Supporting Information

Hu et al. 10.1073/pnas.0809434106

SI Materials and Methods

Chemicals and Standards for Analysis of TPT and Its Ralted Chemicals. Monobutyltin trichloride (MBT, 97%), monophenyltin trichloride (MPT, 98%), and tropolone (98%) were purchased from ACROS ORGANICS. Diphenyltin dichloride (DPT, 96%) was obtained from Aldrich. Dibutyltin dichloride (DBT, 97%), tributyltin chloride (TBT, 95%), triphenyltin chloride (TPT, 95%), and sodium tetraethylborate ($NaBEt_4$, 98%) were purchased from Wako. Deuterated organotins, MBT-d_9, DBT-d_{18}, TBT-d_{27}, tetrabutyltin-d_{36} (TeBT-d_{36}), MPT-d_5, DPT-d_{10}, and TPT-d_{15} were obtained from Hayashi Pure Chemicals. Dichloromethane, methanol, and hexane were HPLC grade obtained from Fisher Scientific, and tetrahydrofuran was HPLC grade obtained from DIKMA. Diethyl ether was HPLC grade and purchased from Siyou Chemicals. Acetic acid, hydrochloric acid, and sodium acetate were AR grade. Anhydrous sodium sulfate and sodium chloride were heated at 450 °C for 6 h before usage. Florisil columns (1 g) were obtained from Waters. Water was obtained by a compact ultrapure water system (Easypure UV). Fresh $NaBEt_4$ solution of 5% (wt/vol) was prepared with tetrahydrofuran every month. An acetate buffer was made from acetic acid and sodium acetate solution. All of the solutions were stored at 4 °C in the dark.

Quantification of Organotins. One to 3 g (dependent on the lipid content) of different tissues of the Chinese sturgeon were homogenated and 100 μL of surrogate standard solution containing 1 mg/L of MBT-d_9, DBT-d_{18}, TBT-d_{27}, MPT-d_5, DPT-d_{10}, and TPT-d_{15} was added to each. The mixture was first extracted with 25 ml of 1 M HCl-methanol/ethyl acetate (1/1) by shaking for 10 min. Then, the samples were centrifuged for 10 min, and the supernatant was transferred to a separation funnel containing 100 mL of saturated NaCl solution. The extraction procedure was repeated again. Analytes were then extracted with 30 mL of ethyl acetate/hexane (3:2) solution twice by mechanical shaking for 5 min each time. Then, 100 mL hexane was added to the combined organic layer, and the mixture was left to stand still for 30 min. After the mixture had been passed through a layer of anhydrous sodium sulfate to remove moisture, it was concentrated by use of a rotary evaporator. Then the concentrate was mixed with 10 mL acetate buffer solution and 200 μL ethylborate reagent to derivatize target organotins. The derivatized samples were combined with 40 mL of 1 M KOH-ethanol solution to decompose any fat for 1 h. After the saponification, 40 mL pure water was added to the solution, and then extracted with 20 mL hexane by mechanical shaking for 10 min twice. The combined hexane extract was first concentrated and passed through a florisil cartridge column (conditioned with 10 mL hexane) covered with a layer of anhydrous sodium sulfate and then eluted with 7 mL of hexane/diethyl ether (9:1). After TeBT-d_{36} was added as the internal standard, the final solution was concentrated to 0.3 mL for GC/MS analysis.

All equipment was rinsed with acetone and hexane to avoid sample contamination, and a laboratory blank was also included during the process of analysis. To automatically correct the losses of analytes during extraction or sample preparation, and to compensate for variations in instrument response from injection to injection, quantification of the 6 organotins was conducted out by use of relative response factors of the analyte with their internal standards of deuterium-labeled surrogate analogues. In this study, the 6 deuterium-labeled surrogates were used to correct for extraction efficiencies during sample preparation and the signal variation of the GC-MS from one injection to another, and the internal standard TeBT-d_{36} was used to calculate the recoveries of the 6 deuterium-labeled surrogates. The calibration standard was prepared every day according to the following procedure. A 100 μL solution of organotin standards (1 mg/L) and their surrogates (1 mg/L) were added in 50 mL of acetate buffer solution (pH = 5.0). Then, 200 μL of ethylborate reagent and 2 mL hexane were combined with the mixture and shaken mechanically for both derivatization and extraction for 5 min. After the organic layer was removed, another 2 mL hexane was added to extract the analyte again. The organic layer was combined with the former one and concentrated to 0.3 mL under gentle nitrogen gas.

