

# Index

## A

Above-ground tree biomass (AGB), 173  
Absorption, distribution, metabolism, and elimination (ADME), 15, 193, 216, 240  
Advection, 93, 101, 104, 127, 135  
Advective transport, 104, 203, 205  
Aerodynamic resistance, 101, 112  
Aerosols, 181  
Agrochemicals, 128  
Algae, 79  
Allometric scaling, 198  
Amphoters, 183, 184  
Aquatic organisms/food webs, 191, 195  
Atmosphere, organic matter, 109  
  transport, 101  
Atmospheric boundary layer (ABL), 105  
Atom-centered fragment (ACF) method, 97

## B

Below-cloud scavenging, 101, 120  
Bioaccumulation, 186, 191  
  factor (BAF), 191, 193  
  modelling, 167  
Bioconcentration factor (BCF), 198  
Biomagnification, 191  
  factor (BMF), 191  
Biota sediment accumulation factor (BSAF), 194  
Biotransformation, 201  
Bioturbation, 127, 140  
Blood, 224, 244–253  
  flow, 235  
Body weight model, 229

Boundary layer thickness, 93  
Boussinesq hypothesis, 105, 112  
Brominated flame retardants, 79  
BSE, 8

## C

CalTOX, 43, 47  
Canopy resistance, 101  
Cardiac output, 208  
Cation exchange capacity (CEC), 157  
Chamberlain's relationship, 181  
Chernobyl fallout, 143  
Childhood, 215  
Combined monitoring-based and modelling-based priority setting (COMMPS), 78  
Comparative assessment, 47  
Complex model, 59  
Critical root radius (CRR), 173  
Cuticle pathway, 167  
Cytochrome P450, 209, 226, 238, 239, 242

## D

Danube River Protection Convention (DRPC), 79  
Degradation, 77, 96, 144  
  increase factor, 145  
Delay coefficient, 160  
Deposition, 77, 88, 127  
Desorption, 36, 40, 77, 80, 127  
Dietary uptake, 199  
Diffusion, 77, 91, 127  
  leaves–air, 167

- Diffusion (*cont.*)  
 soil, 167
- Dioxins, 8, 102, 245
- Distribution coefficients, 77, 81, 108, 131, 159, 162, 171
- Documentation, 59
- Drainage, 46, 133
- Dry deposition, 36, 39, 40, 101, 111, 118, 140, 181
- Dry/wet deposits, interception coefficient, 182
- Dynamic selection and prioritization  
 mechanism for hazardous substances  
 (DYNAMEC), 78
- E**
- Electrolytes, uptake/transport, 167, 183
- Elimination, 209
- Environmental chemicals, 215
- Environmental risk assessment (ERA), 1, 129, 192
- Enzymes, 201, 209, 225, 239
- ESCAPE (Estimation of Soil Concentrations  
 After Pesticide applications), 43, 48
- EU policies, 1
- EUSES (European Union System for the  
 Evaluation of Substances), 44
- Excretion, 36, 37, 40, 194, 196, 209, 217–247
- Exposure, 1, 24, 207, 247  
 models, 1, 23, 43, 59, 191
- Extinction factor, 172
- F**
- Fish, 15, 35, 39, 79, 191–203, 249
- Freundlich model, 161
- Fungicides, 168, 184
- G**
- Gastrointestinal tract (GIT) membrane,  
 transport, 203
- General protection goals (GPGs), 11
- GLOBOX, 44
- GREAT-ER (Geo-referenced Regional  
 environmental Assessment Tool for  
 European Rivers), 44
- Groundwater, 45–49, 55, 130  
 movement, 153  
 quality, 129, 149  
 risk analysis, 151
- Gut, 221
- H**
- Hendrik's model, 197
- Henry's law constant, 95, 140
- Herbicides, 168
- Human health risk assessment (HHRA), 1
- Hydrophobicity, 81, 183, 194, 197–201
- Hydroxyl radical, 101, 109–111
- I**
- In-cloud scavenging, 101, 119
- Infiltration, 127, 135, 151
- Ingestion, 35, 39, 50, 55, 129, 219, 224, 239–249
- Inhalation, 35, 39, 102, 199, 217–222, 236, 240, 242, 245
- Insecticides, 168
- Integrated exposure assessment, 1
- Integrated risk assessment, 14–16
- Interception, 167
- International Commission for the Protection of  
 the Rhine (ICPR), 79
- Intestinal transit times, 239
- Invertebrates, 15, 79, 191, 195, 196
- K**
- Krone's relationship, 88
- L**
- Land use coverage (LUC), 114, 116, 131, 143
- Leaching, 36, 46, 133, 159  
 pesticides, 46
- Lead, 251
- Leaf area index (LAI), 114, 167, 173, 179
- Lifetime exposure, 215, 241, 245
- Lifetime physiologically based  
 pharmacokinetic (PBPK) model, 215
- Liver, 201, 207, 223–228, 242
- Long-range transport, 101  
 atmospheric (LRAT), 137
- Lungs, 223, 237
- M**
- Maastricht Treaty, 6
- MACRO, 45
- Mammals, 191–210
- Mass balance models, 194
- MCDA (multi-criteria decision analysis), 47
- MERLIN-Expo, 23, 45, 59, 191

