B029

Biodegradation of Industrial Cutting Oil by *Pseudomonas* sp.

Lan Hee Kim[1*], Dong Hyo Kang[2], and Sang Seob Lee[1]
[1]*Department of Biology Kyonggi University,* [2]*Busan Metropolitan City Environmental Installations Corporation*

Cutting oils are emulsionable fluids widely used in metal working processes Their composition is mineral oil, water, and additives(fatty acids, surfactants, biocides, etc) generating a toxic waste after a long use cutting oil also affect colour, taste and odour of water, making it unfit for domestic and industrial uses Cutting oil dermatitis is a difficult problem for worker.

In these days, conventional treatment methods as evaporation, membrane or chemical separation have major disadvantages since they generate a concentrated stream that is more harmful than the original waste. Generally, it is a waste too dilute to be incinerated, and due to its toxicity, it is difficult to treat biologically

In this study, our purpose is reducing CODcr of cutting oil with an antiseptic by using biological treatment. Eighty one strains were isolated from cutting waste oil at aerobic condition. KS-47, removed 86.1% cutting oil in 48 hours, was obtained by screen test (pH 7.0, 28℃, aerobic condition) KS-47 was identificated by *Pseudomonas* sp. In batch test, we gave various incubation factors with temperature, cell concentration, and pH to search the optimal incubation condition

B030

Removal of Metal Ions(Cd) from Aqueous Solution by *Pseudomonas* sp.

Jeong-Hwa Jeong[1*], Dong-Hyun Kim[2], Sung-Ho Kong[2], Eun-Jin Lim[3], Jong-Yeol Lee[3], Young-Su Bae[4], and Sang-Seob Lee[1]
[1]*Department of Biological Engineering, Kyonggi University,* [2]*Department of Chemical Engineering, Hanyang University,* [3]*Beautiful Environmental Construction Co , Ltd ,* [4]*Department Soil Analysis, Gyeonggido Institute of Health and Environment*

There are a lot of mines about 2,500 places in South Korea. Generally, over 80% mines are spoiled among them This has led to increasing concern about the effects of toxic heavy metals as environmental pollutants

In the study, we isolated 189 strains from soil of mines spoil and then 10 strains, cadmium-resistant bacteria, were selected They were screened with 40mg/ℓ cadmium In results of screen test, JH1 removed 56 9% cadmium JH1 was identified by *Pseudomonas* sp JH1 was cultured in media containing various carbon sources to improve the formation of the polysaccharide Through the carbon test, JH1 made polysacchride with both 3-Hydroxybenzoic acid and phenylalanine In batch test, we used JH1 and 3-Hydroxybenzoic acid as carbon source in the mineral salts medium we also gave various incubation factor pH, temperature, cell concentration, and cadmium concentration Additionally, chemically, cadmium was removed by citric acid as a soil washing method, but there are no way to treat this cadmium in citric acid So that we tried to treat cadmium in citric acid As a results, 99 1% of initial cadmium were removed by JH1

[Supported by grants from ministry of environment]

B031

Analysis of Microbial and Benthic Macro-Invertebrate Communities in Polluted Streams Using Self-Organizing Map (SOM)

Se-Eun Lee[1*], Jung-Hye Choi[1], Byung-Hyuk Kim[1], Mi-Young Song[2], Tae-Soo Chon[2], Sun-Cheol Kang[3], and Sung-Cheol Koh[1]
[1]*Division of Civil and Environmental Engineering, Korea Maritime University,* [2]*Division of Biological Sciences, Pusan National University,* [3]*Daegu University*

Various polluted streams were patterned by analyzing benthic microbial and invertebrate communities through self-organizing map, one of the artificial neural networks techniques The sampling sites were selected based on different sources of pollution farming, livestock, domestic and industrial sites Grouping of collected microbial and benthic macro-invertebrate communities were affected by the sources of pollution Microbial taxa were diverse at the clean sites while their communities were tolerant at polluted sites. SOM results showed that the sites were essentially categorized into some distinctive areas of SOM map. The eubacterial taxa identified and their distribution in the SOM map appeared to be significantly influenced by organic substrates and nutrients. In macro-invertebrate communities, species richness was high and the taxa were diverse at the clean sites In contrast, a few dominant species tolerant to organic pollution were present at the polluted sites In the inter-taxa grouping, microbial and macro-invertebrate communities were characteristically grouped on the map. The effect of different sources of pollution on changes in community compositions was discussed

B032

The Microbial Biosurfactants Made from *Candida bombicola.* for Oil Industry

Yumi Park[1*], Kisup Lee[1], Juhyun Kim[1], Kyoung Sohn[1], Myungsun Jung[2], and Gieun Kim[1]
[1]*Department of Biotechnology, Seokyeong University,* [2]*Institute for Industry and Technology, Seokyeong University*

Surfactant is used around us. The surfactant which we use commonly is chemical surfactant But, This surfactant additional pollution is happened by nonresolvability The biosurfactant which solution this problem became a studied However, low use in industry by a high price and low removal efficiency.

This study was performed on the VOC process technology that use was possible in the petroleum industry and environmental industry during a lot of surfactant fields in this study. A focus of study is surfactant development to show a low unit cost and the high removal efficiency that solved a limit of the existing surfactant First of all I used a cheap molasses culture medium for a low unit cost. Sampling did the culture fluid which cultured microorgainsm in order to recognize whether surfactant became a generation in a molasses culture medium, and sampling did suspention after centrifugal disconnection and measured CMC Sent this surfactant culture fluid to Ulsan SK factory And compared VOC removal efficiency with chemical surfactant Tween81 by Gastech As a result, biosurfactant generated in *Candida bombicola* showed higher removal than Tween81