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4 - 7

P-5 Proposal of BOD Analysis Method in Tropical Land

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1. Introduction

Thailand is one of the countries in the world keeping the long diplomatic relations with Japan. Recently the standard of living in Thailand is rising, whilst the country has been taking off from the less advanced countries, owing to the cooperation by Japan and other developed countries.

On the contrary, there has occurred many environmental problems due to the abrupt industrial development, and to this end, the country has also received a lot of support from Japan and the other developed countries. For instance, the Environmental Research Training Center (ERTC) was recently constructed under the Japanese grant aid amounting to 3 billion yen. A number of experts have been engaged in the technical transfer, and we ourselves had a chance to participate in the training, Environmental surveying method, particularly analysis method were taught during the training period.

Our Royal Irrigation Department (RID) has only made water analysis for agricultural water. However, multi-purpose dam plans have been actualized one by one. RID started then to conduct the environmental survey for this purpose.

The BOD analysis on the subject does not relate with RID's. Water quality environment experts both in and out of the country discuss water quality environment evaluating based on the BOD. Since it was the first experience for us, analysis was made just as we were taught at first, have never evaluated it.

Though the detailed design study on Bang Pakong Diversion Dam Project under the grant from the Japanese Government since 1992, the study team headed by Dr. J.

Kitamura was dispatched. We were guided in water quality environment survey. In view of the above, we will propose the said subject this time.

2. Present Water Quality Analysis Method in Thailand

The standardized analysis method has not yet been established in Thailand. It is different in each ministry or agency concerned with water quality analysis. Its result from the method which was first taught by the different country. The analysis method in the Ministry of Industry (MOI) is based on the Japan Industrial Standard (JIS). Others are based on the American Standard method for water and waste water, or JIS and ASTM, BOD analysis method is standard in the condition of 20 degrees centigrade for 5 days.

3. Temperature in Thailand

In respective data, the summarized surface water temperatures in Thailand are shown on Table 1.

In the northern part, they range from 24.0°C to 26.5°C.

In the central part, they range from 24.7°C to 27.0°C.

In the southern part, they range from 26.4°C to 30.1°C.

Table 1 Air and Surface Water Temp. (1988 - 90)

	Water	Air
Chang Rai [≡]	24.0	24.7
Lam Pang	26.2	26.6
Sak Nakhon	26.5	27.1
Utha : Thani	27.6	28.3
Nakhon Rathchasi [≡]	24.7	27.3
Bangkok	27.8	28.9
Phet Bari	28.2	29.1
Surat Thani	26.4	27.2
Krabi	30.1	31.0

Table 2 Temp. of Klong Water in Bangkok

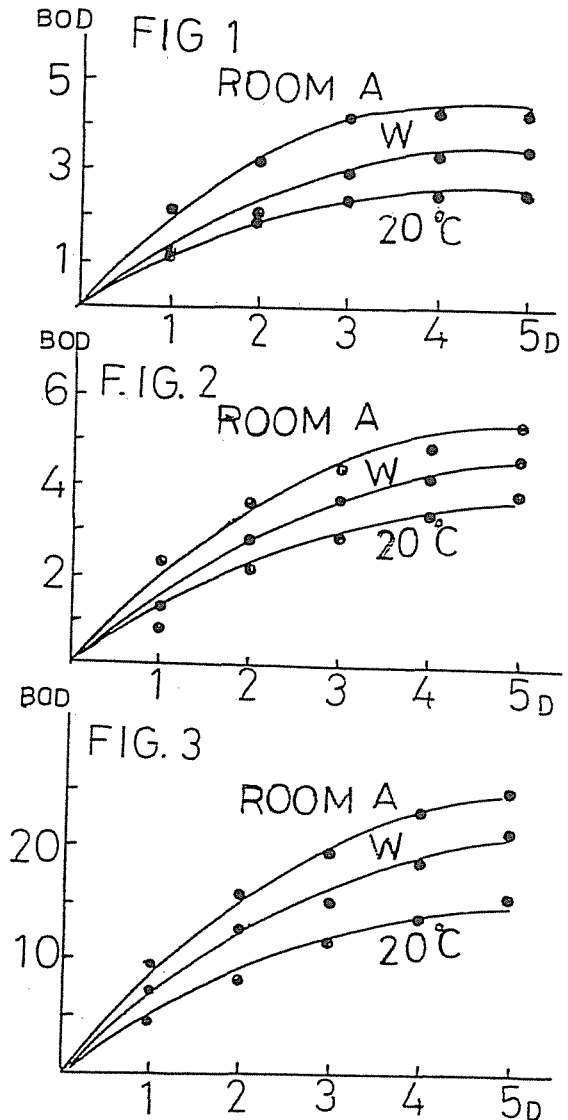
The temperature of Klong Water in Bangkok are shown on Table 2. There data are supplied from JICA Expert who also has the doubt of BOD

	Min	Ave	Max
1989	25.0	28.4	32.5
1990	25.0	30.1	33.0
1991	26.5	30.2	32.0

Analysis method. The fact to be common to the average surface water temperature in Thailand, and Klong Water temperature in Bangkok are no existence of measured in 20°C, but more than 25°C.

4. BOD Analysis Results under Different Conditions

In order to compare the analysis results under the standardized condition of 20 °C for 5 days with them under the different conditions, the results analyzed using the same water in BOD bottles set in a water tank installed in a room, substituting for constant room temperature, and incubate at 20 °C tank are shown on Figure 1,2 and 3.



Generally judging from the results, the water temperature conditions in room indicate higher than the standardized condition of 20 °C for 5 days. The third day values indicate nearly the same values after 5 days at 20 °C. The values of BOD not using titration method but DO meter also show in nearly the same way.

5. Conclusion

The very primary theme was summarized this time in Thailand in which environmental measures are quite less developed.

We are thinking to endeavor to make the country better, under the guidance of Japan and the developed countries.

By presenting our report to this symposium, we would like

at to ask the following questions. We expect to receive the reply in writing during the meeting or during your visit to Thailand.

- (1) Is the necessity of BOD analysis to use as an indication of organic matters pollution ?
- (2) Is the necessity of BOD analysis to use as a prediction of DO reduction ?
- (3) Is BOD analysis necessary for Thailand in which decomposition speed of organic matters is very fast ?
- (4) If necessary, is the standardized condition of 20 °C for 5 days wrong ?
- (5) If necessary, is such condition all right as in a water tank installed in a room for 3 days, using DO meter without any waste water discharge by analysis ?

Thank you.

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