

Contents

List of Abbreviations	IX
Summary and Outlook	XI
1 Introduction	1
2 General Procedures According to the Chemicals Act / EC Regulations on Existing Chemicals, German Soil Protection Act / Federal Regulations on Soil Protection and Contaminated Sites	3
2.1 Chemicals Act (ChemG) and EC Regulations on Existing Chemicals (EG- AltstoffV)	3
2.1.1 The EU White Book	5
2.1.2 Risk Assessments	8
2.2 The Federal Soil Protection Act (BBodSchG) , Soil Protection and Existing Chemicals Regulations (BBodSchV)	15
2.2.1 Derivation of Testing and Action Levels	17
3 Estimation of Exposure	25
3.1 Relevant Exposure Routes	25
3.1.1 Irrigation of Agricultural Fields	27
3.1.2 Flooding of Riverine Meadows	32
3.1.3 Utilization of Dredging Waste in the Sense of DIN 19731	35
3.1.4 Utilization of Wastes from Livestock Farming	38
3.1.4.1 Cleaning and Disinfecting Agents	38
3.1.4.2 Veterinary Medicines and Feed Additives	39
3.1.4.3 Quantification of Substances Emitted into the Soil in Liquid Manure	41
3.2 Bioavailability of Chemicals in Soils	42
3.2.1 Exposure, Chemical Availability, and Bioavailability	42
3.2.2 Consideration of Bioavailability in Deriving Soil Values	48
3.2.3 Calculation Models for Estimating the Concentration of Chemicals in the Soil Solution	51
3.2.3.1 Heavy Metals	51
3.2.3.2 Organic Substances	52
3.3 Metabolism	54
3.3.1 Estimation of Biodegradation by Calculating Models	55
3.3.2 Estimation of Biodegradation According to the TGDs	55
3.3.3 Degradation Capacity of Soils for Organic Substances	56
3.3.4 Extrapolation of Data from Aquatic Degradation Tests to Degradation in Soil	59

4	Determination of the Effective Concentration	61
4.1	Availability of Data	61
4.1.1	Evaluation of Substance Data on the First EU Priority List	61
4.1.2	Transferability of Aquatic Effects Data to Soil Organisms	62
4.1.3	Examples from Relevant Publications	64
4.1.4	Overview of Database Evaluations	66
4.2	Testing and Derivation Strategies	67
4.2.1	Test Strategies	67
4.2.1.1	Test Batteries	67
4.2.1.2	Various Proposals	69
4.2.2	Derivation Strategies	78
4.2.2.1	Expert Judgement	78
4.2.2.2	Factorial Application Method (FAME)	78
4.2.2.3	Distribution-Based Extrapolation (DIBAEX)	79
4.2.2.4	Conventions	81
4.2.2.5	Plausibility Test	82
4.2.2.6	Determination of the Predicted No Effect Concentration (PNEC) by Statistical Extrapolation Methods According to the TGD	84
5	Test Strategy for the Risk Assessment of Substances in Soils	86
5.1	Relevant Emissions for Calculating the PEC_{soil}	86
5.2	Effects Estimate ($PNEC_{soil}$)	89
5.3	Risk Characterization and Test Strategy	90
5.4	Consideration of Degradation in Calculating the PEC_{soil}	94
6	References	98
Annex 1:	Diagram of the Modular Structure of the EUSES	1 - 3
Annex 2:	Estimation of a Substance's Concentration in Surface Waters According to the TGD ...	1 - 3
Annex 3:	Substance Emissions Through Irrigation/Sewage Sludge Application, Estimate	1
Annex 4:	Concentration of Substances in the Soil Solution, Bases for Calculation	1 - 21
Annex 5:	Concentration of Substances in Soil Solution, Tables	1 - 12
Annex 6:	Examining the Extrapolation of Aquatic Effect Data to Soil Organisms	1 - 6
Annex 7:	Test Methods	1 - 7
Annex 8:	EU Risk Assessment for the Terrestrial Compartment for 3,4-Dichloroaniline	1 - 14