

IMPACT OF POLYCYCLIC AROMATIC HYDROCARBONS ON THE ENVIRONMENT AND HUMAN HEALTH: EVIDENCE RETRIEVED FROM BIOMONITORING STUDIES

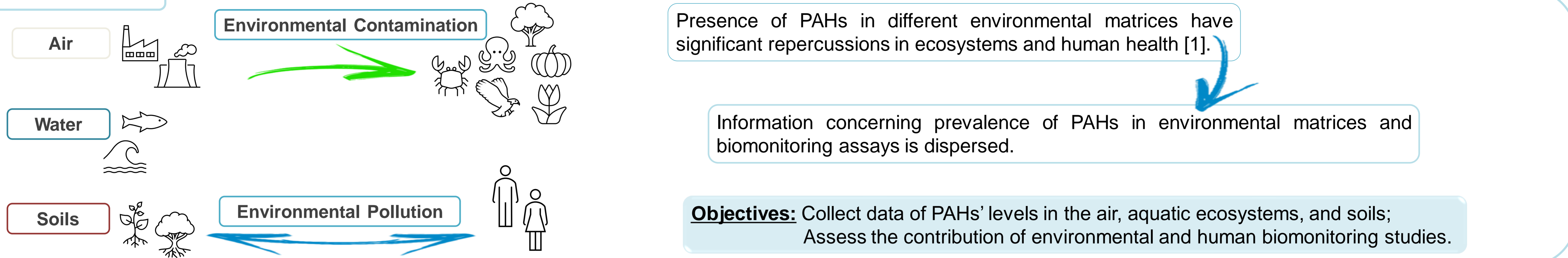
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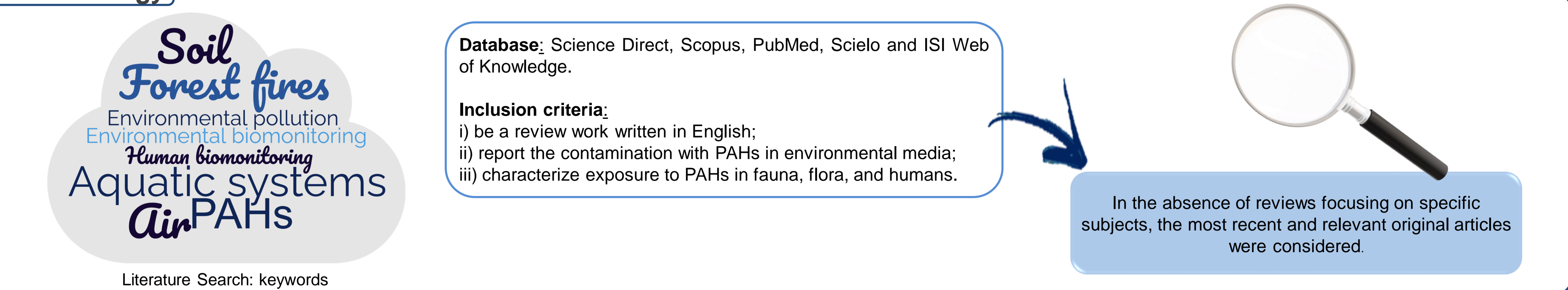
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Introduction



Methodology



Results

Environmental contamination by PAHs

Air
Rural area: 0.03 – 0.60 ng/m³
Industrial and urban area: 1344.4 – 12300 ng/m³



