

US EPA ARCHIVE DOCUMENT

CASE GS _____

PM _____/____/____

CHEM 009001LindaneBRANCH EEBDISC 40FORMULATION Active IngredientFICHE/MASTER ID 00003503

CITATION: Johnson, W and M. Finley. 1980. Handbook of Acute Toxicity of Chemicals to Fish and Aquatic Invertebrates. USDI Publication 137, Washington, D.C.

SUBST. CLASS=

OTHER SUBJECT DESCRIPTORS
PRIM:

DIRECT REVIEW TIME=

(MH) START DATE 5/13/85END DATE 5/13/85

REVIEWED BY: Ann Stavola
TITLE: Aquatic Biologist
ORG: HED/CEB
LOC./TEL: CM2 B01 557 7560

SIGNATURE: Ann StavolaDATE: 5/13/85

APPROVED BY:

TITLE: Section ChiefORG: EEB

LOC/TEL:

SIGNATURE: Henry D. CravenDATE: 6/6/85

Studies conducted by the National Fisheries Research Laboratory at Columbia are accepted as scientifically sound without the need for validation. The studies conducted on Simocephalus, Daphnia pulex and all fish species but goldfish and carp meet our guidelines requirements for acute toxicity testing with freshwater organisms. The data show that lindane is highly toxic to the invertebrates and very highly toxic to the fish.

LINDANE

Chemical Name: Gamma isomer of 1,2,3,4,5,6-hexachlorocyclohexane

Alternate Names: Benesan, CAS 58-89-9, ENT-7796, Forlin, Gamaphex, Gamma BHC, Gammafog, Gammalin, Gammex, Gammexane, Isotox, Lindafor, Lindagam, Lindamul, Lintox, Novigam, Oko, Silvanol.

Principal Use: Insecticide

Sample Description: Technical material, 99%.

SUMMARY OF ACUTE TOXICITY

Test organism	Stage or wt (g)	Temp (C)	96-h LC50 95% CI (µg/L)
<i>Simocephalus</i>	I ₁	15	520* 340-790
<i>Daphnia pulex</i>	I ₁	15	460* 386-547
<i>Cypridopsis</i>	M	21	3.2 2.2-4.6
<i>Asellus</i>	M	15	10 7-14
<i>G. fasciatus</i>	M	15	10 7-14
<i>G. lacustris</i>	M	21	8E 57-136
<i>Pteronarcys</i>	YC ₂	15	4.5 3.6-5.7
Coho salmon	0.6	12	23 19-28
Rainbow trout	1.0	12	27 20-36
Brown trout	1.7	13	1.7, 1.2-2.4
Lake trout	0.7	12	32 24-42
Goldfish	0.9	18	131 92-187

Test organism	Stage or wt (g)	Temp (C)	96-h LC50 95% CI (µg/L)
Carp	0.6	18	90 75-120
Fathead minnow	1.2	18	87 69-101
Black bullhead	1.2	18	64 49-81
Channel catfish	1.5	18	44 37-52
Green sunfish	1.1	18	83 47-149
Bluegill	1.5	18	68 60-78
Largemouth bass	0.9	18	32 27-38
Yellow perch	1.4	18	68 60-76

*48-h EC50.

NOTE: Stonefly nymphs of the first-year class were 4.5 times more susceptible to lindane than were those of the second-year class. Variations in water hardness from 44 to 272 ppm did not alter the toxicity to fish or invertebrates. An increase in temperature from 2° to 18°C caused a 2.3-fold decrease in toxicity to rainbow trout; an increase from 7° to 29°C caused a 2.6-fold increase in toxicity to bluegills. Sublethal exposure of fish to lindane produced focal necrotic lesions in the liver and damage to the convoluted tubules in kidney glomeruli.

Fowlers toad 3200 (2300-4500)ppb
Western chorus frog 2650 ppb

MALATHION

Chemical Name: 0,0-Dimethyl S-(1,2-dicarbethoxyethyl) phosphorodithioate

Alternate Names: AC-4049, Carbofos, Carbophos, CAS 121-75-5, Chemathion, Cythion, Emmatos, ENT-17034, For-Mal, Fyfanon, Karbofos, Kop-Thion, Kypfos, Malamar, Malaphos, Malaspray, Malathon, MLT, Mercaptothion, Mor-Mal, Zithiol

Principal Use: Insecticide

Sample Description: Technical material, 95%