LIGHTING IN THE WORKPLACE

Too little:

- eye strain; fatigue;
- headaches; stress;
- accidents.

Too much:

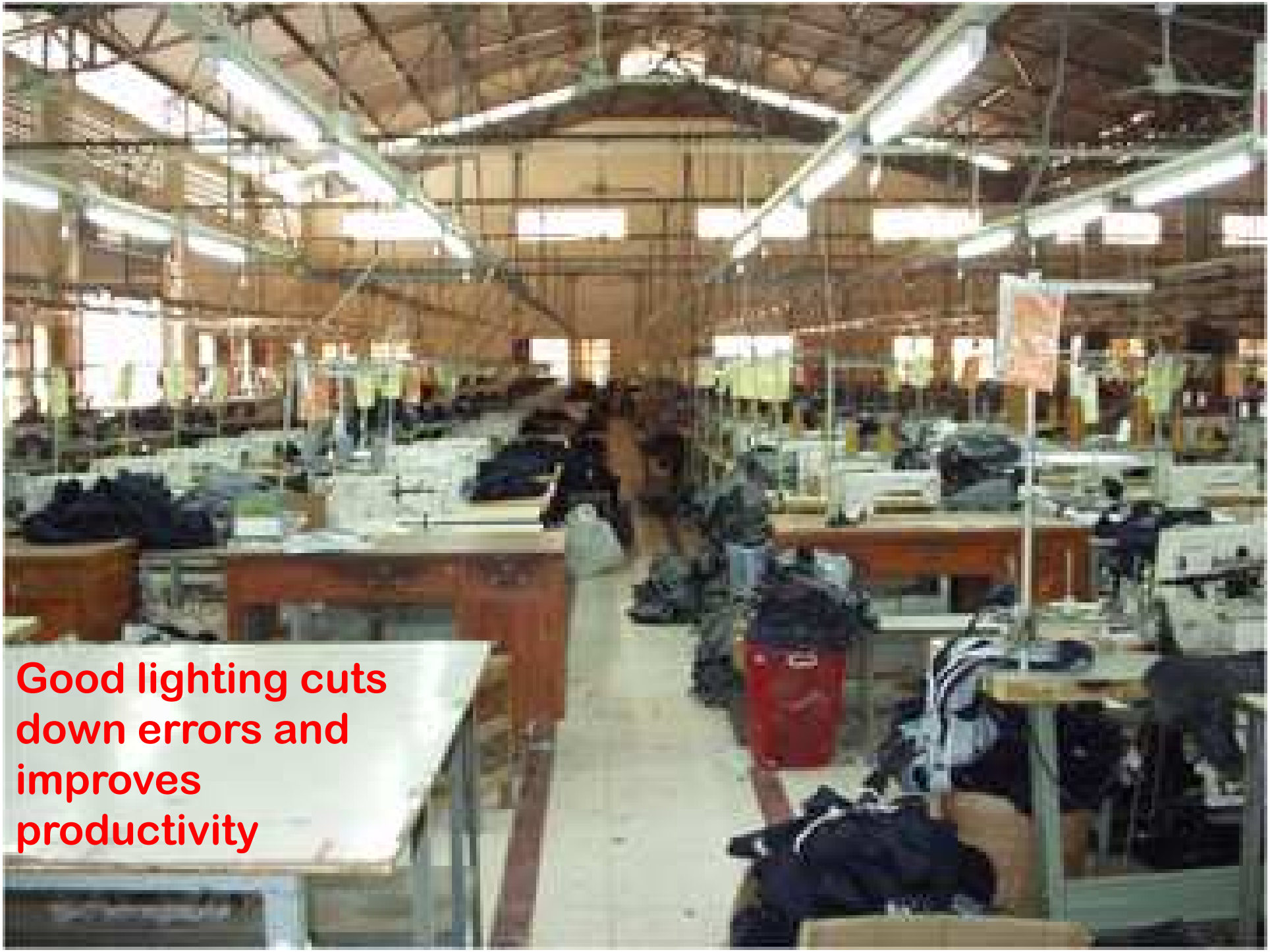
- "glare" headaches;
- stress.

