Thematic working section
Monitoring of RBSP

Multiresidue methods

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Characteristics of traditional methods on target analytes

- High Specificity
- High Sensitivity (high S/N)

- We look for a specific pre-determined analyte or class of analytes
- No other compounds determined, neither derivatives, new analogues compounds, nor metabolites
Limitations of multiresidue/screening methods

- No specificity
- Long total analytical time

Need for:
- High probability of Identification (no false positive)
- Sufficient Sensitivity (no false negative)
- High productivity
RBSP monitoring:
Need for Multiresidue methods

• **Semivolatile compounds: GC-MS**
  - Innovations
    - GC X GC (multidimensional chromatography): resolution of complex mixture
    - GC-MS-MS: sensitivity and specificity

• **Polar compounds: LC-MS**
  - Innovations:
    - UPLC: high efficiency of chromatographic peaks
    - High speed scanning quadrupole MS: high number of analytes in short times, high productivity
    - High resolution MS (TOF, Orbitrap) for unknown identification
UPLC-MS-MS : 250 pesticides in 15 min
500 MS-MS transitions acquired

**Figure 3:** Dynamic MRM method does not require time segments. Extracted ion chromatogram of a 250 pesticide mix spiked into tap water (500 total transitions, 2.5 pg on-column) using a dynamic MRM method run on a 1290 Infinity LC and a 6460 Triple Quadrupole LC/MS system with Agilent Jet Stream technology.
High productivity and automation for routine monitoring of water: the on-line preconcentration
Open issues

- Availability of advanced instruments in local Environmental Agencies?
- Need for reference labs at basin/national/EU levels?
- Availability of validated methods with sufficient LOQs
- Whole water analysis and SPM

Further developments

- Implementation of Effect Directed Analysis at basin level: starting from the evidence of ecological/ ecotoxicological effects, identification of the responsible pollutant