



*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*



**Building Biology Institute**  
The science of healthy buildings

## Color for Health

Life is associated with light. Every single living cell, even in darkness, receives and transmits rays of color. The human body, mind and emotions are also highly responsive to color. The human eye has the capacity to distinguish over one million colors. Our well-being can be positively or negatively affected by a wide range of environmental stimuli, such as weather conditions (air temperature, pressure, humidity and air electricity), sound levels, chemicals and more. Humans are particularly affected by cosmic and terrestrial background radiation, and that includes electromagnetic vibrations of color. Colors are to our emotional life, as spices are to food.

The colors of nature have a very positive impact on the human mind, especially yellow as its energy is most dominant in the visible spectrum of daylight. The human eye is most sensitive to blue, red, and green. The effect of a color is determined by many different aspects, including the hue, saturation, surface texture and quality of a color, as well as the quality of the light (i.e. natural daylight or artificial lighting). Complementary colors, for example, are opposite from each other on the color wheel, and stimulate opposite effects in humans. However, it is important to consider that the experience of color is subjective, depending on one's age, gender, and ethnic background, as well as one's individual color associations.

Warming colors (hues of yellow, orange or red) tend to be exciting. Cooling colors (hues of green, blue and violet) tend to be calming. According to studies by the British psychologist Hans Jurgen Eysenck, adults in the Western world exhibit color preferences in the following order:

1. blue
2. red
3. green
4. purple
5. yellow
6. orange

As we grow older, our relationship with colors tend to change. Dr. Heinrich Frieling, a German color psychologist, called the ubiquitous black blackboard "a poison for a child's mind." The founder of anthroposophy, Rudolf Steiner, developed color schemes for rooms in elementary (or primary) schools as follows:

grade 1: pink/red  
grade 2: pink/orange  
grade 3: orange/red  
grades 4 and 5: pale orange  
grade 6: orange/yellow  
grade 7: yellow/green  
grade 8: pale green

The eye is naturally the most prominent gateway of photoreception in humans. But humans also retrieve color information through the skin. A wide range of photoactive molecules are found in almost any tissue, capable of acting as photoreceptors. The absorption of light energy depends on the color's wavelength. Due to their relatively long wavelengths, the warming colors of red, orange and yellow, as well as infrared, are able to penetrate into deeper layers of tissue. Since the cooling colors of green, blue and violet (including UV radiation) have a shorter wavelength, they are absorbed at the skin's surface. The physiological effects of colors are based on the mixture of frequencies, the amount of radiant energy carried by photons of a particular color, and their conversion into heat and/or chemicals, as well as electrical energy.

Though colors in our immediate environment (home, work place, school, clothes) are mediated across other sensory organs, they have similar effects on our well-being. Thus, the temperature perception of a room painted green-blue is usually experienced as 3-degrees cooler than a room tinted orange.

We make countless color choices every day, often unconsciously and automatic. The National Cancer Institute and the Center for Disease Control and Prevention advise everyone to "Sample the Spectrum" of fruits and vegetables for maximum health. It is a scientific fact that the plant pigments that color our food naturally possess powerful antioxidant and anticancer properties. The intensity of a given color guides us to the highest nutrient density.