- SWOT analysis, 55
  - Metabolic biotransformation, 201
  - Metabolism, 225
  - Metals, 37, 49, 84, 195, 202
    - accumulation, 186
    - bioconcentration, 202
    - distribution (partition) coefficients, 84
  - Microporosity, 158
  - Milk, 15, 35, 38, 207–210, 228
    - lactation, 209
  - MODULERS, 45
  - Multimedia models, 23
- N**
- Nitrate radicals, 109
- O**
- Oligochaetes, 194
  - Ozone, 109–111
- P**
- Partheniades' relationship, 88
  - Particles, below-cloud scavenging, 121
    - dry exchanges, 115
  - Partition, 167
    - gas–particles, 101
  - PBPK model, 45, 215
  - PEARL (Pesticide Emission Assessment at the Regional and Local scale), 46
  - Penman-FAO model, 133
  - Penman-Monteith model, 133, 151
  - Perfluorinated compounds (PFCs), 249
  - Perfluorooctane sulfonate (PFOS), 249
  - Perfluorooctanoic acid (PFOA), 249
  - Persistent, bioaccumulative and toxic (PBT) substances, 193
  - Persistent organic pollutants (POPs), 7, 102, 103, 111
  - Pesticides, 6–11, 46, 79, 102, 129, 145, 168, 183, 241
  - Phloem flow, 167, 174
  - Photolysis, 77, 96, 101, 109, 127, 144
  - Photooxidants, 101, 109
  - Physiologically based pharmacokinetic (PBPK) model, 45, 215, 241
  - Physiologically based toxicokinetic (PBTk) models, 15
  - Phytoplankton, 191, 196
  - Plant protection products (PPP), 128, 168
  - Plants, 167
  - Plutonium, 144
  - Polychlorinated biphenyls (PCBs), 102, 168, 241
  - Polychlorinated dibenzo-*p*-dioxin (PCDDs), 245
  - Polycyclic aromatic hydrocarbons (PAHs), 79, 168, 241
  - Potato, 174
  - Precautionary principle, 7
  - Predicted environmental concentrations (PEC), 9
  - Predicted no effect concentrations (PNEC), 9
  - Priority substances (PS), 78
  - Probabilistic methods, 13
- Q**
- Quantitative structure-activity relationship (QSAR), 63, 194
  - Quasi-laminar sublayer resistance, 101, 113
- R**
- Radionuclides, 143, 144
  - RANS (Reynolds-Averaged Navier-Stokes) model, 105
  - Reactivity of chemicals, 149
  - Reduce-refine-replace (3R) idea, 15
  - Registration, evaluation, authorisation and restriction of chemicals (REACH), 15, 23, 44, 193
  - Regulatory framework, 23
  - Relevance criteria, 34
  - Representative elementary volume (REV) scale, 153
  - Respiration, 237
  - Resuspension, 36, 77, 88–92, 103
  - Retardation factor, 127
  - Richards' equation, 151
  - Rio Declaration, 7
  - Run-off, 36, 151
- S**
- Sedimentation, 182
  - Sediments, 35, 40, 46, 77–96, 194, 216
    - rating curve, 77
  - Semi-volatile organic compounds (SVOCs), 94, 137, 176
  - Sensitivity analysis (SA), 13, 14, 60, 71
  - Settling velocity, 89
  - Sewage sludge, 129, 169
  - Shear stress, deposition/resuspension, 91
  - Soils, 127
    - diffusion, 129, 141
    - organic matter, 131

Soils (*cont.*)

- porewater, 127, 138, 139, 169, 171
- porosity, 150
- quality, 129
- unsaturated zones, 149
- wash-off, 142

Sorption, 77, 80, 127, 130

Standardization, 59, 61

STEPS 1-2 in FOCUS (Surface water Tool for Exposure Predictions), 46

Stockholm Convention, 7

Stomach, 220, 239

Stomata, 114, 170, 176

- pathway, 167, 179, 180

Surface resistance, 114

Surface waters, 77, 80

Suspended particulate matter (SPM), 77, 79, 85

SWOT analysis, 23–55

**T**Tetrachlorodibenzo-*p*-dioxin (TCDD), 245

Thyroid toxicity, 102

Tortuosity, 92

TOXSWA (TOXic substances in Surface Waters), 46

Transpiration, 179

- stream, 167, 169

**U**

Uncertainty, 1, 12

Unsaturated zones, 149

Urinary excretion, 209

USEtox, 46

**V**

Validity domain, 240

Very persistent and very bioaccumulative (vPvB), 193

**W**

Wash-off, 127, 142

- rate constant, 143

Water balance, 151

Water flow, 149, 151

Water mass balance, 127, 134

Water movement, 153

Water–organic carbon partition coefficients, 82

Water percolation, 153, 159

Water tables, 149–160

Weight of evidence, 47

Wet deposition, 101, 117, 118, 167, 181, 182

**X**

Xenobiotics, 192, 201, 204, 225

- biotransformation, 201

Xylem flow, 167, 169

**Z**

Zinc, 79