

# Ergonomic lighting considerations

## Lighting

Many modern offices are **overlit**, causing tremendous **energy waste**, as well as **glare** and **human discomfort**.

**68%** of employees complain about lighting,

**79%** want to control their light, and

**75%** say they would be more productive.

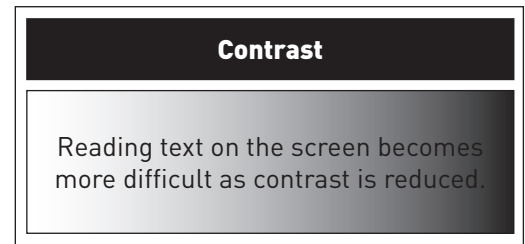
People with controllable lighting **rated tasks less difficult, felt more comfortable**, and experienced a

**35% to 42%** decrease in energy use.

## Contrast

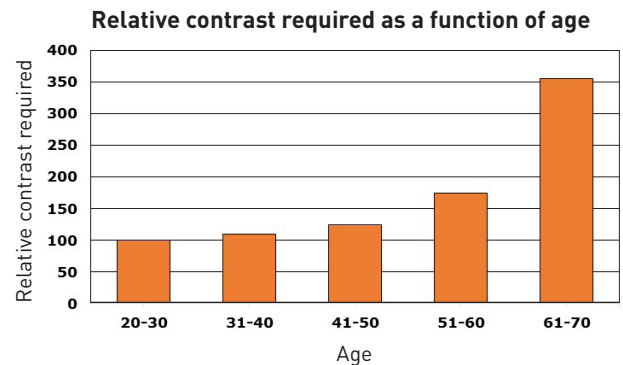
- An aging workforce needs more lighting (contrast), especially task lighting.
- To correct contrast problems: Use ink instead of pencil for hard copy work; use white paper instead of colored; adjust photocopier exposure, monitor brightness and contrast; and decrease reflected glare.
- Data entry speed increases with an increase in illumination and/or contrast.

Contrast is the relationship between the brightness of an object and its background.



## Contrast in text is important too

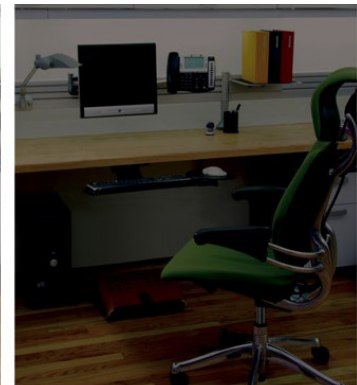
Contrast requirements increase exponentially after age 40.



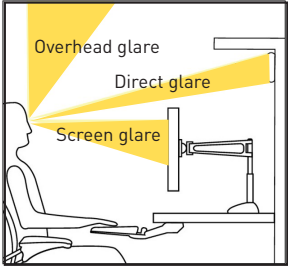
20 years



60 years



75 years



**80%**

of workers experience glare.

**Correct glare**

- Use several low-intensity fixtures vs. one high-intensity.
- Use diffusers.
- Cover bare bulbs with louvers/lens.
- Use adjustable local lighting.
- Reposition light fixtures or work areas.

**Monitors generate light; paper and surroundings reflect light.**

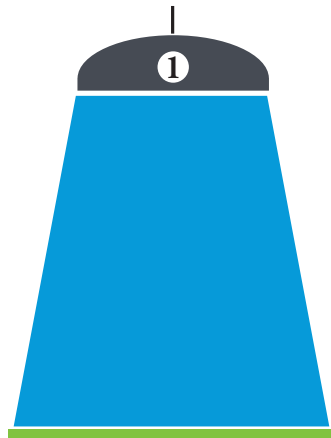
**Direct glare:** natural light, overhead, and under cabinet lighting

**Indirect glare:** work surface, monitor, shiny surfaces, paper, and walls

**Dual-lighting components**

- Dual-component lighting schemes can positively impact comfort and performance while lowering energy consumption 30 percent to 40 percent.
- Conflict exists between lighting requirements for computer work and paper-based tasks.
- Proper light levels vary significantly with worker age and tasks.
- Cool color temperature lighting for paper-based documents. Warm color temperature for computer work.
- Ideal compromise: warm ambient lighting combined with cool task lighting.
- Position task light opposite the worker's writing hand.

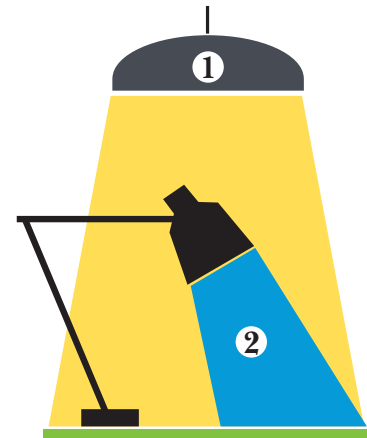
**Common**  
Blue, cool overhead lighting



**Single component:**

- Too much light above eyes
- High energy waste

**Preferred**  
Yellow, warm overhead lighting  
Blue, cool task lighting



**Dual component:**

- Light level determined by user
- 30 percent to 40 percent less energy required



Multiple shadows create vision issues



Single shadow creates visual comfort