Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

OLIS : 17-Feb-1998
Dist. : 18-Feb-1998

Or. Eng.

ENVIRONMENT DIRECTORATE
CHEMICALS GROUP AND MANAGEMENT COMMITTEE

ENV/MC/CHEM(98)19/PART2
Unclassified

OECD SERIES ON TESTING AND ASSESSMENT
Number 11

Report of the OECD Workshop on Statistical Analysis of Aquatic Toxicity Data

Part 2: Annexes

62093

Or. Eng.

OECD Environmental Health and Safety Publications

Series on Testing and Assessment

No. 11

DETAILED REVIEW PAPER ON AQUATIC TESTING METHODS FOR PESTICIDES AND INDUSTRIAL CHEMICALS

PART 2: ANNEXES

(Part 1: Report is Available under Reference ENV/MC/CHEM(98)19)/PART1)

Environment Directorate

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris 1998

Also published in the Series on Testing and Assessment:

No. 1, *Guidance Document for the Development of OECD Guidelines for Testing of Chemicals* (1993; reformatted 1995)

No. 2, *Detailed Review Paper on Biodegradability Testing* (1995)

No. 3, *Guidance Document for Aquatic Effects Assessment* (1995)

No. 4, *Report of the OECD Workshop on Environmental Hazard/Risk Assessment* (1995)

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No. 6, *Report of the Final Ring Test of the* Daphnia magna *Reproduction Test (1997)*

No. 7, *Guidance Document on Direct Phototransformation of Chemicals in Water (1997)*

No. 8, *Report of the OECD Workshop on Sharing Information about New Industrial Chemicals Assessment (1997)*

No. 9, *Guidance Document for the Conduct of Studies of Occupational Exposure to Pesticides During Agricultural Application (1997)*

No.10, *Report of the OECD Workshop on Statistical Analysis of Aquatic Toxicity Data (1998)*

About the OECD

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation in which representatives of 29 industrialised countries in North America, Europe and the Pacific, as well as the European Commission, meet to co-ordinate and harmonize policies, discuss issues of mutual concern, and work together to respond to international problems. Most of the OECD's work is carried out by more than 200 specialized Committees and subsidiary groups composed of Member country delegates. Observers from several countries with special status at the OECD, and from interested international organisations, attend many of the OECD's Workshops and other meetings. Committees and subsidiary groups are served by the OECD Secretariat, located in Paris, France, which is organised into Directorates and Divisions.

The work of the OECD related to chemical safety is carried out in the **Environmental Health and Safety Programme**. As part of its work on chemical testing, the OECD has issued several Council Decisions and Recommendations (the former legally binding on Member countries), as well as numerous Guidance Documents and technical reports. The best known of these publications, the **OECD Test Guidelines**, are a collection of methods used to assess the hazards of chemicals and of chemical preparations such as pesticides and pharmaceuticals. They cover tests for physical and chemical properties, effects on human health and wildlife, and accumulation and degradation in the environment. The OECD Test Guidelines are recognised worldwide as the standard reference tool for chemical testing.

More information about the Environmental Health and Safety Programme and its publications is available on the OECD's World Wide Web site (see page 6).

The Environmental Health and Safety Programme co-operates closely with other international organisations. This document was produced within the framework of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC).

The Inter-Organization Programme for the Sound Management of Chemicals (IOMC) was established in 1995 by UNEP, ILO, FAO, WHO, UNIDO and the OECD (the Participating Organizations), following recommendations made by the 1992 UN Conference on Environment and Development to strengthen co-operation and increase international co-ordination in the field of chemical safety. UNITAR joined the IOMC in 997 to become the seventh Participating Organization. The purpose of the IOMC is to promote co-ordination of the policies and activities pursued by the Participating Organizations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

Foreword

This publication contains the Annexes to the *Detailed Review Paper on Aquatic Testing Methods for Pesticides and Industrial Chemicals, Part 1: Report*, ENV/MC/CHEM(98)19/PART1.

The OECD's Joint Meeting of the Chemicals Group and Management Committee of the Special Programme on the Control of Chemicals recommended that this document be derestricted. It is published on the responsibility of the Secretary-General of the OECD.

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Annex A: Environment effects, hazard and risk assessment schemes

SOURCE	AIS: Practical aspects of environmental hazard assessment of detergent chemicals in Europe
APPLICATION	Detergents, Consensus draft for application in Europe
STATUS	Outcome of AIS 2nd workshop, Limelette, June 1992

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish	EEC, Annex V to dir. 67/548/EEC (7th amm.)	Tier 1 (Screening)	24, 48, 72, 96 hrs LC50, LOLC, NOLC, other obs. effects	EEC method C 1 (equivalent to OECD TG 203)
2. Acute toxicity to daphnids	as above		24, 48 hrs EC50, LOLC, NOLC, other obs. effects	EEC method C 2 (equivalent to OECD TG 202)
3. Toxicity to algae	as above		72 hrs EC50 (growth and biomass) NOEC	EEC method C 3 (equivalent to OECD TG 201)
4. Prolonged toxicity to fish: Embryo-larval, FELS or life cycle.	OECD TG	Tier 2 (Confirmatory)	EC50, NOEC	OECD TG 210 OECD TG draft
5. Chronic toxicity to daphnids	as above		21 days EC50, NOEC: reproduction, survival, growth, a.o.	OECD TG 202
6. Chronic toxicity to two species from other taxa than above	n.d.	Tier 2, tested in addition to 3), 4) and 5) above, PNEC = NOEC (lowest of five)	n.d.	n.d.
7. Chronic toxicity to "relevant biota"	n.d.	Tier 3 (Investigative), if PEC/PNEC ³ 1 based on tier 2 data, identification of sensitive taxa	n.d.	n.d.
8. field studies/ mesocosms	n.d.	Tier 3, PEC/PNEC ³ 1 high differences in toxicity thresholds, complex fate processes involved based on Tier 2 data	n.d.	n.d.

SOURCE	7th ammendment of Directive 67/548/EEC (Council Directive 92/32/EEC). Ecotoxicity Testing Strategy. Technical Guidance Document in the context of Dir. 93/67/EEC.
APPLICATION	Notification of new substances in the EEC and guidance for the assessment of potential environmental effects of new substances, classified "Dangerous for the Environment" (or indication for risk to the environment provided) according to the directive.
STATUS	7th ammendment of Dir. 67/548/EEC and the Technical Document will replace the 6th ammendment from autumn 1993.

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish	Zebrafish (Brachydanio rerio) Rainbow trout (O. mykiss)	Base set (tonnage marketed ^{3} 10 t/yr) equivalent to OECD PMS system	24, 48, 72, 96 hrs LC50, LOLC,NOLC, other observed effects	EEC method C1, Annex V to 7th amn. to Dir. 67/548 (equivalent to OECD TG 203)
2. Acute toxicity to dafnids	Daphnia magna		24, 48 hrs EC50, LOLC, NOLC, other observed effects	EEC method C2, Annex V to 7th amn. to Dir. 67/548 (equivalent to OECD TG 202, part 1)
3. Toxicity to unicellular algae	Selenastrum capricornutum		72 hrs EC50 (biomass), 72 hrs EC50 (growth), NOEC (growth and biomass)	EEC method C3, Annex V to 7th amn. to Dir. 67/548 (equivalent to OECD TG 201)
4. Prolonged toxicity study with Daphnia magna	Daphnia magna	Level 1 (tonnage marketed ^{3} 100 t/yr, or when further testing is required for refining PNEC	21 days EC50, NOEC: reproduction, survival, growth, a.o.	OECD TG 202 (part 2)
5. Prolonged toxicity study with fish: Fish Early Life Stage Test	Oryzias, Jordanella, Zebrafish Rainbow trout.	as above, and potential for bioaccumulation indicated	14-100 days EC50, NOEC: survival, growth, hatchability, malformation of early life stages of fish (egg, sacfry and free feeding juveniles)	OECD TG 210
6. Prolonged toxicity study with fish: Egg and Sacfry Test	Rainbow trout, Zebrafish	as above, and no potential for bioaccumulation indicated	10-40 days EC50, NOEC: survival, growth, hatchability, malformation of egg and sacfry stages of fish	OECD TG Draft

SOURCE	7th ammendment of Directive 67/548/EEC (Council Directive 92/32/EEC). Ecotoxicity Testing Strategy. Technical Guidance Document in the context of Dir. 93/67/EEC.
APPLICATION	Notification of new substances in the EEC and guidance for the assessment of potential environmental effects of new substances, classified "Dangerous for the Environment" (or indication for risk to the environment provided) according to the directive.
STATUS	7th ammendment of Dir. 67/548/EEC and the Technical Document will replace the 6th ammendment from autumn 1993.

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
7. Prolonged toxicity to fish: 28-day Growth Test	Rainbow trout	as above, and no potential for bioaccumulation indicated	28 days EC50, NOEC: growth	OECD TG Draft
8. Prolonged toxicity to fish: 14-day prolonged toxicity test	Rainbow trout, Zebrafish a.o.	as above. For further information on possible short-term lethal effects	14 days LC50, NOEC for sublethal observations	OECD TG 204
9. Additional algae toxicity test	n.d.	as above. For further information when algae is most sensitive at base set	72 hrs EC50, NOEC: growth and biomass	EEC Method C3, equivalent to OECD TG 201
10. Additional testing on fish: e.g. reproduction, life cycle	n.d.	Level II, III	n.d.	n.d.
11. Additional testing on species representing other taxa than included above	n.d.		n.d.	n.d.
12. Mesocosms or field studies	n.d.	Level III	n.d.	n.d.

SOURCE	OECD Hazard Assessment Advisory Body. Guidance document for aquatic effects assessment. Prepared by F. Balk, P.C. Okkerman and S.Dogger, BKH Consulting Engineers, Delft, The Netherlands
APPLICATION	Hazard and risk assessment of new and existing chemicals, OECD Member countries harmonization
STATUS	Draft guidance document, February 1992

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Chronic toxicity to fish	cf. OECD guideline	Calculation of HC_5 (Hazardous Concentration for 5% of the species) according to /1-2/. A minimum of 5 species representing 5 different taxa is needed. <u>or:</u> method for calculation of Environmental Concern Level according to /3/. Includes acute or/and chronic toxicity to one or all of 1-3 species.	Ecological relevant endpoints, e.g. survival, growth, reproduction	e.g. OECD TG 210, Growth inhibition of juvenile fish (OECD TG Draft), Egg and Sacfry test (OECD TG Draft)
2. Chronic toxicity to crustaceans	cf. OECD guideline		as above	e.g. OECD TG 202
3. Chronic toxicity to algae	cf. OECD guideline		growth, biomass reduction	e.g. OECD TG 201
4. Chronic toxicity to a species other than the taxa represented in 1-3	n.d.		Ecologically relevant endpoints	n.d.
5. Chronic toxicity to a species other than the taxa represented in 1-4	n.d.			n.d.

REFERENCES:

/1/ Alderberg, T. and W. Slob, 1991. Confidence limits for hazardous concentrations based on logistically distributed NOEC toxicity data. National Institute of Public Health and Environmental Protection (RIVM), No. 71902002.

/2/ Wagner C. and H. Løkke, 1990. Estimation of ecotoxicological protection levels from NOEC toxicity data. Water. Res. 25, 1237-1242.

/3/ OECD, 1991.
Draft report on the OECD Workshop on the extrapolation of laboratory aquatic toxicity data to the real environment held in Washington (USA) on 10-12 December 1990.

SOURCE	Ecotoxicological testing of petroleum products: a tier testing approach. CONCAWE, Report No. 91/56, July 1991. (CONCAWE: The Oil Companies European Organisaton for Environmental and Health Protection)
APPLICATION	Environmental hazard and risk assessment of oil products and chemicals
STATUS	Draft proposal related to PARCOM recommendations

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to fish	n.d., probably dependent of environmental compartment of concern	Tier 1	n.d.	OECD guidelines should be ammended for the specific propose of testing substances or products hydrophobic, volatile and/or low-soluble in water.
2.	Acute toxicity to invertebrate	n.d.		n.d.	
3.	Acute toxicity to green algae	n.d.		n.d.	
4.	Acute tests to other species than above	n.d.		n.d.	
5.	Acute tests to species 1-3, other mode of exposure	n.d.	Tier 2	n.d.	
6.	Toxicity to microor-ganisms	n.d.		n.d.	
7.	Toxicity to sediment living organisms	n.d.	Tier 2	n.d.	
8.	Chronic toxicity to fish	n.d.		n.d.	
9.	Life cycle fish studies	n.d.	Tier 3	n.d.	
10.	Mesocosm/multi species studies	n.d.		n.d.	

SOURCE	The Swedish National Chemical Inspectorate: Systems for testing and hazard evaluation of chemicals in the aquatic environment. A manual for an initial assessment (**"ESTHER"**). KEMI Report No. 4/89 (1989).
APPLICATION	Environmental hazard assessment of chemicals (ranking, scoring system)
STATUS	Research report

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish	Salmonids (Salmo, Salvelinus, Onchorhynchus), Brachydanio rerio (zebra fish), Rasbora heteromorpha (harlequin fish), Pimephales promelas (fathead minnow), Alburnus alburnus (bleak)	**Assessment of acute toxicity:** Fish toxicity data are given highest priority. If other than fish data is available (2-6), the lowest LC50 is applied as the "acute value"	(24, 48, 72), 96 hrs LC50	OECD TG 203, ISO 7346
2. Acute toxicity to freshwater crustaceans	Daphnia magna	Replacement for fish acute toxicity data. For scoring, a "penalty score" from 1.0 - 0.2 for this type of data is applied (Microtox: 1.0; crustaceans and algae: 0.2).	(24), 48 hrs EC50	OECD TG 202, part 1
3. Acute toxicity to brackish water crustaceans	Nitocra spinipes		(48), 96 hrs EC50	ISO draft
4. Algae growth inhibition	Scenedesmus quadricauda, Selenastrum capricornutum, Chlorella vulgaris, Microcystis sp.		72 hrs EC50	OECD TG 201
5. Toxicity to higher plant	Lemna sp.		n.d.	n.d.

SOURCE	The Swedish National Chemical Inspectorate: Systems for testing and hazard evaluation of chemicals in the aquatic environment. A manual for an initial assessment (**"ESTHER"**). KEMI Report No. 4/89 (1989).
APPLICATION	Environmental hazard assessment of chemicals (ranking, scoring system)
STATUS	Research report

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
6.	Toxicity to luminescent bacteria (Microtox^{R})	Photobacterium sp.		30 min EC50	ISO-draft
7.	Toxicity to fish life cycle	n.d.	**Assessment of chronic toxicity:** Highest priority information. Should all data (7-11) be available, the lowest NOEC reported is to be applied as "chronic value" for the scoring system	NOEC	n.d.
8.	Toxicity to fish reproduction and egg and larvae development	n.d.		NOEC	n.d.
9.	Chronic toxicity to Daphnia	n.d.		21 days EC50, NOEC	OECD TG 202, part 2
10.	Algae growth inhibition	n.d.		72 hrs EC50, NOEC	OECD TG 201
11.	Chronic toxicity to higher plant	n.d.		NOEC	n.d.
12.	Fish embryo-larvae test	n.d.	Replacement data for chronic toxicity. For (12) and (13), a safety factor of 5 and 10 is to be used, respectively.	NOEC	OECD draft, ISO draft
13.	14 d. prolonged acute toxicity to fish	n.d.		14 days LC50, NOEC	n.d.

SOURCE		Stephan C.E. et al. (1985): Guidelines for deriving numerical national water quality criteria for the protection of aquatic organisms and their use. US Environmental Protection Agency. PB85-227049, Springfield, VA. 98 pp.			
APPLICATION		Deriving quality criteria for the aquatic environment			
STATUS		Guideline			
	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1a.	Acute toxicity to Salmonidae (1 sp)	e.g. rainbow trout, brown trout	Acute toxicity to at least eight species from different families and data on chronic toxicity from three families should be available for the estimation of a numerical national water quality criteria. Triangular prob. distribution of acute and chronic data for calculating Final Acute Value (FAV) and Final Chronic Value (FCV). Criteria Max. concentration » ½ × FAV, Criteria Av. Concentration » FCV	n.d.	ASTM E 729-88a, US-EPA 1991 (equivalent to OECD TG 203)
1b.	Acute toxicity to other bonefish (1)	preferably warmwater species as e.g. bluegill, channel catfish			as above
1c.	Acute tox. to represent. of chordata	e.g. a bonefish or an amphibian			ASTM E 729-88a
1d.	Acute tox. to planktonic crustacean	e.g. cladoceran, copepod			ASTM E 729-88a, US-EPA, (equivalent to OECD TG 202)
1e.	Acute tox. to benthic crustacean	e.g. ostracod, isopod, amphipod, crayfish			ASTM E 1383-92
1f.	Acute toxicity to an insect	e.g. mayfly, dragonfly, stonefly, caddisfly, midge			ASTM E 1365-90 (mosquito larvae)
1g.	Acute tox. to non-Arthropoda or Chordata	e.g. Rotifera, Annelida, Mollusca			ASTM 1440-90 (Brachionus), US-EPA (Crassostrea)

SOURCE		Stephan C.E. et al. (1985): Guidelines for deriving numerical national water quality criteria for the protection of aquatic organisms and their use. US Environmental Protection Agency. PB85-227049, Springfield, VA. 98 pp.			
APPLICATION		Deriving quality criteria for the aquatic environment			
STATUS		Guideline			
	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1h.	Acute toxicity to other insect or other phylum	n.d.			n.d.
2a.	Chronic tox. to fish, (fresh or marine)	n.d.	n.d.	n.d.	ASTM E 1241-92, US-EPA (inland silverside, sheepshead minnow, fathead minnow)
2b.	Chronic tox. to invertebrate (fresh or marine)				ASTM E 1191-90 (saltwater mysids), ASTM E 1193-87 (D-aphnia magna), US-EPA
2c.	Chronic tox. to an acute sensitive freshwater species				n.d.
3.	Toxicity to freshw. algae or vascular plant				ASTM E 1415-91, US-EPA (Lemna), ASTM P 3978 80, US-EPA (growth inhib.,algae)

	SOURCE	Walker, John D.(1990): Chemical fate, bioconcentration and environmental effects testing: Proposed testing and decision criteria. Toxicity Assessment: An International Journal, Vol 5, pp 103-134.			
	APPLICATION	Hazard and risk assessment of industrial chemicals			
	STATUS	Proposal for testing and decision criteria in relation to section 4 of the Toxic Substance Control Act, USA			
	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to fish	Freshwater: Rainbow trout Saltwater: Sheepshead minnow	Tier 1: acute toxicity to one species of fish, crustacean and algae. Species are selected according to estimated release pattern (e.g. marine species if release is only to the marine environment). For most sensitive species, other species from this trophic level are to be tested. Decision criteria for requesting further testing (tier 1 data): 1) EC/LC50 < 100 x PEC, or 2) EC/LC50 < 1 mg/l, or 3) EC/LC50 < 100 mg/l and cummulative toxicity indicated (fish or invertebrate). Decision criteria for tier 2 testing (other available data to be included) 1) Any MATC < 0.1 mg/l, or 2) potential reactive metabolites, or 3) log P > 5, membrane permeability and toxic potential, or 4) Stable in water and potential for chronic toxicity	96 hrs. LC50, concentration-response curve (exposure duration-LC50 curve?)	ASTM, EPA
2.	Acute toxicity to crustaceans	Freshwater: Daphnia sp. Saltwater: Mysidopsis bahia		48-96 hrs LC/EC50, concentration-response curve	ASTM, EPA
3.	Toxicity to algae	Freshwater: Selenastrum sp. Saltwater: Skeletonema sp.		72-96 hrs EC50: Growth inhibition	ASTM, EPA
4.	Acute toxicity to a fish species other than 1)	Freshwater: Fathead minnow Saltwater: Silversides		n.d.	ASTM, EPA
5.	Acute toxicity to a crustacean other than 2)	Freshwater: e.g. a midge, amphipod or insect larvae Saltwater: e.g. an amphipod or other crustacean than M. bahia			ASTM, EPA

SOURCE	Walker, John D.(1990): Chemical fate, bioconcentration and environmental effects testing: Proposed testing and decision criteria. Toxicity Assessment: An International Journal, Vol 5, pp 103-134.
APPLICATION	Hazard and risk assessment of industrial chemicals
STATUS	Proposal for testing and decision criteria in relation to section 4 of the Toxic Substance Control Act, USA

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
6.	Chronic toxicity to fish	Partial life cycle test (FELS, embryo-larvae test a.o.) with one of the species above.	Tier 2a: Most sensitive of tier 1 species is to be tested	n.d.	ASTM, EPA
7.	Chronic toxicity to crustaceans	Life cycle test with one of the species above.			ASTM, EPA
8.	Toxicity to benthic organisms	e.g. Rhepoxynius abronius, chironomus tentans, tadpole	Tier 2b: Sediment tests should be required when chemical is likely to bind or patition to sediments		/1/ /2/ Kenezovich, unpublished

REFERENCES:

/1/ Swartz, R.C., W.A. DeBen, J.K.P. Jones, J.O. Lamberson, and F.A. Cole. 1985. Phoxocephalid amphipod bioassay for marine sediment toxicity, P. 284-307. In R.D. Cardwell, R. Purdy, and R.C. Bahner (eds.), Aquatic Toxicology and Hazard Assessment: Seventh Symposium. ASTM STP 854. American Society for Testing and Materials, Philadelphia, PA.

/2/ Adams, W.J., R.A. Kimerle, and R.G. Mosher. 1985. Aquatic safety assessment of chemicals sorbed to sediments, P. 429-453. In. R.D. Cardwell, R. Purdy, and R.C. Bahner (eds.), Aquatic Toxicology and Hazard Assessment: Seventh Symposium. ASTM STP 854. American Society for Testing and Materials, Philadelphia, PA.

