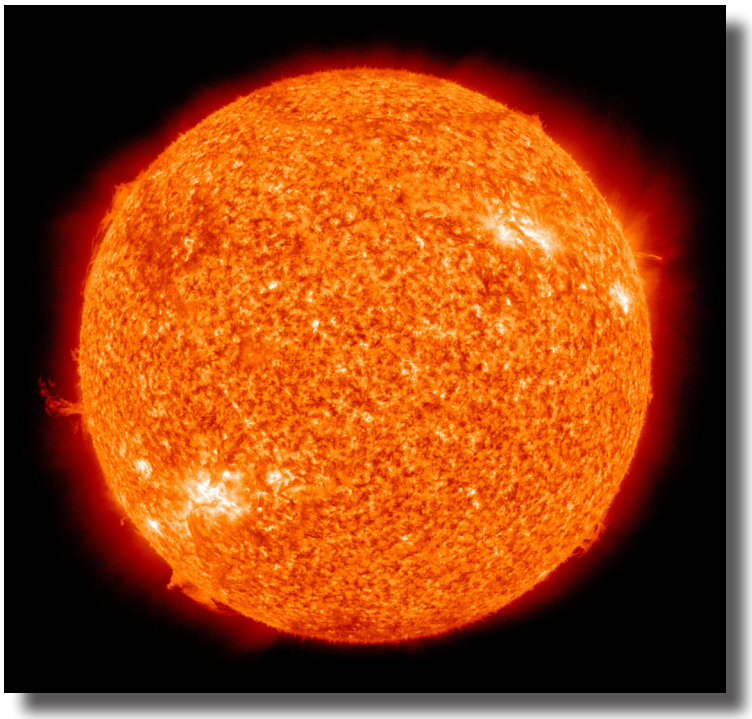
Free Flow Cosmic & Terrestrial Radiation

Fact Sheet



In a time of drastic change it is the learners who inherit the future. The learned usually find themselves equipped to live in a world that no longer exists. – Eric Hoffer

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The science of healthy buildings

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Fresh Air Requirements for Indoor Spaces

Sufficient ventilation is crucial for creating and maintaining a healthy indoor climate. Historically, natural air infiltration was a primary factor that contributed to healthy air exchanges in a house. Building materials were also more porous than those in use today; and the space around doors, windows and in the building envelope itself allowed for natural air infiltration.

Depending upon wind strength, older homes exhibit three or more air changes per hour. The average home built since the 1970's energy crisis commonly sees one-to-two air changes per hour. In contrast, modern homes which are tightly sealed to maximize low energy consumption and efficiency will see air changes per hour as low as one-tenth (0.1). This working analysis points to the utmost importance of a formal whole-house ventilation strategy.

Whole-house ventilation in a natural and healthy home is best accomplished by utilizing proper design strategies, such as a stack effect and cross ventilation. Additionally, how the natural environment works in coordination with the building's design should be considered.

A standard rule of thumb states that one cubic foot of exhaled carbon dioxide (CO_2) requires approximately 80 cubic feet of fresh air. Occupants with a higher level of activity typically require double the amount of fresh air. In rooms with a fireplace, or in spaces where smoking is allowed, the required amount of fresh air may be several times higher. Urban outdoor fresh air requirements can be twice as high as those for outdoor air in the countryside.

Mechanical ventilation becomes more necessary the less often windows are opened, and the tighter a house is sealed. Natural forces that promote air exchange include the differences in outside temperature and the wind pressure. In order to minimize the heat loss associated with ventilation, controlled ventilation systems with heat recovery are now promoted and subsidized. However, if they are not properly sized, installed and maintained, such measures can actually pose a health risk. For that reason, this course will thoroughly evaluate the various forms of ventilation available today. Building Biology favors low-cost, natural ventilation strategies.

In Building Biology, exterior walls, ceilings and roofs are regarded as a "third skin" that must be allowed to "breathe." The concept of "breathing" refers to the ability of water vapor to pass freely through a home's wall systems. However, breathing wall systems do not ventilate air, and therefore should not be confused with poorly designed, drafty homes.