

# RELATIONSHIPS FOR FUNDAMENTAL INTERACTIONS BETWEEN AQUATIC PLANTS AND CONTAMINANTS IN OXIDATION POND (OP) VIA PHYTOGREEN SYSTEM



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## INNOVATION

PhytoGreen, previous name Lestari is the process of phytoremediation by which plants are used to remove or stabilize hazardous pollutants that exist in soil, sediments, surface water or groundwater. PhytoGreen provides a very effective and comparatively low cost way to extract, detoxify or immobilize a wide variety of contaminants such. Today, PhytoGreen or known as 'Green Technology for the Future' is a new technology to stabilize wastewater that has been produce.

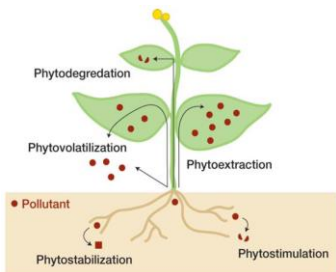


Fig. 1: Possible fates of Pollutants during Phytoremediation.

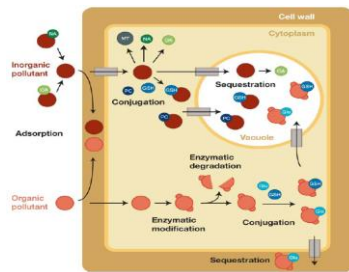


Fig.2: Tolerance mechanisms for inorganic and organic pollutants in Plant Cells.

## THE CONCEPT OF INNOVATION

PhytoGreen is an environmental-friendly approach and a suitable solution to address the issue of domestic wastewater and environmental degradation for the residential area. Using the enhancement of water and soil microbial activity for the degradation of contaminants, typically by organisms that associate with roots, the invention provides an option for domestic area and industrial plants to promote environmental friendly initiative in the existing process. The soil microbial activity enhancement process is also known as *rhizosphere degradation*.



Fig. 6: PhytoGreen in News

## OBJECTIVES

The basic objective is to remove the contaminants from the domestic wastewater with the least possible effort at the lowest possible cost and to return the water and the residual contaminants back into the environment with the least possible damage to the environment using natural plants.



Fig. 3: 1 month after PhytoGreen set up



Fig. 4: 6 months after PhytoGreen set up



Fig. 5: The Different between Control, Influent and Effluent of Domestic Wastewater at Taman Anggerik Oxidation Pond, Kempas, Johor Bahr

## ADVANTAGES

- Based on biotechnology-environmentally friendly
- Efficient and fast wastewater treatment for petrochemical industry.
- Low cost and minimal maintenance facility that able to operate continuously all year with low cost treatment processes.
- Flexible and expandable to cater future needs.
- Healthy and sustainable environment around the petrochemical zone.
- The lower cost of maintenance process,
- Low start-up capital investment cost,
- Alternatives to reduce the usage of chemicals and other hazardous materials.

## COMMERCIALISATION

PhytoGreen is very practical integrated equipment to control the quality of domestic and industrial wastewater. It will produce a better quality of wastewater so that it won't be hazardous to the ecosystem. The market for this product is large due to the expansion of domestic and industrial area in Malaysia.

## BUSINESS PARTNER



## IMPACT TO SOCIETY



**PATENT GRANTED : MY 149593 - A, PI 201005796**