

## **FY 2006 Survey Results of Water Pollution by Agricultural Chemicals Used at Golf Courses**

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The Ministry of the Environment (MOE) has compiled the monitoring results of drainages from golf courses conducted by prefectural governments or regional environment office in FY 2006 according to the "Provisional Guidelines on Prevention of Water Pollution through the Use of Agricultural Chemicals on Golf Courses" (hereinafter referred to as "the Guidelines"). The concentration of 45 agricultural chemicals in the drainages at 786 golf courses was monitored with 30,430 samples, and no sample exceeded the guideline target (Tables 1 & 2).

In order to prevent water pollution caused by agricultural chemicals used at golf courses, the MOE notified the Guidelines to the prefectural governments in May 1990, in which the method of water quality survey and guideline target, of drainage are established. Prefectural governments submit reports on the monitoring results to the MOE every year since FY 1990.

Table 1 Trend in Water Pollution by Agricultural Chemicals Used at Golf Courses

FY	Total number of golf courses surveyed	Number of agricultural chemicals surveyed	Total number of samples (A)	Total number of samples exceeding the guideline target (B)	Ratio of the samples exceeding the guideline target (B/A) (%)
2002	1,539	45	79,893	1	0.0013
2003	1,233	45	60,858	0	0
2004	997	45	45,880	0	0
2005	833	45	35,687	0	0
2006	786	45	30,430	0	0

Table 2 FY 2006 Survey Results of Water Pollution by Agricultural Chemicals Used at Golf Courses

Agricultural chemicals	Guideline target (mg/ l )	Concentration range detected( 1) (mg/ l )	Number of samples exceeding the guideline target	Total number of samples( 2)
<b>(Insecticides)</b>				
Acephate	0.8	ND to 0.001	0	547
Isoxathion	0.08	ND to 0.009	0	789
Isofenphos	0.01	ND	0	520
Ethofenprox	0.8	ND	0	483
Chlorpyrihos	0.04	ND	0	647
Diazinon	0.05	ND to 0.018	0	980
Thiodicarb	0.8	ND to 0.003	0	662
Trichlorfon(DEP)	0.3	ND to 0.001	0	499
Pyridaphenthion	0.02	ND	0	590
Fenitrothion (MEP)	0.03	ND to 0.0005	0	927
<b>(Fungicides)</b>				
Azoxystrobin	5	ND to 0.021	0	853
Isoprothiolane	0.4	ND to 0.001	0	716
Iprodione	3	ND	0	774
Iminoctadine-triacetate	0.06	ND	0	499
Etridiazol	0.04	ND	0	497
Oxine-copper	0.4	ND to 0.0005	0	663
Captan	3	ND	0	549
Chlorotalonil (TPN)	0.4	ND	0	785
Chloroneb	0.5	ND	0	740
Thiram	0.06	ND	0	652
Tolclofos-methyl	0.8	ND to 0.01	0	786
Flutoranil	2	ND to 0.0039	0	804
Propiconazole	0.5	ND	0	832
Pencycuron	0.4	ND to 0.047	0	970
Phosethyl	23	ND	0	546
Polycarbamate	0.3	ND	0	508
Metalaxyl	0.5	ND to 0.001	0	732
Mepronil	1	ND to 0.17	0	807
<b>(Herbicides)</b>				
Asulam	2	ND to 0.0066	0	938
Dithiopyr	0.08	ND to 0.001	0	665
Siduron	3	ND to 0.0003	0	656
Simazine	0.03	ND to 0.002	0	632

Terbucarb (MBPMC)	0.2	ND to 0.0028	0	530
Triclopyr	0.06	ND to 0.001	0	708
Napropamide	0.3	ND to 0.001	0	606
Halosulfuron-methyl	0.3	ND to 0.013	0	750
Pyributicarb	0.2	ND	0	608
Butamifos	0.04	ND	0	574
Flazasulfuron	0.3	ND to 0.001	0	585
Propyzamide	0.08	ND to 0.069	0	664
Bensulide (SAP)	1	ND	0	485
Pendimethalin	0.5	ND	0	815
Benfluralin	0.8	ND to 0.011	0	610
Mecoprop (MCP)	0.05	ND to 0.002	0	721
Methyldymron	0.3	ND	0	526
<b>Total</b>		-	<b>0</b>	<b>30,430</b>

- Notes:
1. Table above shows the data collected at drain outlets of golf courses.
  2. Total number of samples includes those collected from water outside of golf courses.
  3. Regarding the maximum concentration of Metalaxyl, it is indicated "Tr" as the data was over detection limit, 0.001mg/l, and under quantitation limit, 0.005mg/l.