

SECTION A

GASES IN THE ATMOSPHERE

Gases in the Atmosphere



You have been asked to generate an air-quality plan for the Lunar Habitation Module Prototype (LHMP). To do this, you will need to consider which gases (and how much of each) should be present and how each will affect the living environment in this closed system.

In addition to considering the specific gases that must be (as well as those that may be) inside the LHMP, it will be useful to know how these gases behave when there are changes in the conditions of temperature, volume, and pressure. As you know, solar radiation heats the Earth and everything on it, including atmospheric gases. How will radiation from the Sun affect a closed environment such as the LHMP? You will be able to answer this question and others by the end of Section A.

A.1 EXPLORING PROPERTIES OF GASES

Laboratory Activity

Introduction

Because atmospheric gases are generally colorless, odorless, and tasteless, you might doubt that they are forms of matter; they appear to be “nothing.” However, gases have definite physical and chemical properties, just as materials in the other two states of matter—solids and liquids—do. In this laboratory activity, you will perform a variety of experiments that illustrate some properties of air.

Before you start this activity, carefully read through the procedure. Decide what you think will happen at each of the nine laboratory stations, and write down your predictions.

Lab Video



Procedure



Nine stations have been set up around the laboratory. At each station you will perform the experiment indicated. The experiments can be done in any order. For each station:

- Reread the procedure.
- Review your prediction.
- Perform the experiment.
- Record your observations.
- Restore the station to its original condition.

When you have completed your work at all the stations, answer the questions at the end of the activity.