**Bisphenol A concentrations in indoor and outdoor PM2.5 samples**

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**References**


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Bisphenol A [2,2-bis(4-hydroxyphenyl)propane] (BPA) is an industrial chemical, a monomer of the polycarbonate plastics and a precursor for a variety of epoxide resins. The high quantities supplied by industries and in use have produced accumulation of BPA in different environmental compartments, and atmospheric BPA is ubiquitous (Fu P. et Kawamura K., 2010). BPA is a likely endocrine-disrupting compound (EDCs) (Matsushima et al., 2007; Matsumoto et al., 2005). The consideration of exposure to EDCs is critical in study of health effects, particularly in relation to indoor environments, which have been identified as an important source of chemical exposures. People spend a large fraction of their time indoor, and indoor sources of chemicals, coupled with limited ventilation and slow chemical degradation processes, cause increased pollutant concentrations indoor.

**OUTDOOR AND INDOOR CONCENTRATIONS**

Daily outdoor BPA pollution levels (in PM2.5 samples) were in the range of 0.18 (+0.05) ng m\(^{-3}\), which are similar values compared to other cities from China, Japan, New Zeland and USA (Fu P. et Kawamura K., 2010). We measured higher BPA concentrations in indoor than outdoor (Table 1), with an averaged indoor BPA concentration of 0.30 (+0.04) ng m\(^{-3}\).

Indoor atmospheric particles are on average enriched in BPA (values reported as ng \(\mu\)g\(^{-1}\)).

**PM2.5 SAMPLING**

The atmospheric occurrence of particle-bound BPA in the indoor and outdoor atmosphere at an urban site (Milan, Italy) has been investigated. Daily (24 h) PM2.5 samples have been collected (September 2007-March 2008), and sampling took place simultaneously in the indoor and outdoor site.

**QUANTIFICATION OF BPA IN PM2.5 SAMPLES**

PM2.5 samples are ultrasonically extracted in methanol (0.4 ml). The extract is filtered and analysed by HPLC/(−) ESI-MS/MS.

**IN/OUT**

<table>
<thead>
<tr>
<th>INDOOR PM2.5</th>
<th>OUTDOOR PM2.5</th>
<th>IN/OUT</th>
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<tbody>
<tr>
<td>µg m(^{-3})</td>
<td>ng m(^{-3})</td>
<td>µg mg(^{-1})</td>
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<tr>
<td>0.18</td>
<td>0.30</td>
<td>18</td>
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**Tab. 2 Experimental estimation of the indoor BPA source**

**Fig. 1** Daily BPA concentration (ng m\(^{-3}\)) in PM2.5 samples indoor versus outdoor

Indoor air pollution levels are influenced by indoor pollution sources and by infiltration of outdoor air. Daily indoor BPA concentration was correlated to daily outdoor BPA (R\(^2\) = 0.88) (Fig.1), indicating as indoor is strictly influenced by infiltration of outdoor air. The slope of the linear correlation between indoor and outdoor BPA (0.82) suggests that about 80% of outdoor BPA is transported in the indoor.

The y-intercept (0.15 ng m\(^{-3}\)) indicates that another source of indoor BPA, not related to the exchange with outdoor, occurred. The indoor BPA concentration attributed to indoor pollution sources was estimated to be 0.14-0.18 ng m\(^{-3}\) (Tab.2). The indoor sources contributed to 19% up to 94% of the daily indoor BPA level.