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ENVIRONMENTAL BURDEN OF DISEASE CAUSED BY AIR POLLUTANTS FROM MUNICIPAL SOLID WASTE INCINERATORS

Young-Min Kim[a]
[a]Sungkyunkwan University School of Medicine, Korea

Although people living in the vicinity of incinerators have wondered whether incinerators cause any health burden, few studies have attempted to quantify the integrated health burden on the population. To estimate the attributable burden of disease caused by incinerators in Seoul, Korea, a source-specific exposure was applied to the estimation of the environmental burden of disease (EBD). With particular attention on the development of a measurement means of the source-specific, exposure-based population attributable fraction (PAF), we integrated air dispersion modeling, Geographic Information Systems (GIS), the population distribution of exposure, and the exposure-response relationship. Attributable burden of disease of four air pollutants (PM10, NO2, SO2, and CO) emitted from four municipal solid waste incinerators (MSWIs) in Seoul was estimated using the estimated PAF and the disability-adjusted life years (DALY) method. The PAF for NO2 to all-cause mortality was assessed at approximately 0.020% (95% CI: 0.003–0.036%), which was the highest among all air pollutants. The sum of the attributable burden of disease for four pollutants was about 297 person-years (95% CI: 121–472) when the incinerators observed to the emission standards. The attributable burdens of respiratory disease and cardiovascular disease were about 0.2% and 0.1%, respectively, of the total burden of respiratory and cardiovascular diseases of Seoul citizens for the year 2007. Although the air emissions from one risk factor, an incinerator, are small, the EBD can be significant to the public health when population exposure is considered.

Biography

Young-Min Kim has completed her PhD from Seoul National University and postdoctoral studies from Sungkyunkwan University School of Medicine and Emory University Rollens School of Public Health. She is a research professor of Sungkyunkwan University School of Medicine and works for Environmental Health Center for Atopic Diseases, Samsung Medical Center as a senior researcher. She is also joining the Task Force Team for the Response of Climate Change, Korea Center for Disease Control and Prevention as an advisory committee. She has published more than 15 papers in reputed journals.

kym6706@hanmail.net

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