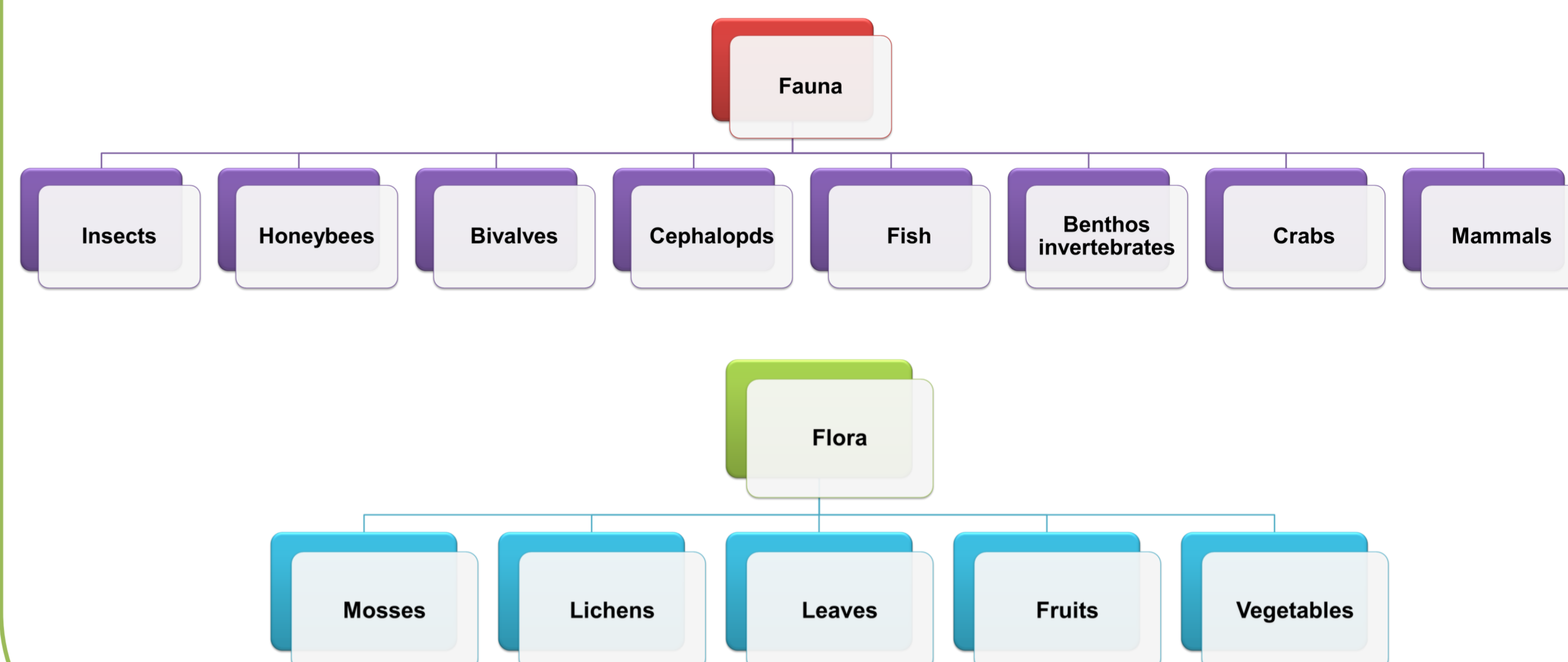
Aquatic ecosystems
Aquatic sediments:
0.16 – 9.81 × 10⁸ ng/g
Coastal zone: 7.00 × 10⁴ – 1.00 × 10⁹ ng/g
Water systems: 2.00 – 1.66 × 10⁷ ng/L

Soils
Urban area: 0.14 – 1.77 × 10⁶ ng/g
Forest area: 2.00 – 9.04 × 10³ ng/g
Rural area: 1.59 – 5.87 × 10³ ng/g
Agricultural area: 0.05 – 6.25 × 10³ ng/g