SOURCE	PARCOM: Harmonized system for the testing, evaluation and control of the use and discharge of chemicals offshore under the remit given to the Paris Commission in the Final Declaration of the Third North Sea Conference (1993)
APPLICATION	Environmental hazard and risk assessment of drill-muds and chemicals from offshore operations
STATUS	Draft proposal

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
Algae growth inhibition test	Skeletonema costatum (or Phaeodactylum tricornutum, UK only)	n.d.	72 hrs EC50	PARCOM protocol
Acute toxicity to marine crustaceans	Acartia tonsa (or Mysidopsis bahia or Tisbe Battagliai, UK only)		24, 48, 72, 96 hrs LC50 (for Acartia and Tisbe: 24h and 48h LC50 only)	PARCOM protocol
Acute toxicity to marine fish species	n.d.		24h and 48h LC50	n.d.
Toxicity to sediment reworker species	Echinocardium cordatum or Corophium volutator or Bathyporeia sarci or Arenicola marina	For products or chemicals likely to accumulate in the sediment (Log K_{oc}[3]3, drilling mud)	21d LC50 (Echinocardium), 10d LC50 (Corophium, Bathyporeia, Arenicola)	PARCOM protocol

SOURCE	US-Environm. Protection Agency: Toxicity Substances Control Act (TSCA), Code of federal regulations, 40, July 1994[1]
APPLICATION	Industrial chemical regulation, environmental hazard and risk assessment of new and existing chemicals (and mixtures) under Section 4 of TSCA
STATUS	Enacted October 11, 1976; rev. july 1988 and june 1991

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish (tier 1, 2)	Brachydanio rerio (zebra fish), Pimephales promelas (fathead minnow), Cyprinus carpio (common carp), Oryzias latipes (red killifish), Poecillis reticulata (guppy), Lepomis macrochirus (bluegill sunfish), Oncorhynchus mykiss (rainbow trout)	<u>Tier 1 tests:</u> TSCA enables EPA to require testing of chemicals if an unacceptable risk to environment is indicated (PEC exceeds concern level) and insufficient data or experience is available for the	24, 48, 72 and 96 hrs LC50, NOLC, LOLC-100, Incipient LC50, any abnormal responses	40 CFR 797.1400 40 CFR 797.1440 (equivalent to OECD TG 203) (797.1400 is preferred by OPPT[2]
2. Acute toxicity to crustaceans (daphnids) (tier 1)	Daphnia magna, Daphnia pulex	assessment. The testing programme is decided on a case-by-case procedure. Acute toxicity to one species of	24, 48 hrs EC50, any adverse effects	40 CFR 797.1300
3a. Acute toxicity to algae (tier 1, 2)	Selenastrum capricornutum (freshwater green algae), Skeletonema costatum (marine diatom)	algae, fish and daphnid is required at this tier (base set data).	24, 48, 72 hrs EC50 and 96 hrs EC10, EC50 and EC90 (inhibition of biomass), other adverse effects: size or colour changes a.o.	40 CFR 797.1050 (under revision, 1995)
3b. Acute toxicity to algae (tier 1, 2)	Fresh water algae: Selenastrum capricornutum, Scenedesmus quadricauda, Chlorella vulgaris. Marine algae: Skeletonema costatum, Thallassiosira pseudonana, Isochrysis galbana.		96 hrs EC50, NOEC and EC100 (growth rate), other adverse effects	40 CFR 797.1060 (fresh water test) and 797.1075 (fresh and marine water test)(equivalent to OECD TG 201)

SOURCE	US-Environm. Protection Agency: Toxicity Substances Control Act (TSCA), Code of federal regulations, 40, July 1994[1]
APPLICATION	Industrial chemical regulation, environmental hazard and risk assessment of new and existing chemicals (and mixtures) under Section 4 of TSCA
STATUS	Enacted October 11, 1976; rev. july 1988 and june 1991

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
4. Acute toxicity to fish, mitigated by Diss. Org. Carbon (tier 2)	n.d.	Tier 2 tests: Decision criteria triggering the request of testing at tier 2 includes: . Identification of high acute toxicity (LC50 or EC50 < 1 mg/l) in any of the tier 1 tests: additional acute toxicity testing of other species belonging to the sensitive taxa . LC50 or EC50 between 1 and 100 mg/l and chronic effects are indicated: additional acute toxicity testing of species from the sensitive taxa.	n.d.	Proposed guideline, not yet published in CFR
5. Acute toxicity to Oyster (tier 2)	Crassostrea virginica (eastern oyster) (juvenile/prespawn, 30-50 mm in valve hight)		96 hrs EC50 (shell deposition)	40 CFR 797.1800
6. Acute toxicity to crustaceans (mysid scrimp) (tier 2)	Mysidopsis bahia		24, 48, 72, 96 hrs LC50, any abnormal responses	40 CFR 797.1930
7. Acute toxicity to gammarids (tier 1, 2)	Gammarus fasciatus, G. pseudolimnaeus, G. lacustris	.....contd	24, 48, 72, 96 hrs LC50, NOLC, any abnormal observations	40 CFR 795.120, provisional
8. Acute toxicity to penaeid schrimp (tier 2)	Penaeus aztecus (brown schrimp), P. duorarum (pink schrimp) and P. setiferus (white schrimp). Post-larval juveniles.		(24), 48, (72), 96 hrs LC50	40 CFR 797.1970
9. Acute toxicity to aquatic plant (tier 2)	Lemna gibba G3		7 day EC10, EC50 and EC90 for total frond number, growth rate and mortality	40 CFR 797.1160
10. Acute chironomid Sediment Test (tier 1, 2 ?)	Chironomus decorus	Tier 2 tests contd.	n.d.	40 CFR 795.135 (provisional)

SOURCE	US-Environm. Protection Agency: Toxicity Substances Control Act (TSCA), Code of federal regulations, 40, July 1994[1]
APPLICATION	Industrial chemical regulation, environmental hazard and risk assessment of new and existing chemicals (and mixtures) under Section 4 of TSCA
STATUS	Enacted October 11, 1976; rev. july 1988 and june 1991

METHOD		RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
11.	Subchronic tad-pole/sediment test (tier 1, 2 ?)	n.d.		n.d.	Proposed guideline, not yet published in CFR
12a.	Chronic toxicity to daphnid (tier 3)	Daphnia magna or D. pulex	<u>Tier 3 tests:</u> Decision criteria triggering the request of testing at tier 3 includes: · LC50 or EC50 < 1 mg/l, or · Fish tests show ratio (24h/96h LC50) > 2 and chemical half life > 4 days, or · Invertebrate tests show ratio (24h/48h LC50) > 2, or · log K_{ow} > 3.5	21 day LC50 (adult), NOEC, LOEC (immobilization of adult brood size, immobilization of young), MATC	40 CFR 797.1330 (under revision and to be harmonized with updated OECD TG 202, part 1)
12b.	Chronic toxicity to daphnid (tier 3)	Daphnia magna or D. pulex		14 day LC50 and EC50 (immo-bilization)(adult), NOEC, LOEC (mortality, reproduction a.o.)	40 CFR 797.1350 (equivalent to OECD TG 202, part 2)
13.	Chronic toxicity to mysid schrimp (tier 3)	Mysidopsis bahia		28 day LC50 and EC50, NOEC, LOEC and MATC (cumulative number of dead mysids, body length of males and females, number of young per female)	40 CFR 797.1950
14.	Chronic toxicity to fish (FELS) (tier 3)	Pimephales promelas (fathead minnow), Cyprinodon variegatus (sheepshead minnow), Salvelinus fontinalis (brook trout), O. mykiss (rainbow trout), Menidia menidia (atlantic silverside), M. peninsulae (tidewater silverside)	<u>Tier 3 tests</u> contd.	28/60 day EC50, NOEC, LOEC (hatching, survival, growth, malformation). 28 days post-hatch for minnows and 60 days post-hatch for trouts	40 CFR 797.1600 (updated method to be based on OECD TG 210)

[1] General comments on guidelines: The 1 Jul 94 Code of Federal Regulations (CFR) contains the current collection of test guidelines published by the Office of Pollution Prevention and Toxics (OPPT). However, the CFR does not reveal proposed test guidelines which were published at various times in the Federal Register in connection with a proposed rule. A considerable number of proposed rules have not been finalized. As a result of this, those proposed rules also have not been published as OPPT guidelines which had been incorporated into those proposed rules also have not been published as OPPT guidelines. In working to harmonize the OPPT guidelines with those of OECD, OPPT has incorporated all testing methods published in the Office of Prevention, Pesticides, and Toxic Substances (OPPTS) which were judged to be of continuing value. Included in that collection were OPPT's (1) official guidelines (40 CFR 797 series), (2) provisional guidelines (40 CFR 795 series), and (3) proposed guidelines, i.e., those which have appeared in the Federal Register in connection with a rule. Most of the OPPT guidelines are now effectively harmonized nearly ready for publication. At some future time, OPPT plans to authorize the U.S. Government Printing Office to publish the harmonized guideline series.

[2] OPPT = The Office of Pollution Prevention and Toxics

SOURCE	Aquatic organism risk assessment scheme for pesticides. Report of the sub-group on aquatic organisms, July 1991. EPPO/Council of Europe Panel on Environmental Risk Assessment of Plant Protection Products.
APPLICATION	Pesticide registration and authorization
STATUS	Draft proposal

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to fish	as OECD TG	Base set data	96 hrs LC50	OECD TG 203
2.	Acute toxicity to Daphnia magna			48 hrs EC50	OECD TG 202
3.	Toxicity to algae			n.d.	OECD TG 201 (modified?)
4.	Acute toxicity to other invertebrates	species representing 2 other taxa than base set	Refining initial PNEC	n.d.	e.g. ASTM: E729-88
5.	Acute toxicity to aquatic macrophytes	Lemna sp.		n.d.	/1-3/
6.	Chronic toxicity to fish	as OECD TG (drafts)		14-60 days NOEC	e.g. OECD TG 210, Inhibition of growth rate (OECD Draft) or OECD TG 204.
7.	Chronic toxicity to Daphnia magna	Daphnia magna		21 days EC50, NOEC	OECD TG 202
8.	Chronic toxicity to algae	as OECD TG		72 hrs EC50	OECD TG 203, ISO Standard 8692
9.	Chronic toxicity to other invertebrates	species representing 2 other taxa than base set		n.d.	n.d.
10.	Short-term multispecies test	short-term static pond experiments at realistic PEC level	confirmatory test level	n.d.	e.g. /4-6/
11.	Mesocosm study	long-term artificial pond/stream	confirmatory test level	n.d. /8/	e.g. /7/

REFERENCES:

/1/ Walbridge, C.T. (1977). A flow-through testing procedure with duckweed (Lemna minor, L.), EPA/600/3-77-108, Ecological Research Series, US.EPA, Washington DC.

/2/ US EPA (1985). Lemna Acute toxicity test. Federal Register Vol. 50, 797.1160, No. 188 1, pp. 39331-39333.

/3/ Wang, W. (1986). Toxicity tests of aquatic pollutants by using common duckweed. Environmental Pollution 11B, 1-14.

/4/ Stephenson, R. (1987). An insecticide formulation that spares fish. Span 30, 75-77.

/5/ Anon. (1987). Generic freshwater microcosm test. US Federal Register, Sept. 28, 1987, 40 CFR Part No. 797.3050, pp. 36344-36352.

/6/ Stay et al. (1990). The precision and accuracy of microcosms used in the early tiers of risk assessment. Unpubl. report by EPA Duluth presented to OECD Workshop on Extrapolation of Aquatic Toxicity Data to the Real Environment, Dec. 1990.

/7/ Crossland, N.O. (1984). Fate and biological effects of methyl parathion in outdoor ponds and laboratory aquaria. II. Effects. Ecotoxicology and Environmental Safety 8, 482-495.

/8/ Okkerman, P.E. et al. (1990). Validation of some extrapolation methods with toxicity data derived from multiple species experiments. Report from National Institute of Public Health & Environmental Protection, The Netherlands, Bilthoven, 20 pp.

SOURCE	Biologische Bundesanstalt für Land- und Forstwirtschaft: Criteria for assessment of plant protection products in the registration procedure. Mitteilungen aus der BBR, Heft 285, Berlin 1993
APPLICATION	Registration of pesticides
STATUS	Guideline related to the national plant protection act

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish	Rainbow trout, carp , a.o.	Active ingredients, in special cases also the product, are to be tested by methods 1-5 if an exposure to the aquatic environment is indicated. Appropriate sediment test methods are presently not available.	96 hrs LC50	OECD TG 203
2. Acute toxicity to crustaceans	Daphnia magna		48 hrs EC50	OECD TG 202, part 1
3. Toxicity to plankton algae	according to OECD TG		72-96 hrs EC50, growth inhibition	OECD TG 201
4. Chronic toxicity to fish	Rainbow trout, carp, a.o.		21 day EC50, NOEC: mortality, behaviour and growth	OECD TG 204?, TG 210
5. Chronic toxicity to crustaceans	Daphnia magna		21 day EC50, NOEC: mortality, reproduction and growth	OECD TG 202, part 2
6 Toxicity to benthic organisms	e.g. Chironomus sp		n.d.	n.d.

SOURCE	Boutin, C., Freemark, K.E. and Keddy, C.J. (1993): Proposed guidelines for registration of chemical pesticides. Technical report series No. 145, Canada Wildlife Service (Headquarters), Environment Canada, Ottawa.
APPLICATION	Nontarget plant testing and evaluation (of pesticides)
STATUS	Draft Document

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Toxicity to algae	3 freshwater (green, blue-green and diatoms) and 3 marine species (green, dinoflagellates and diatoms)	Tier 1: Screening for Phytotoxic potential	algae growth inhibition, maximum challenge test, one concentr.	ASTM (1991): E 1218-90, modified according to protocol included
2. Toxicity to aquatic vascular plants	30 species representing 10 families for herbicides and 10 species representing 6 families for non-herbicides (aquatic + terrestrial)		vegetative growth inhibition, Maximum challenge test, one concentration	Protocol included
3. Toxicity to algae	as 1)	Tier 2: Estimation of order of magnitude of phytotoxicity. If toxic to algae (tier 1): testing of 1, 3 and 4. If 25% inhibition of plant growth (tier 1): testing of 2, 3 and 4.	algae growth inhibition, dose-response relationship	ASTM (1991): E 1218-90, modified acc. to protocol incl.
4. Toxicity to aquatic vascular plants	as 2)		seed germination, root elongation, dose-response relation.	US-EPA: TSCA, Fed. Regist.: 50(188): 39389-39391
5. Toxicity to Lemna gibba	Lemna gibba (strain G-3) or L. minor		vegetative growth and reproduction, dose-response	ASTM (1991): E1415-90, modified acc. to protocol incl.
6. Seed germination test	non-crop and crop species (terrestrial species)		seed germination, root elongiation	Protocol included

SOURCE	Boutin, C., Freemark, K.E. and Keddy, C.J. (1993): Proposed guidelines for registration of chemical pesticides. Technical report series No. 145, Canada Wildlife Service (Headquarters), Environment Canada, Ottawa.
APPLICATION	Nontarget plant testing and evaluation (of pesticides)
STATUS	Draft Document

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
7. Toxicity to rooted submerged aquatic plants	a plant species representative for Canada	Tier 3: Estimation of minimum phytotoxic concentration. If PEC/EC-50 > 10 for algae: testing of 7); for Lemna: testing of 8); for seed: testing of 9). If PEC > EC-25 for 25 % of plant species or 50 % of families: Testing of 9)	vegetative growth, dose-response	n.d.
8. Toxicity to emergent aquatic plants	as 7)		as 7)	n.d.
9. Toxicity to selected single plant species	n.d.		n.d.	n.d.
10. Multispecies communities testing	n.d.	Tier 4: If PEC/EC-50 for algae or PEC/EC-25 for plants > 10	n.d.	n.d.

SOURCE	Klein, A.W. and J. Goedicke (1993): Environmental assessment of pesticides under Directive 91/414/EEC
APPLICATION	Uniform principles for registration of pesticides within the EEC (Annex VI of council Directive 91/414/EEC).
STATUS	Contribution to the discussion within the EEC for developing uniform principles for the assessment of pesticides.

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to fish	e.g. Rainbow trout	Tier 1a: Acute toxicity testing of active ingredient on one species of fish,.	96 hrs LC50	OECD TG 203
2.	Acute toxicity to crustaceans	e.g. Daphnia magna	crustacean and algae. Testing programme sufficient only when the number of	48 hrs LC50	OECD TG 202 part 1
3.	Toxicity to algae	e.g. Selenastrum or Scenedesmus	applications is small, the pesticide degrades rapidly and no toxic and/or persistent metabolites are formed. Decision criteria: PEC/LC(EC)50 < 0.01 for most sensitive of the 3 tested species	72 hrs EC50 (growth inhibition)	OECD TG 201
4.	Chronic toxicity to fish	e.g. Rainbow trout	Tier 1b: Decision criteria (i.e. registration possible) if: · $PEC_{acute}/LC(EC) < 0.01$, and	NOEC	e.g. OECD TG 210
5.	Chronic toxicity to crustaceans	e.g. Daphnia magna	· $PEC_{chronic}/NOEC < 0.1$, for most sensitive of 3 species.	NOEC	e.g. OECD TG 202 part 2
6.	Acute and chronic toxicity to another species than above	n.d., should represent the environment of concern	Tier 2: Acute and chronic testing of at least 5 different species (from 5 different taxonomic groups?): Distribution model	LC50, NOEC	n.d.
7.	Acute and chronic toxicity to another species than above	n.d., should represent the environment of concern	applied for calculating $HC5_{50}$ for acute and chronic effects. Decision criteria: · $PEC_{acute}/LC(EC)\text{-}50 < 0.1$, · $PEC_{chronic}/NOEC < 1$.	LC50, NOEC	n.d.

SOURCE	Linders J., H. Clausen, O. Hansen, A. Klein and W. Klein (1992): Environmental criteria for pesticides. Recommendations from the Northern European Workshop on Environmental Hazard and Risk Assessment of Pesticides, Bilthoven, The Netherlands, 23-25 March 1992.
APPLICATION	Environmental hazard and risk assessment in the context of the Plant Protection Directive (91/414/EEC)
STATUS	Contribution to the development of uniform principles within the EEC

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to fish	e.g. Rainbow trout	<u>Tier 1:</u> Acute and chronic toxicity testing of active ingredients on one species of fish,	96 hrs LC50	OECD TG 203
2.	Acute toxicity to crustaceans	e.g. Daphnia magna	crustaceans and algae.	48 hrs EC50 part 1	OECD TG 202
3.	Toxicity to algae	e.g. Selenastrum or Scenedesmus	Decision criteria (i.e. registration, possible if): · (daphnia or fish most sensitive): PEC_{acute}/LC(EC)50 < 0.001, and	72 hrs EC50	OECD TG 201
4.	Chronic toxicity to fish	e.g. Rainbow trout	· (algae most sensitive): PEC_{acute}/LC(EC)50 < 0.01, and· $PEC_{chronic}$/NOEC < 0.01	NOEC	e.g. OECD TG 210
5.	Chronic toxicity to crustaceans	e.g. Daphnia magna	If 5 species are tested, the cut-off values may be reduced by a factor of 10 (0.01 and 0.1, respectively)	21 day NOEC	e.g. OECD TG 202, part 2
6.	Acute and chronic toxicity to other species than above	n.d., should represent the environment of concern (e.g. sediment)	<u>Tier 2:</u> Acute and chronic testing of at least 5 different species (from 5 different taxonomic groups?): Distribution model to be applied for	n.d.	n.d.
7.	Acute and chronic toxicity to other species than above	n.d., should represent the environment of concern (e.g. sediment)	calculating $HC5_{50}$ for acute and chronic effects. Decision criteria: · PEC_{acute}/LC(EC)50 < 0.1, and · $PEC_{chronic}$/NOEC < 1	n.d.	n.d.

SOURCE	Lynch, M.: Study concerning the inclusion of active substances in annex 1 to Council Dir. 91/414/EEC (Jan. 1993)
APPLICATION	Pesticide registration and authorization according to Council Dir.
STATUS	Study report to the EEC. Background paper to Dir. 91/414/EEC

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to 2 fish species	Rainbow trout (Oncorhynchus mykiss) Bluegill sunfish (Lepomis macrochirus)	The substance is likely to reach water: direct application, direct or unintended overspray, run-off or drift, leaching	48 and 96 hrs LC50, NOLC, LOLC-100. 48 and 96 hrs EC50, NOEC (behaviour)	EEC method C1, Annex V to 7th amn. to Dir 67/548 (equivalent to OECD TG 203)
2.	Chronic toxicity to fish, 28 days prolonged tox.	Rainbow trout (Oncorhynchus mykiss)	as 1) and continued exposure is anticipated	28 days LOLC, NOEC, LOEC for growth and survival of juveniles	OECD Draft: Prolonged toxicity to fish. Method for eval. the effects of substances on the growth rate of O. mykiss.
3.	Chronic toxicity, Fish Early Life Stage Test	Rainbow trout (Oncorhynchus mykiss)	as 1) and continued exposure is anticipated and acute NOEC/chronic NOEC ³ 10	NOEC, LOEC for survival, growth and malformations of egg, sacfry and early free-feeding fry	OECD TG 210
4.	Acute toxicity to daphnids	Daphnia magna	as 1)	24 and 48 hrs EC50, NOLC, LOLC-100	EEC method C2 (equivalent to OECD TG 202, part 1)
5.	Chronic toxicity to daphnids	Daphnia magna	as 1) and continued exposure is anticipated	24, 48, 96 hrs, 7 and 14 days EC50, NOEC, LOEC. Time for brood apperance, survival of brood	OECD TG 202, part 2
6.	Toxicity to algae	Selenastrum capricornutum	as 1) and continued exposure is anticipated	72 hrs EC50, NOEC. Growth rate and growth (biomass reduction)	OECD TG 201
7.	Toxicity to other non-target or-ganisms at risk	n.d.	n.d. (Annex III to Dir. 91/414/EEC	n.d.	n.d.
8.	Field studies	n.d.	n.d.	n.d.	n.d.

