

Varanya Lertcharoensombat 2012: Rate of Oxygen Release of Calcium Peroxide (CaO₂). Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Sanya Sirivithayapakorn, Ph.D. 111 pages.

Bioremediation is a remedial option for treatment of groundwater contaminated with volatile organic compounds. The application of Oxygen Releasing Compounds (ORC), which release small increments of oxygen into the environment, can support constant degradation of these organic compounds. This study focused on the effects of oxygen release rate by ORC under optimal conditions. Calcium peroxide was the selected ORC compound used in this experiment.

Batch reactor with total volume 1.5 litre, diameter of 13 centimeter and high of 12 centimeter was used in this research. This research was divide into 3 experiments. The first experiment is to study the optimum condition of oxygen release from calcium peroxide in tap water at pH 5, 6, 7 and 8 under both slow and rapid mixing condition. The second experiment is to study the optimum condition of oxygen release from calcium peroxide and tartaric acid in tap water at pH 7 under slow speed mixing condition. The last experiment is to study the optimum condition of oxygen release from calcium peroxide and tartaric acid in underground water under slow mixing condition for 4 hr.

The results indicated that at pH 5 and 6, oxygen can be released more under slow speed mixing condition, while at pH 7 and 8, oxygen can be released more under fast mixing condition. Further study that the ratio of found calcium peroxide and tartaric acid of 1:1 ratio was optimum condition. The study in the groundwater found that oxygen can release more when calcium peroxide alone was added in comparison to when calcium peroxide and tartaric acid were added.

Student's signature

Thesis Advisor's signature