

Principal component analysis process.

The method of PCA was used to quantify the sources of soil PAHs in 20 urban agglomerations from 2000 to 2010 and 2011 to 2020. There was a linear correlation between the studied variables (correlation coefficient between each group of variables was greater than 0.3), and the data structure was reasonable (Kaiser-Meyer-Olkin test coefficients were 0.81 and 0.77, respectively, and the Bartlett's test result was $P < 0.001$), suggesting that the study data could be extracted and principal components with characteristic values greater than 0.8 were selected. The PAH source factor loads on the principal component was inferred, the standardized principal component score variable was taken as the independent variable, and the total standardized content of the 16 PAHs was taken as the dependent variable. Multiple linear regression (stepwise regression) was performed, and the standardized regression coefficient reflected the relative contributions of the various sources. Stepwise regression was performed with a default significance level of 0.05.

The data mentioned above comes from Page 2-6.

IBM SPSS Web Report - 2000-2010

Log

Log - Log - November 30, 2023

FACTOR

```
/VARIABLES NAP ANY ACE FLO PHE ANT FLA PYR BaA CHR BbF BkF BaP IcdP DahA BghiP
/MISSING LISTWISE
/ANALYSIS NAP ANY ACE FLO PHE ANT FLA PYR BaA CHR BbF BkF BaP IcdP DahA BghiP
/PRINT KMO ROTATION
/CRITERIA FACTORS(3) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(100)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

Factor Analysis

Factor Analysis - KMO and Bartlett's Test - November 30, 2023

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.821
Bartlett's Test of Sphericity	Approx. Chi-Square	3199.191
	df	120
	Sig.	.000

Factor Analysis

Factor Analysis - Component Matrix - November 30, 2023

Component Matrix^a



a. 3 components
extracted.

IBM SPSS Web Report - 2000-2010

Factor Analysis

Factor Analysis - Rotated Component Matrix - November 30, 2023

Rotated Component Matrix^a

	Component		
	1	2	3
NAP	.033	.310	.771
ANY	.724	.025	.584
ACE	.546	.015	.594
FLO	.901	.244	.243
PHE	.842	.464	.229
ANT	.925	.184	.202
FLA	.757	.581	.231
PYR	.704	.639	.241
BaA	.738	.636	.122
CHR	.630	.701	.267
BbF	.473	.809	.230
BkF	.693	.643	.032
BaP	.600	.752	.198
IcdP	-.071	.945	.132
DahA	.663	.468	-.115
BghiP	.913	.240	.197

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 26 iterations.

Factor Analysis

Factor Analysis - Total Variance Explained - November 30, 2023

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	7.555	47.217	47.217
2	4.850	30.313	77.530
3	1.801	11.259	88.789

Extraction Method: Principal Component Analysis.

IBM SPSS Web Report - 2000-2010

Factor Analysis

Factor Analysis - Component Transformation Matrix - November 30, 2023

Component Transformation Matrix

Component	1	2	3
1	.778	.567	.272
2	-.517	.823	-.237
3	-.358	.044	.933

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

IBM SPSS Web Report - 2011-2020

Log - Log - November 30, 2023

DATASET ACTIVATE 数据集3.

FACTOR

/VARIABLES NAP ANY ACE FLO PHE ANT FLA PYR BaA CHR BbF BkF BaP IcdP DahA BghiP

/MISSING LISTWISE

/ANALYSIS NAP ANY ACE FLO PHE ANT FLA PYR BaA CHR BbF BkF BaP IcdP DahA BghiP

/PRINT KMO ROTATION

/CRITERIA MINEIGEN(1) ITERATE(25)

/EXTRACTION PC

/CRITERIA ITERATE(25)

/ROTATION VARIMAX

/METHOD=CORRELATION.

Factor Analysis

Factor Analysis - Active Dataset - November 30, 2023

Factor Analysis

Factor Analysis - KMO and Bartlett's Test - November 30, 2023

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.763
Bartlett's Test of Sphericity	Approx. Chi-Square	1594.806
	df	120
	Sig.	.000

IBM SPSS Web Report - 2011-2020

Factor Analysis

Factor Analysis - Component Matrix - November 30, 2023

Component Matrix^a



a. 4 components
extracted.

Factor Analysis

Factor Analysis - Rotated Component Matrix - November 30, 2023

Rotated Component Matrix^a

	Component			
	1	2	3	4
NAP	.018	.721	-.003	.131
ANY	.067	.186	.110	.954
ACE	.003	-.047	-.060	.961
FLO	.234	.897	.084	-.033
PHE	.413	.778	.141	.021
ANT	.491	.555	.316	.008
FLA	.783	.252	.373	.128
PYR	.843	.357	.198	.069
BaA	.909	.179	.267	.018
CHR	.063	.054	.897	.039
BbF	.942	.196	.141	.024
BkF	.725	.120	.527	.044
BaP	.893	.179	.329	.059
IcdP	.908	.113	-.071	-.038
DahA	.892	.126	-.010	-.028
BghiP	.351	.141	.776	-.016

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Factor Analysis

Factor Analysis - Total Variance Explained - November 30, 2023

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	6.581	41.133	41.133
2	2.622	16.457	57.590

2	2.033	10.437	57.390
3	2.210	13.813	71.403
4	1.883	11.771	83.175

Extraction Method: Principal Component Analysis.

IBM SPSS Web

Report - 2011-2020

Factor Analysis

Factor Analysis - Component Transformation Matrix - November 30, 2023

Component Transformation Matrix

Component	1	2	3	4
1	.858	.383	.337	.065
2	-.263	.390	.054	.881
3	.296	-.835	.109	.451
4	-.329	-.063	.934	-.127

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.