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Detection of Protein Phosphatase Inhibitors of the Microcystin Class in the Naktong River, South Korea

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Tumor promoting hepatotoxins from the family of microcystins were identified at the Noksan Station of Naktong River. These hepatotoxins were detected in the water and cells at biologically active levels, based on their activity (in microcystin-RR equivalent units) by a highly sensitive protein phosphatase assay system and by high performance liquid chromatography (HPLC). HPLC analysis of the cell sample showed that microcystin-RR was the dominant variant present in the sample. Microcystins are known to be potent inhibitors of protein phosphatases 1 and 2A, which are essential in cellular function. Therefore, one of the most promising methods to determine hepatotoxicity of cyanobacterial blooms is the protein phosphatase assay. The assay involves the conversion of ^{32}P labelled serine phosphorylase a to phosphorylase b using chicken brain homogenate as the source of phosphatases. During this reaction ^{32}P released is measured. Liquid chromatographic analysis of the cell sample identified the main variants of microcystin present in the sample. The bloom material of the Noksan Station was dominated by *Microcystis aeruginosa* species. Horizontal and vertical distributions of these toxins were examined for the first time across the width of the Noksan Station. The chl.a concentration ranged from 21.9-847.7 $\mu\text{g/L}$. The water temperature at the time of sampling ranged from 25.0-28.2 $^{\circ}\text{C}$. The pH value observed as high as 10.5 at Station 1 surface sample.

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Survey of the Biodegradation Potential of Anionic Surfactants Selected

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The anionic surfactants such as linear alkylbenzene sulfonate(LAS), -olefin sulfonate(AOS), sodium lauryl ether sulfate(SLES), and sodium lauryl sulfate(SLS) have been widely used as components of commercial cleaning products. We have studied the primary and ultimate biodegradabilities of these surfactants by screening tests and simulation tests under aerobic conditions specified in KS, ASTM and OECD respectively. And the anaerobic biodegradation potential of these were examined using European Center for Ecotoxicology and Toxicology of Chemicals(ECETOC) method. Biodegradability data serve as a basis for an exposure consideration for the Environmental Risk Assessment.