

英文摘要

This study investigated the air quality and lung function of school children in three different types of elementary schools during 2009 and investigated the air quality in school children's houses during 2010.

We found that high failure rate of the temperature, concentration of ozone and bacteria in the classrooms. Traffic elementary school got the higher concentration and more components of VOC than the other two elementary schools (industry elementary school and background school). The mean ratio of T/B in traffic and industry elementary schools were higher than 9, but it was lower than 1 in background elementary school. I/O ratio of VOC was 0.7 in industry elementary school, and it was close to 1 in traffic and background elementary schools. The result showed that VOC could represent the distance of pollutant source and T/B ratio could estimate the source of VOC.

For lung function, the highest value of VC, FVC and FEV1 were found in background school whereas the lowest value were found in industry elementary school. The trend of abnormal rate of lung function was similar. In multiple regression, we found that the explanation power of air pollutants were high in traffic and industry elementary schools. In background school, climate factors were the main explanation factor for school children's lung function.

For the allergens in blood of school children, it was found that school children of industry elementary school had low concentration of blood allergen. This showed that there might be other reason for inducing

asthma in children in industry elementary school. In addition, the indoor concentration children's house of NO₂, PM₁, PM_{2.5} and PM₁₀ were significantly higher while the window was opened in house than it was closed. The indoor concentration children's house of CO₂, NO₂ and PM_{2.5} were higher during cooking than normal condition.