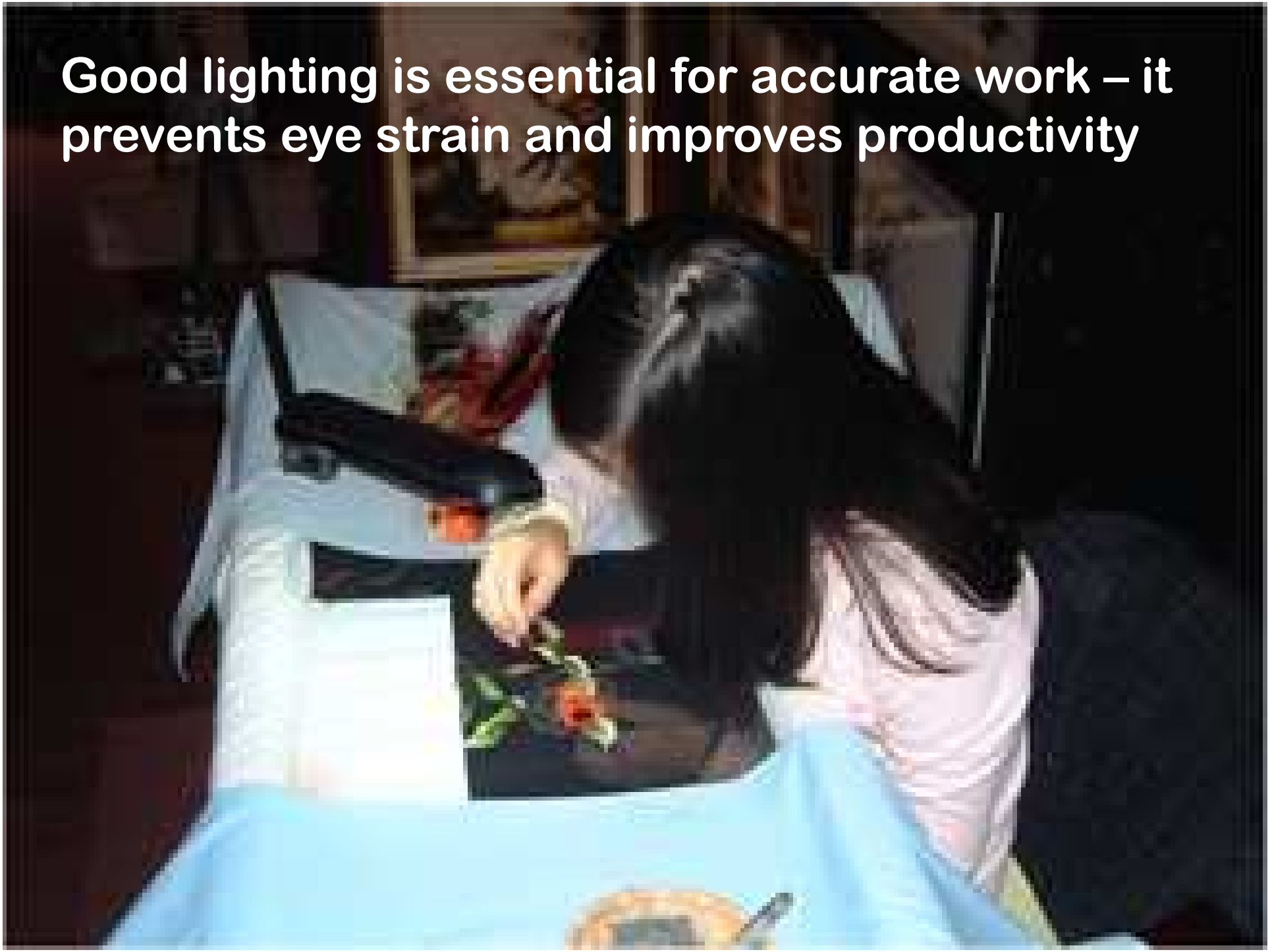
Lower quality – lower productivity

Increased absenteeism – increased ill health

SOME COMMON LIGHTING PROBLEMS AT WORK

- dark or unlit areas especially near hazards such as unguarded machines or steps;
- lack of natural light because of dirty or badly placed windows;
- glare from badly positioned or poorly shaded lights, unshaded windows or reflecting surfaces;
- “energy saving” programmes leading to reduced lighting levels;
- workers suffering from eyestrain or fatigue from bad postures caused by poor lighting;
- dirty or poorly maintained lighting, leading to light loss and flicker;
- unsuitable décor leading to low lighting levels (excessive contrasts or too much glare);
- security risks at night caused by poor lighting.


Good lighting cuts
down errors and
improves
productivity


Good lighting is essential for accurate work – it prevents eye strain and improves productivity

MEASURING LIGHT LEVELS IN THE WORKPLACE

The level of light is measured in LUX. M2 It is measured with a light/lux meter.

