TOXKIT APPLICATIONS

All Toxkit microbiotests are suited for determination of the **intrinsic toxicity** of pure chemicals in the framework of **hazard identification** .

Toxkit microbiotests are furthermore particularly suited for assessing the **toxicity of contaminated aquatic and terrestrial environments, waste waters and solid wastes**.

Some Toxkits are also useful for detection of **biotoxin**s in waters containing cyanobacterial blooms, and for rapid hazard assessment in cases of **water contamination emergencies.**

IMPORTANT : Toxicity tests are "species specific" and there is no test species which is "the most sensitive" for all chemicals.

Hence, and unless the most appropriate (or most sensitive) assay(s) for a particular type of investigation has already been identified through previous analyses, a test battery has to be applied.

The test battery should be composed of (one or more) Toxkit test species representative for the three trophic levels of the biological chain : i.e. production (plants) – consumption (animals) – decomposition (bacteria).

The tables hereafter list the Toxkit microbiotests which are the best suited for toxicity detection and quantification of samples from specific environmental compartments and/or wastes.

FRESHWATER ENVIRONMENT

1. SURFACE WATERS

Trophic level	**Group of organisms**	**Toxkit**	**Type of test**	**Test criterion**	**Test duration**	**Test species**
Producers	Micro-algae	Algaltoxkit F	Short-chronic	Growth inhibition	72h	*Pseudokirchneriella subcapitata* (formerly named *Selenastrum capriconrnutum)*
Consumers	Rotifers	Rotoxkit F	Acute	Mortality	24h	*Brachionus calyciflorus*
		Rotoxkit short-chronic	Short-chronic	Reproduction	48h	*Brachionus calyciflorus*
	Crustaceans	Daphtoxkit F magna	Acute	Immobility/Mortality	24-48h	*Daphnia magna*
		Daphtoxkit F pulex	Acute	Mortality	24h	*Daphnia pulex*
		Ceriodaphtoxkit F	Acute	Mortality	24h	*Ceriodaphnia dubia*
		Thamnotoxkit F	Acute	Mortality	24h	*Thamnocephalus platyurus*
Decomposers	Protozoans	Protoxkit F	Short-chronic	Growth inhibition	24h	*Tetrahymena thermophila*
	Bacteria	Toxi-Screening Kit	Acute	Inhibition of luminescence	30 min	*Vibrio fischeri*

2. SEDIMENTS

2.1. Sediment pore waters

The same test battery selected for surface waters can be used for toxicity analysis of interstitial waters, after extraction from the sediment through centrifugation or filtration.

2.2. Total sediment

Trophic level	Group of organisms	Toxkit	Type of test	Test criterion	Test duration	Test species
Producers	Higher plants	Phytotoxkit	Short-chronic	Seed germination Early plant growth	3 days	*Sorghum saccharatum* *Lepidium sativum* *Sinapis alba* (or any other plant species with rapid seed germination and rapid early plant growth
Consumers	Crustaceans	Ostracodtoxkit	Short-chronic	Mortality Growth inhibition	6 days	*Heterocypris incongruens*
Decomposers	Bacteria	No specific Toxkit available				

3. WASTE WATERS

The same test battery selected for surface waters can be applied for toxicity analysis of industrial effluents and waste waters

4. WATER CONTAMINATION EMERGENCIES (RAPID TESTS)

Trophic level	**Group of organisms**	**Toxkit**	**Type of test**	**Test criterion**	**Test duration**	**Test species**
Producers		No specific rapid Toxkit available				
Consumers	Crustaceans	Rapidtoxkit	Acute	Inhibtion of particle uptake	15-60 min	*Thamnocephalus platuyurus*
Decomposers	Bacteria	Toxi-Screening Kit	Acute	Inhibition of luminescence	30 min	*Vibrio fischeri*

5. BIOTOXINS PRODUCED BY BLUE-GREEN ALGAE (CYANOTOXINS)

Trophic level	**Group of organisms**	**Toxkit**	**Type of test**	**Test criterion**	**Test duration**	**Test species**
Producers		No specific Toxkit available				
Consumers	Crustaceans	Thamnotoxkit	Acute	Mortality	24 h	*Thamnocephalus platyurus*
Decomposers	Bacteria	Toxi-Screening Kit	Acute	Inhibition of luminescence	30 min	*Vibrio fischeri*

MARINE ENVIRONMENT

1. SURFACE WATERS

Trophic level	Group of organisms	Toxkit	Type of test	Test criterion	Test duration	Test species
Producers	Micro-algae	Marine Algaltoxkit	Short-chronic	Growth inhibition	72h	*Phaeodactylum tricornutum*
Consumers	Rotifers Crustaceans	Rotoxkit M Artoxkit M	Acute Acute	Mortality Mortality	24 – 48 h 24h	*Brachionus plicatilis* *Artemia salina*
Decomposers	Bacteria	Toxi-Screening Kit	Acute	Inhibition of luminescence	30 min	*Vibrio fischeri*

2. SEDIMENTS

2.1. Sediment pore waters

The same test battery selected for the marine surface waters can be applied for toxicity analysis of interstitial waters, after extraction from the total sediment through centrifugation or filtration.

2.2. Total sediment

No specific Toxkits available

2.3. Sediment solids (after separation from the pore water)

Trophic level	Group of organisms	Toxkit	Type of test	Test criterion	Test duration	Test species
Producers		No specific Toxkit available				
Consumers	Crustaceans	Ostracodtoxkit	Short-chronic	Mortality Growth inhibition	6 days	*Heterocypris incongruens*
Decomposers	Bacteria	No specific Toxkit available				

TERRESTRIAL ENVIRONMENT

1. SOILS

1.1. Total soil

Trophic level	Group of organisms	Toxkit	Type of test	Test criterion	Test duration	Test species
Producers	Higher plants	Phytotoxkit	Short-chronic	Seed germination Early plant growth	3 days	*Sorghum saccharatum* *Lepidium sativum* *Sinapis alba* (or any other plant species with rapid seed germination and rapid early plant growth
Consumers	Crustaceans	Ostracodtoxkit *	Short-chronic	Mortality Growth inhibition	6 days	*Heterocypris incongruens*
Decomposers	Bacteria	No specific Toxkit available				

* Following the test procedure for sediments

1.2. Soil leachates

The same test battery selected for surface waters can be used for toxicity analysis of soil leachates.

2. GROUNDWATERS

The same test battery used for surface waters can be applied for toxicity analysis of groundwaters

3. SOLID WASTES

3.1. Total solid wastes

The same test battery used for soils can be applied on solid wastes

3.2. Solid waste leachates

The same test battery used for surface waters can be applied on solid waste leachates

3.3. Sludges

The same test battery used for soils can be applied on sludges

3.4. Dredged sediments

The same test battery used for soils can be applied to dredged sediments

.