Triclosan（CAS no. 3380-34-5）

Tier 1 *in vivo* Test

(1) Results

Fish were exposed to concentrations of 54.5, 103.9, 176.8 and 352.8μg/L (measured). No significant differences were observed in fertility rate, male and female gonadosomatic index and hepatosomatic index, male total length, body weight and secondary sex characteristics.

At 103.9μg/L, a significant decrease was observed in female body weight. At 176.8μg/L, a significant decrease was observed in female total length.

At 176.8μg/L and higher, a significant increase was observed in male and female mortality.

A significant increase was observed in female hepatic vitellogenin level, while a significant decrease was observed in male hepatic vitellogenin level at 176.8μg/L and higher.

A significant decrease was observed in number of eggs and number of fertile eggs at 352.8μg/L.

(2) Summary

The significant increase in male and female mortality at 176.8μg/L suggested adverse effect on Medaka.

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

The adverse exposure level of 176.8μg/L was ca. 1,900 times as high as the highest environmental water concentration of 0.093μg/L that was measured in MOE's Environmental Survey and Monitoring of Chemicals in FY2014.

Ishibashi *et al.* (2004)* have reported study results on matured male and female Medaka (*Oryzias latipes*) exposed to triclosan at the concentration of 12.8, 60.8 and 136.9μg/L (measured) for 21 days. At 12.8 and 60.8μg/L, an increase was observed in male hepatic vitellogenin level. At 12.8 and 136.9μg/L, an increase was observed in female gonadosomatic index. At 12.8μg/L, a decrease in F_1 hatchability and an increase of female hepatosomatic index were observed. At 60.8μg/L and higher, an increase in male gonadosomatic index was observed. At 136.9μg/L, a decrease in female body length and an increase in male hepatosomatic index were observed.

*Ishibashi H, Matsumura N, Hirano M, Matsuoka M, Shiratsuchi H, Ishibashi Y, Takao Y and Arizono K (2004) Effects of triclosan on the early life stages and reproduction of medaka *Oryzias latipes* and induction of hepatic vitellogenin. Aquatic Toxicology, 67 (2), 167-179.

Table 1-A Results

Measured concentration (µg/L)	Number of survived fish male and female	Mortality (%) male and female	Total length (mm) male	Total length (mm) female	Body weight (mg) male	Body weight (mg) female
Control	24	0	34.7±1.0	34.1±0.80	419.1±29.9	461±25
54.5	23	4.1	33.6±0.7	33.5±0.7	378.8±28.4	449±11
103.9	21	12.5	34.8±0.7	32.8±1.1	416.6±12.7	409±20*
176.8	17	29.1*	33.3±0.9	32.4±1.27*	379.8±66.2	425±45
352.8	12	50.0*	33.3±1.46	33.2±0.94	361 ±57	437±30

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	Gonadosomatic Index (%) female
Control	25±5.1	25±5.2	97±1.3	1.1±0.17	8.5±0.6
54.5	26±3.8	25±4.0	96±3.3	1.0±0.13	7.3±0.42
103.9	24±1.1	24±1.0	98±1.4	1.0±0.23	7.5±0.58
176.8	19±7.2	18±7.0	97±1.5	0.9±0.165	7.9±1.4
352.8	10±2.0*	10±1.89*	98±0.8	1.2±0.727	8.7±1.1

Table 1-C Results (continued)

Measured concentration (µg/L)	Hepatosomatic Index (%) male	Hepatosomatic Index (%) female	Vitellogenin (ng/mg liver) male	Vitellogenin (ng/mg liver) female	Secondary sex characteristics male	Secondary sex characteristics female
Control	1.4±0.18	4.4±0.48	5.4±5.4	581±142	118±6	-
54.5	1.6±0.23	3.8±0.40	3.3±4.7	616±220	118±6	-
103.9	1.5±0.09	3.7±0.79	4.5±2.7	698±32	123±14	-
176.8	1.4±0.41	3.8±0.30	0.9±0.1*	955±73*	106±4	-
352.8	2.4±1.08	4.5±0.23	1.0±0.3*	1,111±265*	113±19	-

Table 1-D Results (continued)

Measured concentration (µg/L)	Other observations
Control	Not found
54.5	Not found
103.9	Not found
176.8	Not found
352.8	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