Quantification of PCBs. The mixture of standards of PCBs containing 142 PCBs (PCB 1, 2, 3, 4/10, 5/8, 6, 12/13, 14, 15, 16/32, 17, 18, 19, 20/33, 22, 24/27, 25, 26, 28/31, 29, 34, 35, 37, 40, 41/64/71, 42/59, 44, 45, 46, 47/48/75, 49, 51, 52/73, 53, 54, 56/60, 63, 66, 67, 69, 74, 70, 77, 81, 82, 83, 84/92, 85, 91, 93/95, 97, 99, 100/101, 103, 104, 105, 107, 110, 114, 87/90/115, 117, 118, 119, 122, 123, 124, 128, 129, 130, 131, 132/153, 134, 135/144, 136, 137, 138/163/164, 141, 146, 147, 149, 151, 154, 156, 157, 158, 165, 167, 170/190, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 183, 185, 187, 189, 191, 193, 194, 195, 196/203, 197, 199, 200, 201, 202, 205, 206, 207, 208, and 209; ordered by International Union of Pure and Applied Chemistry number) was purchased from AccuStandard. Aroclor 1254 and 1242 were purchased from Sino-Japan Friendship Centre for Environmental Protection. Hexane, dichloromethane and acetone were pesticide grade purchased from Fisher Scientific, and sodium sulfate and silica gel (100–200 mesh size) from Beijing Chemical Reagent Company.

Analysis for PCBs. The analytical method used to quantify the PCBs was based on a previous article (1) with some modifications; 2 g of freeze-dried eggs of the Chinese sturgeon were homogenized, and 200 μL of surrogate standard solution containing PCB 30, PCB 121, and PCB 198 were added to the each sample. The mixtures were transferred to 250 mL round-bottomed flasks and Soxhlet extraction were carried out for 24 h with 250 mL hexane/dichloromethane (1:3 vol/vol) added by 2 g of Na_2SO_4. After being concentrated to $\approx$1 mL by use of a rotary evaporator, the residue was sequentially passed through silica gel packed glass columns (impregnated with sulfuric acid) covered with 1 cm Na_2SO_4 layers. The columns were then eluted by 15 mL hexane and 10 mL dichloromethane sequentially. The elution was transferred to 4-mL bottles, and concentrated to dryness under gentle nitrogen followed by 200 μL hexane addition for GC-MS analysis.

All equipment was rinsed with acetone and hexane to avoid sample contamination, and a laboratory blank was also included during the process of analysis. To automatically correct the losses of analytes during extraction or sample preparation, and to compensate for variations in instrument response from injection to injection, quantification of PCB congeners was conducted out by use of relative response factors of the analyte with the internal standards. In this study, the PCB 30, PCB 121, and PCB 198 were used to correct for extraction efficiencies during sample preparation and the signal variation of the GC-MS from one injection to another. The calibration standard was prepared every day according to the following procedure.

The fortification experiments were conducted by adding a comparable amount of PCB congeners with the typical concen-

trations in Chinese sturgeon samples, which ranged from 10 to 50 ng/g wet weigh (ww). Recoveries of PCBs were in the range of 50–124%. The limit of quantification (LOQ) for different PCB congeners ranged from 0.02 to 1.21 ng/g ww.

Instrumental Conditions. The analysis for the 6 derivatized organotins was carried out on a GC-MS coupled with a Hewlett-Packard 5890 GC and a Hewlett-Packard 5971 MS. An HP-5MS capillary column (60 m 0.25 mm i.d. with a film thickness of 0.25 μm) was used for organotin analysis. The injector temperature was maintained at 270 °C. The temperature program increased from 60 (2 min) to 130 °C at a rate of 20 °C/min (26 min), and then to 280 °C at 20 °C/min (7 min). The injection volume was 1 μL, and the splitless mode was used. The mass spectrometer was operated in the electron impact ionization mode with an ionizing energy of 70 eV, and the data were acquired with selected ion monitoring mode (40 ms dwell time). The fragment ions were selected according to the most abundant ions in each oligomer. The concentrations of organotins are expressed as cationic species.

Instrumental analysis for PCBs was performed by GC-EI-MS (Shimadzu QP 2010 plus).

