Improvement stage by continuous addition of WK

Atmospheric sphere

O_2, N_2, CO_2

Decreased —— markedly

O_2

WK

Continuous addition
(8 ppm in water)

N_2 NH_3 H_2S Sunlight

Vigorous generation
CH_4
(No consumption in S region)

Surface of water area

DO

Anti-oxidation and anti-bacterium function

Synergism of:
· Bromeline (anti-oxidation and anti-bacterium function)
· Fermentation-suppressed yeast (sludge decomposition accelerated)

Enlargement of S region

O_2 consumption reduced → DO rise

Catalysis

Increase in effective microorganisms → Increase in activity

Negative catalysis

Bacteria leading to putrefaction and contamination reduced → DO consumption depressed

Aerobic region

S

(1) Org decomposition bacteria
(2) Nitrifying bacteria
(3) Sulfur oxidation bacteria named *thiobacillus thiooxidans*
(4) Denitrification bacteria, etc.

Decrease in turbidity

Note:
Due to a lot of consumption of DO by effective aerobic bacteria (DO markedly decreased), S region may become narrow one time, but the turbidity keeps on diminishing.

(Increase in activity)

(1) Org → CO_2, NH_3, SO_4^{2-}
(2) NH_3 → NO_2^- → NO_3^-

Complete decomposition

(Increase in activity)

(3) H_2S → SO_4^{2-}

DO ≒ 0

(4) Org $\xrightarrow{NO_3^-}$ N_2

Sunlight

NH_3 H_2S CH_4

Aquatic sphere

WK*

Anaerobic region

Green, Purple sulfur bacteria: Increase in activity
In accordance with sunlight
Photosynthesis = H_2S consumption
Purple non-sulfur bacteria: Increase in activity
Photosynthesis = Org consumption

(Enlargement of S region)
(Anaerobic state)
DO = 0

Partial decomposition
Org → CO_2, CH_4, NH_3, H_2S
Increase in activity*

NH_3 CH_4 H_2S

Sludge layer

WK*

(Anaerobic state)

Sedimentary sludge

Partial decomposition
Org → CO_2, CH_4, NH_3, H_2S
Increase in activity*

I of water quality accompanied by the continuous addition of Waterkeeper.