

Measurement of roadside air pollution with a biomonitoring method

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Abstract

In Japan air pollution due to atmospheric particulate matter has been a serious problem, however it is difficult to widely cover roadside areas with a limited number of the station. Therefore we focused on biomonitoring technique with ginkgo leaves. Ginkgo leaves were collected along major arterial roads in spring, summer and autumn. The particles retained on leaves were removed by ultrasonic cleaning into ethanol solution. The ethanol solution including particles was suctioned by an aspirator. Particles were collected on PTFE filter. Particles on filter were quantified by Particle Induced X-ray Emission (PIXE) analysis. The total mass fluxes of traffic-related elements on leaves and the ratios of elements were almost same in three seasons. The total mass fluxes of traffic-related elements on leaves correlated with the traffic density of large vehicles, and the distance from the roadside to the sampling point. The ratios of mass of road dust-related elements on leaves were nearly equal to those of road dust profile data. These results suggest biomonitoring technique is the effective method to assess roadside air pollution in three seasons.