A DB-5MS capillary column (30 m $\times$ 0.25 mm $\times$ 0.1 μm film thickness; J&W Scientific) was selected for PCBs analysis. The injector and ion source temperature was held at 280 and 320 °C, respectively. The temperature program increased from 80 (4 min) to 160 °C at 20 °C/min, then to 230 °C at 2 °C/min. and then to 295 °C (5 min) at a rate of 30 °C/min. The injection volume was 1 μL, and the splitless mode was used. The MS was operated in the electron impact ionization mode with an ionizing energy of 70 eV, and the data were acquired with selected ion monitoring mode. The fragment ions were selected according to the most abundant ions in each PCB.

Nanoinjection of Eggs of Chinese Sturgeon. A limited number of eggs were collected from 1 wild-caught chinese sturgeon during the reproductive season (last 10 days of November 2008). One anadromous female (length 330 cm) and 1 anadromous male Chinese sturgeon (length 265 cm) were captured from Yichang of Yangtze River in 2008. After injecting luteinizing hormone releasing hormone A2 (LHR-A2; Ningbo second hormone factory) of 9 μg/kg body weight (BW) for female and 4.5 μg/kg body weight for male, fish spawned in the following 16 h at 18 °C. Egg and sperm were collected, and the eggs were artificially fertilized, and then the procedure for nanoinjection was carried out according to the method as described in the main text for Siberian sturgeon. Eighty eggs were injected with each treatment. Exposure concentrations of TPT were 0 (control, trioline), 30 or 150 ng/g ww with a final injection volume of 20 nL of trioline (vehicle control) or TPT stock solution per egg. The embryos and larvae were maintained in active carbon-treated water until ≈12 d posthatch, and then were inspected for deformities.

Yeast Assay for RAR-mediated Activity. The yeast 2-hybrid transactivation assay, which has been described in ref. 2 was applied to evaluate the RAR-mediated activity of samples. Yeast cells were preincubated at 30 °C for 16 h in 5 mL medium (6.7 g/L Difco yeast nitrogen base without amino acids, 0.2% glucose, 300 mg/L L-isoleucine, 1500 mg/L L-valine, 200 mg/L L-adenine hemisulfate salt, 200 mg/L L-arginine HCl, 200 mg/L L-histidine HCl monohydrate, 300 mg/L L-lysine HCl, 200 mg/L L-methionine, 500 mg/L L-phenylalanine, 200 mg/L L-threonine, 300 mg/L L-tyrosine, 200 mg/L L-uracil; Sigma); 50 μL of overnight culture and 2.5 μL of DMSO solution diluted to the desired concentrations were then added to 200 μL of fresh medium (2% galactose) in a microtube (Axygen Scientific), respectively. After yeasts were cultured for 4 h at 30 °C, 150 μL of the above culture was fractionated, and its absorbance at 595 nm was detected. The residual culture (100 μL) was centrifuged at 4 °C (15,000 $\times$ g) for 5 min, and the collected cells were resuspended in 200 μL of Z buffer (0.1 M sodium phosphate, pH 7.0/10 mM KCl/1 mM $MgSO_4$) containing 1 mg/mL Zymolyase 20T (Seikagaku), and incubated for 20 min at 30 °C. The enzymatic reaction was started by the addition of 40 μL of 4 mg/mL 2-nitrophenyl-β-D-galactopyranoside (ONPG; Tokyo Kasei), and incubated for 20 min at 30 °C. Then the enzymatic reaction was stopped by adding 1 M Na_2CO_3 (100 μL). After the above solution was centrifuged, 150-μL aliquots were placed into 96-wells of a microplate. Absorbances at 415 and 570 nm were read on a microplate reader (Bio RAD 550) to estimate the RAR-mediated activity, and the β-galactosidase activity (U) was calculated according to the following equation: $U = 1{,}000 \times ([OD_{415}] - [1.75 \times OD_{570}]/([t]\times[v]\times[OD_{595}])$, where t represents the reaction time (min); v is the volume of the culture used in the assay (mL); OD_{595} is the cell density at the start of the assay; OD_{415} is the absorbance by O-nitrophenol at the end of the reaction, and OD_{570} is the light scattering at the end of the reaction. In this assay, *all-trans*RA was used as positive control, and the molar concentration for each organotin that produces 50% (EC_{50}) of the maximum response of corresponding RAR agonistic activity was calculated by the Prism 4 for Windows program (GraphPad).

