Tridymite

~~Trydemide~~ formation :- The heat produced inside the burner causes some of the quartz to change to another form of silica called ~~trydemite~~ tridymite. This trydemide formation is opaque to UVR so that the total output of lamp gradually falls as the proportion of trydemide increases. So, after 1000 hours of burning so much tridymite has formed that the whole burner tube needs to be replaced.

Kromayer lamp :- The kromayer lamp is medium

pressure water cooled mercury vapour lamp which eliminates the dangers of infrared burn.

It has the advantage that it can be used in contact with the skin and over the sinuses with a suitable applicator to irradiate inside the sinus or body cavity.

Construction:-

It consist of mercury vapour burner. The working is same as the air cooled lamp like high pressure mercury vapour lamp but this U tube is completely enclosed in a jacket of circulating distilled water which absorbs the infrared radiation.

A pump and cooling fan are incorporated in order to cool the water.

The water circulation continued for 5 minutes after burner is switched off in order to cool the lamp.

Fluorescent tube for UV production:

These are low pressure mercury discharge tube with a phosphorus coating inside.
This phosphorus coating absorbed the short UVR.

The phosphorus coated tube produces continous spectrum between 250 - 280 nm and 300 nm. This gives a considerable amount of UVA and UVB output.

Theraktin tunnel :-

The theraktin tunnel is a semicylindrical frame in which four fluorescent tubes are attached each tube is mount on its own reflector in such a way that an even irradiation of patient is produced, allowing the treatment of whole body simultaneously.

Normally fluorescent tube with spectrum of 280-400 nm are used.

The low pressure mercury vapour lamp are often called cold UV lamp.

Physiological effects of UVR :-

UVB and UVC are absorbed by the epidermis but UVA may penetrate as far as capillary loops in dermis.

Immediate acute effects of UVR on the skin :-

Erythema : UVR causes redening of the skin
UVB and UVC are largerly absorbed by the skin.

↓

It causes release of histamine and prostaglandin keratenocytes and nitric oxide which are vasodilators.

↓

Accumulation of these substances around the blood vessels in the skin make the dilate.

↓

This leads to formation of erythema.

About 20 millijoules / cm^2 of 300nm of UVB is required to produce minimal erythema in a fair skin individual.