SOURCE		USA: Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Pesticide Assessment Guidelines, Hazard Evaluation: Wildlife and Aquatic Organisms (40 CFR 162, Subdivision E) (EPA-540/9-82-024)			
APPLICATION		Registration of pesticide products in USA			
STATUS		Enacted Oct. 21, 1972 with recent amendment Nov. 1990			
METHOD		RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to freshwater fish (§ 72-1)	Preferably bluegill sunfish (warm water) and rainbow trout (coldwater)	Tier 1: Acute toxicity to 1) a warm water fish species, 2) a cold water fish species and 3) an invertebrate is requested on active ingredients used out-door, less frequently also on formulated products and pesticides used in-door. An algae study is required on a case-by-case basis.	(24, 48, 72), 96 hrs LC50	ASTM 729-88a a.o.
2.	Acute toxicity to freshwater invertebrates (§ 72-2)	Daphnia magna or D. pulex		EC/LC50 values at 24 hrs step for the entire test period	ASTM E 729-88a
3.	Aquatic plant growth (§ 122-2)	algae growth inhibition		n.d.	n.d.
4.	Acute toxicity to estuarine and marine fish (§ 72-3a)	-	Tier 2: Required when the substance is intended for direct use in marine or estuarine environment or when risk.		
5.	Acute toxicity to estuarine and marine molluscs (§ 72-3b)	oyster embryo larvae test (48 hrs) or 96 hrs shell deposition test. Crassostrea gigas (pacific oyster), C. virginica (eastern oyster), Mercenaria mercenaria (hard clam) and Mytilus edulis (blue mussel).	for runoff to these environments in significant concentrations is expected		ASTM E 724-89
6.	Acute toxicity to estuarine and marine shrimps (§ 72-3c)	Mysidopsis bahia			

SOURCE		USA: Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); Pesticide Assessment Guidelines, Hazard Evaluation: Wildlife and Aquatic Organisms (40 CFR 162, Subdivision E) (EPA-540/9-82-024)			
APPLICATION		Registration of pesticide products in USA			
STATUS		Enacted Oct. 21, 1972 with recent amendment Nov. 1990			
METHOD		RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
7.	Fish early life stage toxicity test (§ 72-4a)	Pimephales promelas (fathead minnow), Salvelinus fontinalis (brook trout)	Tier 2 (contd.): The most sensitive species (§ 72-1, -2, -3) is to be applied for testing, provided that L(E)C50 < 1	n.d.	ASTM E 1241-92
8.	Invertebrate life cycle test (§ 72-4b)	Daphnia magna	mg/l, or indication of reproductive effects, or indications of cumulative		ASTM E 1193-87
9.	Mysid shrimp life cycle test (§ 72-4c)	Mysidopsis bahia	effects, or biodegradation half life in water > 4 days		ASTM E 1191-90
10.	Aquatic plant growth (§ 123-2)				
12.	Acute toxicity to aquatic insects (§ 142-1)		Tier 3: If PEC ³ 0.1 x NOEC or reproductive effects in other species: Fish life cycle test. Other tests on a case-by-case basis		
13.	Fish life cycle test (§ 72-5)				
14.	Simulated field testing - Aquatic organisms (§ 72-7a)		Tier 4: PEC ³ 0.1 x LC50 or PEC > 0.1 × LC50 if Tier 4 testing requested directly following Tier 1 testing.		
15.	Actual field testing - Aquatic organisms (§ 72-7b)				

SOURCE	United States Environmental Protection Agency (US-EPA): Technical support document for water quality-based toxic control (EPA/505/2-90-001) March 1991.
APPLICATION	Technical guidance for assessing and regulating the discharge of toxic substances to the aquatic environment (waste water permits).
STATUS	US-EPA guidance document to the national Clean Water Act.

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish	<u>Freshwater species:</u> Pimephales promelas (fathead minnow), Onchorhynchus mykiss (rainbow trout), Salvelinus fontinalis (brook trout) <u>Marine species:</u> Cyprinodon variegatus (sheepshead minnow), Menidia beryllina, M. medinia, M. peninsulae (silversides)	Whole effluent testing: Initial dilution > 1000:1: acute toxicity to 3 trophic levels (1-3) as a minimum. Chronic toxicity should be "Checked" Initial dilution > 100:1 and < 1000:1: acute or chronic toxicity to 3 trophic levels. Acute or chronic toxicity levels are to be estimated from acute/chronic ratios.	Effluents: 96 hrs LC50, LOLC Receiving water: 96 hrs LOLC	US-EPA: Methods for measuring the acute toxicity to effluents and receiving waters to freshwater and marine organisms. Fourth ed., Sept. 1991. (EPA/600/4-90/027)
2. Acute toxicity to invertebrates	<u>Freshwater species:</u> Ceriodaphnia dubia, Daphnia magna, D. pulex. <u>Marine species:</u> Mysidopsis bahia	Initial dilution < 100:1: Chronic toxicity to 3 trophic levels as a minimum. The acute toxicity level may be estimated from A/C ratios. Freshwater organisms should be applied when the actual receiving	Effluents: 24, 48 or 96 hrs LC50, LOLC Receiving water: 24, 48 or 96 hrs LOLC	
3. Toxicity to plants	n.d.	water salinity is less than 1,000 mg/l and marine organisms when above 1,000 mg/l. .....contd.	n.d.	n.d.
4. Short-term chronic toxicity to freshwater crustaceans	Ceriodaphnia dubia	Sediment toxicity testing may be required in special cases.	7 d. NOEC: survival, reproduction	US-EPA: Short-term methods for estimating the chronic toxicity to effluents and receiving waters to freshwater organisms. Second ed. March 1989 (EPA 600/4-89/001)

SOURCE	United States Environmental Protection Agency (US-EPA): Technical support document for water quality-based toxic control (EPA/505/2-90-001) March 1991.
APPLICATION	Technical guidance for assessing and regulating the discharge of toxic substances to the aquatic environment (waste water permits).
STATUS	US-EPA guidance document to the national Clean Water Act.

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
5. Short-term chronic toxicity to freshwater fish	Pimephales promelas (fathead minnow)		7 d. NOEC: larval growth, survival; 7-9 d. NOEC: embryo-larval survival, hatchability, abnormality	
6 Algae growth inhibition	Selenastrum capricornutum		96 hrs NOEC: growth rate inhibition	
7. Short-term chronic toxicity to marine crustaceans	Mysidopsis bahia (mysid)		7 d. NOEC: growth, survival, fecundity	US-EPA: Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and freshwater organisms. May 1988 (EPA/600/4-87/028)
8. Short-term chronic toxicity to marine fish	Cyprinodon variegatus (sheepshead minnow), Menidia beryllina (inland silverside)		7 d. NOEC: larval growth, survival. 7-9 d. NOEC: embryo-larval survival, hatchability, abnormality (C. variegatus)	
9. Macroalgae fertilization test	Champia parvula (red macroalgae)		7-9 d. NOEC: cystocarp production (fertilization)	
10. Sea urchin fertilization test	Arbacia punctulata		1.5 hrs NOEC: fertilization	
11. Kelp reproduction test	Laminaria saccharina (kelp)		24 hrs NOEC: inhibition of sporophyte development	US-EPA: Biomonitoring for control of toxicity in effluent discharges to the marine environment. Sept. 1989 (EPA/-625/8-89/015)

SOURCE	Danish environmental protection agency: Guideline for hazard assessment of industrial effluents. 1993
APPLICATION	Procedure for investigation and assessment of hazard/risk to marine and freshwater environments of industrial effluents
STATUS	Technical guidance document

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1. Acute toxicity to fish	Freshwater: Brachydanio rerio (zebra fish), O. Mykiss (rainbow trout) Brackish water: Platichthys flesus (flounder), Clupea harengus (herring) Marine water: P. flesus, C. harengus, Scophthalmus maximus (turbot)	Tier 1: Testing of one fish, one crustacean and one alga is requested if an unacceptable risk to the environment is indicated or insufficient data or experience is provided for the assessment. Species of relevance to the receiving water should be applied. $PNEC_{acute}$ and $PNEC_{chronic}$ are estimated applying assessment factors.	96 hrs LC50	OECD TG 203
2. Acute toxicity to crustaceans	Freshwater: Daphnia magna, Gammarus pulex Brackish water: Nitocra spinipes Marine water: Acartia tonsa		48 hrs EC50 (Daphnia, Acartia) 96 hrs EC50 (other)	Daphnids: OECD TG 202, part 1 Nitocra: DS 2209 Acartia: ISO draft /5/ Gammarus: /1/
3. Toxicity to algae	Freshwater: Nitzschia palea, Selenastrum capricornutum Brackish and marine water: Skeletonema costatum, Phaeodactylum tricornutum		n.d. (72 hrs EC50)	OECD TG 201
4. Acute toxicity to microorganisms	Freshwater: Pseudomonas putida Brack. and marine w.: Photobacterium phosphoreum (Microtox)	Tier 2a: $PNEC_{acute}/PEC_{max} < 1$: Additional acute toxicity tests may be performed for refinement of $PNEC_{acute}$ (more acute toxicity data lead to a reduced assessment factor)	72 hrs EC50, growth inhibition (Pseudomonas), 0.5 hrs EC50, inhibition of luminiscens (Photobacterium)	Pseudomonas: ISO N111 (draft) Photobacterium: ISO N127 (draft)

SOURCE		Danish environmental protection agency: Guideline for hazard assessment of industrial effluents. 1993			
APPLICATION		Procedure for investigation and assessment of hazard/risk to marine and freshwater environments of industrial effluents			
STATUS		Technical guidance document			
METHOD		RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
5.	Acute toxicity to protozoans	Freshwater: Tetrahymena sp. Brack. and marine w.: Uronema marinum		Uronema: 24 hrs EC50, growth inhibition	Uronema: /11/
6.	Acute toxicity to higher plant	Freshwater: Lemna minor (duckweed) Brack. and marine w.: Zostera marina		Lemna: 7 days EC50: growth inhibition and mortality Zostera: 28 days EC50: growth inhibition, photosynthesis	Lemna: /2/ Zostera: Non-published protocol
7.	Acute toxicity to insects	Chironomus sp., Baetis rhodani, Cloëon bipunctata		96 hrs LC50	/3-4/
8.	Acute toxicity to molluscs	Brack. and marine w.: larvae from blue mussel, oyster		96 hrs LC50	-
9.	Acute toxicity to planaria	-		-	-
10.	Chronic toxicity to fish (FELS/embryo-sacfry test)	as 1)	Tier 2b: $PNEC_{chronic}/PEC_{ave.} < 1$: One or more of the methods may be applied for refinement of $PNEC_{chronic}$	Embryo-sacfry test: 7-11 days EC50, NOEC, LOEC, survival, hatching, growth FELS: 28-60 days EC50, NOEC, LOEC	OECD TG 210 (FELS), OECD draft (embryo sacfry test)
11.	Chronic toxicity to crustaceans	as 2)		Daphnids: 21 days EC50, NOEC, LOEC: survival, reproduction	Daphnids: OECD TG 202, part 2 Nitocra: DS 2209 Acartia: ISO draft
12.	Chronic toxicity to algae	as 3)		72 hrs EC50, NOEC, LOEC: growth inhibition	OECD TG 201, ISO 8692

SOURCE	Danish environmental protection agency: Guideline for hazard assessment of industrial effluents. 1993
APPLICATION	Procedure for investigation and assessment of hazard/risk to marine and freshwater environments of industrial effluents
STATUS	Technical guidance document

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
13. Toxicity to crustaceans	Freshwater: Gammarus pulex Brack. and marine water: Corophium volutator, C. insidiosum	Tier 2c: One or more of the methods may be applied for refining the PNEC for sediments	Corophium: 10 days LC50	Gammarus: /1/ Corophium: /6/
14. Toxicity to molluscs	Freshwater: Unio sp. Brack. and marine water: Abra alba, Macoma baltica		Abra: 5 days LC50	Abra alba: /7/
15. Toxicity to annelids	Freshwater: Tubifex tubifex Brack. and marine water: Arenicola marina, Nereis virens		Arenicola: 10 days LC50 Nereis: 10 days LC50	Arenicola: /8/ Nereis: /9/
16. Toxicity to insects	Chironomus sp.		n.d.	ASTM E 1383-90
17. Toxicity to echinoderms	Echinocardium cordatum		21 days LC50, LOLC	/10/

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A sediment bioassay using the polychaete Arenicola marina. Ringtest protocol, Paris Commission.

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Nereis virens (polychaeta) sediment reworker. Ringtest protocol, Paris Commission.

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Method for the assessment of acute toxicity of contaminated sediment using the borrow sea urchin Echinocardium cordatum. Ringtest protocol, Paris Commission.

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Toxic Effects of Heavy Metals upon Cultures of Uronema marinum (Ciliophora: Uronematidae). Marine Biology 54 (1979): 17-24.

	SOURCE	Biological-chemical Characterisation of industrial waste water. Swedish Environmental Protection Agency 1990 (Naturvårdsverket)			
	APPLICATION	Environmental hazard and risk assessment of industrial effluents			
	STATUS	Guideline applied for the hazard identification of emissions to the aquatic environment			
	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
1.	Acute toxicity to fish species	Brachydanio rerio (zebra fish), O. mykiss (rainbow trout), Salmo salar, Salmo trutta (brown trout), Alburnus alburnus (bleak), Perca fluviatilis (perch), Pimephales promelas (fat-head minnow), Gasterosteus aculeatus (stickleback), Platichthys flesus (dab), Gadus morhua (cod).	Stage 1: Requested if available data or experience is insufficient for assessing the potential hazard/risk to the environment	24-96 hrs LC50	Freshwater sp.: SS 028162 Marine sp.: SS 028189 Bleak: /1/
2.	Acute toxicity to crustacean species	Daphnia magna. Ceriodaphnia dubia, Nitocra spinipes, Crangon crangon, Acartia tonsa		24-48 hrs LC50	Daphnia: SS 028180 Ceriodaphnia: /2/ Nitocra: /3/ Brown shrimp: /4/ Acartia: /5/
3.	Algae growth inhibition test	Selenastrum capricornutum, Monoraphidium griphitti, Chlorella vulgaris, Scenedesmus subspicatus, Skeletonema costatum		5 days EC50	OECD TG 201
4.	Vascular plant growth inhibition test	Lemna minor (duckweed), Allium cepa (onion), Lens culinaris (lentil)		5 days EC50	Lemna: /6/ Onion: /7/ Lentil: /8/
5.	Activated sludge, respiration and nitrification inhibition. Microtox	Activated sludge Microtox: Photobacterium sp.		3 hrs EC50	ISO 8192 (draft), ISO/DIS 9509 (draft)

	SOURCE	Biological-chemical Characterisation of industrial waste water. Swedish Environmental Protection Agency 1990 (Naturvårdsverket)			
	APPLICATION	Environmental hazard and risk assessment of industrial effluents			
	STATUS	Guideline applied for the hazard identification of emissions to the aquatic environment			
	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
6.	Fish egg and sacfry test	Zebra fish	Stage 2: Requested on a case-by-case basis, especially.	11 days EC50	SS 028193 (equivalent to OECD TG draft)
7.	Fish, Prolonged toxicity study	Rainbow trout	when LC50/PEC < 1. Most sensitive species/taxa	14 days LC50	OECD TG 204
8.	Fish subchronic toxicity test	Fathead minnow	identified in stage 1 is given highest priority for further testing	7 days EC50	/9/
9.	Fish physiological effects	Salmon, rainbow trout, brown trout, perch		Physiological and biochemical	/10/
10.	Chronic toxicity to crustaceans	Daphnia magna, Ceriodaphnia dubia, Nitocra spinipes		21 days EC50 (Daphnia), 7 days EC50 (Ceriodaphnia), 14 days EC50 (Nitocra)	Daphnia: OECD TG 202 Ceriodaphnia: /11/ Nitocra: /12-13/
11.	Mussel larvae survival test	Mytilus edulis		n.d.	/14-15/
12.	Microtest for algae inhibition	algae test battery		n.d.	/16/
13.	Ames test	Salmonella sp.		revertants	/17/
14.	Extended Chronic toxicity studies with fish	Zebra fish, Clupea harengus (baltic herring)	Stage 3: Confirmatory tests. To be selected and designed depending on the specific environment.	impairment of reproduction of zebra fish, herring embryo-larvae toxicity	/18-19/
15.	Sediment toxicity tests	Daphnia magna, Tubifex tubifex		n.d.	/20/

SOURCE	Biological-chemical Characterisation of industrial waste water. Swedish Environmental Protection Agency 1990 (Naturvårdsverket)
APPLICATION	Environmental hazard and risk assessment of industrial effluents
STATUS	Guideline applied for the hazard identification of emissions to the aquatic environment

	METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
16.	In-situ testing with fish	Salmon, rainbow trout, brown trout, perch		physiological effects, tainting	/21-23/
17.	Effect monitoring in-situ	Perch, dab, salmon, rainbow trout, brown trout, fourhorn sculpin		physiological and skeletal changes	/22-24/
18.	Inhibition of peri-phyton communities	n.d.		n.d.	n.d.
19.	Model ecosystem studies	n.d.		n.d.	n.d.

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Determination of the acute toxicity (LC-50) of chemical products and waste water to Ceriodaphnia dubia. SNV. Pux Report (under preparation), M. Unger. (In Swedish).

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The harpacticoid Nitocra spinipes (Crustacea) as a test organism in brackish water toxicological bioassays. INSERM 1981, 106, pp. 421-430. B.E. Bengtsson.

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Determination of the acute toxicity of waste water to marine fish and a marine crustacean, the brown shrimp (Crangon crangon). SNV 1983, PM 1733, Appendix 1. A. Granmo et al. (In Swedish).

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Ecotoxicological testing using the planktonic crustacean Acartia tonsa. Acute and chronic tests. Water Quality Institute, Denmark 1985. O. Kusk. (In Danish).

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The Allium test as a standard in environmental monitoring. Hereditas 1986, 102, pp. 99-112. G. Fiskesjö.

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A new fathead minnow (Pimephales promelas) subchronic toxicity test. Environmental Toxicology and Chemistry 1985, 4, pp. 711-718. T.J. Norberg and D.I. Mount.

/10/ Physiological effects - fish
Toxic effects of metals on fish. Testing og physiological test methodology. SNV 1986, Report 3166. A. Larsson, C. Haux and M.L. Sjöbäck. (In Swedish).

/11/ Reproduction - Ceriodaphnia
A seven day life-cycle cladoceran toxicity test. Environmental Toxicology and Chemistry 1984, 3. pp. 425-434. D.I. Mount and T.J. Norberg.

/12/ Reproduction: Nitocra
A flow through fecundity test with Nitocra spinipes (Harpactecoida, Crustacea) for aquatic toxicity. Ecotoxicology and Environmental Safety 1987, 14, pp. 260-268. B.E. Bengtsson and B. Bergström.

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/14/ Survival - bivalves: common sea mussel larvae

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Short-term test for predicting the potential of xenobiotics to impair the reproductive success in fish. Ecotoxicology and Environmental Safety 1985, 9, pp. 282-293. L. Landner, A.H. Neilson, L. Tärnholm and T. Viktor.

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SOURCE	United States Environmental Protection Agency (US-EPA) and US Army Corps of Engineers: Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual. Inland Testing Manual (Draft), EPA-823-B-94-002, 1994
APPLICATION	Discharge of dredged material; to implement requirements in the Clean Water Act.
STATUS	Statutory and regulatory background; Scope and applicability; Draft Technical Guidance.

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
PELAGIC TESTS: Acute toxicity to fish	Freshwater species: Pimephales promelas (fathead minnow), Lepomis macrochirus (bluegill sunfish), Ictalurus punctatus (channel catfish), Oncorhynchus mykiss (rainbow trout) Estuarine species: Menidia sp. (silversides)(also higher salinity) Saltwater species: Cyprinodon variegatus, Citharicthys stigmaeus (speckled sanddab), Leuresthes tenuis (grunion)	Tier 3 testing The testing of three species is required, representing different phyla where possible. The organisms used should exists in the vicinity of disposal site.	Survival, 96 hrs tests	US-EPA (1991): Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and marine Organisms, 4th ed. EPA/600/4-90/027
Acute toxicity to crustaceans	Freshwater species: Daphnia magna, D. pulex, Ceriodaphnia dubia Saltwater species: Mysidopsis sp., Neomysis americana, Holmesimysis costata, Palaemonetes sp., Penaeus sp.		Survival, 96 hrs tests	
Toxicity to bivalves	Saltwater and Estuarine species: Crassostrea sp., Mytilus edulis		Shell development to hinged, D-shaped prodissoconch I larva, 48 hrs test	ASTM E 724-89 (1989)
Toxicity to echinoderms	Saltwater species: Strongylocentrotus sp., Lytechinus pictus, Dendraster sp.		Acute toxicity: Survival, embryo development, 48 hrs test Sperm cell acute test: Egg fertilization, 80 minutes test	US-EPA (1990): ERL- Narragansett internal SOP. Dinnel et al. (1982): ASTM STP 766, pp. 82-98

SOURCE	United States Environmental Protection Agency (US-EPA) and US Army Corps of Engineers: Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual. Inland Testing Manual (Draft), EPA-823-B-94-002, 1994
APPLICATION	Discharge of dredged material; to implement requirements in the Clean Water Act.
STATUS	Statutory and regulatory background; Scope and applicability; Draft Technical Guidance.