Formerly measured in foot candles (being phased out), some Caribbean states still use the older units

1 footcandle = 10.7 lux

Very bright sunny day - > 100,000 lux

Overcast day – 1,000 lux

Dusk in the Caribbean – 100 lux

Slide 5

M2 Could state that lighting is also measured in footcandles, though this is old and being phased out to allow for the newer metric unit, lux. Could also state the conversion factor i.e. 1 footcandle = 10.7 lux

Michael, 22/10/2011

GENERAL LIGHTING STANDARDS

Machine shops:

- rough work and assembly 300 lux
- medium bench and machine work 500 lux
- fine bench and machine work 1000 lux

Office work or garment factory:

- general tasks 500 lux
- more detailed work 750 lux
- very fine work 1000 lux

RECOMMENDATIONS FOR MINIMUM LIGHTING LEVELS

Activity	*Typical Location*	*Average Illuminance (lux)*	*Minimum Illuminance (lux)*
Movement of people, machines and vehicles.	**Lorry park, corridors, circulation routes.**	**20**	**5**
Movement of people, machines and vehicles in hazardous areas; rough work not requiring any perception of detail.	**Construction site clearance, excavation and soil work, loading bays, bottling and canning plants.**	**50**	**20**
Work requiring limited perception of detail.	**Kitchens, factories assembling large components, potteries.**	**100**	**50**
Work requiring perception of detail.	**Offices, sheet metal work, book binding.**	**200**	**100**
Work requiring perception of fine detail.	**Drawing offices, factories assembling electronic components, textile production.**	**500**	**200**

GLARE

Disability glare: can dazzle and impede vision. Can lead to accidents (headlights).

Discomfort glare: most common in the workplace. Caused by direct vision of bright light/background over long periods.

Reflected glare: bright light reflected by shiny surfaces.

ALL THESE FACTORS CAUSE EYE STRAIN, FATIGUE AND INTERFERE WITH VISION AND MAY ALSO CONTRIBUTE TO ACCIDENTS

METHODS TO AVOID GLARE

To reduce glare from windows:

- use blinds, curtains, louvres, or shades;
- replace clear glass with opaque/translucent materials – paint glass with whitewash; and
- change the layout of workstations.

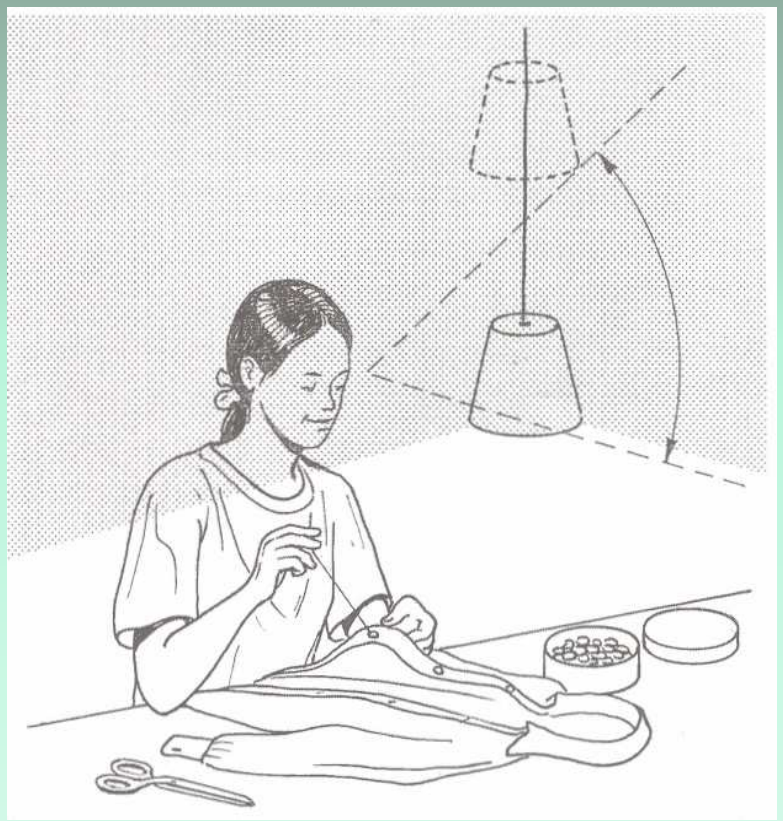
To reduce glare from lamps:

- ensure that no naked lights are in direct view of workers; and
- use shades or shields but ensure work area is well lit;

To reduce reflected glare:

- change position of light source and reduce its brightness;
- cover reflecting surface with opaque, non-glossy material; and
- change the layout of the workstations.

