

In Inland China, Rice, rather than Fish is the major Pathway for Methylmercury Exposure

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Supplemental Material, Section 1: Methods for sampling and preparation

Water sample was stored in a 200 mL borosilicate glass bottle. Before fieldwork, the acid-washed borosilicate glass bottles were rigorously pre-cleaned by ultrapure water and heating for at least 45 minutes in a muffle furnace at 500°C. During collection, sample bottles were rinsed three times with river water prior to filling. Water samples were preserved by adding 0.4% (v/v) of distilled ultra-pure HCl within 24 hr. Sample bottles were tightly capped and placed into double plastic bags and stored in clean coolers (4°C) until processing and analysis. To ensure clean operation, polyethylene gloves were used throughout the whole processes.

For agriculture product samples, at each sampling site, a composite sample was composed of 5 sub-samples. All food samples were individually sealed into polyethylene bags avoids cross-contamination. In the laboratory, grain (rice and corn) and vegetable samples were first carefully washed with tap water for at least three times, and then with ultrapure water. After that,

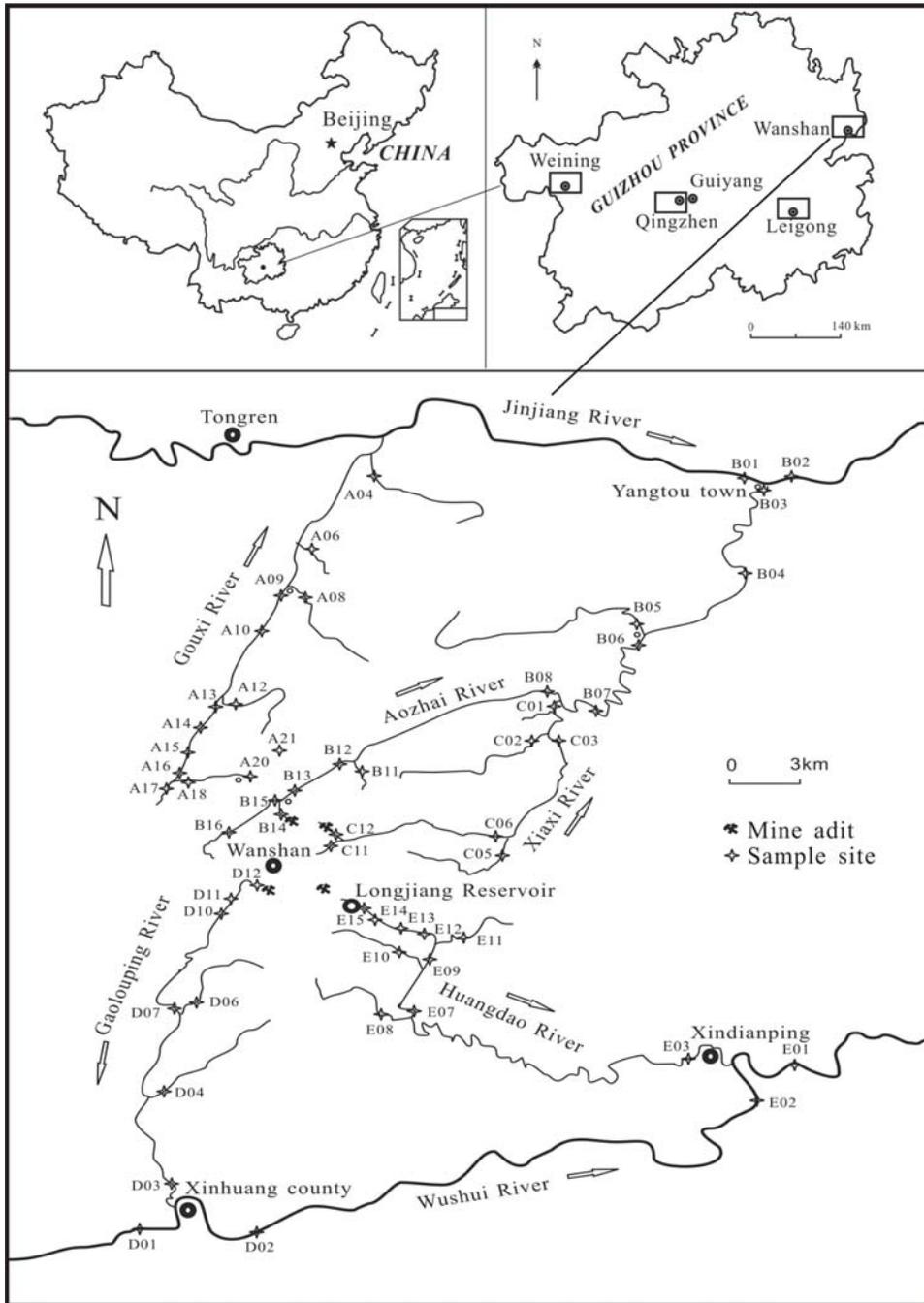
they were dried in an oven at 40 °C until they reached constant weight. And finally the edible part was crushed and ground by a grinder.

