JRC Activities on Microplastics

Dr Birgit Sokull-Klüttgen

The European Commission’s science and knowledge service
Joint Research Centre
JRC Project on
Sustainability and Impacts of Plastics

Support to the Implementation of the EU Plastics Strategy

Environmental Impacts of Plastics**
Marine Litter
Life-Cycle Assessment

Microplastics*
Micro and nano-plastics: Towards a more reliable assessment of exposure and biological effects
Explanatory Project
Microplastics in Micro-Organisms

Plastics Recycling***
Generation and management of knowledge for policy making on a higher quality of plastics recycling

*JRC.F Health, Consumers & Reference Materials
**JRC.D Sustainable Resources
***JRC.B Growth and Innovation

Contact: Birgit.Sokull-Kluettgen@ec.europa.eu
Environmental Impacts of Plastics – Marine Litter

- Support the implementation of the **Marine Strategy Framework Directive** (MSFD): co-chairing the MSFD Technical Group on Marine Litter

- Harmonisation of methodologies for the **quantification of litter in the marine environment (including microlitter)**, beach, sea-surface, seafloor and biota

- Collaboration with **international frameworks** on marine litter (Regional Seas, United Nations, G7/G20, Arctic Council), as litter is transboundary

- Provide scientifically sound **marine litter data** for preparing and underpinning the Plastics Strategy and to evaluate success of measures

Contact: Georg.Hanke@ec.europa.eu
The JRC Taskforce on Water Quality - Microplastics

- **Policy support to the implementation of:**
  - Water Framework Directive
  - Urban Waste Water Treatment Directive
  - Groundwater Directive
  - Drinking Water Directive
  - Water Reuse Regulation

- **UN Environment**
  - Technical Assistance World Water Quality Alliance (*UN SDG 6.3.2*)
  - Regional Hub for GEMStat Water

- **International River Conventions**
  - Danube River (Joint Danube Survey)
  - Elbe River

- **Targeted EU monitoring campaign and on-site study on microplastics in wastewater**
  - Joint Campaign with *Water Europe* on microplastics in wastewater
    - Monitoring Design Workshop, Milan (17-18 October 2019)
    - EU-wide monitoring exercise on 150 European Wastewater Treatment Plants (1 Nov 2019 – 15 Mar 2020)
    - Microplastics - What goes down the drainpipes - Workshop on 22 March 2020, Brussels or Zagreb (EU Semester 2020)

Contact: Bernd.Gawlik@ec.europa.eu
Analytical methods to detect/quantifying microplastics in marine & fresh water, sediments, food, soil, waste water treatment sludge
• Support harmonise existing methods for "larger" microplastics (>10µm)
• Develop fit-for-purpose methods for "smaller" micro(nano)plastics (<10µm)

Support the development of test and reference materials
• Critical step in providing fit-for-purpose analytical tools to reduce knowledge gaps

Micro(nano)plastics in the transfer of chemical contaminants:
• Identify robust analytical methods to quantify selected contaminants released from microplastics (e.g. heavy metals, persistent organic pollutants)

Micro(nano)plastic interaction with microorganisms and cells
• Evaluate micro(nano) plastic uptake by selected microbiota & cells (realistic exposure levels)
• Explore the effects on microorganisms following the uptake of micro(nano) plastics with and without additives or environment pollutants

Contact:
Douglas.Gilliland@ec.europa.eu
Micro- and nanoplastics: Status of analytical methods

- **Microplastics**
  - Analytical methods exist but need to be further developed, harmonized and standardised: need to ensure full applicability beyond only aquatic samples – e.g. sediment, soil air, food, biota

- **Nanoplastics**
  - Analytical methods should be developed and standardised, in order to assess their presence, identity (including shape) and to quantify their amount all relevant media and environmental compartments

- Particles <10 µm: difficult to detect/identify
- Particles <1 µm: methodological gap?

Christian Schwaferts et al.
TrAC Trends in Analytical Chemistry, 112 (2019), pp 52-65
Expert network on micro- and nanoplastics

- **Series of workshops about micro- and nanoplastics**
  JRC organises workshops and other events in order to bring the various stakeholders in the MP/NP area together

  - **Seminar on Sustainability and Impacts of Plastics**, 28 November 2018, Brussels (Belgium)
  - **Workshop on State-of-the-art analytical methods for reliable detection of micro- and nanoplastics**, 13-14 May 2019, Ispra (Italy)
Test & (certified) Reference Materials

Contact: Andrea.Held@ec.europa.eu
Support Harmonisation and standardisation of analytical methods

- As a first step: detection and identification of microplastics in *(drinking)* water (bottled, tap water)

  - inter-laboratory comparison (ILC) study (proficiency test),

  - Proficiency test on *food grade PET material* in *water*
    - Call for interested experts laboratories will be launched soon
    - Proficiency test scheduled for autumn 2019
    - JRC contact: jrc-microplastics@ec.europa.eu

- Standard Operation Procedure (SOP)
Better knowledge base in the area of micro- and nanoplastics in food and the environment

- Series of workshops about micro- and nanoplastics
- Test and reference materials
- Harmonisation and standardisation of analytical methods
- Expert platform on microplastics
- Network on nanoplastics
- Open Access to JRC research infrastructures
Open Access to JRC Nanobiotechnology Laboratory

JRC gives the opportunity to external scientists to work in its scientific laboratories and facilities.

JRC Nanobiotechnology Lab

- Hands on training on Nanomaterials/Microplastics characterisation, surface analysis, biomolecular interactions ...

360° Virtual Tour of the Laboratory

Open Access

Standard Call (deadline 7 June):

Training and Capacity Building Call for H2020 Countries (deadline 3 June):

Video
https://youtu.be/HauMN49GAIg
Thank you!

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Questions?

Contact:
jrc-microplastics@ec.europa.eu

Stay in touch

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