
❖ Increasing of urbanization, industrialization and over population are leading causatives of environmental pollution.

❖ Key pollutants that pollute water bodies are suspended solids, biological oxygen demand, and heavy metal contamination.

❖ Conventional treatment such as chemical precipitation does not provide sustainable solutions as the pollutants are merely transferred from the waste water to a sludge residue which is disposed of by land-filling.

❖ Phytoremediation, an eco-friendly technology which is ecologically sound and economically viable; it is also an attractive alternative to current cleanup methods that are very expensive.

❖ This involves efficient use of aquatic plants to remove, detoxify or immobilize heavy metals from waste water.

Introduction

- ❖ Most of the domestic and industrial waste water is discharged untreated or partially treated contains a wide range of toxic chemicals and pathogens causing serious health issues for human health and environment.
- ❖ Conventional methods are insufficient to remove Heavy metals completely from effluents.
- ❖ An alternative is naturally occurring biological tool called bioremediation, includes the use of microorganism, plants and their products to remove contaminants.
- ❖ Phytoremediation is complimentary technology that can be used in place of conventional methods.
- ❖ It is less destructive to environment, cost effective and most suitable for developing countries.

Cont. (industrial effluents)



Cont. Water Hyacinth



Cont.

- ❖ The value of metal-accumulating plants to wetland remediation has been recently realized and can be used as in-situ or ex-situ technique
- ❖ There are around 400 plant species known to accumulate heavy metals in large amounts worldwide.
- ❖ Water hyacinth (*Eichornia crassipes*) the floating aquatic flowering plant is known as a invasion plant.
- ❖ It is capable of rapid reproduction in shallow water
- ❖ Tolerate wide range of environmental conditions
- ❖ Hyacinth has been known to assist in purification of waste water because of its settlement and absorption capacity.

Cont.

- ❖ Its ability to reduce organic matter ,fecal coli forms and heavy metals has been reported
- ❖ Many studies reported that water hyacinth was an excellent accumulator for Cd, Se , and Cu.
- ❖ The present study was planned to assign water hyacinth as phytoremediator for heavy metals present in industrial wastewater, using the plant's root in different forms under control experimental conditions.
- ❖ The quality of treated wastewater was compared to FAO guidelines to evaluate its suitability for reuse in irrigation.