. Frequent urination is a symptom of this process. Failure to replace lost body fluids can lead to dehydration, severe headaches, and hypothermia. High altitude dilation of the brain's blood vessels, combined with dehydration, can lead to a headache as severe as a migraine. Observatory workers sometimes take aspirin or acetaminophen before departing Hale Pohaku for the summit to help avoid headaches.

Individual responses to altitude can vary greatly. **No one is immune from the effects or the potential dangers.** To lessen the risk of high-altitude health hazards, be in good health, dress warmly, drink lots of fluids, avoid alcohol and drugs, and pace yourself.

It's important to acclimatize at least a 1/2 hour (1 to 1 ½ hours for first timers) at the Hale Pohaku facility or the Visitor Information Station (9,200 foot/2,800 m level) before going to the summit.

Do not go solo to the summit. You may not always recognize the symptoms of altitude sickness in yourself. If you feel the onset of any unusual feeling or symptom, ***let someone know immediately.*** If you notice someone who appears to be suffering from some unusual feeling or symptom, ask how he or she feels.

High Altitude Sickness **Major Emergency**		*Steps to Take*
Major Symptoms	Major Signs	**Evacuation: Follow the Mauna Kea Emergency Procedures** **Examine the victim** **Call 911 with the following information:** • Your Location • Describe how the accident or illness occurred • Describe the victim's symptoms • Indicate the urgency needed for treatment • Describe the weather conditions • Establish the primary meeting place (Saddle Road Junction) • Describe the vehicle used to transport the victim **Inform HQ Management**
Severe Unrelenting Sudden Headaches Shortness of Breath (at rest) Chest Pain Abdominal Pain	Slurred Speech Visual Disturbance Loss of Coordination Paralysis Seizures Collapse Slow or Rapid Heart Beat Labored Breathing Cough with blood tinged sputum Unrelenting Nausea or Vomiting	

High Altitude Sickness **Minor Emergency**		*Steps to Take*
Minor Symptoms		Rest Administer Emergency Medical Oxygen (fixed flow type) Descend to Lower Altitude (Hale Pohaku) Inform HQ Management If symptoms persist, proceed to a Medical Center Emergency Room
Mild shortness of breath Dizziness Light headedness Headaches Visual Change Palpitations Chest Tightness Nausea		

For detailed information, see: http://www2.keck.hawaii.edu/realpublic/observing/visitor/hyalt.html