All precautions were taken in order to avoid any cross-contamination during the process. Two sub-samples were ground, the first was discarded and the second powdered sample was subsequently sealed in a polyethylene bag and stored in a refrigerator. The grinder was rigorously rinsed by ultrapure water and dried by a hair drier before a new sample cycle.

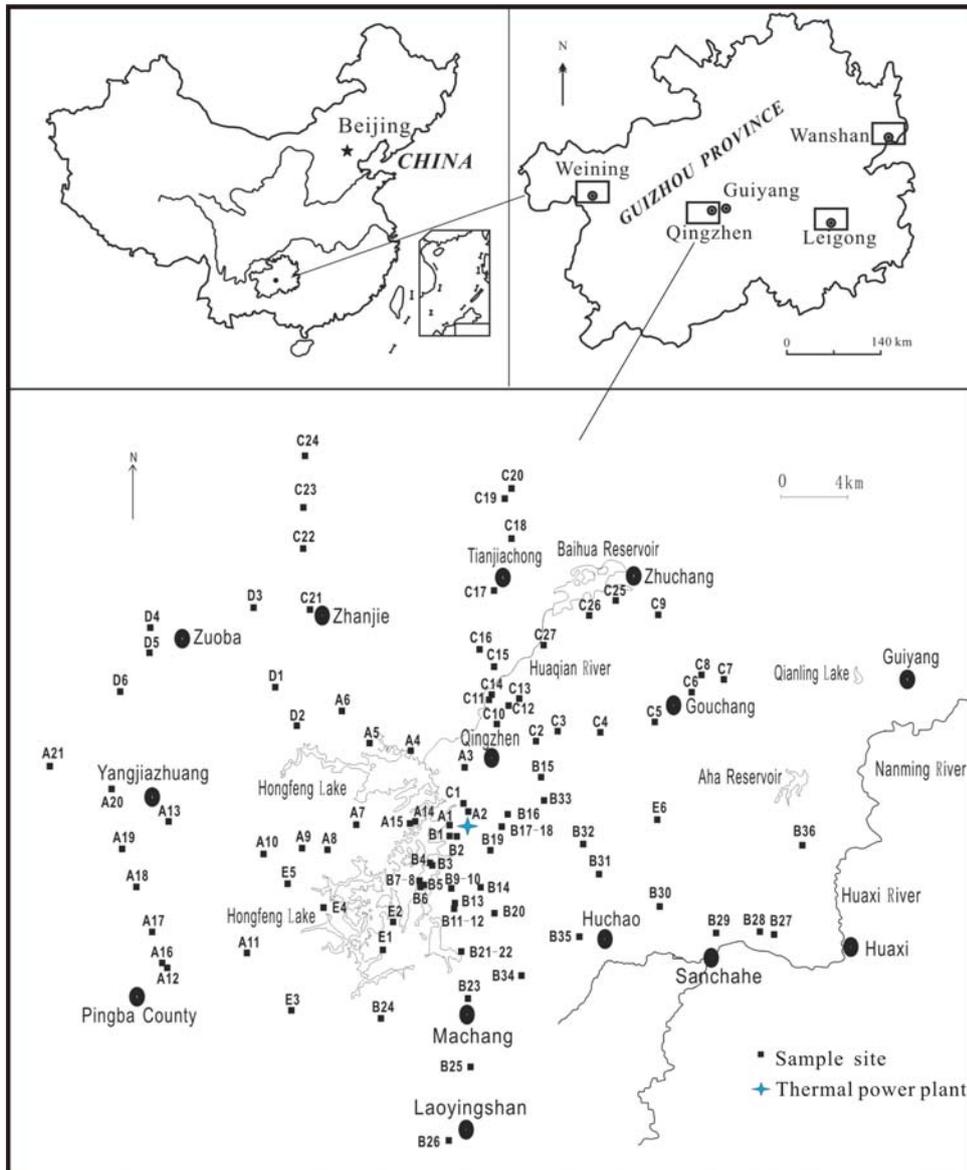
Supplemental Material, Section 2: QA/QC

The merits of the Hg analysis were assessed through the use of method blanks, blank spikes, matrix spikes, certified reference material and blind duplicates. All method blanks were observed to be below corresponding detection limits. Limits of determination for THg were 0.01 µg/kg in food samples and 0.02 ng/L for water samples. For MeHg, limits of determination were 0.003 µg/kg in food samples and 0.035 ng/L in water samples. The