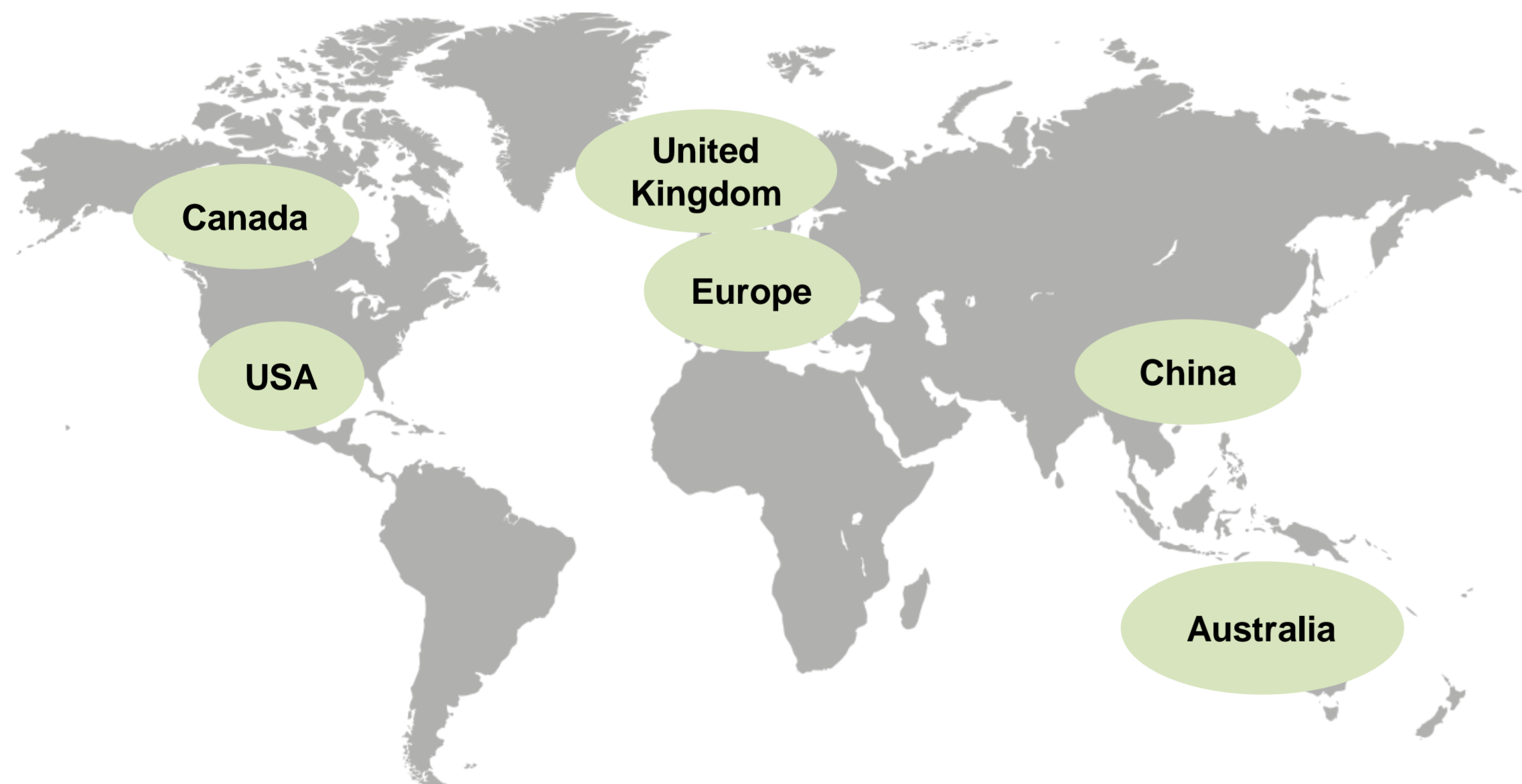
Environmental biomonitoring studies

Sentinel species



Human biomonitoring studies

Human biomonitoring allows an overall assessment of the integrated uptake of PAHs, regardless the route of exposure.



The major metabolites found in urine were **1-hydroxynaphthalene**, **2-hydroxynaphthalene** and **2-hydroxyfluorene**.

The highest level of the biomarker of exposure, **1-hydroxypyrene**, was 11554.90 ng/g.

The biomarker of carcinogenic BaP is mainly detected in faeces.

Conclusions

- PAHs are bioaccumulated in different aquatic and terrestrial plants and animals, mainly in coastal and more urbanized/industrialized areas.
- Some sentinel species have been used as environmental biomonitors to assess the contamination with PAHs in their surrounding media.
- Human biomonitoring studies characterized the occupational and environmental exposure to PAHs and could be helpful to define critical levels of human exposure.
- Future research should pursue the development and implementation of effective (bio)remediation tools to reduce/mitigate the bioaccumulation of PAHs.

References

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