

## Fenvalerate (CAS no. 51630-58-1)

### **Tier 1 *in vivo* Test**

#### (1) Results

Fish were exposed to concentrations of 0.019, 0.294 and 1.30 µg/L (measured). No significant differences were observed in mortality, number of eggs, fertility rate, total length, body weight, secondary sex characteristics, gonadosomatic index, hepatosomatic index and hepatic vitellogenin.

#### (2) Summary

While estrogenic activity of fenvalerate has been indicated from literature, an increase in male hepatic vitellogenin level was not observed at sublethal concentrations to suggest estrogenic effect in this study. It was not concluded that fenvalerate is an estrogenic compound.

The non-adverse exposure level of 1.30 µg/L was ca. 32 times as high as the highest environmental water concentration of 0.041 µg/L that was measured in MOE's Research on the Existence of Chemical Substances in FY2006.

Table 1-A Results

Measured concentration (µg/L)	Number of fish		Mortality (%)		Total length (mm)		Body weight (mg)	
	male	female	male	female	male	female	male	female
Control	12	12	0	0	34.5±0.7	34.1±0.4	435±20	471±40
Solvent control	12	12	0	0	34.7±0.9	33.7±0.2	449±28	442±29
0.0619	12	12	0	0	33.8±1.4	33.5±1.1	418±51	454±36
0.294	12	12	0	0	34.0±0.2	34.4±0.9	422±22	484±33
1.30	12	12	0	0	33.9±1.9	34.1±0.5	416±56	491±33

Table 1-B Results (continued)

Measured concentration (µg/L)	Number of eggs (eggs/female/day)	Number of fertile eggs (eggs/female/day)	Fertility rate (%)	Gonadosomatic Index (%)	
				male	female
Control	19.8±5.1	-	90.99±5.2	0.7±0.2	10.4±0.5
Solvent control	22.2±4.0	-	89.6±5.7	0.7±0.1	10.0±0.9
0.0619	19.3±3.6	-	91.9±3.2	0.7±0.1	9.9±0.7
0.294	20.9±3.1	-	92.7±4.3	0.7±0.1	9.7±0.5
1.30	24.1±1.8	-	93.5±2.8	0.7±0.1	10.0±0.1

Table 1-C Results (continued)

Measured concentration (µg/L)	Hepatosomatic Index (%)		Vitellogenin (ng/mg liver)		Secondary sex characteristics	
	male	female	male	female	male	female
Control	2.4±0.3	3.9±1.2	2.10±3.20	296±154	82.0±12.7	0.0±0.0
Solvent control	2.7±0.4	5.0±0.3	7.22±13.4	298±193	87.8±3.9	0.0±0.0
0.0619	2.7±0.3	4.3±0.7	nd	390±67.7	80.3±5.6	0.0±0.0
0.294	2.3±0.5	4.7±0.4	nd	370±212	87.8±7.2	0.0±0.0
1.30	2.5±0.2	4.4±0.8	nd	237±152	82.6±4.8	0.0±0.0

Table 1-D Results (continued)

Measured concentration (µg/L)	Other observations
Control	Not found
Solvent control	Not found
0.0619	Not found
0.294	Not found
1.30	Not found

Data show mean ± SD (standard deviation)

Statistically significant differences from control group (\*\*p<0.01, \*p<0.05)

nd: not detected (below detection limit of vitellogenin: 1ng/mg liver)

(-): not measured

Secondary sex characteristics: number of joint plates with papillary processes