Avoid direct light into the eyes – use a shade




TOO MUCH LIGHT CAN BLIND YOU!

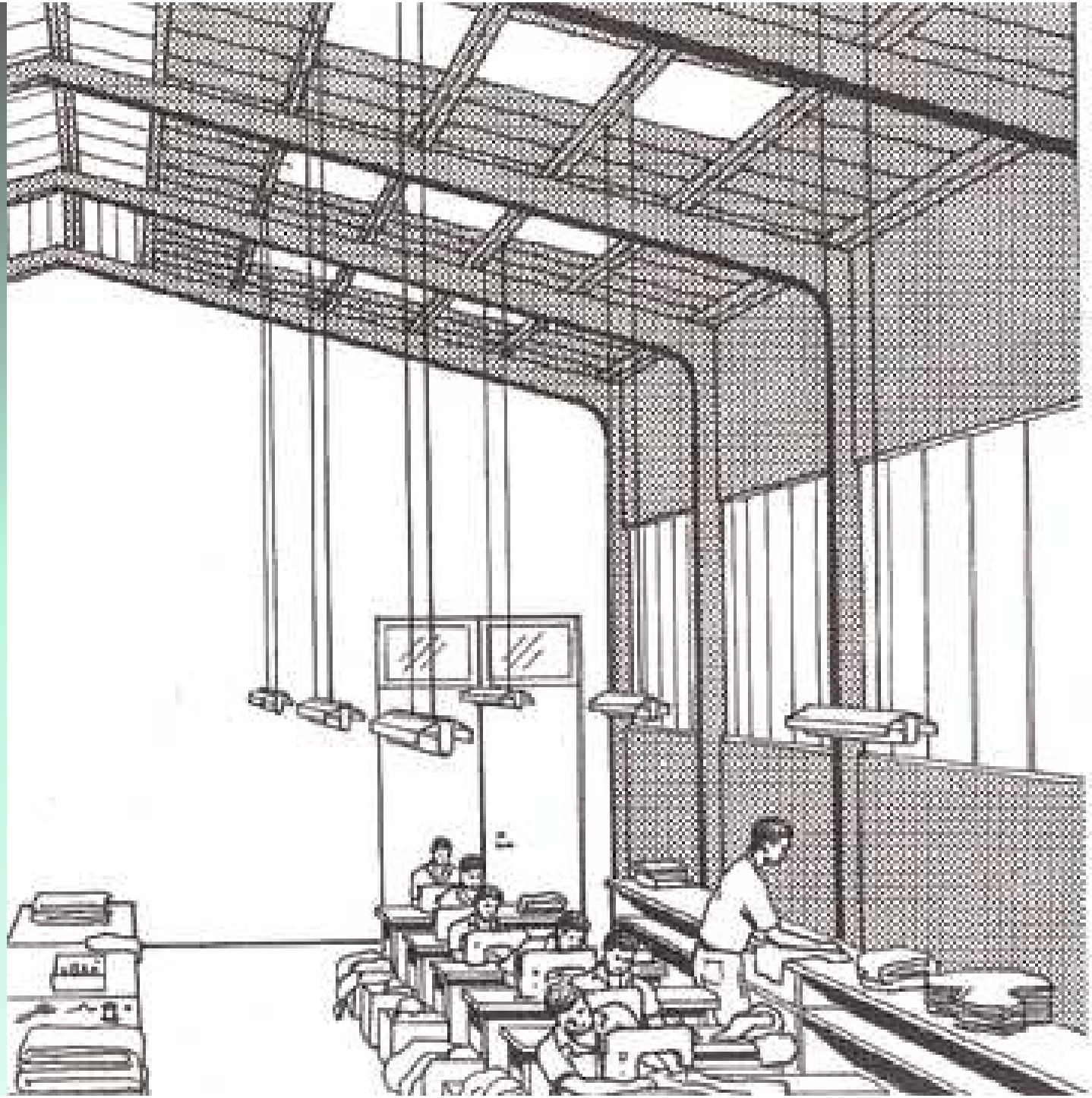
Avoid polished surfaces – use matt finishes or move the work position by 90 degrees to the right or left to stop reflected glare.