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
<u>BENTHIC TESTS:</u> Toxicity to amphipod crustaceans	Ampelisca abdita (d,b), Rhepoxynius abronius (d,b), Grandidierella japonicum (d,b), Corophium sp. (f,d,b), Leptocheirus plumulosus (d,b), Eohaustorius estuarius (d,b), Hyalelle azteca (d,b)	Tier 3 testing Testing of 3 species required, representing three different feeding strategies: filter feeder (f), deposit feeder (d), burrowing organism (b)	Survival, not further specified	Draft Inland Testing Manual, not further specified
Toxicity to polychaetes	Neanthes arenaceodentata (d,b)			
Toxicity to juvenile bivalves	Anodonta imbecillis (f,b)			
Toxicity to crustaceans other than amphipods	Mysidopsis sp. (f,d), Neomysis americana (f), Holmesimysis costata (f), Penaeus sp. (d,b), Palaemonetes sp. (d)			
Toxicity to insect larvae	Chironomus tentans (d,b), C. riparus (d,b), Hexagenia limbata (d,b)			
Toxicity to oligochaetes	Pristina leidyi (d,b), Tubifex tubifex (d,b), Lumbriculus variegatus (d,b)			

SOURCE	Keddy C., J.C. Greene and M.A. Bonnell (1994): A review of whole organism bioassays for assessing the quality of soil, freshwater sediment and freshwater in Canada. The National Contaminated Sites Remediation Programme. Environment Canada, Ecosystem Conservation Directorate, Evaluation and Interpretation Branch, Ottawa, Ontario, Scientific Series No. 198.
APPLICATION	Assessment of environmental quality criteria for contaminated sites
STATUS	Scientific report prepared for Environment Canada

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
PELAGIC TESTS: Unicellular algae	Selenastrum capricornutum	Screening tests	72 hrs growth inhibition	Env. Canada (1992)
Crustaceans	Daphnia sp.		48 hrs immobilization	Env. Canada (1990)
Bacteria	Photobacterium phosphoreum		5 min IC50	Env. Canada (1991)
Bacteria	freshwater bacterium (Pseudomonas putida or E. coli)		IC50	ISO (1991)/Orgenics Ltd (1985)
Rotifera	Brachionus calyciflorus		24 hrs IC50, growth	Snell and Persoone (1989)
Crustaceans	Ceriodaphnia dubia	Definitive tests	4 or 7 days survival and reproduction	Environ. Canada (1992)
Warmwater fish	Fathead minnow		7 days larval growth and survival	Environ. Canada (1992)
Coldwater fish	Rainbow trout		96 hrs survival	Environ. Canada (1990)
Aquatic plant	Lemna sp.		growth	ASTM (1991), US-EPA (1985)
Rotifera	Brachionus Calyciflorus		48 hrs reproduction	ASTM draft

SOURCE	Keddy C., J.C. Greene and M.A. Bonnell (1994): A review of whole organism bioassays for assessing the quality of soil, freshwater sediment and freshwater in Canada. The National Contaminated Sites Remediation Programme. Environment Canada, Ecosystem Conservation Directorate, Evaluation and Interpretation Branch, Ottawa, Ontario, Scientific Series No. 198.
APPLICATION	Assessment of environmental quality criteria for contaminated sites
STATUS	Scientific report prepared for Environment Canada

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
ELUTRIATE TESTS: Unicellular algae	Selenastrum capricornutum	Screening tests	72 hrs growth inhibition	Env. Canada (1992)
Crustaceans	Daphnia sp.		48 hrs immobilization	Env. Canada (1990)
Bacteria	freshwater or sediment bacterium		-	-
WHOLE SEDIMENT TESTS: Insect larvae/nymph	Chironomus tentans Hexagenia spp.		10 days survival 10 days survival	ASTM (1990), Bedard et al. (1992)
Amphipods	Hyalella azteca		10 days survival	ASTM (1990)
ELUTRIATE TESTS: Crustaceans	Hyalella azteca Ceriodaphnia dubia	Definitive tests	28 days survival, growth, sexual maturation; 7 days larvae survival	ASTM (1990) Env. Canada (1992)
Oligochaeta	Tubifex tubifex		Reproduction	ASTM draft

SOURCE	US-EPA (1994): EPA's Contaminated Sediment Management Strategy. US Environmental Protection Agency, Office of Water. EPA 823-R-94-001, August 1994
APPLICATION	Assessment of contaminated sediments (or sediments spiked with chemical compounds)
STATUS	Draft Document

METHOD	RECOMMENDED SPECIES	WHEN TO TEST	ENDPOINTS	RECOMMENDED GUIDELINE
Acute toxicity to Amphipods	Freshwater: Hyalella azteca Estuarine & Marine: Hyalella azteca, Ampelisca abdita, Rhepoxynius abronius, Eohaustorius estuaris, Leptocheirus plumulosus		10 days acute toxicity (survival)	EPA 600/R-94/024 (freshwater) EPA 600/R-94/025 (marine)
Acute toxicity to Midges	Chironomus tentans		10 days acute toxicity (survival)	EPA 600/R-94/024

Annex B: National and International Standard methods/Guideline

National and international standard methods/guidelines

EU	Official Journal of the European Communities. Annex V
ISO:	International Organization for Standardization.
OECD:	Organisation for Economic Co-operation and Development
Austria (ONORM)	Österreichische Normen
Canada (Env-CAN)	Environment Canada, Environmental Protection Series
Denmark (DS)	Dansk Standard (Danish Standard Association)
Finland (SFS)	Suomen (Finland) Standard Isoimisliitto
France (AFNOR)	Association Française de Normalisation
Germany (DIN)	Deutsches Institut für Normung
Netherland (NEN)	Nederlands Nomalisatie-instituut
Norway (NS)	Norges Standardiseringsforbund
Sweden (SS)	Standardiseringskommisionen i Sverige
United Kingdom (BSI)	British Standards Institution
USA (US-EPA)	United States Environmental Protection Agency :
- CFR	Code of Federal Regulations
- TSCA	Toxic Substances Control Act
- FIFRA	Federal Insecticide Fungicide and Rodenticide Act.
USA (ASTM)	American Society for Testing and Materials

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Algae	F	Selenastrum capricornutum Scenedesmus subspicatus Chlorella vulgaris	Short-term / Growth rate (Chronic)	US-EPA 1994 (40 CFR 797.1060, 40 CFR 797.1075, 40 CFR 797.1050)
	S	Skeletonema costatum Thallassiosira pseudonana Isochrysis galbana		
	F	Selenastrum capricornutum Scenedesmus subspicatus Chorella vulgaris	Short-term / Growth rate (Chronic)	ASTM (E 1218-90), FIFRA (§122-2), OECD (201), ISO (8692), NF (T90-304), DIN (38412 Teil 33), BS (6068: Section 5.10:1990), NEN (6506), SFS (5072), CAN (1/RM/25, 1992), EU (L 384 A Vol. 35 C.3)
	S	Skeletonema costatum Phaeodactylum tricornutum	Short-term / Growth rate (Chronic)	ISO (10253), BS (91/56211 DC), NEN (6506), SFS (5072)
Macrophytes	S	Champia parvula	Short-term / Reproduction (Chronic)	US-EPA (EPA/600/4-87/028)
Plants	F	Lemna gibba	Short-term / EC50 (Acute)	ASTM (E-1415-91), FIFRA (§123-2), US-EPA (1994)(40 CFR 797.1160)
Crustaceans	S	Mysidopsis bahia	Short-term / LC50 (Acute)	ASTM (E 1463-92), FIFRA (§72-3 c), US-EPA (EPA/600/4-90/027), US-EPA (1994): 40 CFR 797.1930)
	S	Artemia salina	Short-term / LC50 (Acute)	US-EPA (EPA/600/4-90/027)
	S	Penaeus aztecus Penaeus duorarum Penaeus setiferus	Short-term / LC50 (Acute)	US-EPA (1994) 40 CFR Ch. 1 (7-1-92) Part 797.1970)
	S	Nitocra spinipes	Short-term / LC50 (Acute)	SS (028106), DS (2209), ISO/TC 147/SC 5/WG 2N56

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Crustaceans	S	Acartia tonsa	Short-term / LC50 (Acute)	ISO/TC 147/SC 5/WG 2N56
	S	Tisbe battagliai	Short-term / LC50 (Acute)	ISO/TC 147/SC 5WR 2N56
	F	Daphnia magna Daphnia pulex	Short-term / LC50 (Acute)	US-EPA (EPA/600/4-90/027), OECD (202), ASTM (E 729-88a), FIFRA (§72-2), ISO (6341), NF (T90-301), DIN (38412 Teil 11), BS (6068: Section 5,1:1990), NEN (6501), ONORM (M 6264), SFS (5052), SS (028180), DS (ISO 6341), CAN (EPS 1/RM/11, 1990), US-EPA (1994) (40 CFR 797-1300), EU (L 384 A vol. 35 C.2)
	F	Ceriodaphnia dubia	Short-term / LC50 (Acute)	ASTM (E 1295-89), US-EPA (EPA/600/4-90/027)
	S/F	Gammarus fasciatus Gammarus pseudolimnaeus Gammarus lacustris	Short-term/LC50 (Acute)	US-EPA (1994) (40CFR 795.120), CAN (EPS1/RM/26, 1992)
	S	Mysidopsis bahia	Long-term /survival, growth, fecundity (Subchronic)	US-EPA (EPA/600/4-87/028)
	S	Mysidopsis bahia Mysidopsis bigelowi Mysidopsis almyra	Long-term / life cycle (Chronic)	ASTM (E-1191-90), US-EPA (1994) (40 CFR 797.1950)
	F	Daphnia magna	Short-term / reproduction (Subchronic)	US-EPA (1994) (40 CFR 797.1330), OECD (202), NEN (6502)
	F	Daphnia magna	Long-term / life cycle (Chronic)	ASTM (E-1193-87), FIFRA (§72-4 C), US-EPA (1994) (40 CFR 797.1350)
	F	Ceriodaphnia dubia	Short-term / reproduction (Subchronic)	CAN (EPS 1/RM/21, 1992), US-EPA (EPA/600/4-89/001)

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Insects (mosquito)	F	Wyemyia Smithii	Short-term / LC50 (Acute)	ASTM (E-1365-90), FIFRA (§142-1)
Rotifers	F	Brachyonus	Short-term / LC50 (Acute)	ASTM (E-1440-91)
Bacteria	S	Photobacterium phosphoreum	Short-term / Light emission (Acute)	NF (T90-320), DIN (38412 Teil 34), ONORM (M 6609), ISO/TC 147/SC 5/WG 1, CAN (EPS/1/RM/24, 1992)
	F	Pseudomonas	Short-term / Growth (Chronic)	DIN (38412 Teil 8), NEN (6509 2e Ont w) ISO (DIS 10712. N133)
	F	Activated sludge	Short-term / respiration inhibition (Acute)	OECD (209), EU (L 133 vol 31 p. 118), ISO 9509
Amphibians	F	Xenopus	Short-term / teratogenesis (Subchronic)	

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Fish	F	Brachydanio rerio Oncorhynchus mykiss Pimephals promelas Cyprinus carpio Oryzias latipes Poecilia reticulata Lepomis macrochirus Lepomis cyanellus Salmo gairdneri Oncorhynchus kistutch Salvelinus fontinalis Carassius auratus Ictalurus punctatus Leuciscus idus	Short-term / LC50 (Acute)	ASTM (E-729-88a), FIFRA (§ 72-1), US-EPA (EPA/600/4-90/027 + US-EPA (1994) 40 CFR 797.1440), OECD (203), ISO (7346-1-3), NF (T90-303+305), DIN (38412 Teil 15+20), BS (6068: Section 5,2; 5,3; 5,4:1985), SFS (3035+5073), DS (ISO 7346/1-3), CAN (EPS 1/RM/9), EU (L 383 A vol. 35 C.1)
	F	Poecilia reticulata	Short-term / LC 50 (Acute)	NEN (6504)
	F	Abassis macleayi	Short-term / LC 50 (Acute	OFR 54

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Fish	S	Sheepshead minnow Fundulus heteroclitus Menidia sp. Gasterosteus aculeatus Lagodon rhomboides Leiostomus xanthurus Cymatogaster aggregata Oligocottus maculosus Citharichthys stigmaeus Paralichthys dentatus Paralichthys lethostigma Platichthys stellatus Parophrys vetulus Clupea harengus	Short-term / LC50 (Acute)	ASTM (E729-88a), FIFRA (§72-3 a), US-EPA (EPA/600/4-90/027), SS (028189), CAN (EPS 1/RM/10)
	F	Brachydanio rerio Pimephals promelas Cyprinus carpio Oryzias latipes Poecilia reticulata Lepomis macrochirus Salmo gairdneri (Oncorhynchus mykiss)	Long-term / growth (Subchronic)	OECD (204), ISO (10229-1), BS (93/500175 DC)

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Fish (cont.)	F	Brachydanio rerio Oncorhynchus mykiss Cyrinus carpio Oryzias latipes Carassius auratus Lepomis macrochirus Pimephales promelas	Short-term / egg and sac-fry stages (Subchronic)	OECD (draft)
	S	Menidia peninsulae Clupea harengus Gadus morhua		
	F	Pimphales promelas	Short-term / early life stage test (Subchronic)	CAN (EPS 1/RM/22, 1992, US-EPA (600/4-89/001)
Fish	F	Oncorhynchus mykiss Salmo gairdneri Salvelinus fontinalis Esox lucius Pimephales promelas Catostomus commersoni Ictalurus punctatus Lepomis macrochirus Morone saxatilis	Long-term / early life-stage test (Subchronic)	ASTM (E-1241-92), FIFRA (§72-4 a), US-EPA (1994) (40 CFR 797.1600), SS (SS 028193), NS (4763), SFS (5501), CAN (EPS 1/RM/28, 1992)
	S	Opsanus beta Cyprinodon variegatus Menidia menidia		

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Fish (cont.)	F	Mogunda mogunda	Long-term / early life stage test (Subchronic)	OFR 52
	S	Cyprinodon variegatus	Long-term / survival, teratoge-necity (Subchronic)	US-EPA (EPA/600/4-87/028)
	S	Cyprinodum variegatus Menidia beryllina	Long-term / survival, growth (Subchronic)	US-EPA (EPA/600/4-87/028)

National and international standard methods / Guidelines

Taxonomic group	Fresh/ Salt	Species	Exposure time / endpoint	Guideline
Fish	F	Salmo gairdneri Pimephales promelas Brachydanio rerio Oryzias latipes Oncorhynchus kisutch Oncorhynchus tschawytscha Salmo trutta Salvelinus fontinalis Salvelinus namaycush Esox lucius Catostomus commersoni Lepomis macrochirus Ictalurus punctatus Jordanella floridae Gasterosteus aculeatus	Long-term / hatching, survival, growth, malformations, behavoiur (Subchronic)	OECD (210)
	S	Cyprinodon variegatus Menidia menidia Menidia penisulae		
Echinoderms	S	Arbacia punctulata)	Short-term / fertilization (Sub-chronic)	US-EPA (EPA/600/4-87/038), CAN (EPS1/RM/27, 1992)
Mussels	S	not specified	Short-term / LC50 (Acute)	ASTM (E-724-89), FIFRA (§72-3 b)
	S	Crassostrea virginica	Short-term / shell growth (Acute)	US-EPA (1994)(40 CFR 797.1800)

* Short-term £ 14 days, Long-term > 14 days

Annex C: Evaluation of Pelagic warm fresh water species

Evaluation, Pelagic environment Table 1

Taxonomic group: Algae/micro

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Scenedesmus subspicatus*	*Selenastrum capricornutum*	*Selenastrum capricornutum*	*Selenastrum capricornutum*	*Ankistrodesmus falcatus*	*Selenastrum capricornutum*	*Scenedesmus quadricauda*	*Chlorella vulgaris*	*Selenastrum capricornutum*	*Selenastrum capricornutum*			
Reference no.	226	374	14	181	370	186	187	188	22	77			
Trophic level	P	P	P	P	P	P	P	P	P	P			
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	C/ ST	C/ ST	C/ ST	AC/ ST	C/ ST	C/ ST	C/ ST	C/ ST	AC/ ST	C/ ST			
Technical Performance	A	A	A	A	B	A	A	A	A	A			
Duration of long-term test													
Availability of test organism	A	A	A	A	A	A	A	A	A	A			
Exposure system	C	C	C	C	C	C	C	C	C	C			
Cost, equipment	A	A	A	B	A	A	A	A	C	A			
Cost, labour	A	A	A	A	B	A	A	A	A	A			
Reproducibility	-	-	A	-	-	-	-	-	-	-			
Sources of potential error	A	A	A	B	B	A	A	A	B	A			
Range of tolerance to environmental conditions	A	A	A	A	A	A	A	A	A	A			
Geographical distribution	-	-	-	-	-	-	-	-	-	-			
Representativeness of the test organism	-	-	-	-	-	-	-	-	-	-			
Extrapolation of endpoints	A	A	A	A/C	A/C	A	A	A	C	A			
General sensitivity	B	B	B	B	-	B	B	B	A/B	B			
Relevance of exposure route and test conditions	A	A	A	A	A	A	A	A	A	A			
Standardization	AA	AA	A	C	C	A	A	A	C	A			
Relative evaluation	A	A	A	B	B	A	A	A	B	A			

Evaluation, Pelagic environment Table 1

Taxonomic group: Algae/micro

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species:	*Selenastrum capricornutum*	*Scenedesmus subspicatus*	*Chlorella vulgaris*	*Selenastrum capricornutum*	*Scenedesmus subspicatus*	*Chlorella vulgaris*	*Various sp.*						
Reference no.		375	376	377	378	379	380	437						
Trophic level		P	P	P	P	P	P	P						
Duration:(**AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**		C/ST	C/ST	C/ST	C/ST	C/ST	C/ST	C/ST						
Technical performance			A	A	A	A	A	A	A					
Duration of long-term test														
Availability of test organism			A	A	A	A	A	A	A					
Exposure system			C	C	C	C	C	C	C					
Cost, equipment			A	A	A	A	A	A	A					
Cost, labour			A	A	A	A	A	A	A					
Reproducibility			-	-	-	-	-	-	-					
Sources of potential error			A	A	A	A	A	A	A					
Range of tolerance to environmental conditions			A	A	A	A	A	A	A					
Geographical distribution			-	-	-	-	-	-	-					
Representativeness of the test organism			-	-	-	-	-	-	-					
Extrapolation of endpoints			A	A	A	A	A	A	A					
General sensitivity			B	B	B	B	B	B	B					
Relevance of exposure route and test conditions			A	A	A	A	A	A	A					
Standardization			AA	AA	AA	AA	AA	AA	B					
Relative evaluation			A	A	A	A	A	A	A					

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Algae/micro

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
181	*Selenastrum capricornutum*	Several steps need to be documented in terms of possibilities of errors and reproducibility, due to a complicated handling procedure. Medium size investments needed for efficient handling of microplates. Recovery after exposure is however a relevant endpoint of an acute algae test.	B
370	*Ankistrodemus falcatus*	The test is more laborius than other test with the same endpoints. 3 endpoints are included, all basically showing the same response to toxicants.	B
22	*Selenastrum capricornutum*	Phosphate uptake is of relevance for ecotoxicological testing, but in terms of standard testing, difficult to extrapolate in to an ecological effect.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: Kormophyta

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species:	*Lemna gibba*	*Lemna gibba*											
Reference no.		66	88											
Trophic level		P	P											
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**		SC/ ST	SC/ ST											
Technical performance		A	A											
Duration of long-term test														
Availability of test organism		A	A											
Exposure system		B	C											
Cost, equipment		A	A											
Cost, labour		A	A											
Reproducibility		-	-											
Sources of potential error		B	B											
Range of tolerance to environmental conditions		-	-											
Geographical distribution		A	A											
Representativeness of the test organism		A	A											
Extrapolation of endpoints		B	B											
General sensitivity		-	-											
Relevance of exposure route and test conditions		A	A											
Standardization		B	B											
Relative evaluation		B	B											

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Kormophyta

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
66	*Lemna gibba*	Visual evaluation of growth	B
88	*Lemna gibba*	Growth is measured	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Crustacea

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species: *Paratya compresse*	*Neomysis mercedis*	*Moinodapnia macleayi*	*Streptocephalus sp.* [1]									
Reference no.	28	402	6	11									
Trophic level	O	O	H	H									
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC/ ST	AC/ ST	C/L T	AC/ ST									
Technical performance	A	A	A	A									
Duration of long-term test	-	-	A	-									
Availability of test organism	B	A	A	A									
Exposure system	C	A	B	C									
Cost, equipment	A	B	A	A									
Cost, labour	A	B	B	A									
Reproducibility	-	-	-	-									
Sources of potential error	B	B	B	A									
Range of tolerance to environmental conditions	-	B	A	A									
Geographical distribution	B	B	B	B									
Representativeness of the test organism	B	B	-	-									
Extrapolation of endpoints	B	B	A										
General sensitivity	-	-	-	-									
Relevance of exposure route and test conditions	A	A	A	A									
Standardization	C	A	C	C									
Relative evaluation	B	A	B	B									

