But radiation in the visible range can also cause damage particularly at the short wavelength end of the visible spectrum. To minimise damage from light, it is necessary to limit the light exposure. Table 13.1 shows the limiting illuminances and limiting annual light exposures recommended for objects with different levels of responsivity to light. Determining the responsivity of an object to light is the responsibility of the conservator. An illuminance of 50 lx is considered to be a minimum for displaying objects that require the perception of detail and colour. For high responsivity objects, using an illuminance of 50 lx implies restricting the annual hours of display to less than 300 hours.

Table 13.1 Limiting illuminance (lx) and limiting exposure recommendations for objects with different levels of responsivity to light

Responsivity to light	Limiting illuminance (lx)	Limiting annual light exposure (lux-hours/year)
High responsivity objects, e.g. silk, newspapers, some colorants	50	15,000
Moderate responsivity objects, e.g. textiles, furs, lace, fugitive dyes, prints, watercolours, some minerals, feathers	50	150,000
Low responsivity sensitive objects, e.g. oil paintings, wood finishes, leather, some plastics	200	600,000
Irresponsive objects, e.g. metal, stone, glass, ceramic, most minerals	Unrestricted	Unrestricted

13.2.3 Light source colour rendering properties

Electric light sources vary in their ability to render colours accurately. Light sources with a CIE general colour rendering index greater than 80 should be used in all museums and art galleries. However, the CIE general colour rendering index is a single number describing a complex perception. Therefore, it is always advisable to view the objects to be displayed under the proposed light source before choosing the light source.

13.2.4 Adaptation

The low light levels in the exhibit rooms of many museums and art galleries mean that visitors need time for their vision to adapt from the higher light levels usually present in entrances, cafes etc. To achieve this there should be a transition zone of slowly decreasing illuminance between the brighter lit areas and the exhibit areas.

13.2.5 Balance

The balance between the lighting of the exhibits and the general lighting of the space can vary widely. At one extreme is the approach where the only lighting is the lighting of the exhibits, the general lighting of the space being achieved by spill light from the exhibits (Figure 13.1). Such lighting can be very dramatic but may pose problems for circulation. At the other extreme is a high level of diffuse ambient lighting without emphasis on the exhibits (Figure 13.2). This approach can be very bland. A reasonable compromise is to aim for an illuminance ratio between exhibit lighting and ambient lighting of 3:1. If a strong emphasis on the exhibits is required an illuminance ratio of at least 10:1 is suggested.