

### Ultraviolet Radiation Disinfection

Ultraviolet rays are most commonly produced by a low pressure mercury lamp constructed of quartz or special glass which is transparent and produces a narrow band of radiation energy at 2537 Å emitted by the mercury vapour etc. Though this is a standard chemistry, in actual practice, its efficiency is largely constrained by the requirements of (a) The water to be free from suspended and colloidal substances causing turbidity, (b) The water does not contain light absorbing substances such as phenols, ABS and other aromatic compounds, (c) The water is flowing in thin film sheets and is well mixed and (d) Adequate intensity and time of exposure of UV rays. The advantage of UV is that exposure is only for short periods, no foreign matter is actually introduced and no toxic and no odour is produced. Over exposure does not result in any harmful effects. The disadvantages are that no residual effect is available and there is lack of field test for assessing the treatment efficiency. Moreover, the equipment needed is expensive.

(Source CPHEEO Manual 2014 Chapter 5.9.3)

#### **Advantages**

- UV disinfection is effective at inactivating most viruses, spores, and cysts.
- UV disinfection is a physical process rather than a chemical disinfectant, which eliminates the need to generate, handle, transport, or store toxic/hazardous or corrosive chemicals.
- There is no residual effect that can be harmful to humans or aquatic life.
- UV disinfection is user-friendly for operators.
- UV disinfection has a shorter contact time when compared with other disinfectants (approximately 20 to 30 seconds with low-pressure lamps).
- UV disinfection equipment requires less space than other methods.