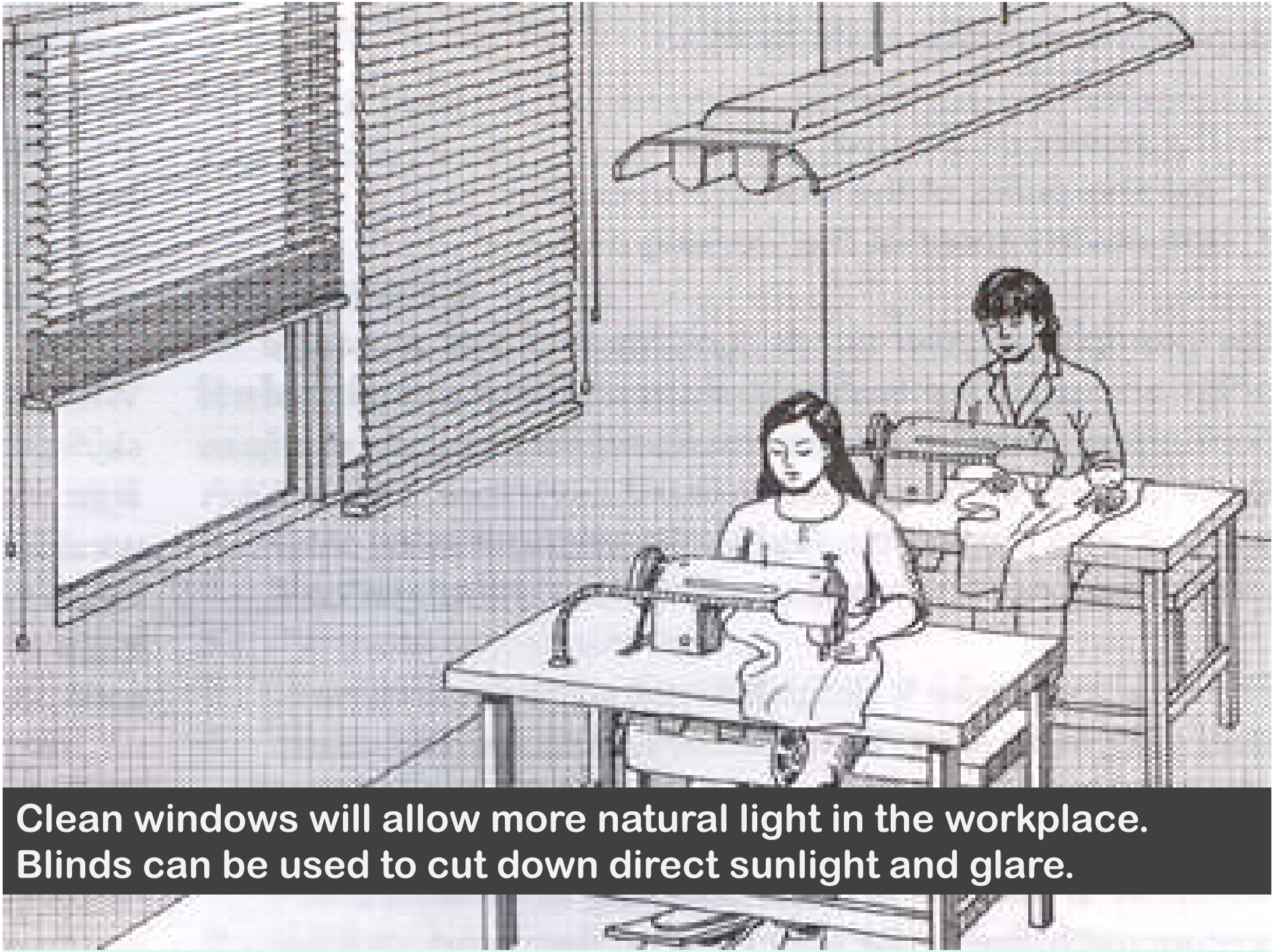
For close-up work, it is essential to have local lighting where the light shines directly on the task and not into the workers' eyes.

OTHER KEY FACTORS

- Make full use of daylight in the factory.
- Choose appropriate visual backgrounds for wall, ceilings etc.
- Find the best place for the light source to avoid glare etc.
- Use the most appropriate lighting device and fixture.
- Avoid shadows.
- Ensure regular cleaning and maintenance.

Use as much natural light as possible. Make sure that all windows, skylights etc are clean.

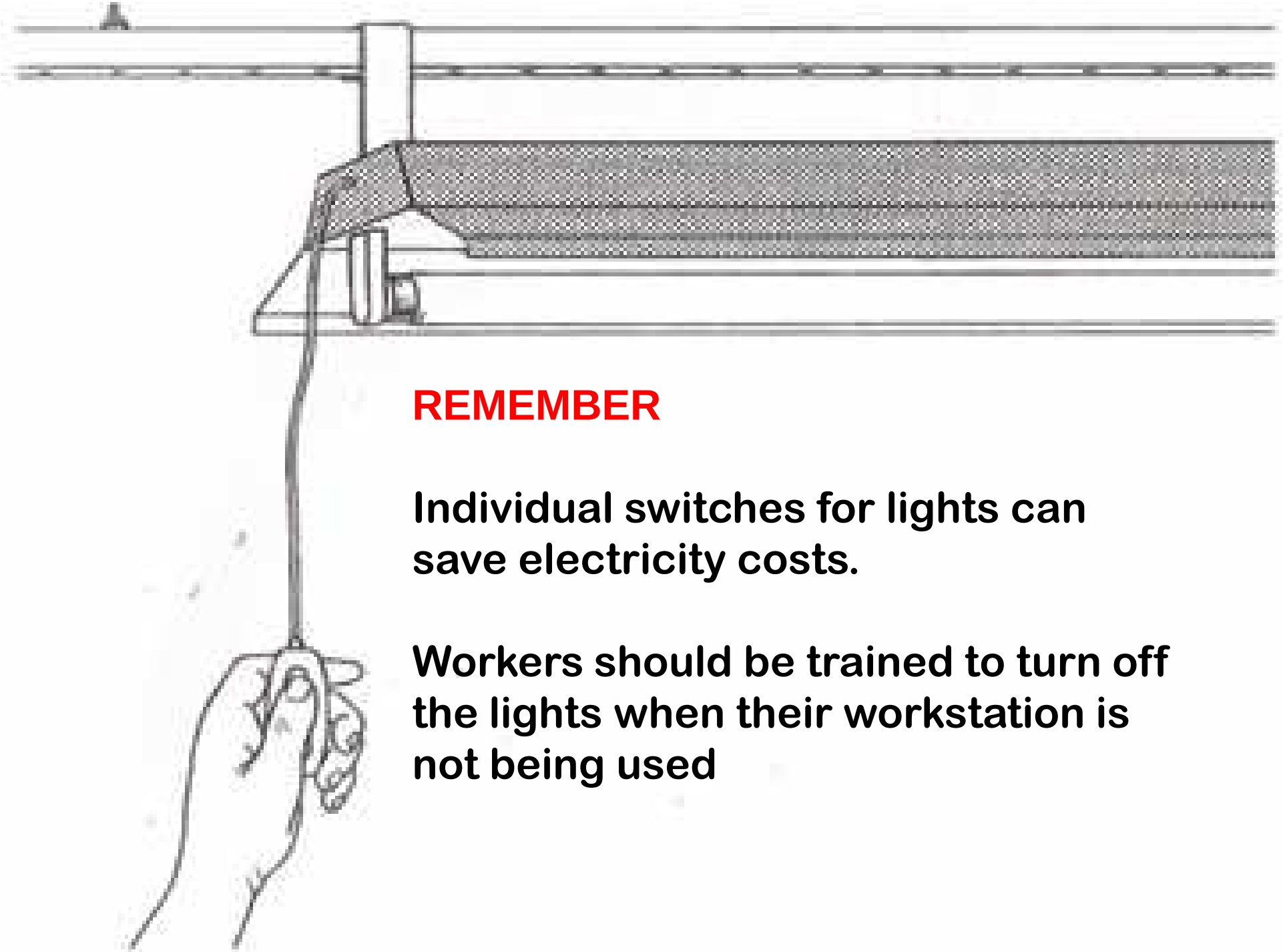




Clean windows will allow more natural light in the workplace.
Blinds can be used to cut down direct sunlight and glare.


Here is a strip light
covered in cobwebs and
never cleaned. It is a
waste of money for
electricity and provides
poor light for the workers

The correct positioning of lights avoids discomfort glare but care should be taken to avoid shadows on the working area. Look at the worker on the right – the light is almost behind her head so that she is working in her own shadow.



REMEMBER

Individual switches for lights can save electricity costs.

Workers should be trained to turn off the lights when their workstation is not being used