Supplemental Material for

Ambient Air Quality in Dhaka Bangladesh over Two Decades: Impacts of Policy on Air Quality

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Source Apportionment Results

The source profiles derived from the 2009 to 2015 data are presented in Figure S1 and the corresponding contributions are shown in Figure S2. The reproduced mass is compared with the measured mass in Figure S3. Although the analysis reproduces 84% of the measured PM mass, the r^2 value is only 0.610. These results are typical of prior work since the data set lacks any direct measurement of organic carbon or particulate nitrate. Based on the extensive prior work sampling and analyzing data from this site (Begum and Biswas, 2004; Begum *et al.* 2004; 2005; 2006a,b; 2011a,b; 2013; 2014), the factors are interpreted as Road Dust, Brick Kiln, Biomass Burning, Motor Vehicles, Soil Dust, Lead, Sea Salt, and Zn Works. Road dust includes Zn and S that are likely derived from vehicle emissions. Zn and S may represent tire wear as well as tailpipe emissions from burning lubrication oil (Zn) and high sulfur fuels (particularly diesel fuel). Brick kilns are mostly fired with relatively high sulfur coal although the lowest grade coal that had been used was banned from import in 2014. The government has been trying to move kiln operators from using fixed chimney bull trench kilns to using zigzag or other more efficient systems. There has been a minor decline in the brick kiln contribution. Biomass burning represents the main source of potassium and may also involve cooking emissions. Soil dust is crustal material without as much contamination by the non-crustal species that appear in the road dust factor. Lead involves emissions from backyard battery reclamation operations and possibly some emissions from the Zn plant. Pb is also seen in the Zn works profile since they use Pb to

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enhance the sheen of the galvanized materials.   Sea salt is aged as seen from the depletion of Cl
and the enhancement of sulfur. Similar profiles have been consistently observed.
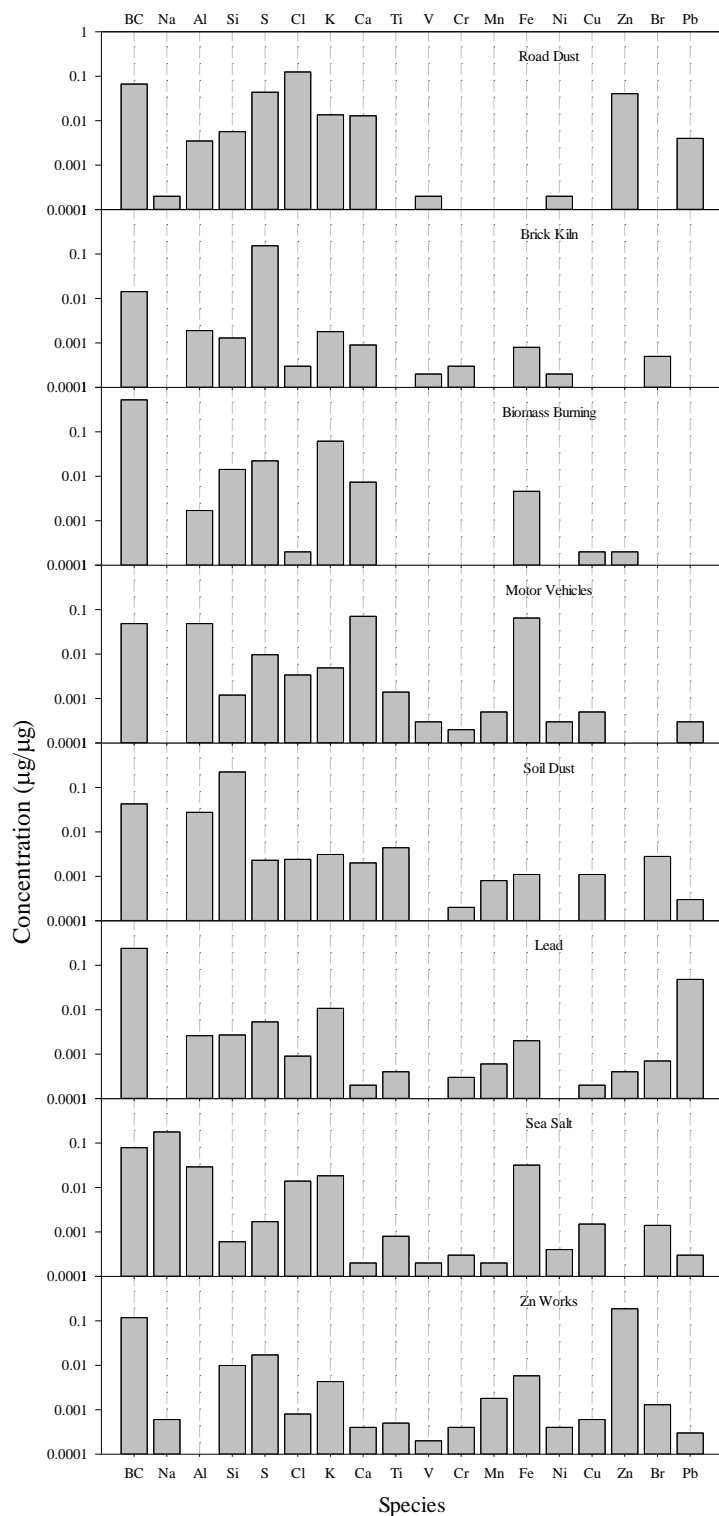

