Unregulated pollutants may cause health risks in Western Balkans

Several pollutants that are not covered by UN regulations could be harmful to humans, according to new research in the Balkans. By sampling air at various urban sites, the research showed that polycyclic aromatic compounds (PAHs) have the potential to be a major health risk.

The UNEP Stockholm Convention\(^1\) regulates emissions of Persistent Organic Pollutants (POPs). These are carbon-based chemicals, such as polychlorinated biphenyls (PCBs), that remain in the environment and accumulate in the fatty tissue of humans and wildlife. However, the Convention does not include a number of other potentially harmful organic substances, especially PAHs which are produced by incomplete burning of fuels and can cause cancer, developmental and reproductive problems.

The former Yugoslavia has limited information on air pollution, despite possible contamination from damaged industrial sites during the Balkan war conflicts in the late 1990s. A new EU-supported study, conducted under the APOPSBAL project\(^2\), assessed the contribution of several classes of toxic compounds to human health risks: PCBs, PAHs and organochloride pesticides (OCPs). Researchers collected 127 samples and the assessment of health risk was based on exposure levels and carcinogenic effects of pollutants.

Results indicated that Croatia had the lowest overall health risks and Bosnia and Herzegovina the highest. With just one exception, all locations in Bosnia and Herzegovina reached or exceeded a significant risk level. PCBs posed a risk, particularly when bound to particles. Particulate PCBs are thought to be released from contaminated soils and buildings. PCB levels were significantly higher in the Serbian town of Kragujevac where a car factory is based.

However, the majority of human health risk in urban areas was associated with PAHs, predominantly when bound to particles. Between 83 and 94 per cent of total health risk was accounted for by pollutants bound to particles and PAHs were responsible for 99 per cent of this risk. Most contamination was in Bosnia and Herzegovina and it is suggested that it could be caused by non-regulated burning of waste, wood and other fuels. In comparison to the other two classes, OCPs do not represent a significant risk to human health in the western Balkans.

Data were collected between May and June, which is the season with lowest emissions from combustion sources. Using a different sampling technique, contributions to health risks were estimated for the winter months. This indicated that PAH related human health risks increased by several orders of magnitude between summer and winter months.

The researchers highlighted several uncertainties in their results. For example, they only considered inhalation as a route for exposure and not ingestion which may be more pertinent for OCPs and PCBs. Also the sampling procedure at different times over 24 hours may not ensure typical samples. Nevertheless it indicates that the health risks posed by PCBs may be underestimated in the Western Balkans.

1. See [http://chm.pops.int/](http://chm.pops.int/)
2. APOPSBAL was supported by the European Commission under the Fifth Framework Programme. See [www.recetox.muni.cz/projekty/apopsbal/index.php](http://www.recetox.muni.cz/projekty/apopsbal/index.php)


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