detection limit of Zeeman Mercury Analyzer RA-915+ for measurement of total gaseous mercury (TGM) is 2 ng/m³ at the applied flow rate through the instrument of 20 L/min. The average THg concentration of rice standard reference material (GBW10010) was 5.4 ± 0.4 µg/kg, which was comparable with the certified concentration of 5.3 ± 0.5µg/kg. An average MeHg concentration of 154 ± 3.3µg/kg were obtained from fish standard reference material (TORT-2) with a certified value of 152 ± 13 µg/kg. The percentage of recoveries of spiked samples ranged from 83 to 115% for MeHg in food and water samples. The relative percentage difference on duplicate samples were lower than 8 % for THg and MeHg in food and water duplicate samples.

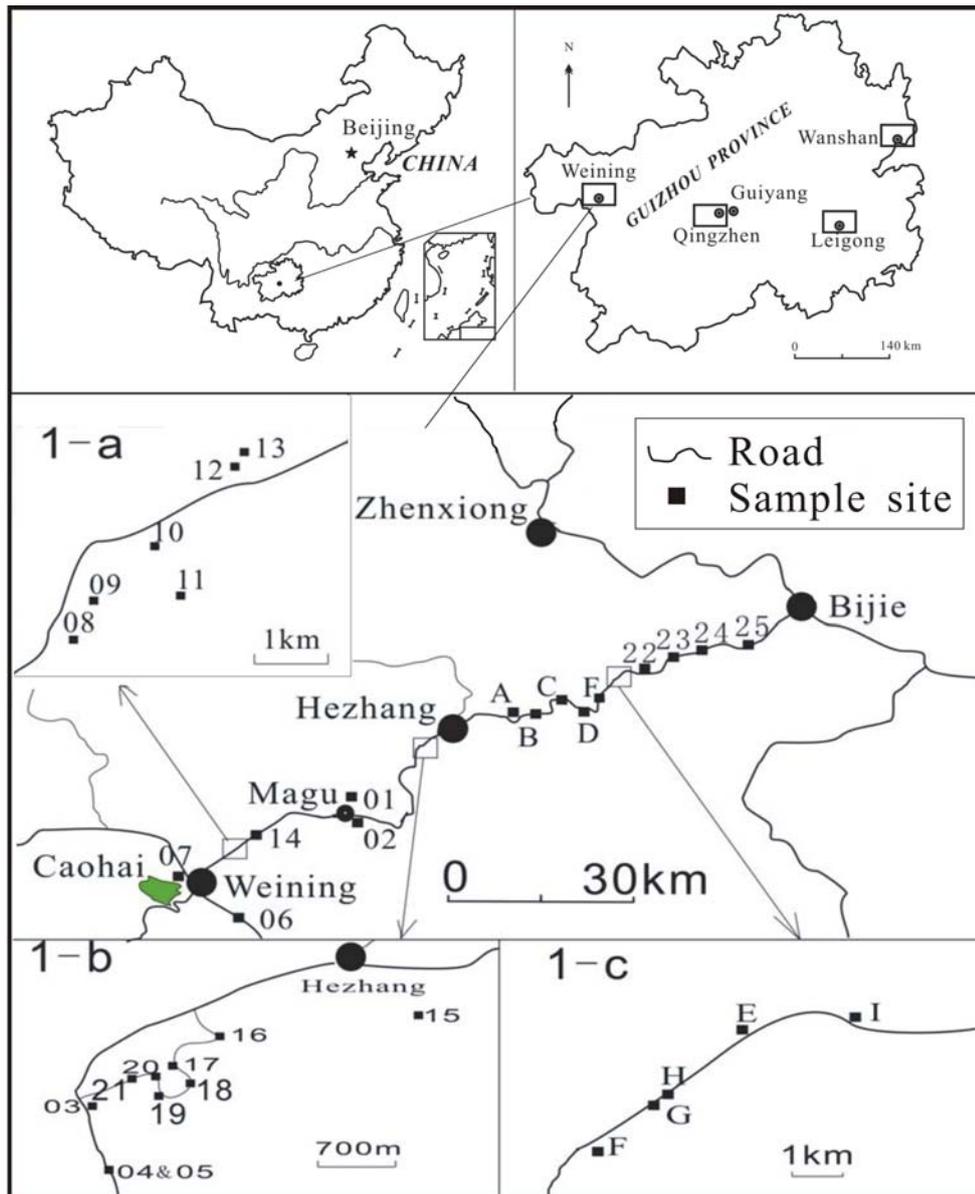
Supplemental Material, Figure 1. Map of sampling locations in Wanshan area in Guizhou province, China.