Figure S1. Source profiles for PM$_{2.5}$ measured in Dhaka from 2010 to 2015.
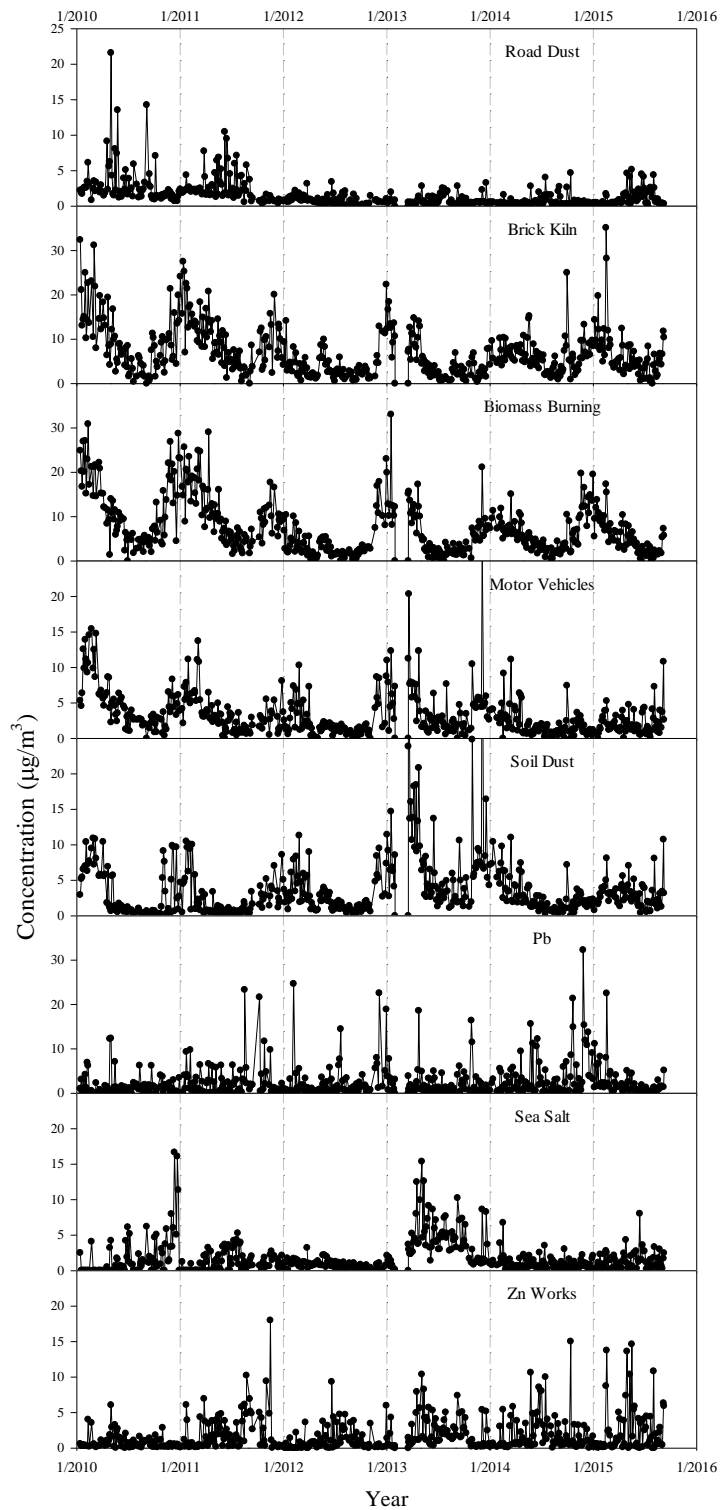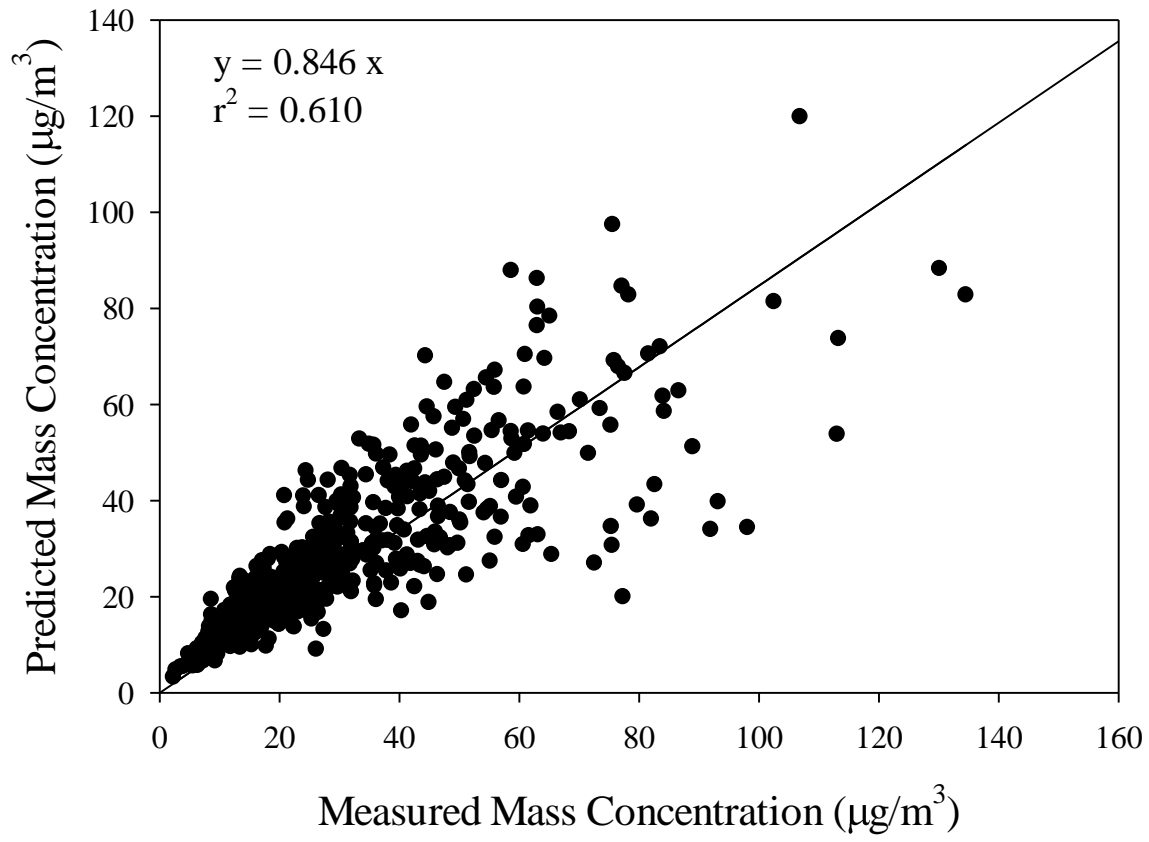
Figure S2. Source contribution time series for Dhaka samples from 2010 to 2015.

$y = 0.846\ x$
$r^2 = 0.610$

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