

Quantification of soil pollution concentration of plating metals by bioassay using luminous bacteria

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Cd, Cr(6+), Pb, As and CN are substances which closely related to metal plating. These are regulated as Class II Specified Chemical Substances by Soil Contamination Countermeasures Act. However, many other plating metals have not been subject to this law. Some heavy metals, which are used as plating metals, may be harmful to the human body if taken in excess. They must be also assessed risk in the same way as a Class II Specified Chemical Substances.

On the other hand, there is a bioassay using luminous bacteria as one of the acute toxicity evaluation test on hazardous substances. Since there is normally correlation between the concentration of hazardous substances and the intensity of the acute toxicity, it may be possible to estimate the concentration of harmful substances from the intensity of the acute toxic effects.

Focusing on Fe, Ni, Cu, Zn, Ag and Sn which are widely used as common plating metals, in this study, systematic bioassay tests using luminous bacteria (*Vibrio fischeri*) were performed. Based on the data obtained in the experiments, quantification of the correlation between the concentration of the plating metals and the intensity of the acute toxicity was attempted.

Keywords: Soil contamination, Plating metal, Bioassay, Luminous bacteria, Quantification