Purification Effect Of A New Plant In Amagasaki Canal

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Amagasaki Canal has been polluted because it is sheltered by artificial vertical structures and is contaminated by waste water from factories. To restore the water quality in the brackish water to meet recreational demands, a new water quality improvement plant was constructed in May, 2012, on the basis of the findings of the Amagasaki Sea Blue Project of Hyogo Prefecture. The new water quality improvement plant comprises a tank for removing suspended solids and an algae channel with algae harvesting for composting by civic collaboration. The suspended solids removing tank reduces organic suspended solids in the pumped surface seawater and converts organic suspended solids to dissolved nutrients using bivalve biology. Algae channels serve to assimilate the dissolved nutrients in the canal's treated water from either the suspended solids removing tank or the water pumped up from the bottom of the sea, using the primary

productivity of green algae and blue-green algae that grow naturally in the channel. In this study, we quantified purification effect of the system by field observation. In the algae channel, the dissolved inorganic nitrogen (DIN) and PO4-P reduction function was estimated by measuring the distribution of dissolved nutrient in channel. The values after reduction by advanced sewage treatment were varied in every season because amount of algae and concentration of nutrient were varied seasonally, especially about more than 65% of the amount of DIN was removed in the channel. Purification rate of the suspended solids removing tank was estimated more than 42% until summer and the rate decreased in winter because lack of food (phytoplankton) for bivalves occured in the tank.