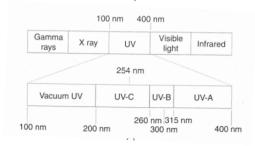
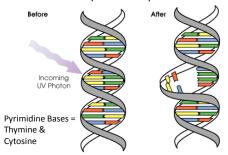
## Ultraviolet (UV) Disinfection

### **Ultraviolet Spectrum**

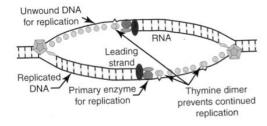


# UV Attacks DNA P = Phosyrhote (sugar) P = Phosyrhate \*\*\* Hydrogen Bond Pyrimidine Bases = Thymine and Cytosine Purine Bases = Adenine & Guanine

# UV Radiation Induces Pyrimidine Dimers Disrupts DNA Replication



# UV Radiation Induces Pyrimidine Dimers Disrupts DNA Replication



### **UV Lamps**

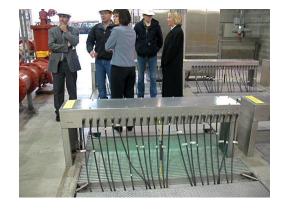


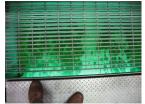
## **UV Lamp Types** • Low Pressure Hg Vapor (Amalgam) - Higher biocide efficiency - Lower power, lower temperature - Longer lamp life - Lots of lamps needed for large flows - Hence mostly in smaller plants **UV Lamp Types** • Medium Pressure Hg Vapor Broader UV spectrum - Penetrate water better - Higher power use per tube, higher temp - Hotter tubes tend to foul more easily - Fewer tubes needed - Hence more efficient per watt for large flows Comparative Spectra: Low and Medium Pressure UV Lamps DNA absorbency and UV lamp output as a percentage of maximum output 1.0 pressure UV lamp 0.8 DNA absorbance pressure 6.6 UV lamp 0.4 0.2 0.0

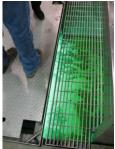
200

250 Wavelength, nm

# **UV** Disinfection Equipment Marine Park WWTP, Vancouver WA







### Aesthetics at Marine Park WWTP





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