[1] *Streptocephalus proboscideus*

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Crustacea

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
28	*Paratya compresse*	Useful method for animals living in river systems especially for testing pesticides.	B - A
6	*Moinodaphia macleayi*	The test method should be evaluated by interlaboratory ring testing.	B - A
11	*Streptocephalus proboscideus*	The test method should be evaluated by interlaboratory ring testing.	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Insecta

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species: *Aedes aegypti*	*Aedes aegypti*	*Aedes aegypti*	*Simulium vittatum*	*Cnephia pecuarum*	*Epeorus latifolium*							
Reference no.	91	138	144	161	174	33							
Trophic level	H/D	H/D	H/D	H/D	H/D	H							
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC ST	AC ST	**AC ST**	AC ST	AC ST	**C ST**							
Technical performance	A	A	A	A	B	B							
Duration of long-term test	-	-	-	-	-	B							
Availability of test organism	A	A	A	B	CC	B							
Exposure system	C	C	C	C	A	A							
Cost, equipment	A	A	A	A	B	B							
Cost, labour	A	A	A	A	B	C							
Reproducibility	-	-	-	-	-	-							
Sources of potential error	-	-	**A**	-	-	-							
Range of tolerance to environmental conditions	A	A	A	A	A	A							
Geographical distribution	A	A	A	A	B	-							
Representativeness of the test organism	A	A	A	A	B	A							
Extrapolation of endpoints	B	B	B	B	B	B							
General sensitivity	-	-	-	-	-	-							
Relevance of exposure route and test conditions	A	A	A	A	A	A							
Standardization	C	C	C	C	C	C							
Relative evaluation	C	C	C	B	C	B							

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Insecta

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
33	*Epeorus latifolium*	SC/LT-Herbivore: The test needs further development	B - A
144	*Aedes aegypti*	AC/LT-Herbivore/Degrader: The test needs further development	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Aschelminthes

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species: *Brachionus calyciflorus*	*Brachionus urceolaris*	*Brachionus calyciflorus*	*Brachionus angularis*									
Reference no.	9	31	190	205									
Trophic level													
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC/ ST	C/ ST	C/ ST	C/ LT									
Technical performance	A	A	A										
Duration of long-term test				B									
Availability of test organism	A	A	A	A									
Exposure system	C	B	B	B									
Cost, equipment	A	A	A	C									
Cost, labour	A	B	B	B									
Reproducibility	A	-	-	-									
Sources of potential error	A	B	B	B									
Range of tolerance to environmental conditions	-	-	-	-									
Geographical distribution	-	-	-	-									
Representativeness of the test organism	-	-	-	-									
Extrapolation of endpoints	B	A	A	A									
General sensitivity	B	-	B	-									
Relevance of exposure route and test conditions	A	A	A	A									
Standardization	A	C	C	C									
Relative evaluation	A	B	B	C									

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Aschelminthes

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
190	*Brachionus calyciflorus*	Test 190 and 31 is very similar but 31 is a life cycle study, including measurements of reproduction.Thus 31 gives more information with only a little more work	B
31	*Brachionus urceolaris*		B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Bacteria

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation Species: parameter:	*Pseudomonas putida*	*Activated sludge*	*Activated sludge*	*Activated sludge*	*E. coli*	*Anaerobic sludge*							
Reference no.	192	382	383	384	206	408							
Trophic level	D	D	D	D	D	D							
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	C/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	C/ ST							
Technical performance	A	A	A	A	A	B							
Duration of long-term test													
Availability of test organism	A	A	A	A	A	A							
Exposure system	C	C	C	C	C	C							
Cost, equipment	A	A	A	A	C	B							
Cost, labour	A	A	A	A	A	A							
Reproducibility	A	-	-	-	-	-							
Sources of potential error	A	A	A	A	B	B							
Range of tolerance to environmental conditions	A	A	A	A	-	A							
Geographical distribution	A	-	-	-	CC	-							
Representativeness of the test organism	B	-	-	-	CC	-							
Extrapolation of endpoints	A	A	A	A	CC	A							
General sensitivity	B	B	B	B	C	A							
Relevance of exposure route and test conditions	A	A	A	A	A	A							
Standardization	A	AA	AA	AA	C	C							
Relative evaluation	A	A	A	A	C	B							

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Bacteria

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
408	*Anaerobic sludge*	The Method needs to be further validated by ring testing	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Amphibia

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Bufo arenarum*	*Bufo melanosticus*	*Xenopus laevis*	*Xenopus laevis*	*Xenopus laevis*	*Xenopus laevis*	*Xenopus laevis*						
Reference no.	118	124	98	83	117	122	99						
Trophic level	H	H	H	H	H	H	H						
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC/ ST	AC/ ST	**AC/ ST**	**AC/ S T**	AC/ S T	AC/ S T	**SC/ LT**						
Technical performance	-	-	A	B	A	A	A						
Duration of long-term test	-	-	-	-	-	-	C						
Availability of test organism	**CC**	**CC**	**A**	**A**	**A**	**A**	**A**						
Exposure system	-	C	C	B	C	C	B						
Cost, equipment	-	-	A	A	B	A	A						
Cost, labour	-	-	A	B	A	A	C						
Reproducibility	-	-	-	-	-	-	-						
Sources of potential error	-	-	A	A	A	A	-						
Range of tolerance to environmental conditions	-	-	A	A	A	A	A						
Geographical distribution	B	-	B	B	B	B	B						
Representativeness of the test organism	B	B	B	B	B	B	B						
Extrapolation of endpoints	B	B	B	B	B	B	B						
General sensitivity	-	-	B	B	B	B	B						
Relevance of exposure route and test conditions	A	A	A	B	A	A	A						
Standardization	**C**	**C**	**B**	**A**	**C**	**C**	**C**						
Relative evaluation	C	C	B	B	C	C	B						

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Amphibia

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
98	*Xenopus laevis*	AC/ST - easy to perform - flow through - test conditions relevant	B - A
83	*Xenopus laevis*	AC/ST - slightly complicated - semistatic de-jellying of embryos	B
99	*Xenopus laevis*	SC/LT	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species:	*Ambassis macleayi*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*	*Brachydanio rerio*
Reference no.		4	26	227	257	259	262	263	274	276	327	347	385	392
Trophic level		C	C	C	C	C	C	C	C	C	C	C	C	C
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**		AC/LT	C/LLT	AC/ST	SC/LT	SC/LT	SC/LT	SC/LT	SC/LT	C/LT	SC/LT	SC/LT	AC/ST	AC/LT
Technical performance		A	B	B	**CC**	B	A	A	B	B	A	A	A	A
Duration of long-term test		A	C	-	B	A	A	A	B	C	B	B	-	A
Availability of test organism		B	A	A	A	A	A	B	A	A	A	A	A	A
Exposure system		A	A	C	A	B	A	A	A	A	A	A	A	A
Cost, equipment		A	A	**C**	**C**	B	A	A	A	A	A	A	A	A
Cost, labour		B	C	**C**	**C**	B	A	A	B	B	B	B	A	B
Reproducibility		-	-	-	-	-	-	-	-	-	-	B	-	-
Sources of potential error		B	B	B	**CC**	B	A	A	B	B	B	B	A	A
Range of tolerance to environmental conditions		B	B	A	A	A	A	A	B	B	B	B	A	A
Geographical distribution		B	B	B	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism		B	B	B	B	B	B	B	B	B	B	B	B	B
Extrapolation of endpoints		B	A	B	C	A	B	B	B	A	B	B	B	B
General sensitivity		-	A	A	-	-	B	B	B	(A)	B	B	B	B
Relevance of exposure route and test conditions		A	A	A	A	A	A	A	A	A	A	A	A	A
Standardization		A	C	C	C	C	A	A	C	C	AA	C	AA	AA
Relative evaluation		A	B	C	C	B	A	A	B	A	AA	A	AA	AA

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Carassius auratus*	*Carassius auratus*	*Carassius auratus*	*Channa punctatus*	*Cyprinus carpio*	*Cyprinus carpio*	*Cyprinus carpio*	*Ictalurus punctatus*	*Ictalurus punctatus*	*Ictalurus punctatus*	*Jordanella floridae*	*Lepomis cyanellus*	*Lepomis macrochirus*
Reference no.	299	228	265	245	341	387	394	291	301	338	339	305	239
Trophic level	C	C	C	C	C	C	C	C	C	C	C	C	C
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT**)	AC/ ST	SC/ T	SC/ ST	SC/ LT	SC/ LT	AC/ ST	AC/ LT	SC/ LT	AC/ ST	SC/ LT	SC/-	AC/ ST	AC/ ST
Technical performance	A	B	A	**CC**	A	A	A	A	A	A	A	A	B
Duration of long-term test	-	-	-	C	B	-	A	B	-	B	-	-	-
Availability of test organism	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposure system	A	B	A	B	A	A	A	A	A	A	A	A	B
Cost, equipment	A	B	A	B	A	A	A	A	A	A	A	A	B
Cost, labour	A	**C**	A	**C**	B	A	B	B	A	B	B	A	**C**
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error	A	B	A	**CC**	B	A	A	B	A	B	B	A	B
Range of tolerance to environmental conditions	A	A	A	-	B	A	A	B	A	B	B	A	B
Geographical distribution	B	B	B	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism	B	B	B	B	B	B	B	B	B	B	B	B	B
Extrapolation of endpoints	B	B	B	**CC**	B	B	B	B	B	B	B	B	B
General sensitivity	B	-	B	-	B	B	B	B	B	B	B	B	B
Relevance of exposure route and test conditions	A	A	A	-	A	A	A	A	A	A	A	A	B
Standardization	A	C	A	C	AA	AA	AA	A	A	AA	AA	A	B
Relative evaluation	A	C	A	C	AA	AA	AA	A	A	AA	AA	A	C

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Lepomis macrochirus*	*Melanotaenia sp. 1*	*Micropterus salmoides*	*Mogunda mogunda*	*Mogunda mogunda*
Reference no.	304	292	248	266	337	355	356	390	397	3	273	1	2
Trophic level	C	C	C	C	C	C	C	C	C	C	C	C	C
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC/ST	SC/LT	SC/ST	SC/ST	SC/LT	SC/ST	SC/ST	AC/ST	AC/LT	AC/LT	SC/-	SC/ST	SC/ST
Technical performance	A	A	**CC**	A	A	B	B	A	A	B	**CC**	B	B
Duration of long-term test	-	B	-	-	B	-	-	-	A	A	-	-	A
Availability of test organism	B	B	B	B	B	B	B	B	B	B	B	B	B
Exposure system	A	A	A	A	A	A	A	A	A	A	A	B	A
Cost, equipment	A	A	**C**	A	A	B	B	A	A	A	**C**	A	A
Cost, labour	A	B	**C**	A	B	**CC**	**CC**	A	B	B	**C**	A	B
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error	A	B	B	A	B	B	B	A	A	B	**CC**	B	B
Range of tolerance to environmental conditions	A	B	B	A	B	B	B	A	A	B	-	B	B
Geographical distribution	B	B	B	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism	B	B	B	B	B	B	B	B	B	B	B	B	B
Extrapolation of endpoints	B	B	**CC**	B	B	**CC**	**CC**	B	B	B	**CC**	B	B
General sensitivity	B	B	A	B	B	-	-	B	B	-	-	-	-
Relevance of exposure route and test conditions	A	A	B	A	A	A	B	A	A	A	**CC**	A	A
Standardization	A	A	C	A	AA	C	C	AA	AA	A	C	A	A
Relative evaluation	A	A	C	A	AA	C	C	AA	AA	A	C	B	A

[1] *Melanotaenia splendida inornata*

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species:	*Oryzias latipes*	*Oryzias latipes*	*Oryzias latipes*	*Oryzias latipes*	*Oryzias latipes*	*Oryzias latipes*	*Oryzias latipes*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*
Reference no.		36	155	264	351	388	395	328	19	62	71	240	300	289
Trophic level		C	C	C	C	C	C	C	C	C	C	C	C	C
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT**)		SC/ ST	SC/ LT	SC/ LT	SC/ ST	AC/ ST	AC/ LT	SC/ LT	AC/ ST	AC/ ST	SC/ LT	AC/ ST	AC/ ST	SC/ LT
Technical performance		B	B	A	B	A	A	A	A	A	A	B	A	A
Duration of long-term test		-	A	-	-	-	A	B	-	-	A	-	-	B
Availability of test organism		B	B	B	B	B	B	B	A	A	A	A	A	A
Exposure system		A	B	A	C	A	A	A	A	A	A	B	A	A
Cost, equipment		**C**	B	A	A	A	A	A	A	A	A	B	A	A
Cost, labour		**C**	**C**	A	B	A	B	B	A	A	B	**C**	A	B
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		**CC**	B	A	B	A	A	B	B	A	B	B	A	B
Range of tolerance to environmental conditions		B	B	A	B	A	A	B	B	A	B	B	A	B
Geographical distribution		B	B	B	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism		B	B	B	B	B	B	B	B	B	B	B	B	B
Extrapolation of endpoints		B	B	B	B	B	B	B	B	B	B	B	B	B
General sensitivity		B	B	B	-	B	B	B	-	B	B	B	B	B
Relevance of exposure route and test conditions		B	B	A	A	A	A	A	A	A	A	B	A	A
Standardization		C	C	A	C	AA	AA	AA	A	A	A	B	A	A
Relative evaluation		C	C	A	B	AA	AA	AA	A	A	A	C	A	A

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Pimephales promelas*	*Poecilia reticulata*	*Poecilia reticulata*
Reference no.	242	244	252	253	254	255	256	267	326	386	393	32	249
Trophic level	C	C	C	C	C	C	C	C	C	C	C	C	C
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	SC/ ST	SC/ ST	AC/ ST	SC/ ST	SC/ ST	SC/ ST	SC/ ST	SC/ LT	SC/ LT	AC/ AT	AC/ LT	SC/ LT	SC/ LT
Technical performance	A	A	**CC**	**CC**	A	A	A	A	A	A	A	B	**CC**
Duration of long-term test	-	-	-	-	-	-	-	A	B	-	A	A	B
Availability of test organism	A	A	**CC**	A	A	A	A	A	A	A	A	A	A
Exposure system	A	A	C	C	B	B	B	A	A	A	A	B	A
Cost, equipment	A	A	**C**	**C**	A	A	A	A	A	A	A	A	A
Cost, labour	A	A	**C**	**C**	A	A	A	B	B	A	B	**C**	**C**
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error	B	B	**CC**	**CC**	B	A	B	A	B	A	A	B	**CC**
Range of tolerance to environmental conditions	B	B	**CC**	B	B	A	B	A	B	A	A	B	B
Geographical distribution	B	B	-	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism	B	B	-	B	B	B	B	B	B	B	B	B	B
Extrapolation of endpoints	B	B	B	**CC**	B	B	B	B	B	B	B	A	A
General sensitivity	B	B	-	-	B	B	B	B	B	B	B	B	B
Relevance of exposure route and test conditions	A	A	**CC**	B	A	A	A	A	A	A	A	A	A
Standardization	A	C	C	C	A	A	B	A	AA	AA	AA	C	C
Relative evaluation	A	A	C	C	A	A	B	A	AA	AA	AA	C	C

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation Species: parameter:	*Poecilia reticulata*	*Poecilia reticulata*	*Poecilia reticulata*	*Pimephales promelas*	*Brachydanio rerio*	*Pimephales promelas*	*Cyprinus carpio*	*Oryzias latipes*	*Poecilia reticulata*	*Lepomis macrochirus*	*Brachydanio rerio*	*Pimephales promelas*	*Cyprinus carpio*
Reference no.	283	389	396	428	70	422	423	424	425	426	429	430	431
Trophic level	C	C	C	C	C	C	C	C	C	C	C	C	C
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	SC/-	AC/ ST	AC/ L T	C/ LT	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST
Technical performance	**CC**	A	A	B	A	A	A	A	A	A	A	A	A
Duration of long-term test	-	-	A	C	-	-	-	-	-	-	-	-	-
Availability of test organism	B	B	B	A	A	A	B	B	B	B	A	A	B
Exposure system	A	A	A	A	A	A	A	A	A	A	A	A	A
Cost, equipment	**C**	A	A	B	A	A	A	A	A	A	A	A	A
Cost, labour	**C**	A	B	B	A	A	A	A	A	A	A	A	A
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error	**CC**	A	A	A	A	A	A	A	A	A	A	A	A
Range of tolerance to environmental conditions	-	A	A	A	A	A	A	A	A	A	A	A	A
Geographical distribution	B	B	B	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism	B	B	B	B	B	B	B	B	B	B	B	B	B
Extrapolation of endpoints	**CC**	B	B	A	B	B	B	B	B	B	B	B	B
General sensitivity	-	B	B	A	B	B	B	B	B	B	B	B	B
Relevance of exposure route and test conditions	**CC**	A	A	A	A	A	A	A	A	A	A	A	A
Standardization	C	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Relative evaluation	C	AA	AA	AA	A	A	A	A	A	A	A	A	A

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation Species: parameter:	*Oryzias latipes*	*Poecilia reticulata*											
Reference no.	432	433											
Trophic level	C	C											
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC/ ST	AC/ ST											
Technical performance	A	A											
Duration of long-term test	-	-											
Availability of test organism	B	B											
Exposure system	A	A											
Cost, equipment	A	A											
Cost, labour	A	A											
Reproducibility	-	-											
Sources of potential error	A	A											
Range of tolerance to environmental conditions	A	A											
Geographical distribution	B	B											
Representativeness of the test organism	B	B											
Extrapolation of endpoints	B	B											
General sensitivity	B	B											
Relevance of exposure route and test conditions	A	A											
Standardization	AA	AA											
Relative evaluation	A	A											

Evaluation, Pelagic environment Table 1

Taxonomic group: Cnidaria

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation Species: parameter:	*Hydra sp.*	*Hydra attenuata*											
Reference no.	7	373											
Trophic level	O	O											
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	C/ ST	SC/ ST											
Technical performance	A	A											
Duration of long-term test													
Availability of test organism	A	A											
Exposure system	B	C											
Cost, equipment	A	A											
Cost, labour	A	A											
Reproducibility	-	-											
Sources of potential error	A	B											
Range of tolerance to environmental conditions	-												
Geographical distribution	A	A											
Representativeness of the test organism	-	-											
Extrapolation of endpoints	B	B											
General sensitivity	-	B											
Relevance of exposure route and test conditions	A	A											
Standardization	B	C											
Relative evaluation	A	B											

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Cnidaria

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
373	*Hydra attenuata*	The test is directed towards detection of teratogenesis in mammalians, but may prove usefull in the evaluation of teratogenesis in aquatic organisms as well.	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Mollusca

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter:	Species: *Amerianna carinata*												
Reference no.	5												
Trophic level	H												
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT**)	SC/ LT												
Technical performance	B												
Duration of long-term test	A												
Availability of test organism	B												
Exposure system	A												
Cost, equipment	B												
Cost, labour	**C**												
Reproducibility	-												
Sources of potential error	B												
Range of tolerance to environmental conditions	B												
Geographical distribution	B												
Representativeness of the test organism	B												
Extrapolation of endpoints	B												
General sensitivity	-												
Relevance of exposure route and test conditions	A												
Standardization	C												
Relative evaluation	C												

Evaluation, Pelagic environment Table 1

Taxonomic group: Plathyhelminthes

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Dugesia dorotocephala*	*Dugesia dorotocephala*	*Dugesia japonica*	*Dugesia tigrina*									
Reference no.	197	195	198	367									
Trophic level	C	C	C	C									
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	SC/ ST	AC/ ST	SC/ ST	SC/ LT									
Technical performance	A	A	A	A									
Duration of long-term test				A									
Availability of test organism	A	A	A	A									
Exposure system	B	C	B	C									
Cost, equipment	A	A	A	A									
Cost, labour	A	A	A	A									
Reproducibility	-	-	-	-									
Sources of potential error	B	B	B	B									
Range of tolerance to environmental conditions	-	-	-	-									
Geographical distribution	A	A	A	A									
Representativeness of the test organism	-	-	-	-									
Extrapolation of endpoints	B	B	B	B									
General sensitivity	-	-	B	-									
Relevance of exposure route and test conditions	A	A	A	A									
Standardization	C	C	C	C									
Relative evaluation	B	B	B	B									

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Plathyhelminthes

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
195	*Dugesia dorotocephala*	Method is only briefly described and based mainly on behavioral endpoints that may be difficult to evaluate	B
197	*Dugesia dortocephala*	Endpoints based on regeneration and survival. Documentation on reproducibility and possible sources of errors is needed	B - A
198	*Dugesia japonica*	Semistatic subcronic test based on survival and regeneration. Sensitivity is documented	B - A
367	*Dugenia tigrina*	Test based on survival, regeneration and biochemical respons. Test duration longer than other similar tests	B

Evaluation, Pelagic environment Table 1

Taxonomic group: Protozoans

Warm/cold: Warm

Fresh/marine: Fresh

Evaluation parameter: Species:	*Colpidium campylum*	*Tetrahymena pyriformis*	*Tetrahymena pyriformis*	*Tetrahymena thermophila*	*Tetrahymena pyriformis*	*Paramecium caudatum*							
Reference no.	13	436	204	196	199	369							
Trophic level	C	C	C	C	C	C							
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT**)	C/ST	C/ST	AC/ST	AC/ST	C/ST	C/ST							
Technical performance	A	A	A	B	A	A							
Duration of long-term test													
Availability of test organism	A	A	A	A	A	A							
Exposure system	C	C	C	C	C	C							
Cost, equipment	A	A	A	C	A	A							
Cost, labour	A	A	A	A	A	A							
Reproducibility	-	-	-	-	-	-							
Sources of potential error	A	A	B	B	A	A							
Range of tolerance to environmental conditions		A	-	-									
Geographical distribution	A	A	A	A	A	A							
Representativeness of the test organism	-	B	B	B	B	B							
Extrapolation of endpoints	A	A	CC	CC	A	A							
General sensitivity	-	B	-	-	B	-							
Relevance of exposure route and test conditions	A	A	A	A	A	A							
Standardization	C	A/B	C	C	C	A							
Relative evaluation	B	A	C	C	B	B							

