

5th International Conference on
Green Chemistry and Technology
&
6th International Conference on
Environmental Chemistry and Engineering
July 24-26, 2017 Rome, Italy

Hezhong Tian et al., Trends in Green chem, 3:2
DOI: 10.21767/2471-9889-C1-002

Global atmospheric emissions of toxic heavy metals from anthropogenic sources under multi-scale regions

Hezhong Tian and Chuanyong Zhu
Beijing Normal University, China

Based on economic development and technology diffusion theory, anthropogenic atmospheric emission of typical heavy metals (HM, Hg, As, Se, Pb, Cd, Cr, Ni, Sb, Mn, Co, Cu and Zn) characterized by global multi-scale regions, long-term spans and high spatiotemporal resolutions were established by synthetically using the best available representation of time-varying emission factor methods and ArcGIS tools. The main conclusions are summarized as follows: Emissions of 12 toxic heavy metals in China during the period of 1949-2012, increased by about 20-128 times, totally reaching about 79807.7 tons in 2012, and contributing 36.8% of global emissions (about 216893.1 tons). Coal combustion, liquid fuel combustion, nonferrous metal smelting and brake wear were identified as the primary sources for the corresponding heavy metals. Generally, Shandong (for As, Se, Cd, Cr, Ni, Sb and Cu), Hebei (for Pb and Zn), Guizhou (for Hg), Inner Mongolia (for Mn) and Shanxi (for Co) ranked as the largest provinces, respectively. Emission intensities of HMs were much higher in central and eastern China than those in western China, and the coastal regions were classed as the most polluted areas of varied HMs. Worldwidely speaking, China, Chile, India, Russia, the United States and South Africa are the countries with high HMs burden. Therein, China ranked as the top one largest country with HMs (except for Sb) emissions. Asia represented the highest heavy metals emitting continent, which accounts for approximately 58.6% of the global emission in 2012. The top emission intensities of HMs were found in Eastern and Southern Asia and Eastern Europe.

Biography

Hezhong Tian has completed his PhD from Tsinghua University and Postdoctoral Studies from Tsinghua University School of Environment. He is now the Director of Center for Atmospheric Environment Studies, Professor of School of Environment at Beijing Normal University of China. He has published more than 50 papers in reputed journals like ES&T, and ACP, and has been serving as an Editorial Board Member of *Environmental Science Studies*.

hztian@bnu.edu.cn

Notes: