Personal Exposure to Fine-particle Black Carbon Air Pollution Among Schoolchildren Living in Ulaanbaatar, Mongolia

Ulzii Dashnyam1,2, Nicole Warburton3, Rossa Brugha4, Ichinkhorloo Tserenkhi, Enkhmaa Davaasambuu1, Shonkhuuz Enkhtur1, Bayalag Munkhuu1, Sereeter Lodoysamba5, Baigalmaa Dashdendev1, Jonathan Grigg4, David Warburton3

1National Center for Maternal and Child Health, Ulaanbaatar, Mongolia; 2Department of Pediatrics, School of Medicine, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia; *The Saban Research Institute, Children’s Hospital Los Angeles and Keck School of Medicine, University of Southern California, Los Angeles, CA, USA; *The Blizard Institute, Barts and The London School of Medicine and Dentistry, London, England, UK; *National University of Mongolia, Ulaanbaatar, Mongolia


In this study, personal monitoring of black carbon in the PM_{2.5} size fraction was conducted with children. In the article, several times measurements were referred to incorrectly as being personal PM_{2.5} exposure, which is not accurate since black carbon within the PM_{2.5} size fraction was measured, not total PM_{2.5}. The stationary monitoring was referred to correctly since black carbon in the PM_{2.5} size fraction was measured with the AethLabs aethalometer in addition to the PM_{2.5} size fraction with the TSI DustTrak, but the children’s exposure was only measured with the AethLabs aethalometer. As seen in Table 1 from the stationary monitoring, black carbon comprises only 5-31% of the total PM_{2.5} concentration. Therefore, if the children’s exposure in Table 2, Figure 3, and in the text is interpreted as total PM_{2.5} exposure, their exposure to PM_{2.5} is underestimated. In all instances referring to the children’s exposure, the measurement should be referred to as the black carbon in the PM_{2.5} size fraction.