Mossphere

Easy, standardized and sustainable monitoring of air quality

Technology

Continuous monitoring of environmental air quality has been mandatory in the EU since 1996. Since 2008, EU countries are not only obligated to monitor air quality but also to measure heavy metal pollution. However, state-of-the-art approved technical measurement systems are expensive, rather elaborate and lack mobility. The “Mossphere” is a ready to use and easy solution developed by a European consortium led by biologist Prof. Dr. Ralf Reski.

Mossphere is a ready-for-sale, innovative, standardized, sustainable, eco-friendly, passive diffuser which identifies the presence of all relevant micro pollutants (heavy metals, PAHs, Dioxins) in ambient air. It contains moss material produced in standardized conditions and takes advantage of the physicochemical and morphological characteristics of terrestrial moss. Just with 50 Mossphere bags the air quality in a city of medium sized (15 km^2) can be monitored. Mossphere needs no power hookup and no calibration. Lamp posts, traffic lights, even trees are sufficient for installation. Over the next six weeks, while binding pollutants, Mossphere will do the job. Upon collection/replacement analytical results can be generated and assessed regularly.

Features

- Implementation of intensive surveillance networks of ambient air
- Identification of pollution sources in small scale
- Standardized methodology for monitoring air pollution in networks
- Establishment of pre-operative levels and/or verification of corrective measures of industrial emissions
- Plans for environmental monitoring and human health

Competitive advantages

- Lower cost - compared to other systems
- Easy handling due to small size
- Easy location and transport - high mobility
- Integrates into any environment - becomes a bio-element
- Versatility and plasticity in the design of monitoring networks
- No power or complex installations requirements
- High sensitivity

Publications

1) Capozzi et al. (2016); **Best options for the exposure of traditional and innovative moss bags: A systematic evaluation in three European countries**. *Environmental Pollution* 214, 362-373.
2) Di Palma et al. (2016) **Molecular and chemical characterization of a *Sphagnum palustre* clone: Key steps towards a standardized and sustainable moss bag technique**. *Ecological Indicators* 71, 388-397.
3) González et al. (2016): **Chemical and structural characterization of copper adsorbed on mosses (Bryophyta).** *Journal of Hazardous Materials* 308, 343–354.
4) González et al. (2015): **Metal and proton adsorption capacities of natural and cloned Sphagnum mosses.** *Journal of Colloid and Interface Science,* 326-334.
5) Concha-Grana et al. (2015): **Matrix solid phase dispersion method for determination of polycyclic aromatic hydrocarbons in moss.** *Journal of Chromatography A*. 1406: 19–26.
6) Beike et al. (2014): **Clonal in vitro propagation of peat mosses (Sphagnum L.) as novel green resources for basic and applied research.** *Plant Cell, Tissue and Organ Culture* 120, 1037-1049.
7) https://www.biooekonomie-bw.de/en/articles/news/mossclone-peat-moss-for-measuring-air-pollution/

Responsible Scientist

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Note: Joint European Invention

Branch

BioTech, Environment, Air Pollution

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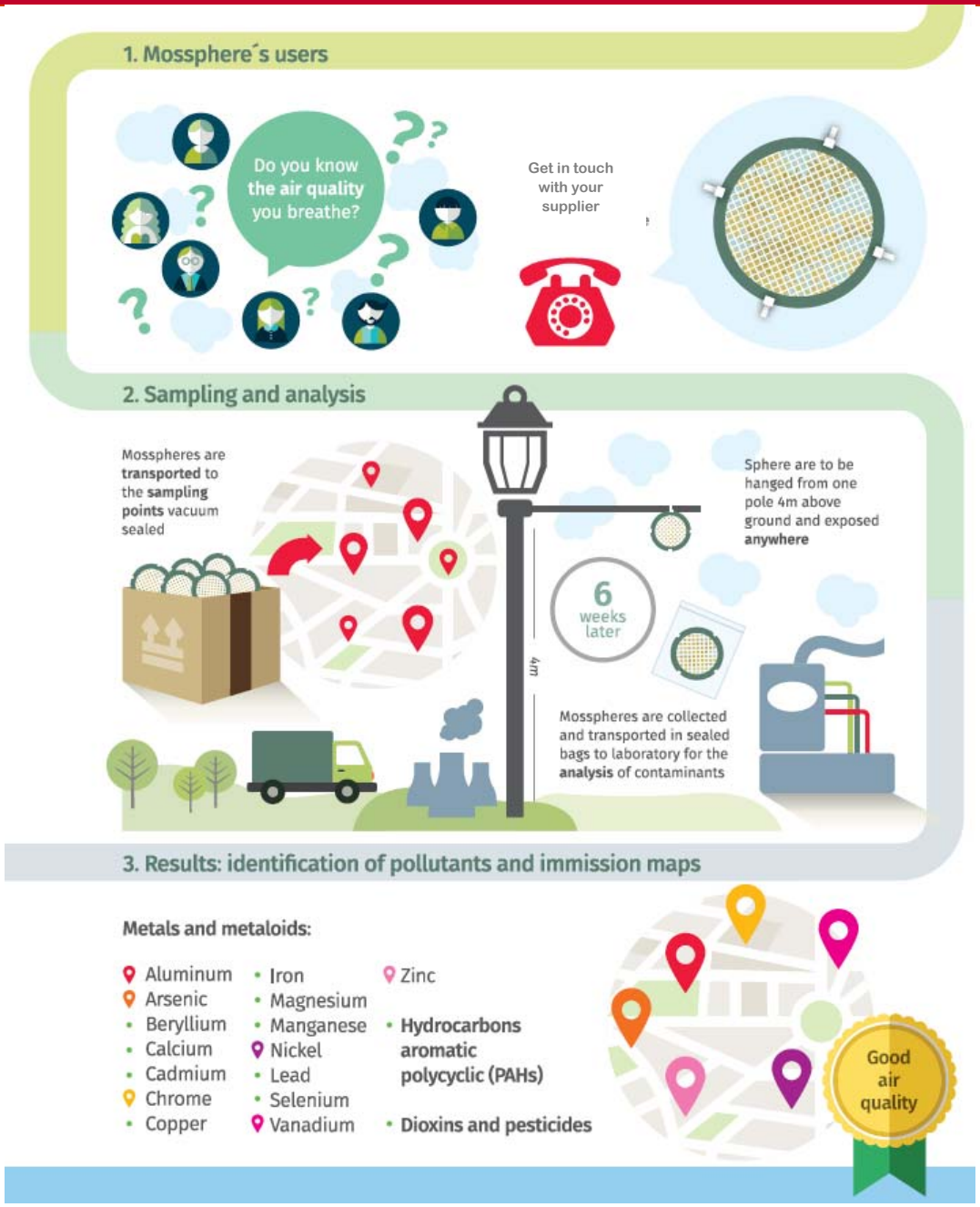
Mossphere

How does it work?



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