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Protozoans

Warm/cold: Warm

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
13	*Colpidium campylum*	Test needs to be evaluated with respect to general sensitivity and reproducibility	B
436	*Tetrahymena pyriformis*	The results of the present ring testing show a good reproducibility of the test and a high sensitivity the test is promising	B - A
199	*Tetrahymena pyriformis*	Information on reproducibility (i.e. ring testing is needed)	B
369	*Paramecium caudatum*	Information on sensitivity is needed	B

Annex D: Evaluation of Pelagic cold fresh water species

Evaluation, Pelagic environment Table 1

Taxonomic group: Algae/micro

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation parameter: Species:	*Scenedesmus subspicatus*	*Selenastrum capricornutum*	*Selenastrum capricornutum*	*Selenastrum capricornutum*	*Ankistrodesmus falcatus*	*Selenastrum capricornutum*	*Scenedesmus quadricauda*	*Chlorella vulgaris*	*Selenastrum capricornutum*	*Selenastrum capricornutum*			
Reference no.	226	374	14	181	370	186	187	188	22	77			
Trophic level	P	P	P	P	P	P	P	P	P	P			
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	C/ ST	C/ ST	C/ ST	aC/ ST	C/ ST	C/ ST	C/ ST	C/ ST	aC/ ST	C/ ST			
Technical performance	A	A	A	A	B	A	A	A	A	A			
Duration of long-term test													
Availability of test organism	A	A	A	A	A	A	A	A	A	A			
Exposure system	C	C	C	C	C	C	C	C	C	C			
Cost, equipment	A	A	A	B	A	A	A	A	C	A			
Cost, labour	A	A	A	A	B	A	A	A	A	A			
Reproducibility	-	-	A	-	-	-	-	-	-	-			
Sources of potential error	A	A	A	B	B	A	A	A	B	A			
Range of tolerance to environmental conditions	A	A	A	A	A	A	A	A	A	A			
Geographical distribution	-	-	-	-	-	-	-	-	-	-			
Representativeness of the test organism	-	-	-	-	-	-	-	-	-	-			
Extrapolation of endpoints	A	A	A	A/C	A/C	A	A	A	C	A			
General sensitivity	B	B	B	B	-	B	B	B	A/B	B			
Relevance of exposure route and test conditions	A	A	A	A	A	A	A	A	A	A			
Standardization	AA	AA	A	C	C	A	A	A	C	A			
Relative evaluation	A	A	A	B	B	A	A	A	B	A			

Evaluation, Pelagic environment Table 1

Taxonomic group: Algae/micro

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation Species: parameter:	*Selenastrum capricornutum*	*Scenedesmus subspicatus*	*Chlorella vulgaris*	*Selenastrum capricornutum*	*Scenedesmus subspicatus*	*Chlorella vulgaris*	*Various sp.*						
Reference no.	375	376	377	378	379	380	437						
Trophic level	P	P	P	P	P	P	P						
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT**)	C/ST	C/ST	C/ST	C/ST	C/ST	C/ST	C/ST						
Technical performance	A	A	A	A	A	A	A						
Duration of long-term test													
Availability of test organism	A	A	A	A	A	A	A						
Exposure system	C	C	C	C	C	C	C						
Cost, equipment	A	A	A	A	A	A	A						
Cost, labour	A	A	A	A	A	A	A						
Reproducibility	-	-	-	-	-	-	-						
Sources of potential error	A	A	A	A	A	A	A						
Range of tolerance to environmental conditions	A	A	A	A	A	A	A						
Geographical distribution	-	-	-	-	-	-	-						
Representativeness of the test organism	-	-	-	-	-	-	-						
Extrapolation of endpoints	A	A	A	A	A	A	A						
General sensitivity	B	B	B	B	B	B	B						
Relevance of exposure route and test conditions	A	A	A	A	A	A	A						
Standardization	AA	AA	AA	AA	AA	AA	B						
Relative evaluation	A	A	A	A	A	A	A						

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Algae/micro

Warm/cold: Cold

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
181	*Selenastrum capricornutum*	Several steps need to be documented in terms of possibilities of errors and reproducibility, due to a complicated handling procedure. Medium size investments needed for efficient handling of microplates. Recovery after exposure is however a	B
		relevant endpoint of an acute algae test.	
370	*Ankistrodemus falcatus*	The test is more laborius than other test with the same endpoints. 3 endpoints are included, all basically showing the same response to toxicants.	B
22	*Selenastrum capricornutum*	Phosphate uptake is of relevance for ecotoxicological testing, but in terms of standard testing, difficult to extrapolate in to an ecological effect.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: Kormophyta

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation parameter:	Species: *Lemna minor*	*Potamogeton sp.*											
Reference no.	191	441											
Trophic level	P	P											
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	SC/ ST	SC/ LT											
Technical performance	A	A											
Duration of long-term test		C											
Availability of test organism	A	B											
Exposure system	B	B											
Cost, equipment	A	A											
Cost, labour	A	A											
Reproducibility	A	-											
Sources of potential error	B	-											
Range of tolerance to environmental conditions	-	-											
Geographical distribution	A	B											
Representativeness of the test organism	A	A											
Extrapolation of endpoints	B	B											
General sensitivity	B	B											
Relevance of exposure route and test conditions	A	A											
Standardization	B	C											
Relative evaluation	A	B											

Evaluation, Pelagic environment Table 1

Taxonomic group: Crustacea

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation parameter: Species:	*Daphnia magna*	*Daphnia pulex*	*Daphnia magna*	*Daphnia magna*	*Ceriodaphnia dubia*	*Ceriodaphnia dubia*	*Ceriodaphnia dubia*	*Ceriodaphnia dubia*	*Ceriodaphnia dubia*	*Daphnia sp.*	*Daphnia sp.*	*Daphnia magna*	*Daphnia magna*
Reference no.	68	324	81	223	49	18	50	58	89	217	218	207	17
Trophic level	H	H	H	H	H	H	H	H	H	H	H	H	H
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	C/LT	C/LT	C/LT	C/LT	AC/ST	SC/ST	C/ST	AC/ST	C/LT	AC/ST	C/LT	AC/ST	AC/ST
Technical performance	A	A	A	A	A	A	A	A	A	A	A	A	A
Duration of long-term test	A	A	A	A	-	-	-	-	A	-	A	-	-
Availability of test organism	A	A	A	A	A	A	A	A	A	A	A	A	A
Exposure system	A	A	B	B	C	B	B	A	B	B	B	B	C
Cost, equipment	A	A	A	A	A	A	A	A	A	A	A	A	A
Cost, labour	B	B	B	B	A	A	A	A	B	A	B	A	A
Reproducibility	A	A	A	A	A	A	A	A	A	A	A	A	A
Sources of potential error	B	B	B	B	A	B	B	A	B	A	A	A	A
Range of tolerance to environmental conditions	A	A	A	A	A	A	A	A	A	A	A	A	A
Geographical distribution	B	A	B	B	A	A	A	A	A	B	B	B	B
Representativeness of the test organism	A	A	A	A	A	A	A	A	A	A	A	A	A
Extrapolation of endpoints	A	A	A	A	B	A	A	B	A	B	A	B	B
General sensitivity	B	B	B	B	B	B	B	B	B	B	B	B	B
Relevance of exposure route and test conditions	A	A	A	A	A	A	A	A	A	A	A	A	A
Standardization	A	A	A	B	C	A	A	A	A	AA	AA	AA	A
Relative evaluation	A	A	A	A	A	A	A	A	A	A	A	A	A

Evaluation, Pelagic environment Table 1

Taxonomic group: Crustacea

Warm/cold: Cold

Fresh/marine: Fresh

Daphnia pulex	*Daphnia magna*	*Daphnia pulex*	*Daphnia magna*	*Daphnia pulex*	*Daphnia magna*	*Daphnia pulex*	*Daphnia magna*	*Gammarus pulex*	*Gammarus pulex*	Gammarus italicus		
277	67	323	59	238	400	401	10	231	224	215		
H	H	H	H	H	H	H	H	D	D	D		
AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST	AC/ ST		
A	A	A	A	A	A	A	A	A	A	A		
-	-	-	-	-	-	-	-	-	-	-		
A	A	A	A	A	A	A	A	A	A	B		
C	A	A	A	A	C	C	C	-	B	C		
A	A	A	A	A	A	A	A	A	A	A		
A	A	A	A	A	A	A	A	A	A	A		
A	A	A	A	A	A	A	A	-	-	-		
A	A	A	A	A	A	A	A	A	A	A		
A	A	A	A	A	A	A	A	A	A	A		
A	B	A	B	A	B	A	B	B	B	B		
A	A	A	A	A	A	A	A	B	B	B		
B	B	B	B	B	B	B	B	B	B	B		
B	B	B	B	B	B	B	B	B	B	B		
A	A	A	A	A	A	A	A	A	A	A		
A	A	A	A	A	AA	AA	C	C	C	C		
A	A	A	A	A	A	A	B	B	B	B		

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Crustacea

Warm/cold: Cold

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
10	*Daphnia magna*	The test method should be evaluated by interlaboratory ring testing.	B - A
231	*Gammarus pulex*	Further documentation needed before standardization. The test methods are recommended as the test animals represent an important link in the foodchain (detritivorous) and as little attention has been given to other Crustaceans but daphnids.	B
224	*Gammarus pulex*		B
215	*Gammarus italicus*		B

Evaluation, Pelagic environment Table 1

Taxonomic group: Insecta

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation parameter: Species:	*Cheumatopsyche pettiti*	*Hydropsyche sp.1*	*Hydropsyche lobata*	*Hydropsyche bulbifera*	*Hydropsyche exocellata*	*Hydropsyche sp.2*	*Hydropsyche sp.3*	*Hydropsyche siltalai*	*Hydropsyche sp.*	*Hydropsyche sp.*			
Reference no.	147	146	169	170	171	172	180	23	162	135			
Trophic level	O	O	O	O	O	O	O	O	O	O			
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST			
Technical performance	A	A	A	A	A	A	A	A	A	A			
Duration of long-term test	-	-	-	-	-	-	-	-	-	-			
Availability of test organism	B	B	A	B	A	A	B(A)	B(A)	B	B			
Exposure system	C	C	C	C	C	C	C	C	C	A			
Cost, equipment	A	A	A	A	A	A	A	A	A	B			
Cost, labour	A	A	A	A	A	A	B	B	A	B			
Reproducibility	-	-	-	-	-	-	-	-	-	-			
Sources of potential error	**CC**	**CC**	B	B	B	B	B	B	B	**CC**			
Range of tolerance to environmental conditions	A	A	A	A	A	A	A	A	A	A			
Geographical distribution	A	A	**-**	**-**	**-**	**A**	**A**	**B**	**-**	-			
Representativeness of the test organism	A	A	A	A	A	A	A	A	A	A			
Extrapolation of endpoints	B	B	B	B	B	B	B	B	B	B			
General sensitivity	-	-	-	-	-	-	-	-	-	-			
Relevance of exposure route and test conditions	A	A	A	A	A	A	A	A	A	A			
Standardization	C	C	C	C	C	C	C	C	C	C			
Relative evaluation	C	C	C	C	C	B	B	C	C	C			

[1] *Hydropsyche occidentalis*
[2] *Hydropsyche pellucidula*
[3] *Hydropsyche contubernalis*

Evaluation, Pelagic environment Table 1

Taxonomic group: Insecta

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation Species: parameter:	*Aedes atropalpus*	*Simulium vittatum*	*Wyeomyia smithii*	*Simulium sp.*	*Heptagenia flavescens*	*Eporus vitrea*	*Baetis sp.*	*Isonychia bicolor*	*Isonychia sp.*	*Pycnopsyche guttifer*	*Dolophilodes distinctus*	*Chimarra marginata*	
Reference no.	175	161	85	137	126	128	125	163	127	133	134	168	
Trophic level	H	H/D	H	H/D	H	H	H	H/D	H	D	O	O	
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	
Technical performance	A	A	A	A	A	A	A	A	A	A	A	A	
Duration of long-term test	-	-	-	-	-	-	-	-	-	-	-	-	
Availability of test organism	-	B	A	B	B	B	B	B	B	B	B	B	
Exposure system	C	C	C	A	A	A	A	C	A	A	A	C	
Cost, equipment	A	A	A	B	B	B	B	A	B	B	B	A	
Cost, labour	A	A	A	B	B	B	B	A	B	B	B	A	
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	
Sources of potential error	**A**	-	-	**CC**	**CC**	**CC**	**CC**	**B**	**CC**	**CC**	**CC**	**B**	
Range of tolerance to environmental conditions	A	A	A	A	A	A	A	A	A	A	A	A	
Geographical distribution	**A**	A	**CC**	A	-	-	A	-	-	-	-	-	
Representativeness of the test organism	**A**	A	**CC**	A	-	-	A	-	-	-	-	-	
Extrapolation of endpoints	B	B	B	B	B	B	B	B	B	B	B	B	
General sensitivity	-	-	-	-	-	-	-	-	-	-	-	-	
Relevance of exposure route and test conditions	A	A	A	A	A	A	A	A	A	A	A	A	
Standardization	C	C	B	C	C	C	C	C	C	C	C	C	
Relative evaluation	B	C	C	C	C	C	C	B	C	C	C	B	

Evaluation, Pelagic environment Table 1

Taxonomic group: Insecta

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation Species: parameter:	*Acroneuria abnormis*	*Paragnetina sp.*	*Isogenoides sp.*	*Acroneuria lycorias*	*Ophiogomphus sp.1*	*Glyptotendipes pallens*	*Cloeon triangulifer*	*Wyeomyia smithii*	*Stenonema modestur*	*Cloeon triangulifer*	*Baetis rhodani*	*Paratanytarsus sp.2*	
Reference no.	129	131	132	148	136	152	165	145	139	164	160	439	
Trophic level	C	O	C	C	C	D	H	H	H	H	H	C	
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT**)	AC ST	AC ST	AC ST	AC ST	AC ST	SC ST	SC ST	SCL T	SCL T	SCL T	SC-	SC/ LT	
Technical performance	A	A	A	A	A	A	A	A	A	A	-	A	
Duration of long-term test	-	-	-	-	-	-	-	B	B	A	-	A	
Availability of test organism	B	B	B	B	B	A	B(A)	A	B	B(A)	B	B	
Exposure system	A	A	A	A	A	C	C	C	B	B	C	B	
Cost, equipment	B	B	B	B	B	B	A	A	A	A	-	A	
Cost, labour	B	B	B	B	B	A	A	B	B	A	-	A	
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	
Sources of potential error	CC	CC	CC	B	CC	B	B	-	B	B	-	B	
Range of tolerance to environmental conditions	A	A	A	A	A	-	A	A	A	A	A	-	
Geographical distribution	-	-	-	-	-	-	-	CC	-	-	A	-	
Representativeness of the test organism	-	-	-	A	-	CC	A	CC	A	A	A	-	
Extrapolation of endpoints	B	B	B	B	B	B	B	B	B	B	B	B	
General sensitivity	-	-	-	-	-	-	-	-	A	-	-	-	
Relevance of exposure route and test conditions	A	A	A	A	A	A	A	A	A	A	A	A	
Standardization	C	C	C	C	C	C	C	C	C	C	C	C	
Relative evaluation	C	C	C	B	C	C	B	C	B	B	C	C	

[1] *Ophiogomphus carolusher*

[2] *Paratanytarsus parthenogenica*

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Insecta

Warm/cold: Cold

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
172	*Hydropsyche pellucidula*	Omnivore - Both tests use species widely distributed. Both need further development. The choice should be based on investigations of the general sensitivity of the species.	B - A
180	*Hydropsyche contubernalis*		
175	*Aedes atropalpus*	Herbivore:- - Relatively well documented test - Representative species - Requires some development	B - A
163	*Isonychia bicolor*	Herbivore/Degrader: - Sources ofpotential error possible - Requires much development	B
168	*Chimarra marginata*	Omnivore: - Sources of potential error possible - Requires much development	B
148	*Acroneuria lycorias*	Carnivore: - Sources of potential effor possible - Representative species - Requires some development	B - A
165	*Cloeon triangulifer*	Herbivore: - Sources of potential error possible - Representative species - Requires some development	B - A
164	*Cloeon triangulifer*	Herbivore - - Duration relatively short - Species can be kept 1 gen. in the lab.	B - A
139	*Stenonema modestum*	Herbivore - duration relatively long - availability low - sensitivity high	B

Evaluation, Pelagic environment Table 1

Taxonomic group: Bacteria

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation Species: parameter:	*Pseudomonas putida*	*Activated sludge*	*Activated sludge*	*Activated sludge*	*Anaerobic sludge*								
Reference no.	192	382	383	384	408								
Trophic level	D	D	D	D	D								
Duration: **(AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)**	C/ST	AC/ST	AC/ST	AC/ST	C/ST								
Technical performance	A	A	A	A	B								
Duration of long-term test													
Availability of test organism	A	A	A	A	A								
Exposure system	C	C	C	C	C								
Cost, equipment	A	A	A	A	B								
Cost, labour	A	A	A	A	A								
Reproducibility	A	-	-	-	-								
Sources of potential error	A	A	A	A	B								
Range of tolerance to environmental conditions	A	A	A	A	A								
Geographical distribution	A	-	-	-	-								
Representativeness of the test organism	B	-	-	-	-								
Extrapolation of endpoints	A	A	A	A	A								
General sensitivity	B	B	B	B	A								
Relevance of exposure route and test conditions	A	A	A	A	A								
Standardization	A	AA	AA	AA	C								
Relative evaluation	A	A	A	A	B								

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Bacteria

Warm/cold: Cold

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
408	*Anaerobic sludge*	The method needs to be further evaluated by ring testing.	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Amphibia

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation Species: parameter:	*Amb*	*Amb*	*Amb*	*Amb*	*Acri*	*Bufo*	*Bufo*	*Bufo*	*Ran*	*Ran*	*Ran*	*Ran*	*Ran*
Reference no.	97	108	121	109	110	93	111	120	106	113	94	107	92
Trophic level	C	C	C	C	H	H	H	H	H	H	H	H	H
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)													
Technical performance	A	A	A	A	A	A	A	-	B	A	A	A	A
Duration of long-term test	-	-	-	-	-	-	-	-	-	-	-	-	-
Availability of test organism	-	-	A	-	CC	CC	CC	CC	CC	CC	CC	A	A
Exposure system	B	A	C	A	A	B	A	C	B	A	B	C	C
Cost, equipment	B	A	A	A	A	B	A	A	B	A	B	-	A
Cost, labour	B	A	A	A	A	B	A	-	B	A	B	A	A
Reproducibility	-	-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error	-	A	A	A	A	-	A	-	-	A	-	-	-
Range of tolerance to environmental conditions													
Geographical distribution	B	B	B	B	B	B	B	B	B	B	B	B	B
Representativeness of the test organism													
Extrapolation of endpoints	B	B	B	B	B	B	B	B	C	B	B	B	B
General sensitivity	B	B	B	B	B	-	B	-	-	B	-	-	-
Relevance of exposure route and test conditions													
Standardization	C	C	C	C	C	C	C	C	C	C	C	C	C

Evaluation, Pelagic environment Table 1

Taxonomic group: **Amphibia**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter: Species:	*Ran*	*Ran*	*Ran*	*Ran*	*Ran*	*Ran*	*Bufo*	*Bufo*	*Ran*	*Ran*	*Amb*		

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Amphibia

Warm/cold: Cold

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
121	*Ambystoma mexicanum*	AC/ST - carnivore - only test using laboratory reared test organisms	B -A
107	*Rana pipiens*	AC/ST - herbivore - the only test that is described in detail is 95. Descriptions of 107, 92 and 119 are insufficient.	B
92	*Rana pipiens*		B
95	*Rana pipiens*		B - A
119	*Rana pipiens*		B
102	*Rana pipiens*	AC/LT - herbivore	B - A
105	*Rana pipiens*	SC/LT - herbivore	B - A
90	*Ambystoma texanum*	SC/LT - carnivore	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter: Species:	*Cat*	*Cat*	*Eso*	*Eso*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*

[1] *Catostomus commersoni*

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter: Species:	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*	*Onc*

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter: Species:	*Onc*	*Onc*	*Onc*	*Onc*	*Per*	*Pho*	*Sal*	*Sal*	*Sal*	*Sal*	*Sal*	*Sal*	*Salv*

1 *Oncorhynchus tschawytsha*

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation parameter:	Species:	*Salv*	*Salv*	*Salv*	*Salv*	*Salv*	*Onc*	*Onc*						
[illegible]		[illegible]												
[illegible]		[illegible]												
[illegible]		[illegible]												
[illegible]		[illegible]												
[illegible]		[illegible]												

Evaluation, Pelagic environment Table 1

Taxonomic group: **Mollusca**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter: Species:	*Dre*	*Lam*	*Dre*										

Evaluation, Pelagic environment Table 1

Taxonomic group: Protozoans

Warm/cold: Cold

Fresh/marine: Fresh

Evaluation parameter:	Species:	*Colp*	*Tetr*	*Tetr*	*Tetr*	*Para*	*Prot*	*Prot*						

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Protozoans

Warm/cold: Cold

Fresh/marine: Fresh

Ref. no.	Species	Comments	Rel. eval.
13	*Colpidium campylum*	Test needs to be evaluated with respect to general sensitivity and reproducibility	B
436	*Tetrahymena pyriformis*	If the results of the present ring testing show a good reproducibility of the test and a high sensitivity the test is promising	B - A
199	*Tetrahymena pyriformis*	Information on reproducibility (i.e. ring testing is needed)	B
369	*Paramecium caudatum*	Information on sensitivity is needed	B
440	*Protozoan community*	The test needs further validation/standardization	B

