

MODEL MATEMATIKA MENGENAI PENCEMARAN AIR SUNGAI

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Mathematics

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Pollutant in the rivers made the oxygen dissolved in the water decrease. It is because the dissolved oxygen absorbed by microorganism for organic waste degradation process. It's called deoxygenation. Deoxygenation made dissolved oxygen decrease.

Ones of river pollution modelling based on dissolved oxygen is influence by deoxygenation process. Rate of dissolved oxygen that used for deoxygenation proportional with biochemical oxygen demand remain. Thus, mathematics modeling of rivers pollutant based on dissolved oxygen given:

(1)

where is amount of dissolved oxygen at t time (mg/L), k is constant, Q_w is rate of rivers flow (m³/s), Q_r is rate of water pollutant flow (m³/s), L_w adalah rate biochemical oxygen demand of rivers (mg/L), L_r is rate biochemical oxygen demand of water pollutant (mg/L).

Based on the equation (1), the level of pollutant will known from amount of the dissolved oxygen in the water at t time.