

, US EPA method

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1.449 ~ 13.934 mg/kg, 0.048  
 ~ 0.540 mg/kg, 6가 0.007 ~ 1.089 mg/kg, 4.708 ~ 209.507 mg/kg,  
 4.368 ~ 53.998 mg/kg, 0.000 ~ 0.172 mg/kg, 3.324 ~ 79.652 mg/kg,  
 179.902 ~ 715.765 mg/kg, 2914.017 ~ 64304 mg/kg, 237.655  
 ~ 827.616 mg/kg, 0.161 ~ 3.020 mg/kg, 92.056 ~ 1355.609 mg/kg,  
 1.346 ~ 4.346 mg/kg

가

5 ( ) 10 11 CODcr

가

(dammed pool)가

5 ( ) 7 8

CODcr 가

24

pH,

temperature, DO, T-N, T-P, CODcr

pH, temperature,

T-N, T-P, CODcr,

2

# Summary

## . Title

Investigation and administration planning of harmful pollutants in sediment of Kyungan stream sediment

## . Previous research

There is no regulations and laws in Korea for sampling, analyzing and evaluating the sediment from the river. Therefore, almost all the researches which were done in Korea based on the analytical method from other laws and other countries. That is why we should gather some data about effective policies and practices for Korea.

## . Objectives and significance of the study

Some of the harmful contaminants, such as heavy metals and pesticides, have very low water solubility and are present in significant amounts in freshwater sediments. With changes of water condition(pH, temperature, turbulence, etc.), the contaminants come out from the sediment into the water system. These materials have high persistence and biological concentration and toxicity. That is why they should be monitored and treated in the water system.

Kyungan stream is one of the tributaries of Paldang reservoir which is not a big stream but has high unit pollution loading and discharge pollution loading. It is polluted by organic matter and nutritive salt. Moreover, small amount of water, low water depth and stagnation make the pollution serious.

Therefore, this study aimed to investigate the pollution status of Kyungan stream by general pollutants(COD, T-N, T-P) and heavy metals as harmful pollutant and to research effective pollutant reduction policies and practices performed in Korea or other countries for making an administration plan for Kyungan stream.

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## **. Research methodology**

There were 24 sites in Kyungan stream water shed studied. Sampling was done four times a year to monitor the pollution status of Kyungan stream. As fundamental analysis, pH, temperature, DO, T-N, T-P and CODcr for water samples, and pH, temperature, T-N, T-P, CODcr, ignition loss, moisture content and size distribution for sediment samples were performed. Also, heavy metal analysis is performed for water and sediment samples. In addition, investigation of the data of public institution was performed to find the source causes pollution.

## **. Results**

The results showed sediment has higher value than stream water for almost all the contaminants we measured and there are no relationship among sampling sites. The particle size distribution(PSD) data demonstrated river bed of the Kyungan stream is formed by sand. From the results of contaminants and PSD, we assumed that the sediment which is formed by fine particle has higher contaminants concentration, because of higher specific surface area. Aside from that, contaminants concentration is increased as goes to downstream. It is regarded that contaminants are settled as goes to downstream because the flow rate is slowed.

## **. Management plan and political direction for contaminated sediment**

Kyungan stream is the major pollution source of Paldang reservoir, and it has been debated about the high pollution level. Therefore, dredging is mentioned to clean the stream, but secondary pollution is worried after the dredging. So, Yongin city is now making wet land around the stream.

It is difficult to identify and treat the contaminants in sediment. Also, it is not expected that the contaminants are decreased by self-purification in case of sediment contaminants. Therefore, management for contaminated sediment should be planned to protect the river(stream)/sediment from contaminants and maintain the quality of sediment. Also, identification of the source, source specification, pollution route and other characteristics of water system is needed.

## **. Application plan**

The data from this study can be used as reference to establish a treatment and control plan for polluted sediment and to improve the water quality of Kyungan stream and Paldang reservoir.

Also, this data can propose a scheme to reduce pollutants by strengthening the rules about harmful pollutants and sediment.

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