Annex E: Evaluation of Pelagic warm marine species

Evaluation, Pelagic environment Table 1

Taxonomic group: **Algae/micro**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Ske*		*Ske*	*Tha*	*Isoc*	*Ske*	*Tetr*	*Pro*	*Ske*	*Nat*	*Var*		

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Algae/micro

Warm/cold: Warm

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
21	*Skeletonema costatum*	The test needs to be evaluated in terms of interlaboratory, reproducibilities and sources of error	B
21	Natural phytoplankton	Standardization of the test method limited in terms of test organism. Natural phytoplankton will vary in sensitivity and activity from time to time.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: **Algae/macrophytes**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Graci*	*Cha*	*Cer*										

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Algae/macrophytes

Warm/cold: Warm

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
44	*Gracilaria tenuistipitata*	Some documentation on the reproducibility (ring testing etc.) and general sensitivity is needed as well as the tolerance of the organism to environmental factors.	B - A
8	Ceramium strictum	Method for culturing is not described, and reproducibility and sensitivity are not documented. The test may, however, be of interest to the OECD test guideline programme.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: **Crustacea**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Mys*	*Mys*	*Mys*	*Mys*	*Mys*	*Mys*	*Mys*	*Mys*	*Arte*	*Arte*			

Evaluation, Pelagic environment Table 1

Taxonomic group: Crustacea

Warm/cold: Warm

Fresh/marine: Marine

Evaluation parameter:	Species:	*Holi*	*Holi*	*Aca*	*Tem*									

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Crustacea

Warm/cold: Warm

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
420	*Mysidopsis juniae*	Further information about availability, reproducibility and sensitivity needed.	B
407	*Mysidopsis almyra*		B
417	*Holmesimysis costata*		B
87	*Holmesimysis costata*		B
418	*Acarta lilljeborgi*		B
419	*Temora stylifera*		B

Evaluation, Pelagic environment Table 1

Taxonomic group: <u>Aschelminthes</u>

Warm/cold: <u>Warm</u>

Fresh/marine: <u>Marine</u>

Evaluation parameter: Species:	*Brac*												

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Athe*	*Cyp*	*Cyp*	*Cyp*	*Cyp*	*Cyp*	*Cyp*	*Cyp*	*Cyp*	*Fun*			

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Leic*	*Mer*	*Mer*	*Mer*	*Mer*	*Mer*	*Mer*	*Mer*	*Mer*	*Mer*			

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Olig*	*Ops*	*Cyp*										

Evaluation, Pelagic environment Table 1

Taxonomic group: **Cnidaria**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Dipl*	*Aur*	*Cor*	*Eire*									

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Cnidaria

Warm/cold: Warm

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
203	*Aurelia sp.*	More precise documentation and guidance is needed in the evaluation of malformation.	B
442	*Corodylophora caspia*	The method is well documented but more information is need regarding cultivation of the species.	B®A
443	*Eirene viridula*		

Evaluation, Pelagic environment Table 1

Taxonomic group: **Echinodermata**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Arb*	*Lyte*	*Lyte*	*Arb*									

Evaluation, Pelagic environment Table 1

Taxonomic group: **<u>Mollusca</u>**

Warm/cold: **<u>Warm</u>**

Fresh/marine: **<u>Marine</u>**

Evaluation parameter: Species:	*Myti*												

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Mollusca

Warm/cold: Warm

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
421	*Mytilus californianus*	Test method suitable for embryo/larval toxicity tests. More information on reproducibility and sensitivity needed.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: **Protozoans**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Uro*												

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Protozoans

Warm/cold: Warm

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
189	*Uronema marinum*	The test need to be documented further with respect to sensitivity and reproducibility	B - A

Annex F: Evaluation of Pelagic cold marine species

Evaluation, Pelagic environment Table 1

Taxonomic group: Algae/micro

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:	*Ske*		*Ske*	*Tha*	*Isoc*	*Ske*	*Tetr*	*Ske*	*Natt*	*Vari*			
[illegible]		A	A	A	A	A	A	A	A	A	A			
[illegible]		A	A	A	A	A	A	A	A	A	A			
[illegible]		A	A	A	A	A	A	A	A	A	A			
[illegible]		A	B	A	-	-	-	-	-	-	A	A		
[illegible]		A	A	A	A	A	A	A	A	A	A			
[illegible]		A	A	A	A	A	A	A	A	A	A			

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Algae/micro

Warm/cold: Cold

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
21	*Skeletonema costatum*	The test needs to be evaluated in terms of interlaboratory, reproducibilities and sources of error	B
21	Natural phytoplankton	Standardization of the test method limited in terms of test organism. Natural phytoplankton will vary in sensitivity and activity from time to time.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: Algae/macrophytes

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:	*Cer*	*Asc*	*Cha*										
[redacted]		[redacted]												
[redacted]														
[redacted]		[redacted]												
[redacted]														
[redacted]		[redacted]												

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Algae/macrophytes

Warm/cold: Cold

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
8	*Ceramium strictum*	Methods for culturing need to be described. Also the reproducibility and sensitivity are not documented. In general, however the test method is promising.	B
38	Natural phytoplankton	Information on reproducibility and general sensitivity is needed	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Kormophyta

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:												
	Zos												
[illegible]													
[illegible]													
[illegible]													
[illegible]													
[illegible]													

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Kormophyta

Warm/cold: Cold

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
202	*Zostera marina*	Documentation of the sensitivity of growth to chemical stress is needed	B - A
	Natural phytoplankton		

Evaluation, Pelagic environment Table 1

Taxonomic group: **Crustacea**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Nito*	*Nito*	*Nito*	*Aca*	*Tisb*	*Nito*	*Aca*	*Aca*	*Aca*	*Aca*			

* ISO-proposal

Evaluation, Pelagic environment Table 1

Taxonomic group: **Crustacea**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter: Species:			*Eur*	*Gar*									

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Crustacea

Warm/cold: Cold

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
409	*Acartia tonsa*	Regarding the immense ecological importance especially of Acartia tonsa, it is recommended to elaborate subcronic and chronic test methods using marine zooplankton.	B - A
410	Acartia tonsa		B - A
208	Centropages hamatus		B - A
219	Centropages hamatus		B - A
221	Eurytemora affinis		B - A
220	Gammarus tigrinus	Many gammarids live in tidal areas with high salinity fluctuations.	B

Evaluation, Pelagic environment Table 1

Taxonomic group: **Bacteria**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter: Species:													

[1] *Photobacterium phosphoreum*

Evaluation, Pelagic environment Table 1

Taxonomic group: **Bryozoa**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter: Species:			*Bow*	*Bow*									

Evaluation, Pelagic environment Table 1

Taxonomic group: **Fish**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter: Species:	*Cith*	*Clup*	*Clup*	*Cor*	*Cym*	*Gad*	*Gad*	*Gas*	*Gas*	*Gas*	*Mor*	*Para*	*Para*

[1] *Cymatogaster aggregata*
[2] *Paralichthys lethostigma*

Evaluation, Pelagic environment Table 1

Taxonomic group: Fish

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:	*Par*	*Plat*	*Plat*	*Pleu*	*Sco*								
[illegible]		A	A	A	A	A								
[illegible]														
[illegible]		A	B	A	B	A								
[illegible]														
[illegible]		A	B	A	B	A								

Evaluation, Pelagic environment Table 1

Taxonomic group: Chordata/Urochordata

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:												
	Cio												
[illegible]	[illegible]												
[illegible]	[illegible]												
[illegible]	[illegible]	B											
		B											
[illegible]	[illegible]												
[illegible]	[illegible]	A											

Evaluation, Pelagic environment Table 1

Taxonomic group: Echinodermata

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:													
		Stro	*Den*											
[illegible]		[illegible]												
[illegible]														
		AAA												
[illegible]														
		BBB												
[illegible]														
		AAA												
[illegible]														

[1] *Strongylocentrotus purpuratus*

Evaluation, Pelagic environment Table 1

Taxonomic group: Cnidaria

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:												
	Aur												
[illegible]	[illegible]												
[illegible]	[illegible]												
[illegible]	[illegible]	B											
		B											
[illegible]	[illegible]	A											
[illegible]	[illegible]												

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Cnidaria

Warm/cold: Cold

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
448	*Aurelia aurita*	Further documentation is needed.	B - A

Evaluation, Pelagic environment Table 1

Taxonomic group: Mollusca

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:	*Myti*	*Myti*	*Cras*	*Cra*	*Mer*	*Myti*	*Cra*	*Cra*					
[illegible]		C	C	C	C	C	C	C	C					
[illegible]		A	A	A	-	-	-	A						
[illegible]		A	B	B	B	A	B	B						
[illegible]		A	A	A	A	A	A	A						
[illegible]		A	A	A	A	A	A	A						

Evaluation, Pelagic environment Table 1

Taxonomic group: Protozoans

Warm/cold: Cold

Fresh/marine: Marine

Evaluation parameter:	Species:												
	Uro												
[illegible]	[illegible]												
[illegible]													
[illegible]	[illegible]												
[illegible]													
[illegible]	[illegible]												

Evaluation, Pelagic environment Table 2

Comments on tests that were placed in category "B" in the initial evaluation.

Taxonomic group: Protozoans

Warm/cold: Cold

Fresh/marine: Marine

Ref. no.	Species	Comments	Rel. eval.
189	*Uronema marinum*	The test need to be documented further with respect to sensitivity and reproducibility	B - A

Annex G: Evaluation of (epi) benthic species used in standard and ring-tested methods

Evaluation, Sediment environment Table 1

Taxonomic group: **Insecta**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

	4247									
Trophic level	D									
	AC LT									
Technical performance	A									
Duration (d)	10									
Availability of test organism	B									
Exposure system	B									
Cost, equipment	A									
Cost, labour	A									
Reproducibility	-									
Sources of potential error	-									
	-									
Geographical distribution	-									
	A									
Extrapolation of endpoints	B									
General sensitivity	-									
	A									
Standardization	A									
Relative evaluation										

Evaluation, Sediment environment Table 1

Taxonomic group: **Algae, Annelida, Mollusca, Crustacea, Insecta**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

	4075	4013	4013	4241	4251	4252	4247			
Trophic level	D	D	D				D			
	SC LT	AC LT	SC LT				AC LT			
Technical performance	A	A	A	A	A	A	A			
Duration (d)	>21	10	25	10	10	10	10			
Availability of test organism	A	A	A	A	A	A	B			
Exposure system	B	A	A	A/B	B	B	B			
Cost, equipment	A	A/B	A/B	A/B	A	A	A			
Cost, labour	B	A/B	B	A	A	A	A			
Reproducibility	-	-	-	-	-	-	-			
Sources of potential error	-	A	A	A	-	-	-			
	-	A	A	A	A	A	-			
Geographical distribution	A	A	A	A	A	A/B	-			
	A	A	A	A	A	A	A			
Extrapolation of endpoints	B	B	B	B	B	B	B			
General sensitivity	B	B	B	B	B	A/B	-			
	A	A	A	A	A	A	A			
Standardization	C	A		A	A	A	A			
Relative evaluation										

Evaluation, Sediment environment Table 1

Evaluation, Sediment environment Table 1

Evaluation, Sediment environment Table 1

Taxonomic group: **Annelida, Mollusca, Crustacea, Echinodermata, Pisces**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter: Species:	various species	Scophthalmus maximus	Scophthalmus maximus									
Reference no.	4051	4200	4201									
Trophic level	D	-	-									
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	AC ST	AC ST	AC ST									
Technical performance	B	A	A									
Duration (d)	10-60*	4	4									
Availability of test organism	C	B	B									
Exposure system	A	A	A									
Cost, equipment	A	A	A									
Cost, labour	B	A	A									
Reproducibility	-	-	-									
Sources of potential error	-	-	-									
Range of tolerance to environmental conditions	-	A	A									
Geographical distribution	A	-	-									
Representativeness of the test organism	B	A	A									
Extrapolation of endpoints	A	B	B									
General sensitivity	-	-	-									
Relevance of exposure route and test conditions	B	B	B									
Standardization	A	A	A									
Relative evaluation												

Evaluation, Sediment environment Table 1

Evaluation, Sediment environment Table 1

Taxonomic group: **Annelida, Crustacea**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4002	4187	4249	4007	4008	4232	4233	4234	4235	4237	4238	4244
Trophic level		D	D	D	D?	D/H	D/O	D/O	D/O	O	D	D	D/H
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT
Technical performance		A	A	A	A	A	A	A	A	A	A	A	A
Duration (d)		10	10	10	10	10	10	10	10	10	10	10	10
Availability of test organism		A	A	A	B	B	A	A	-	A	B	A	B
Exposure system		A	A	B	B	B	B	B	B	B	B	B	B
Cost, equipment		B	B	A	A	A	A	A	A	A	A	A	A
Cost, labour		A	A	A	A	A	A	A	A	A	A	A	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		-	-	-	A	A	-	-	-	-	-	-	A
Range of tolerance to environmental conditions		-	-	-	A	A/B	-	-	-	-	-	-	A/B
Geographical distribution		-	-	-	B	B	-	-	-	-	-	-	B
Representativeness of the test organism		A/B	A/B	A/B	A	A	A	A	A	A	A	A	A
Extrapolation of endpoints		B	B	B	B	B	B	B	B	B	B	B	B
General sensitivity		B	B	-	B	B	A	-	-	-	B	-	B
Relevance of exposure route and test conditions		A	A	A	A	A	A	A	A	A	A	A	A
Standardization		A	A	A	A	A	A	A	A	A	A	A	A
Relative evaluation													

Annex H: Evaluation of (epi) benthic cold fresh-water species

Evaluation, Sediment environment Table 1

Taxonomic group: **Annelida**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4092	4093	4094	4095	4122	4202	Stylodrilus heringianus				
Trophic level		D	D	D	D	D	D					
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		SC LT	AC ST	AC ST	AC ST	AC LT	AC ST					
Technical performance		B	A	A	A	A/B	A					
Duration (d)		42	4	4	4	14	4					
Availability of test organism		B	B	B	B	B	B					
Exposure system		B	A	A	A	B	A					
Cost, equipment		A	A	A	A	A	A					
Cost, labour		A	A	A	A	A	A					
Reproducibility		-	-	-	-	-	-					
Sources of potential error		-	-	-	-	-	-					
Range of tolerance to environmental conditions		-	-	-	-	A	-					
Geographical distribution		-	-	-	-	A	-					
Representativeness of the test organism		A/B	A/B	A	A/B	A	A/B					
Extrapolation of endpoints		B	B	B	B	B	B					
General sensitivity		B/C	B/C	B/C	B/C	-	B/C					
Relevance of exposure route and test conditions		A	A	A	A	A	A					
Standardization		C	C	C	C	C	C					
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.	4141	Gammarus lacustris										
Trophic level	D											
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	AC LT											
Technical performance	A											
Duration (d)	10											
Availability of test organism	A											
Exposure system	B											
Cost, equipment	A											
Cost, labour	A											
Reproducibility	-											
Sources of potential error	-											
Range of tolerance to environmental conditions	-											
Geographical distribution	-											
Representativeness of the test organism	A											
Extrapolation of endpoints	B											
General sensitivity	A											
Relevance of exposure route and test conditions	A											
Standardization	C											
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Insecta**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4076	4076	4110	4247							
Trophic level		D	D	D	D							
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC ST	AC ST	AC LT							
Technical performance		B	B	A	A							
Duration (d)		2-4	2-4	5	10							
Availability of test organism		B	B	B	B							
Exposure system		A	A	A	B							
Cost, equipment		B	B	B	A							
Cost, labour		A	A	A	A							
Reproducibility		-	-	-	-							
Sources of potential error		-	-	-	-							
Range of tolerance to environmental conditions		-	-	-	-							
Geographical distribution		-	-	-	-							
Representativeness of the test organism		A	A	A	A							
Extrapolation of endpoints		B	B	B	B							
General sensitivity		-	-	-	-							
Relevance of exposure route and test conditions		A	A	A	A							
Standardization		C	C	C	A							
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Visces**

Warm/cold: **Cold**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4047	4055	4120	4121							
Trophic level		C	-	-	-							
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	SC LT	AC ST	SC LT							
Technical performance		A	A	C	A							
Duration (d)		8	10	4	42							
Availability of test organism		B	A	B	B							
Exposure system		A	A	A	B							
Cost, equipment		B	A	B	A							
Cost, labour		A	B	C	A/B							
Reproducibility		-	-	-	-							
Sources of potential error		-	-	-	-							
Range of tolerance to environmental conditions		-	-	-	-							
Geographical distribution		-	-	-	-							
Representativeness of the test organism		A/B	B	B	B							
Extrapolation of endpoints		B	B	B+CC	B+CC							
General sensitivity		-	-	B	-							
Relevance of exposure route and test conditions		A	A	B	B							
Standardization		C	C	C	C							
Relative evaluation												

Annex I: Evaluation of (epi) benthic warm fresh-water species

Evaluation, Sediment environment Table 1

Taxonomic group: **Bacteria**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:												
Reference no.		4029	4048	4054	4073	4099	4197						
Trophic level		D	-	-	-	-	D						
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		C ST	C ST	C ST	AC ST	C ST	C st/lt						
Technical performance		B	B	B	B	B	B						
Duration (d)		-	2	2	0.33h	2	7-11						
Availability of test organism		B	A	A	A	A	A						
Exposure system		A	A	A	A	A	A						
Cost, equipment		B	A	A	A	C	B						
Cost, labour		A	A	A	A	A	A						
Reproducibility		-	-	-	-	-	-						
Sources of potential error		C	-	-	-	-	-						
Range of tolerance to environmental conditions		-	-	-	-	-	-						
Geographical distribution		-	-	-	-	-	-						
Representativeness of the test organism		A	C	C	C	C	A						
Extrapolation of endpoints		A+CC	CC	CC	CC	CC	A						
General sensitivity		-	-	-	-	-	-						
Relevance of exposure route and test conditions		A	C	C	C	A	A						
Standardization		C	C	C	C	C	C						
Relative evaluation													

