Light and Health

The Impact on Space and Inhabitants | Kaitlin Page
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LEARNING OBJECTIVES

• Identify visual Impacts of Light
• Identify non-visual impacts of light
• Identify design methods available for non-visual impacts
MOOD
Light does us good. We are reminded of that every year in spring: when the days get brighter we feel more active, we are in a better mood and we are generally more focused than in the dark winter months.
CIRCADIAN RHYTHM
CIRCADIAN RHYTHM
CIRCADIAN RHYTHM

Influence of daylight on the human body

6 a.m.  noon  6 p.m.  midnight

3 a.m.

9 a.m.

6 a.m.  noon  6 p.m.  midnight

cortisol level  melatonin level
CIRCADIAN RHYTHM

- Highest body temperature
- Highest blood pressure
- Lowest body temperature
- Cortisol release
- Deep sleep
- Fastest increase in blood pressure
- Best coordination
- Fastest reaction times
- High alertness
- Melatonin secretion
CIRCADIAN RHYTHM
CIRCADIAN RHYTHM

Influence of daylight on the human body

- Cortisol level
- Melatonin level
CIRCADIAN RHYTHM

- Sleep Deprivation
- Depression
- Obesity
- Cardiovascular diseases
- Cancer
CIRCADIAN RHYTHM
NON-VISUAL IMPACTS
Leave 3.67 days earlier
22% less medication
4.4% reduction in mortality
Reduced agitated behavior by 9%
Increased sleep duration by 27 minutes
87% believe that adequate lighting attributes to task accomplishment
Less medication errors
Night Shift

• Loss of sleep
• Greater risk of ulcers, cardiovascular disease, cancer
• Decreased alertness
• Decreased performance
• Increase in errors
DESIGN METHODS
Comfort
Function
Safety
Health + Wellness
COLOR

SUNLIGHT

LED

INCANDESCENT

CFL

WAVELENGTH (nanometers)
TUNEABLE LIGHTING
On average, a 60 year old receives only 30-40% as much light as a 20 year old.
RESEARCH