

# # 3971447221 : MAJOR ENVIRONMENTAL ENGINEERING

KEY WORD: CONSTRUCTED WETLAND / CADMIUM / RETENTION TIME / MEDIUM / TYPHA LATIFOLIA.  
RATTANA TREERATTANAPORN : TREATMENT OF CADMIUM FROM WASTEWATER USING  
SUBSURFACE-FLOW CONSTRUCTED WETLAND. THESIS ADVISOR : ASSOC. PROF. ORATHAI  
CHAVALPARIT , M.Sc. 155 pp. ISBN 974-332-881-5.

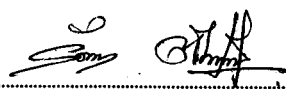
This study evaluated efficiency in cadmium removal from wastewater using subsurface-flow constructed wetland and cadmium accumulation in wetland with sand , sand and soil , or soil medium . Cd concentration in wastewater was varied in 1 , 5 , 10 and 20 mg/l . Retention time (HRT) was 5 days and flow rate was 4 , 4.4 and 5 l/d for wetland with sand , sand and soil , and soil medium respectively . In addition cadmium in various parts of system which consisted of medium varied among sand , sand and soil , or soil medium and a plant (*Typha* sp.) was studied .

As a result , constructed wetland could removed cadmium from wastewater according to effluent thai industrial standard , no more than 0.03 mg/l , when  $[Cd]_{inf}$  was no more than 5 mg/l . When  $[Cd]_{inf}$  increased (10 and 20 mg/l) , efficiency in cadmium removal was still more than 99 % . Cadmium removal was begun when wastewater pass medium layer in horizontal flow direction , and soil was able to adsorb cadmium better than sand . Most of cadmium in influent was adsorbed on medium (95.56 % on sand , 95.53 % on sand and soil , 94.07 % on soil) . In plant , accumulated cadmium was 0.08 % 0.06 % and 0.08 % for wetland with sand , sand and soil , and soil medium respectively . Cadmium adsorption on soil was tighter than sand , since cadmium leaching from medium was 5.37 % 11.15 % and 54.25 % for soil , sand and soil , and sand medium respectively . In conclusion only cadmium in leachant from soil ; and sand and soil met standard (no more than 1 mg/l) ,so both of mediums were not hazardous waste and can be used for landfill.

ภาควิชา วิศวกรรมสิ่งแวดล้อม

สาขาวิชา วิศวกรรมสิ่งแวดล้อม

ปีการศึกษา 2542

ลายมือชื่อนิสิต 

ลายมือชื่ออาจารย์ที่ปรึกษา 

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม