

Report

The Development of an On-site Wastewater Treatment System with Monitoring Capabilities

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Summary

A compact Wastewater Treatment Unit that can monitor its own decontamination efficiency by using an underwater dosimeter and turbidity meter was developed. This equipment is so compact as to be able to be loaded up a 1t-class truck and is efficient enough to decrease radioactivity level of wastewater to under 10Bq/L. There are high levels of correlation between radioactivity and turbidity and underwater radiation dose (URD). Turbidity has the advantage of measuring low radiation density, whilst URD can measure radioactive contamination independently of other factors affecting water quality. However experiments showed that the relationship between turbidity and radioactivity density was changed according to radioactivity of the suspensoid, and that air dose rate had an impact on determination limit of URD index. As this Wastewater Treatment Unit has a dual-meter system, it is possible to calibrate the turbidity index with the measured URD. This dual- meter system would be able to monitor low radioactivity levels in a range of wastewaters.

Key Words: Radioactive wastewater, On-site treatment, Turbidity, Underwater radiation dose