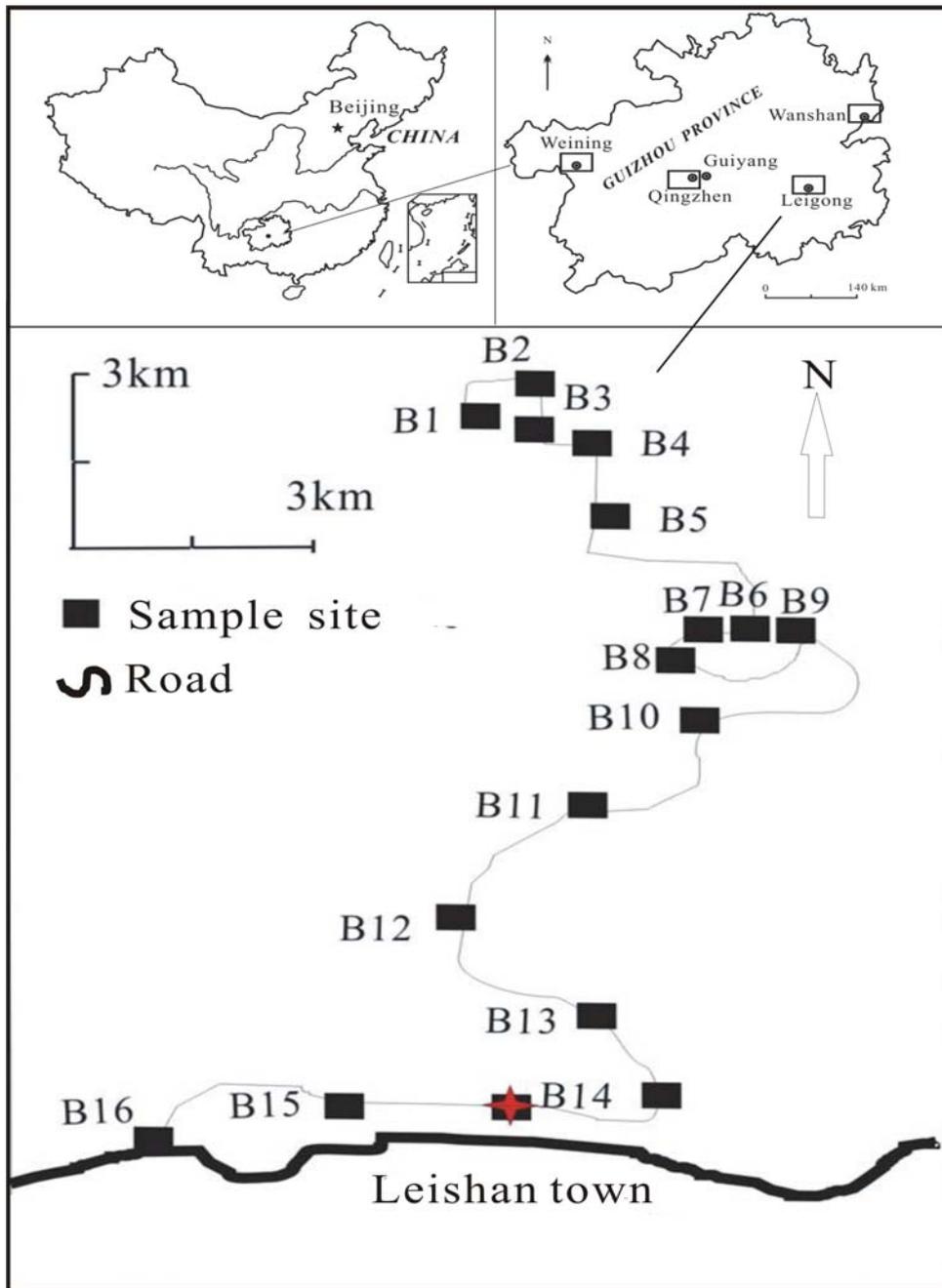
Supplemental Material, Figure 2. Map of sampling locations in Qingzhen area in Guizhou province, China.