Evaluation, Sediment environment Table 1

Evaluation, Sediment environment Table 1

Taxonomic group: **Aschelminthes**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.	4070 Panagrellus redivivius											
Trophic level	?											
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	SC ST											
Technical performance	A											
Duration (d)	4											
Availability of test organism	A											
Exposure system	A											
Cost, equipment	A											
Cost, labour	B											
Reproducibility	-											
Sources of potential error	-											
Range of tolerance to environmental conditions	-											
Geographical distribution	-											
Representativeness of the test organism	A											
Extrapolation of endpoints	B											
General sensitivity	-											
Relevance of exposure route and test conditions	B											
Standardization	C											
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Annelida**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4044	4124	4157	4179	4157	4179	4169	4169	4203	4239	4240	4239
Trophic level		D	D	D	D/H	D	D/H	D	D	D	D	D	D
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		C LT	C LT	C LT	AC ST	AC st/lt	SC LT	C LT	AC LT	C LT	AC LT	AC LT	AC LT
Technical performance		A	A	B	A	B	A	A	A	A	A	A	A
Duration (d)		14	500	10-28	2-?	4-10	18	28	21	500	10	10	10
Availability of test organism		A	A	A	A	A	A	B	A	A	A	A	A
Exposure system		B	A	A	A	A	B	B	A	A	B	B	B
Cost, equipment		A	A	C	A	C	A	A	A	A	A	A	A
Cost, labour		A/B	C	A/B	A	A/B	B	B	A/B	C	A	A	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		-	-	-	-	-	-	-	-	-	-	-	-
Range of tolerance to environmental conditions		-	-	-	-	-	-	-	-	-	-	-	-
Geographical distribution		A	A	A	A	A	A	A	A	A	A	A	A
Representativeness of the test organism		A/B	A	A/B	A	A/B	A	A	A	A	A	A/B	A
Extrapolation of endpoints		A+B	A+B	A	B	B	A	A	B	A+B	B	B	B
General sensitivity		B/C	C	B/C	-	B/C	-	C	B/-	-	C	B/C	-
Relevance of exposure route and test conditions		A	A	A	B	A	B	A	A	A	A	A	A
Standardization		C	C	C	C	C	C	C	C	C	A	A	A
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4012	4012	4021	4022	4036	4036	4080	4082	4104	4108	4100	4100
Trophic level		D	D	D	D	H	H	H	H	D	D	H	H
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	SC LT	SC LT	SC LT	C LT	AC ST	AC ST	C LT	AC LT	AC st/lt	AC ST	C LT
Technical performance		A	A	A	A	B	B	A	A	A	A	A	A
Duration (d)		10	30	28	28	21	2	4	21	26	3-31	2	21
Availability of test organism		A	A	A	A	A	A	A	A	B	B	A	A
Exposure system		A	A	B	B	B	B	A	A	B	A	A	B
Cost, equipment		A/B	A/B	A	A	B	B	A	A	A	A	A	B
Cost, labour		A	B	A	A	A	A	A	B	A	A	A	A/B
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		A	A	-	-	-	-	-	-	-	-	-	-
Range of tolerance to environmental conditions		A	A	-	-	-	-	-	-	-	-	-	-
Geographical distribution		A	A	-	-	-	-	-	-	-	-	-	-
Representativeness of the test organism		A	A	A	A	B	B	B	B	A	A	B	B
Extrapolation of endpoints		B	A	B	B	A	B	B	B	B	B	B	A
General sensitivity		B	B	B	B	B	B	B	B	-	-	B	B
Relevance of exposure route and test conditions		A	A	A	A	B	B	A+B	A+B	A	A	B	B
Standardization		A	A	C	C	C	C	C	C	C	C	C	C
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4112	4130	4130	4197	4138	4130	4143	4165	4165	4170	4171	4180
Trophic level		H	H	H	D	H	H	D	H	H	H	H	H
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		C LT	AC ST	AC ST	AC LT	AC ST	SC LT	SC LT	AC ST	AC ST	AC ST	AC ST	AC ST
Technical performance		A	A	A	A	A	A	A	A	A	A	A	A
Duration (d)		>14	2	2	10	4	10	28	2	2	2	2	2
Availability of test organism		A	A	A	A	A	A	A	A	A	A	A	A
Exposure system		A	A	A	B	A	B	B	A	A	A	A	A
Cost, equipment		A	A	A	A	B	A	A	A	B	A	B	A
Cost, labour		B	A	A	A	A	A/B	A	A	B	A	B	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		-	-	-	-	-	-	-	-	-	-	-	-
Range of tolerance to environmental conditions		-	-	-	-	-	-	-	-	-	-	-	-
Geographical distribution		-	-	-	-	-	-	-	A	A	A	-	-
Representativeness of the test organism		B	B	B	A	B	B	A	B	B	B	B	B
Extrapolation of endpoints		A	B	B	B	B	A	B	B	B	B	B	B
General sensitivity		B	B	B	B	B	B	B	B	B	B	B	B
Relevance of exposure route and test conditions		B	A	B	A	B	A	A	B	A	B	B	A
Standardization		C	C	C	C	C	C	C	C	C	C	C	C
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.	4181	4231	4240									
Trophic level	D	D	D									
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	AC ST	AC LT	AC LT									
Technical performance	A	A	A									
Duration (d)	2	10	10									
Availability of test organism	A	A	A									
Exposure system	A	A/B	B									
Cost, equipment	A	A/B	A									
Cost, labour	A	A	A									
Reproducibility	-	-	-									
Sources of potential error	-	A	-									
Range of tolerance to environmental conditions	-	A	-									
Geographical distribution	-	A	A									
Representativeness of the test organism	B	A	A									
Extrapolation of endpoints	B	B	B									
General sensitivity	B	B	B									
Relevance of exposure route and test conditions	A	A	A									
Standardization	C	A	A									
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Insecta**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4011	4011	4015	4015	4015	4016	4075	4081	4085	4084	4090	4097
Trophic level		D	D	D	D	D	D	D	D	D	D	D	D
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	SC LT	AC LT	SC LT	SC LT	AC ST	SC LT	AC ST	SC LT	SC LT	AC ST	SC LT
Technical performance		A	A	A	A	A	B/C	A	A	A/B	A/B	A	A
Duration (d)		10	30	10	25	25	2	>21	4	21	10	3	15
Availability of test organism		A	A	A	A	A	A	A	A	A	A	A	A
Exposure system		A	A	A	A	B	-	B	A	A	A	A	B
Cost, equipment		A/B	A/B	A	A	A	A	A	A	A	A	A	A
Cost, labour		A/B	B	A	A	B	C	B	A	B/C	A	A	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		A	A	-	-	-	-	-	A	A	A	-	-
Range of tolerance to environmental conditions		A	A	A	A	-	-	-	A	A	A	-	-
Geographical distribution		A	A	A/B	A/B	-	-	-	A	A	A	B	B
Representativeness of the test organism		A	A	A	A	A	A	A	A	A	A	A	A
Extrapolation of endpoints		B	B	B	B	B	CC	B	B	B	B	B	B
General sensitivity		B	B	A/B	A/B	B	-	B	B	B	B	-	-
Relevance of exposure route and test conditions		A	A	A	A	A	-	A	A	A	B	A/B	B
Standardization		A	A	A	A	C	C	C	C	C	C	C	C
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Insecta**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:												
Reference no.		4205	4214	4241	4247	4251	4252	4254	Chironomus tentans	Chironomus riparius			
Trophic level		D	D	D	D	D	D	D					
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC ST	AC LT	AC LT	AC LT	AC LT	SC LT					
Technical performance		A	B	A	A	A	A	A					
Duration (d)		4	6	10	10	10	10	28					
Availability of test organism		A	B	A	B	A	A	A					
Exposure system		A	A	A/B	B	B	B	A					
Cost, equipment		A	B	A/B	A	A	A	A					
Cost, labour		A	A	A	A	A	A	B					
Reproducibility		-	-	-	-	-	-	-					
Sources of potential error		-	-	A	-	-	-	-					
Range of tolerance to environmental conditions		-	-	A	-	A	A	A					
Geographical distribution		A	-	A	-	A	A/B	A					
Representativeness of the test organism		A	A	A	A	A	A	A					
Extrapolation of endpoints		B	B	B	B	B	B	B					
General sensitivity		B	-	B	-	B	A/B	B					
Relevance of exposure route and test conditions		B	B	A	A	A	A	A					
Standardization		C	C	A	A	A	A	C					
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Chlordata/Amphibans**

Warm/cold: **Warm**

Fresh/Marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.	4043	Xenopus laevis 4057										
Trophic level	C	C										
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	AC ST	AC ST										
Technical performance	A	A										
Duration (d)	4	6-7										
Availability of test organism	B	A										
Exposure system	A	B										
Cost, equipment	A	A										
Cost, labour	B	B										
Reproducibility	-	-										
Sources of potential error	-	-										
Range of tolerance to environmental conditions	-	-										
Geographical distribution	-	-										
Representativeness of the test organism	B	B										
Extrapolation of endpoints	B	B										
General sensitivity	B	-										
Relevance of exposure route and test conditions	B	A										
Standardization	C	C										
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Pisces**

Warm/cold: **Warm**

Fresh/marine: **Fresh**

Evaluation parameter:	Species:											
Reference no.		4041	4042	4058	4059	4060	4061	4062	4063	4107	4178	
Trophic level		O	C	C	C	C	C	C	C	C	C	
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC ST	AC ST	AC ST	AC ST	SC LT	AC ST	SC LT	AC LT	AC ST	
Technical performance		A	A	A	A	A	A	A	A	A	A	
Duration (d)		3	6	6-7	6-7	4	30	4	30	21	2	
Availability of test organism		A	A	A	A	A	A	A	A	A	A	
Exposure system		A	A	B	B	A	B	A	B	B	B	
Cost, equipment		A	A	A	A	A	A	A	A	B	B	
Cost, labour		B	B	B	B	A	A	A	A	A	A	
Reproducibility		-	-	-	-	-	-	-	-	-	-	
Sources of potential error		-	-	-	-	-	-	-	-	-	-	
Range of tolerance to environmental conditions		-	-	-	-	-	-	-	-	-	-	
Geographical distribution		-	-	-	-	-	-	-	-	-	-	
Representativeness of the test organism		B	B	B	B	B	B	A	A	B	B	
Extrapolation of endpoints		B	B	B	B	B	B	B	B	B	B	
General sensitivity		B	B	B/C	B	B	B	-	-	B	B	
Relevance of exposure route and test conditions		A	B	A	A	A	A	A	A	B	A/B	
Standardization		C	C	C	C	C	C	C	C	C	C	
Relative evaluation												

Annex J: Evaluation of (epi) benthic cold marine species

Evaluation, Sediment environment Table 1

Taxonomic group: **Bacteria**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter:	Species:												
Reference no.		4009	4015	4027	4078	4190	4192	4207					
Trophic level		D	D	D	D	D	D	D					
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC ST	AC ST	AC ST	AC ST	AC ST	AC ST					
Technical performance		A	C	A	A	A	A	A					
Duration (min)		15	15	15	15	15	30	25					
Availability of test organism		A	A	A	A	A	A	A					
Exposure system		A	A	A	A	A	A	A					
Cost, equipment		C	C	C	C	C	C	C					
Cost, labour		A	A	A	A	A	A	A					
Reproducibility		-	-	-	-	-	-	-					
Sources of potential error		-	-	-	-	-	-	-					
Range of tolerance to environmental conditions		-	-	-	-	-	-	-					
Geographical distribution		-	-	-	-	-	-	-					
Representativeness of the test organism		B	B	B	B	B	B	B					
Extrapolation of endpoints		CC	CC	CC	CC	CC	CC	CC					
General sensitivity		B	-	-	-	-	-	-					
Relevance of exposure route and test conditions		B	B	A/B	B	B	B	B					
Standardization		C	C	C	C	C	C	C					
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Annelida**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter:	Species:												
Reference no.		4020	4035	4148	4148	4148	4148	4228					
Trophic level		D	D	D	D	D	D	D					
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	AC ST	AC LT	AC LT	AC LT	AC LT	AC LT					
Technical performance		A	C	A	A	A	A	A					
Duration (d)		16	1/2	28	28	28	10	10					
Availability of test organism		B	B	B	B	B	B	B					
Exposure system		A	A	A	A	A	B	B					
Cost, equipment		A	C	A	A	A	A	A					
Cost, labour		A	B	A	A	A	A	A					
Reproducibility		-	-	-	-	-	-	-					
Sources of potential error		-	-	-	-	-	-	-					
Range of tolerance to environmental conditions		-	-	-	-	-	-	-					
Geographical distribution		-	-	-	-	-	-	-					
Representativeness of the test organism		A	A	A/B	A/B	A/B	A	A					
Extrapolation of endpoints		B	CC	B/CC	B/CC	B/CC	B	B					
General sensitivity		-	B	B	-	-	C	C					
Relevance of exposure route and test conditions		B	B	A	A	A	A	A					
Standardization		C	C	C	C	C	A	A					
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Mollusca**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4024	4025	4049	4185	4184	4226					
Trophic level		H	H	D	D	D	D					
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC LT	SC LT	AC ST	AC ST	AC ST					
Technical performance		B	A	B	A	A	A					
Duration (d)		<1	16	35	4-5	5	5					
Availability of test organism		B	B	B	B	B	B					
Exposure system		A	A	A	A/B	B	B					
Cost, equipment		B	A	B	A	A	A					
Cost, labour		B	A	A	A	A	A					
Reproducibility		-	-	-	-	-	-					
Sources of potential error		-	-	-	-	-	-					
Range of tolerance to environmental conditions		-	-	-	-	-	-					
Geographical distribution		-	-	-	-	-	-					
Representativeness of the test organism		A	A	A	A	A	A					
Extrapolation of endpoints		CC	B	B	B+CC	B+CC	CC					
General sensitivity		C	C	-	-	-	-					
Relevance of exposure route and test conditions		B	A	B	B	A	B					
Standardization		C	C	C	A	C	A					
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4001	4006	4007	4008	4009	4020	4037	4038	4039	4040	4085	7414
Trophic level		H	D/H/C	D?	D/H	D/H	H	D	D	D	D	D	D
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT
Technical performance		A	A	A	A	A	A	A	A	A	A	A	A
Duration (d)		4	10	10	10	10	10	10	10	10	10	10	10
Availability of test organism		A	B	B	B	B	A	B	B	B	B	B	B
Exposure system		A	B	B	B	B	A	B	B	B	B	B	A
Cost, equipment		A	A	A	A	A	A	A	A	A	A	A	A
Cost, labour		A	A	A	A	A	A	A	A	A	A	A	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		-	A	A	A	A	-	-	-	-	-	-	-
Range of tolerance to environmental conditions		-	A	A	A/B	A	-	A	A	A	-	-	-
Geographical distribution		-	B	B	B	B	-	-	-	-	-	-	-
Representativeness of the test organism		A	A	A	A	A	A	A	A	A	A	A	A
Extrapolation of endpoints		B	B	B	B	B	B	B	B	B	B	B	B
General sensitivity		B	A/B	A/B	-	-	B	B	B	B	-	-	-
Relevance of exposure route and test conditions		B	A	A	A	A	B	A	A	A	A	A	A
Standardization		A	A	A	A	A	A	C	C	C	A	A	C
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Cold**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4185	4186	4198	4208	4209	4227	4230	4242	4243	4246	4256	4257
Trophic level		D	D/H/C	D	D	D	D	O	D?	D/H/C	D	D/H/C	D
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	AC LT	AC LT	SC LT	SC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT	AC LT
Technical performance		A	A	A	A	A	A	A	A	A	A	A	A
Duration (d)		10	10	10	28	28	10	10	10	10	10	10	10
Availability of test organism		B	B	B	B	B	B	-	B	B	B	B	B
Exposure system		B	B	B	B	B	B	B	B	B	B	B	B
Cost, equipment		A	A	A	A	A	A	A	A	A	A	A	A
Cost, labour		A	A	A	A	A	A	A	A	A	A	A	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		-	-	-	-	-	-	-	A	A	-	-	-
Range of tolerance to environmental conditions		-	-	A	-	-	A	-	A	A	-	-	-
Geographical distribution		-	B	-	-	-	-	-	B	B	-	B	B
Representativeness of the test organism		A	A	A	A	A	A	A	A	A	A	A	A
Extrapolation of endpoints		B	B	B	A+B	A+B	B	B	B	B	B	B	B
General sensitivity		-	B	-	B	-	B	-	B	B	-	B	-
Relevance of exposure route and test conditions		A	A	A	A+B	A+B	A	A	A	A	A	A	A
Standardization		C	C	A	C	C	A	A	A	A	A	A	A
Relative evaluation													

Annex K: Evaluation of (epi) benthic warm marine species

Evaluation, Sediment environment Table 1

Taxonomic group: **Bacteria**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.	4079	4091										
Trophic level	-	-										
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	C ST	AC ST										
Technical performance	A	A										
Duration (h)	28	0.5										
Availability of test organism	A	A										
Exposure system	A	A										
Cost, equipment	C	C										
Cost, labour	A	A										
Reproducibility	-	-										
Sources of potential error	-	-										
Range of tolerance to environmental conditions	-	-										
Geographical distribution	-	-										
Representativeness of the test organism	CC	CC										
Extrapolation of endpoints	CC	CC										
General sensitivity	-	-										
Relevance of exposure route and test conditions	B	C										
Standardization	C	C										
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Algae**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4193	4194	4195	4196							
Trophic level		P	P	P	P							
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		C LT	C LT	C LT	C LT							
Technical performance		A	A	A	A							
Duration (d)		10	10	10	10							
Availability of test organism		A	A	A	A							
Exposure system		A	A	A	A							
Cost, equipment		A	A	A	A							
Cost, labour		B	B	B	B							
Reproducibility		-	-	-	-							
Sources of potential error		-	-	-	-							
Range of tolerance to environmental conditions		-	-	-	-							
Geographical distribution		-	-	-	-							
Representativeness of the test organism		B	B	B	B							
Extrapolation of endpoints		A	A	A	A							
General sensitivity		B	-	A/B	-							
Relevance of exposure route and test conditions		B	B	B	B							
Standardization		C	C	C	C							
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Annelida**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:												
Reference no.		4002	4004	4048	4090	4154	4187	4249					
Trophic level		D	D	D	D	D	D	D					
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	AC LT	SC LT	AC LT	AC ST	AC LT	AC LT					
Technical performance		A	A	A	A	C	A	A					
Duration (d)		10	10	<42	20	2	10	10					
Availability of test organism		A	A	A	A	A	A	A					
Exposure system		A	A	B	A	-	A	B					
Cost, equipment		B	B	A	A	A	B	A					
Cost, labour		A	A	A	B	C	A	A					
Reproducibility		-	-	-	-	-	-	-					
Sources of potential error		-	-	-	-	-	-	-					
Range of tolerance to environmental conditions		-	-	-	-	-	-	-					
Geographical distribution		-	-	-	-	-	-	-					
Representativeness of the test organism		A/B	A/B	A/B	A/B	A/B	A/B	A/B					
Extrapolation of endpoints		B	B	B	B	CC	B	B					
General sensitivity		B	B	-	-	-	B	-					
Relevance of exposure route and test conditions		A	A	A+B	A	B	A	A					
Standardization		A	A	C	C	C	A	A					
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Mollusca**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.	4056	4156	5404	5426								
Trophic level	H	H	H	D								
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	AC ST	AC ST	SC LT	AC ST								
Technical performance	A	A	C	A								
Duration (d)	2	4	28-77	2								
Availability of test organism	B	B	B	B								
Exposure system	A	A	A	A								
Cost, equipment	A	A	C	A								
Cost, labour	B	B	C	B								
Reproducibility	-	-	-	-								
Sources of potential error	-	-	-	-								
Range of tolerance to environmental conditions	-	-	-	-								
Geographical distribution	-	-	-	-								
Representativeness of the test organism	B	B	A/B	B								
Extrapolation of endpoints	B	B	CC	B								
General sensitivity	B	B	C	B								
Relevance of exposure route and test conditions	A	A	A	A								
Standardization	C	C	C	C								
Relative evaluation												

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4007	4008	4032	4033	4034	4035	4036	4102	4108	4114	4115	4117
Trophic level		D?	D/H	H?	H?	H?	H	D/H	H	H	H	H	D
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	AC LT	SC ST	SC ST	SC ST	AC ST	AC ST	AC LT	AC ST	AC ST	AC ST	AC LT
Technical performance		A	A	A	A	A	A	A	A	A	A	A	A
Duration (d)		10	10	7	7	7	4	4	10	4	7	7	10
Availability of test organism		B	B	A	A	A	A	A	A	A	B/C	B/C	B
Exposure system		B	B	A	A	A	A	A	B	A	A	A	B
Cost, equipment		A	A	A	A	A	A	A	A	A	A	A	A
Cost, labour		A	A	A	A	A	A	A	A	A	B	B	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		A	A	-	-	-	-	-	-	-	-	-	-
Range of tolerance to environmental conditions		A	A/B	-	-	-	-	-	-	-	-	-	A
Geographical distribution		B	B	-	-	-	-	-	-	-	-	-	-
Representativeness of the test organism		A	A	A	A	A	A	A	B	B	A/B	A/B	A
Extrapolation of endpoints		B	B	A	A	A	B	B	A	CC	B	B	B
General sensitivity		A/B	-	-	-	-	-	-	-	-	-	-	-
Relevance of exposure route and test conditions		A	A	A	A	A	B	A	B	B	B	B	A
Standardization		A	A	C	C	C	C	C	C	C	C	C	C
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Arthropoda/Crustacea**

Warm/Cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.		4118	4119	4145	4167	4168	4172	4174	4182	4292	4293	4294	4295
Trophic level		D	D	D	D	D	D/H	D/H	D	D/O	D/O	D/O	O
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC LT	SC LT	SC LT	AC LT	AC LT	AC ST	C LT	C LT	AC LT	AC LT	AC LT	AC LT
Technical performance		A	A	A	A	A	A	A	A	A	A	A	A
Duration (d)		10	40	28	10	28	4	58	21	10	10	10	10
Availability of test organism		B	B	B	B	B	B	B	A	A	A	-	A
Exposure system		B	A	B	A/B	A/B	B	B	A	B	B	B	B
Cost, equipment		A	A	A	A	A	B	B	A	A	A	A	A
Cost, labour		A	B	A	A	A	A	B	B	A	A	A	A
Reproducibility		-	-	-	-	-	-	-	-	-	-	-	-
Sources of potential error		-	-	-	-	-	-	-	-	-	-	-	-
Range of tolerance to environmental conditions		A	A	-	A	A	-	-	-	-	-	-	-
Geographical distribution		-	-	-	-	-	-	-	-	-	-	-	-
Representativeness of the test organism		A	A	A	A	A	A	A	A	A	A	A	A
Extrapolation of endpoints		B	A+B	B	B	B	B	A	A	B	B	B	B
General sensitivity		-	-	-	-	-	-	-	-	A	-	-	-
Relevance of exposure route and test conditions		A	A	A	A	A	B	B	A	A	A	A	A
Standardization		C	C	A	A	A	C	C	C	A	A	A	A
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Echinodermata**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:												
Reference no.		4149	4150	Paracentrotus lividus	Paracentrotus lividus								
Trophic level		D	D										
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)		AC ST	AC ST										
Technical performance		B	B										
Duration (d)		3	1 h										
Availability of test organism		C	C										
Exposure system		A	A										
Cost, equipment		A	A										
Cost, labour		B	B										
Reproducibility		-	-										
Sources of potential error		-	-										
Range of tolerance to environmental conditions		-	-										
Geographical distribution		-	-										
Representativeness of the test organism		B	B										
Extrapolation of endpoints		B	B										
General sensitivity		-	-										
Relevance of exposure route and test conditions		B	A										
Standardization		C	C										
Relative evaluation													

Evaluation, Sediment environment Table 1

Taxonomic group: **Pisces**

Warm/cold: **Warm**

Fresh/marine: **Marine**

Evaluation parameter:	Species:											
Reference no.	4014	4102	various species	Paralichthys xanthurus								
Trophic level	C	C										
Duration: (AC/ST), (AC/LT), (SC/ST), (SC/LT), (C/ST), (C/LT)	AC ST	AC LT										
Technical performance	A	A										
Duration (d)	4	28										
Availability of test organism	B	B										
Exposure system	A	A										
Cost, equipment	B	B										
Cost, labour	B	A										
Reproducibility	-	-										
Sources of potential error	-	-										
Range of tolerance to environmental conditions	-	-										
Geographical distribution	-	-										
Representativeness of the test organism	B	A										
Extrapolation of endpoints	B	B										
General sensitivity	-	-										
Relevance of exposure route and test conditions	B	A+B										
Standardization	C	C										
Relative evaluation												

Annex L: References

L1: Pelagic test methods

L2: Benthic test methods

Annex L1: Pelagic test methods

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