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Correlation of the Five Test Methods to Assess Chemical Toxicity and Relation to Physical Properties.

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Biological tests using *Oryzias latipes* (LC₅₀ and oxygen uptake test), *Moina macrocopa* (LC₅₀), and *Dugesia japonica* (head regeneration test and LC₅₀) were carried out in order to clarify the mutual relationship of these test methods. The oxygen uptake rate of *O. latipes* was not effective to assess chemical toxicity. Adding the results of the growth inhibition test of *Tetrahymena pyriformis* which were previously reported by the authors, the correlation coefficients between each two test method were calculated. The test results except EC₅₀ and LC₅₀ of *D. japonica* showed a good relation to each other. The n-octanol/water partition coefficient interpreted the toxicity in mol/liter unit but not in mg/liter. Solubility was not useful descriptor in both unit.

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Evaluation of the Test Method "Activated Sludge, Respiration Inhibition Test" Proposed by the OECD.

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The test method of "activated sludge, respiration inhibition test" proposed by the OECD was critically carried out and compared with other test methods. Investigation of test conditions showed that the moderate deviation from the test conditions defined by the OECD Test Guidelines did not have much effect on the result, and some modifications were proposed to improve the method. This method had a poor detection limit compared with the LC₅₀ test with *Oryzias latipes* and EC₅₀ of the growth inhibition test with *Tetrahymena pyriformis*. The susceptibility of the method was particularly poor for the chemicals which were highly toxic in the other two tests.

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Development of Odorous Gas Sampler and Investigation of its Practicality

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The existing gas sampler is deficient in regard to its efficiency, handling and ability. In order to solve these problems, a new gas sampler was developed and its function was investigated. The sampler is a vessel made of aluminium and contains a polyester bag inside the vessel. The vacuum method is employed for taking the gas. The maximum capacity of the gas volume that can be taken is about 15 liters and sampling time can be changeable from 15 sec to 10 min per sample. In addition, many odor surveys were carried out and the practicality of the new sampler was investigated. It was concluded that the new sampler was easy to handle and was more efficient than the existing gas sampler.