Supplemental Material, Figure 3. Map of sampling locations in Weining area in Guizhou province, China.



Supplemental Material, Figure 4. Map of sampling locations in Leigong area in Guizhou province, China.



Supplemental Material, Table 1. THg and MeHg concentration of rice samples (dry weight, $\mu\text{g}/\text{kg}$) at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan	Qingzhen	Weining	Leigong
THg				
Mean(SD)	78(100)	5.5(4.9)	2.3(1.2)	3.2(2.1)
Range	7.3–508	1.0–25	1.3–6.4	1.2–7.7
MeHg				
Mean±SD	9.3(9.0)	2.2(1.7)	1.6(0.40)	2.1(1.7)
Range	1.2–44	0.12–9	0.42–3.7	0.24–6.1
No. of sites	59	65	16	10

Supplemental Material, Table 2. THg and MeHg in fish (wet weight, mg/kg) at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan ^a	Qingzhen & Weining & Leigong ^{b,c}
THg		
Mean(SD)	0.29(0.16)	0.063(0.078)
Range	0.061–0.68	0.0018–0.44
MeHg		
Mean(SD)	0.060(0.026)	0.014(0.016)
Range	0.024–0.98	0.006–0.20
No. of samples	17	228

^a (Qiu et al. 2009); ^b (Li et al. 2009); (MeHg data from Li et al. was estimated with same %MeHg in Wanshan as 30%).

Supplemental Material, Table 3. Total gaseous mercury (TGM) (ng/m^3) concentrations in ambient air at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan	Qingzhen ^a (Weining ^b)	Leigong ^c
Mean(SD)	93(194)	7.54(2.22)	2.8(1.51)
Range	8.0–1160	4.6–9.96	
No. of sites	59	4	1

^a(Feng et al. 2004a); ^b data in Weining were estimated as the same as in Qingzhen; ^c (Fu et al. 2009).

Supplemental Material, Table 4. THg and MeHg in drinking water (ng/L) at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan	Qingzhen ^a	Weinnig ^b	Leigong
THg				
Mean(SD)	50(45)	19(11)	13(3.8)	1.5(1.3)
Range	26–122	6.9–31	8.1–18	0.4–2.9
MeHg				
Mean(SD)	0.064(0.043)	0.22(0.07)	0.13(0.04)	0.047
Range	0.041–0.12	0.05–0.33	0.08–0.18	<0.035–0.060
No. of sites	10	5	5	3

^a (Feng et al. 2004a) and (He et al. 2008); ^b(Feng et al. 2004b).

Supplemental Material, Table 5. THg and MeHg in vegetable (wet weight, µg/kg) at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan ^a	Qingzhen	Weining (Leigong ^b)
THg			
Mean(SD)	132(83)	4.0(1.3)	2.5(1.2)
Range	19–253	1.3–7.8	1.2–5.4
MeHg			
Mean(SD)	0.097(0.011)	0.032(0.013)	0.023(0.014)
Range	0.02–0.51	0.008–0.064	0.008–0.043
No. of sites	105	31	10

^a present study(n=15), (Feng et al. 2008) (n=90);

^bdata in Leigong was estimated as the same as in Weining.

Supplemental Material, Table 6. THg and MeHg in pork and poultry (wet weight, µg/kg) at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan		Qingzhen & Weining & Leigong	
	Pork ^a	duck ^b	Pork ^c	Chicken ^c
	THg			
Mean(SD)	220(230)	160(34)	17	39
Range	7.5–570			
	MeHg			
Mean(SD)	0.85(1.2)	2.4(0.5) ^d	0.26 ^d	0.56 ^d
Range	0.05–3.4			
No. of samples	7	7	4	4

^a (Feng et al. 2008); ^b (Ji et al. 2006); ^c estimated data from (Cheng et al. 2009);

^d Estimated with the same %MeHg (1.5%) as in Wanshan pork.

Supplemental Material, Table 7. THg and MeHg in corn (dry weight, µg/kg) at four areas for exposure assessment in Guizhou, China.

Areas	Wanshan	Qingzhen	Weinnig	Leigong
	THg			
Mean(SD)	2.3(0.72)	1.9 (0.73)	0.71(0.33)	0.59(0.25)
Range	1.17–3.5	0.8–3.1	0.44–1.8	0.56–0.83
	MeHg			
Mean(SD)	0.25(0.086)	0.21(0.087)	0.15(0.029)	0.13(0.009)
Range	0.15–0.43	0.07–0.38	0.11–0.19	0.12–0.15
No. of sites	7	12	27	3

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