

## TECHNIQUES TO LOOK AT SOIL/AIR ORGANIC COMPOUNDS EXCHANGE - TOOL

| <b>RIVER BASIN MANAGEMENT ISSUE</b>              |          |       |             |             |                          |  |   |               |    |        |
|--|----------|-------|-------------|-------------|--------------------------|--|---|---------------|----|--------|
| Water Quantity                                   |          |       |             |             |                          | Water Quality  |   | Alterations   |    | Others |
| 1  | 2        | 3     | 4           | 5           | 6                        | 7  | 8 | 9             | 10 |        |
| C  |          | C     | C           |             | C                        |  |   |               |    |        |
| (1) Diffuse pollution by agriculture             |          |       |             |             |                          | (2) Salinisation   |   |               |    |        |
| (3) Contaminated sediment and floodplain soils   |          |       |             |             |                          | (4) Large scale pollution due to past mining / industries activities |   |               |    |        |
| (5) Pollution by organic matter                  |          |       |             |             |                          | (6) Emerging compounds   |   |               |    |        |
| (7) Water scarcity                               |          |       |             |             |                          | (8) Floods and low flow  |   |               |    |        |
| (9) Hydromorphological alterations               |          |       |             |             |                          | (10) Soil erosion  |   |               |    |        |
| C = System Characterisation                      |          |       |             |             |                          | M = System Monitoring  |   |               |    |        |
| T = System Trend                                 |          |       |             |             |                          | R = System Remediation, Mitigation                                   |   |               |    |        |
| <b>RIVER BASIN</b>                               |          |       |             |             |                          |  |   |               |    |        |
| Danube   | Ebro     | Meuse | Elbe        | Brévilles   | Others                   |  |   |               |    |        |
|  |          | ✓     |             | ✓           | Not river basin specific |  |   |               |    |        |
| Spec. : Results specific to selected River Basin |          |       |             |             |                          |  |   |               |    |        |
| <b>KEY FINDING TYPE</b>                          |          |       |             |             |                          |  |   |               |    |        |
| Laboratory based                                 |          |       |             | Field based |                          |  |   | Modelling     |    |        |
|  |          |       |             | ✓           |                          |  |   |               |    |        |
| <b>BENEFITS TO END-USERS</b>                     |          |       |             |             |                          |  |   |               |    |        |
| Technical  |          |       | Management  |             | Policy                   |  |   |               |    |        |
| WFD Implementation                               | Research |       | River Basin |             | Compliance               |  |   | Policy making |    |        |
| ✓  | ✓        |       |             |             |                          |  |   |               |    |        |

### INTRODUCTION

The objectives of FLUX 1 are to quantify solute fluxes in the soil-groundwater system including mass transfer from and into the atmosphere. This is carried out at the local and at catchment scale. Contaminants such as Persistent Organic Pollutants (POPs) and pesticides were monitored.

### TOOL SUMMARY

The techniques to look at soil / air organic compounds exchange aims to quantify flux of contaminants from air to soil and from soil to air and to determine the net direction of the contaminant flux. The techniques include passive sampling tools, active sampling with micro-meteorological methods, bulk deposition flux measurements, upwards flux measurements and an analytical solution which calculates net direction. These tools can be used by consultants or technical staff of river basin management team. Passive sampling tools can be installed by technician; soil / air fluxes samplers are sophisticated tools which require to be used by specialised staff. Monitoring and measurements tools give reliable data. The accuracy of results of modelling (using analytical solutions) depends on the quantity of data available. These techniques are low-cost for the determination of net flux for study area of large-scale. However, they are quite expensive to implement at the site specific scale level. These techniques can be applied to organic contaminants and require sufficient soil properties and air quality information.