

## **A review on the exposure to benzene among children in schools, preschools and daycare centre**

### **ABSTRACT**

Benzene, has been measured in indoor environments for many decades and has been identified to cause variety of health effects. As children spend most of their time indoors such as daycare centre, preschool and school, they are more likely to be exposed to indoor air pollutants. This paper was aimed to evaluate 15 years(2003-2018) of investigations of exposure to benzene among children within indoor environments from worldwide studies. Among 24 papers evaluated, the most frequently studied environment was in primary school (54%) and the highest concentration of benzene was found in preschool at 148.0  $\mu\text{g}/\text{m}^3$  in China. Benzene levels were found higher in indoors than outdoors for most of the studies. Active sampling techniques were used in 42% of studies that enable the determination of acute health effects on children during short period of exposure time. Based on the papers evaluated in this study, most of the children are exposed to the inadequate environment during their time spent in indoor environments, which is not in compliance with the established standard of exposure to benzene and may lead to the increase of potential health risk. Besides, differences in sampling techniques and durations make it hard to compare the outcomes of the studies with health-effects guidelines. The evaluation from this study indicated a diversity of sampling approaches and techniques, pointing to the importance of establishment of standard method for collecting and reporting data, for both exposure and health effects.

**Keyword:** Benzene; Children's health effects; Daycare centre; Indoor air quality; Preschool; School