device shown in FIG. 2 was used to treat artificial wastewater under the conditions below. In this example, a sequencing batch biological treatment tank (dimensions of the sequencing batch biological treatment tank: 0.15 m in width x 0.2 m in length x 0.4 m in height) was used in which a wastewater inlet was positioned at 1/4 the height of the water surface in the sequencing batch biological treatment tank (0.4 m above the bottom of the tank) and a treated water outlet was positioned at the water level (0.2 m below the top of the tank) such that the treated water outlet was positioned higher than the wastewater inlet. The artificial wastewater which mainly contained fish meat extract and peptone was used.

[0116]

The artificial wastewater supplied in the sequencing batch biological treatment tank was biologically treated by supplying air to the artificial wastewater for a predetermined time (150 minutes) using an aerator disposed near the bottom of the sequencing batch biological treatment tank (biological treatment process). At the same time as supply of wastewater was started from the wastewater inlet 30 seconds after stopping the aerator (within the zone settlement time obtained using a graduated cylinder), discharge of treated water from a treated water outlet was started (wastewater supply and treated water discharge process). The flow linear velocity of the wastewater was set to 1 m/h with respect to the water surface area of the sequencing batch biological treatment device. The wastewater supply amount was set such that 75% of actual volume of the sequencing batch biological treatment device was filled in 18 minutes. In this way, the biological treatment process and the wastewater supply and treated water discharge process were repeatedly performed.

[0117]

Comparative Example

In a comparative example, the above described treatment of artificial wastewater was performed under the conditions described below. In the comparative example, a sequencing batch biological treatment tank (dimensions of the sequencing batch biological

treatment tank: 0.15 m in width x 0.2 m in length x 0.4 m in height) was used in which a wastewater inlet was positioned at 1/4 the height of the water surface in the sequencing batch biological treatment tank (0.4 m above the bottom of the tank) and a treated water outlet was positioned at 1/2 the height of the water surface in the sequencing batch biological treatment tank (0.2 m above the bottom of the tank).

[0118]

In the comparative example, a conventional sequencing batch treatment was performed. First, (1) in a wastewater supply process, raw water was supplied to the sequencing batch biological treatment tank from a wastewater inlet for 10 minutes. (2) In a biological treatment process of the target substances, artificial wastewater was biologically treated by supplying air to the artificial wastewater using an aerator disposed near the bottom of the sequencing batch biological treatment tank for 95 minutes. (3) In a biological sludge settlement process, biological sludge was allowed to settle for 15 minutes after stopping the aerator. (4) In a treated water discharge process, the treated water was discharged from the treated water outlet for 10 minutes. Processes (1) to (4) were repeated.

[0119]

In both the example of the present invention and the comparative example, daily SVI5 values of biological sludge in the sequencing batch biological treatment tank were measured. The SVI5 value which is an indicator of sludge settleability can be obtained as described here. First, sludge (1L) was supplied in a 1L graduated cylinder and stirred. After allowing 5 minutes, the sludge interface was measured. Then, the volume ratio (%) of the sludge in the graduated cylinder was calculated. Then, MLSS (mg/L) was measured. The SVI5 value was calculated by inserting these values into the equation below. A smaller SVI5 value indicates a higher settleability of the sludge.

SVI5 (mL/g) = volume of sludge x 10,000/MLSS

[0120]

Table 1 shows an example of representative treated water quality on the 26th day