

Supplementary Materials

Table S1. The values and significance of parameters of health risk calculating.

parameters	Unit and value	significance	reference
C _{water}	mg/L	Concentration in groundwater	[45]
CS	mg/kg	Exposure-point concentration	[45]
EF	365 d/a	Exposure frequency	[45]
ED	adults 70 a; children 6a	Exposure duration	[45]
ET	24 h/d	Exposure frequency	[45]
AT	365 × ED day	Averaging time for (non)carcinogens	[45]
BW	adults: 70 kg and children: 18 kg	Bodyweight	[46]
SA	adults 5700 cm ² ·day ⁻¹ , children and 2800 cm ² ·day ⁻¹	Exposed skin area	[45]
AF	adults 0.07 mg·cm ⁻² , children 0.02 mg·cm ⁻²	Adherence factor	[45]
ABS	0.001	Dermal absorption fraction	[45]
PEF	1.36 × 10 ⁹ m ³ ·kg ⁻¹	Particle emission factor	[6]
CF	10 ⁻⁶ kg·mg ⁻¹	Units conversion factor	[45]
IRS	adults 100 mg·d ⁻¹ , children and 200 mg·d ⁻¹	Ingestion rate	[45]
IR _{wheat}	adults 0.225 kg·d ⁻¹ , children 0.075 kg·d ⁻¹	Ingestion rate of wheat	[34]
IR _{water}	adults 1.82 L·person ⁻¹ ·d ⁻¹ , children 1.06 L·person ⁻¹ ·d ⁻¹	Ingestion rate of water	[47]
RFD	RFD ingestion: 0.001 mg·kg ⁻¹ ·d ⁻¹ , RFD inhale: 0.00001 mg·kg ⁻¹ ·d ⁻¹ , RFDdermal: 0.00001 mg·kg ⁻¹ ·d ⁻¹	Chronic reference	[45]
SF	SFingestion: 15kg·d·mg ⁻¹ , SFinhale: 6.3 kg·d·mg ⁻¹ .	Slope factor	[45]

Table S2. The correlations coefficient between Cd-T and 7 fractions and Cdwheat.

	Cdwheat	Cd-T	Cd-1	Cd-2	Cd-3	Cd-4	Cd-5	Cd-6	Cd-7
Cdwheat	1								
Cd-T	0.307**								
Cd-1	0.044	0.625**	1						
Cd-2	0.320**	0.995**	0.604**	1					
Cd-3	0.141*	0.894**	0.780**	0.874**	1				
Cd-4	0.300**	0.686**	0.182**	0.669**	0.439**	1			
Cd-5	0.121	0.427**	0.416**	0.402**	0.391**	0.240**	1		
Cd-6	0.013	0.056	0.018	0.049	0.042	0.009	0.051	1	
Cd-7	0.390**	0.927**	0.379**	0.932**	0.675**	0.756**	0.317**	0.023	1

**. Correlation is significant at $P < 0.01$ *. Correlation is significant at $P < 0.05$ level. Cd-1 water-soluble, Cd -2 exchangeable, Cd -3 carbonate-bound, Cd -4 humic acid-bound, Cd -5 Fe-Mn oxide-bound, Cd -6 organic matter-bound, Cd -7 residual, Cd-T total content

Table S3. Total Variance Explained of PCA.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.923	43.594	43.594	3.923	43.594	43.594	2.855	31.717	31.717
2	1.286	14.294	57.888	1.286	14.294	57.888	2.318	25.756	57.474
3	1.054	11.708	69.596	1.054	11.708	69.596	1.091	12.123	69.596
4	0.953	10.592	80.188						
5	0.787	8.741	88.929						
6	0.609	6.770	95.698						
7	0.252	2.805	98.503						
8	0.123	1.367	99.870						
9	0.012	0.130	100.000						

Extraction Method: Principal Component Analysis.

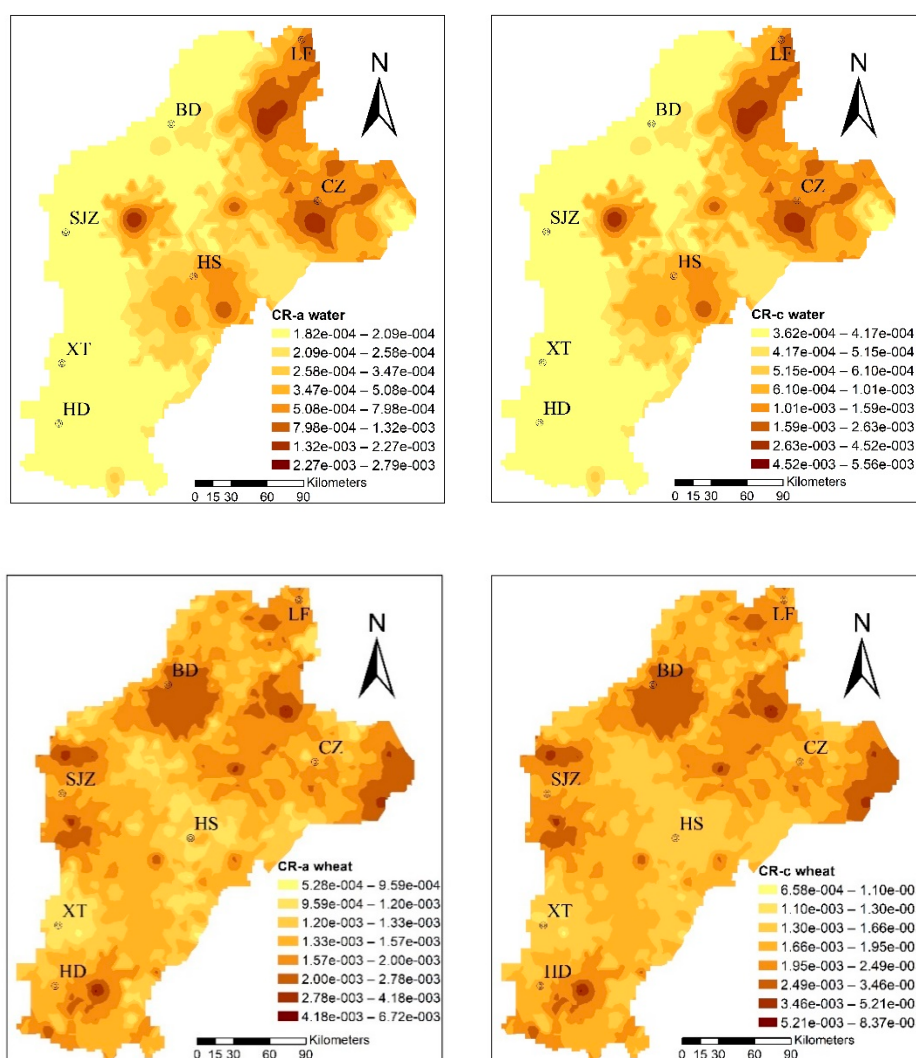
Table S4. Rotated Component Matrix^a of 1,2,3 components.

elements	Component 1	Component 2	3Component 3
Cd1	0.894	-0.016	-0.060
Cd2	0.740	0.630	0.002
Cd3	0.886	0.309	-0.052
Cd4	0.260	0.801	0.172
Cd5	0.601	0.069	0.212
Cd6	0.128	-0.152	0.683
Cd7	0.515	0.788	0.038
Cdwheat	-0.073	0.693	-0.067
Fe2O3	-0.082	0.231	0.733

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

^a. Rotation converged in 5 iterations.



FigureS1. The spatial Distribution of cancer risk to adults and children predicted by water and wheat when ingestion.