

A Study on the PhysicoChemistry and Biological Treatment of Laundry Wastewater

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1. INTRODUCTION

Elevation of increase in population and standard of living increases quantitatively, and aggravated qualitatively occurrence amount of laundry wastewater.

Most laundry wastewaters are purifying biologically using conventional activated sludge process. But, because roughage, cleaning material and n-Hexane extract among laundry wastewater was contained resolvability material, treatment efficiency is bad and is causing problem that contaminate in the stream.

In this study, among laundry wastewater, We developed justice that handle because mix physicochemistry and biological treatment method to improve problem that do not satisfy effluent water criteria in case of resolvability material treats by conventional activated sludge process. Removed dissolved organic matter by biological treatment that use activated carbon absorption and biofilm after remove underwater turbidity material, chromaticity material, non-biodegradable organics etc. through chemical treatment.

2. MATERIALS AND METHODS

Laundry wastewater did water sampling at D company's flux equalizing tank. Uses CaO by alkaline aid, Alum and polymer coagulant by coagulant in chemical process.

Treatment process is adsorbed dissolved organic matter by contacts powdered activated carbon after diatomite filtration. Continuously, Treated by biofilm process that use Coal Brick- HBC ring media

3. RESULT AND DISCUSSION

1) Chemical treatment

Chemical treatment of wastewater imposes CaO until amount to pH 9.0, and when impose polymer coagulant after do haste agitation imposing Alum again medicines amount used is few and removal efficiency of pollutant appeared high. Filtered clarified supernatant liquid in diatomite to remove fine colloids and residential Al out of supernatant liquid.

2) Powder activated carbon absorption

We did diatomite filtration after agitate that molecule organic matter etc. projecting powdered activated carbon to do adsorption exclusion effectively.

Organic matter exclusion speed of powdered activated carbon displayed very fasted and high removal efficiency.

3) Biological treatment that use biofilm

Dissolved organic matter of chemical treatment water was removed effectively. Because microorganism has attached stably on the inorganic - organic combination media

Table 1. Pollutant concentration of treatment water by process (Unit: mg/l)

		COD _{Mn}	COD _{Cr}	T-N	T-P	TS	TSS	TDS
Raw water		80	310	76.32	350.80	618	143	475
Coagulation- Diatomite filtration		25.1	83.7	41.39	25.32	117	5	112
Activated carbon tion – diatomite filtration		8.6	62.5	32.12	12.0	45	3	42
Biofilm	HRT 9hr	9.8	34.26	30.18	8.41	36	6	30
	HRT12hr	9.2	32.20	28.64	8.74	38	8	30
	HRT 15hr	8.8	30.18	29.22	6.52	42	10	32
	HRT 18hr	8.4	26.15	26.10	6.40	34	5	29

4. REFERENCES

- 1) Precoat Filtration M30. Denver Colo. : American Water Works Association, 1995
- 2) Keith Bennet : Precoat Filtration, Filtration & Separation 37(3) 32-33, 2000
- 3) D. Y. SHIN etc, "A study on the Drinking Water Treatment by precoat Filtration end Activated carbon Adsorption Process" Kor. J. Env. Hlth., Vol 30. NO.5 pp402-409 (2004)
- 4) D. Y. SHIN etc., "A Study on the Diatomaceous Earth Filtration of settling Basin Effluent" Kor. J. Env. Hlth., Vol 30. NO.5 pp410-411 (2004)