Tissue Distribution of Oragnotins in Chinese Sturgeon. The tissue distributions of BTs and PTs are given in Fig. S1. Because of the limited number of samples, kidney, spleen, and gallbladder are not included in the graph. The greatest concentration of BTs was measured in liver tissue (mean: 365 ng/g ww, ranging from 21 to 1,373 ng/g ww), followed by 1 kidney sample (74.4 ng/g ww). The BTs residues in other organs were 1 or 2 orders of magnitude less than those in liver. This profile of BTs distribution in tissues was similar to that of finless porpoise (3) and Dall's porpoise (4) from Japanese coastal waters. Concentrations of PTs decreased in the order: liver (mean: 168 ng/g ww, in the range of 38–468 ng/g ww)>kidney (122 ng/g ww)>heart (mean: 58 ng/g ww, in the range of 31–80 ng/g ww)>spleen (46 ng/g ww)>muscle (mean: 40 ng/g ww, in the range of 18–59 ng/g ww)>gill, roe, pancreas, gonad, gallbladder, adipose, intestine and stomach (range: 1.0–55.6 ng/g ww), which was in accordance with that of the Dall's porpoise collected in the northern North Pacific Ocean (5). Both BTs and PTs distributions revealed that liver and kidney had an important role in the burden of organotins in Chinese sturgeon, which is different from those of organochlorine compounds and musk fragrances in Chinese sturgeon (6). The lipid content in organs is often associated with the accumulation of many organic chemicals; however, there was no correlation between lipid contents of different tissues and the PTs or BTs concentrations, suggesting that organotins did not accumulate in organisms in a lipid-specific way as traditional lipophilic compounds do. The relatively great accumulation of BTs and PTs in the liver and kidney of Chinese sturgeon may be because of the close affinity of trialkyltin compounds with some amino acids, peptides and proteins (7).

Concentrations of PCBs in the Eggs of Chinese Sturgeon. Of 142 target PCBs, PCB 28/31, 52/73, 54, 47/48/75, 74, 56/60, 66, 93/95, 84/92, 100/101, 99, 87/90/115, 85, 118, 107, 105, 151, 149, 146, 165, 132/153, 138/163/164, 178, 187, 183, 177, 171, 180, and 170/190 were detected in the eggs of Chinese sturgeon. Of these PCBs detected, PCB 99, 132/153, and 138/163/164 were detected in all of the 14 egg samples, and PCB 85, 100/101, 118 and 28/31 were detected in 13, 12, 11 among 14 samples, respectively (Table S2). The mean concentration of total PCB congeners was 95.1 ± 78.2 ng/g ww (from 16.8 to 229 ng/g ww). Among 39 PCBs including coeluting congeners detected in the eggs of Chinese sturgeon,

PCB 132/153, 99, and 138/163/164 were predominant which accounted for 20.1 ± 5.4%, 15.2 ± 4.4% and 13.4 ± 8.1% of total PCBs. PCB 85, 118 were almost at the same level, which accounted for 7.8 ± 4.9%, and 6.0 ± 4.6% of the total PCBs concentration, respectively. The profile of PCBs in eggs of Chinese sturgeon is relatively similar to that of Aroclor 1254 compared with other commercial manufactured Aroclors such as Aroclor 1242, 1248, and 1260 (8) (Fig. S2). Compositions of Aroclor 1254 and 1242 which are similar to the 2 main PCB industrial products (i.e., PCB-3 and PCB-5) made in China, and the result indicated that 81% PCB congeners detected in samples were included in Aroclor 1254. Therefore, to investigate the potential toxicity of PCBs, sturgeon embryos were exposed to Aroclor 1254 under laboratory conditions.

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Fig. S1. Concentrations of BTs (right cluster) and PTs (left cluster) in different tissues of Chinese sturgeon. Data are presented in box-and-whisker plots; 50% of the cases have values within the boxes, and the edges of the box mark the 25th and 75th percentiles. a, PTs; b, BTs.

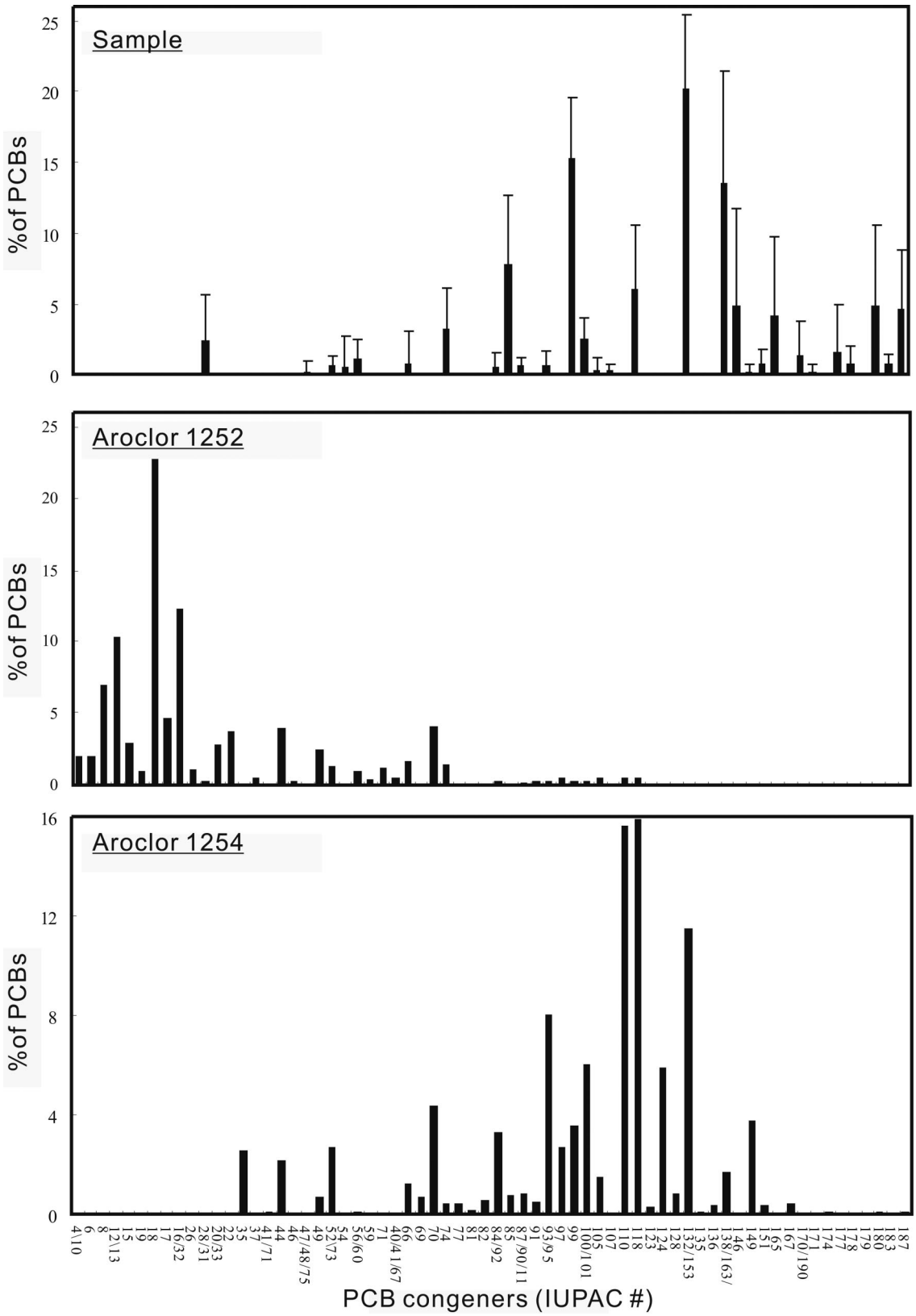

Fig. S2. Comparison of PCB profiles in the eggs of Chinese sturgeon with commercially manufactured Aroclor 1254 and 1242.

Table S1. Malformations of Siberian sturgeon (*Acipenser baerii*) larvae developed from eggs exposed via nanoinjection to Arcolor 1254, DBT, MBT, and DPT

		No.					
Type	Treatment	Eggs injected	Hatched larvae*	Survived larvae*	Abnormal skeletal larvae	Abnormal ocular larvae	Frequency of abnormal skeletal larvae, %
Blank	Untreated	—	—	1000	7	0	0.70
Control	triolein	666	472	436	4	0	0.92
Arcolor 1254	100 ng/g ww	1,220	842	798	9	0	1.13
—	300 ng/g ww	814	564	526	7	0	1.33
—	30 ng/g ww	663	462	426	5	0	1.17
DBT	150 ng/g ww	569	397	349	6	0	1.72
—	750 ng/g ww	521	199	168	2	0	1.19
—	30 ng/g ww	876	623	569	6	0	1.05
MBT	150 ng/g ww	643	452	414	3	0	0.72
—	750 ng/g ww	819	576	506	5	0	0.99
—	30 ng/g ww	559	402	387	4	0	1.03
DPT	150 ng/g ww	658	441	410	6	0	1.46
—	750 ng/g ww	452	323	296	6	0	2.03

*Eighteen days posthatch larvae.

Table S2. Half maximal EC_{50} and relative potency factors (RePs) of 6 organotins based on RXR reporter gene expression

	EC_{50}	ReP
TPT	9.6×10^{-9}	1
TBT	2.0×10^{-8}	0.47648
DPT	3.4×10^{-6}	0.00283
MPT	1.0×10^{-5}	0.00094
DBT	1.2×10^{-4}	0.00008
MBT	$>5.0 \times 10^{-3}$	$<2 \times 10^{-6}$
9*cis*-RA	7.8×10^{-8}	—

Table S3. Concentrations of PCBs in eggs (ng/g ww) of Chinese sturgeon

	Sample code														
PCBs	A0410	A0406	A0408	A0412	A0414	A0500	A0439	A0449	A0444	A0403	A0440	A0452	A0447	A0438	Mean	SD
28/31	1.7	ND	ND	2.0	ND	5.9	0.6	1.2	4.3	1.3	3.7	3.0	5.2	ND	2.1	2.0
52/73	ND	ND	ND	1.4	ND	2.9	0.6	ND	ND	0.7	1.7	ND	ND	ND	0.5	0.9
54	1.3	ND	0.7	ND	ND	ND	ND	1.6	ND	ND	ND	ND	ND	0.5	0.3	0.5
47	0.5	ND	ND	0.6	ND	0.4	0.2	ND	ND	0.3	1.0	ND	ND	0.4	0.2	0.3
74	1.7	1.0	1.9	7.7	2.6	8.7	ND	2.2	4.3	ND	5.8	ND	6.6	4.0	3.3	2.8
56/60	ND	0.3	ND	2.4	1.8	ND	ND	0.7	ND	1.4	3.4	ND	ND	0.6	0.7	1.0
66	1.4	ND	ND	4.5	ND	5.7	ND	ND	ND	ND	4.4	ND	3.7	1.7	1.5	2.0
93/95	0.6	ND	ND	1.5	ND	2.1	0.6	ND	1.5	0.6	2.1	ND	ND	ND	0.6	0.8
92/84	ND	ND	ND	ND	ND	6.6	ND	ND	4.8	ND	2.1	ND	ND	ND	1.0	2.0
100/101	0.4	0.4	2.6	4.4	1.0	6.7	1.5	ND	3.0	1.1	2.7	1.3	4.6	ND	2.1	1.9
99	2.8	2.1	6.3	25.6	6.5	34.3	4.8	6.0	18.6	8	23.9	7.0	30.2	11.8	13.4	11
90	ND	ND	0.4	ND	ND	1.4	ND	0.5	0.7	ND	2.3	0.6	ND	1.0	0.5	0.7
85	ND	1.2	5.6	19.3	5.4	7.6	5.0	2.4	5.4	3.6	7.3	3.6	ND	7.2	5.3	4.6
118	0.8	1.3	5.0	15.7	2.6	ND	1.8	1.4	29.5	2.1	15.5	ND	ND	5.7	5.8	8.3
107	ND	ND	ND	ND	ND	2.3	ND	ND	2.2	ND	2.0	ND	ND	ND	0.5	0.9
105	ND	ND	ND	ND	ND	ND	ND	ND	5.5	ND	ND	ND	ND	ND	0.4	1.4
151	ND	ND	ND	ND	ND	7.2	ND	ND	3.2	0.6	4.2	ND	ND	ND	1.1	2.1
149	ND	ND	ND	ND	ND	ND	ND	ND	2.6	ND	2.8	ND	ND	ND	0.4	0.9
146	ND	ND	16.8	8.7	ND	16	ND	ND	8.9	1.1	15.0	2.7	ND	ND	4.9	6.5
165	ND	2.1	ND	ND	ND	ND	ND	2.6	25.7	3.7	ND	ND	ND	6.6	2.9	6.6
153/132	4.4	4.3	9.5	41.4	10.8	48.6	6.1	6.5	12.3	7.4	27.7	6.9	53.0	21.5	18.6	17
138/163/164	1.3	2.0	17.3	47.7	12.6	20.4	6.8	2.3	1.9	3.1	12.5	2.6	21.2	10.5	11.6	12
178	ND	ND	ND	ND	ND	2.9	ND	ND	6.9	ND	2.2	ND	2.4	2	1.2	1.9
187	ND	1.2	ND	12.3	7.0	13.4	ND	1.7	2.2	ND	12.6	1.8	ND	7.8	4.3	5.0
183	ND	ND	ND	1.4	ND	3.5	ND	ND	1.2	ND	3.0	ND	3.0	2.6	1.0	1.3
177	ND	ND	ND	ND	ND	1.9	ND	ND	12.8	ND	1.0	ND	19.2	ND	2.5	5.7
171	ND	ND	ND	ND	ND	1.5	ND	ND	3.2	ND	ND	ND	ND	ND	0.3	0.9
180	ND	1.9	ND	3.8	ND	23	ND	1.4	ND	ND	17.4	ND	24.7	14.3	6.2	9.0
170/190	ND	ND	ND	ND	ND	6.4	ND	ND	ND	ND	5.3	ND	4.5	9.5	1.8	3.1
TOTAL	16.8	17.7	66	200	50.4	229	27.9	30.4	161	35.1	182	29.4	178	108	95.1	75

ND, less than limit of quantification.

Table S4. Rates of deformities in larvae of F1 generation and the capacity to produce viable offspring of medaka after TPT-Cl exposure

Exposure groups, ng/L	Accumulated TPT levels in female, ng/g ww	Rate of ocular deformities, %	Spawning frequency, %*	Spawned egg no. per female per day	Egg protein, μg/egg	No. of viable offspring produced by 1 female pre day
0 (Control)	Not detected	0	86.9 ± 8.13	24.25 ± 3.97	164 ± 5.44	19.5 ± 1.88
1.6	6.52 ± 0.56	0	83.33 ± 6.80	21.15 ± 4.08	155 ± 5.12	15.2 ± 3.42
8	28.9 ± 5.73	0.95 ± 0.78	65.47 ± 10.12	18.43 ± 3.29	152 ± 2.62	9.37 ± 1.07
40	141 ± 9.18	1.97 ± 1.31	55.95 ± 9.27	15.88 ± 3.06	146 ± 4.78	6.15 ± 1.21
200	720 ± 113	3.48 ± 1.62	40.47 ± 11.21	15.23 ± 2.93	136 ± 3.7	4.14 ± 1.47
1,000	4919 ± 571	6.72 ± 1.66	42.86 ± 13.11	13.85 ± 2.94	133 ± 3.40	3.67 ± 0.96

Data are presented as means ± standard deviation (9).
*Spawning frequency is the fraction of spawning females per day.

Table S5. Details of Chinese sturgeon samples used in this study

Sample code	Date of collection	Tissue	Age, year	Wt, kg	Length, cm	
					Total length	Body length
A0466	2003	L, M, H, Go, St, I, A, Gi, K	24	254	339	285
A0406	2004	R, L, M, H, Go, St, P	18	174	297	245
A0410	2004	R, L, M, H, Go, St, I, A, Gb	17	140	288	246
A0412	2004	R, L, M, H, Go, St, I, Gi, P	24	230	334	287
A0414	2004	R, L, M, I, A, Gi	25	263	337	285
A0408	2004	R	22	230	312	258
A0447	2005	R, L, M, H, Go, I, Gi	19	192	303	247
A0445	2005	L, M, H, Go, I, A, Gi	18	187	285	237
A0403	2005	R	24	260	338	280
A0444	2005	R	23	224	320	270
A0452	2005	R	23	207	322	282
A0449	2005	R	22	252	327	275
A0500	2005	R	22	227	317	261
A0439	2006	R, L, M, H, Go, St, I, A, Gi, Sp	21	223	312	262
A0438	2006	R	27	334	343	290
A0440	2006	R	17	176	290	250
A0441	2006	R	24	240	340	300

L, liver; M, muscle; H, heart; Go, gonad; St, stomach; I, intestines; A, adipose; Gi, gill; P, pancreas; K, kidney; Gb, gallbladder; R, roe; Sp, spleen. All sturgeons were female. Eggs and other tissues were collected from 17 sturgeon that were captured from the spawning location at Yichang on the Yangtze River, and died during the artificial propagation in each year between 2003 and 2006.