Supplementary material

Multivariate Statistical Methods and GIS-Based Evaluation of Potable Water in Urban Children's Parks Due to Potentially Toxic Elements Contamination: A Children's Health Risk Assessment Study in a Developing Country

Junaid Ghani[1], Javed Nawab[2,*], Zahid Ullah[3], Naseem Rafiq[4], Shah Zaib Hasan[5], Sardar Khan[6], Muddaser Shah[7,8], Mikhlid H. Almutairi[9]

[1] Department of Biological, Geological and Environmental Sciences, Alma Mater Studiorum University of Bologna, 40126, Bologna, Italy; junaid.ghani2@unibo.it
[2] Department of Environmental Sciences, Kohat University of Science and Technology, Kohat, 26000, Pakistan; javednawab@kust.edu.pk
[3] School of Environmental Sciences, China University of Geosciences, Wuhan, 430074, China; 2201890048@cug.edu.cn
[4] Department of Zoology, Abdul Wali Khan University Mardan, Mardan 23200, Pakistan; naseem@awkum.edu.pk
[5] Faculty of Environmental Sciences, Czech University of Life Sciences Prague, 16500, Prague, Czech Republic; hasans@fzp.czu.cz
[6] Department of Environmental Sciences, University of Peshawar, Peshawar, 25120, Pakistan; sardar@uop.edu.pk
[7] Department of Botany, Abdul Wali Khan University, Mardan 23200, Pakistan; muddasershah@awkum.edu.pk
[8] Natural and Medical Sciences Research Center, University of Nizwa, Nizwa 616, Oman
[9] Zoology Department, College of Science, King Saud University, P.O. Box: 2455, 11451, Riyadh, Saudi Arabia; malmutari@ksu.edu.sa

Corresponding author E-mail address: javednawab@kust.edu.pk (J.N.).

Table S1. The mean Wi and Qi calculation for groundwater samples of the study area.

Parameter	Standard Permissible Value (µg/L) Si	Highest Desirable Value (µg/L) Ii	Unit Weight (Wi)	Sub-Index (Qi)	Wi×Qi
Cd	5	3	0.20	5.37	7.37
Cr	50	-	0.02	99.9	1.41
Pb	10	-	0.10	15.3	7.06
Ni	70	20	0.014	27.7	0.31
Cu	1500	50	0.00067	3.40	0.002

Table S2. Parameter values used for daily metal intake in health risk models

Factor	Definition	Unit	Value for children	Value for adult	References
IR	Ingestion rate	mg/day	1.8	2	[45]
EF	Exposure frequency	days/year	365	365	[45]
ED	Exposure duration	years	6	30	[45]
BW	Body weight	kg	16	70	[45]
AT	Average time	days	ED×365	ED×365	[67]
AT_c	Average time	days	LT×365	LT×365	[79]
ABS	Dermal absorption factor	-	0.001	0.001	[45]
SA	Skin-surface area	Cm^2	18000	18000	
Kp	Permeability coefficient	Cm/hr	Cr 0.002, Pb, Cd, Cu 0.001, Ni 0.0002		
ET	Exposure time	hd^{-1}	0.58	10.58	[45]
CF	Conversion factor	L/cm^3	0.001	0.001	
RfD	Chronic inhalation unit risk	$\mu g\ m^{-3}$	Ingestion: Cd 5.00E-01, Cr 3.00E+00, Pb 1.40E+00, Ni 2.00E+01, Cu 4.00E+01. Dermal: Cd 5.00E-03, Cr 1.50E-0, Pb 4.20E-01, Ni 5.40E+00, Cu 1.20E+01		[45]
CSF	Cancer slope factor	$(mg/kg\text{-}d)^{-1}$	Cd 6.10E+00, Cr 4.10E+01, Pb 8.50E+00, Ni 8.40E-01		[45]

Table S3. Physiochemical and PTEs mean concentration (µg/L) in drinking water sources of UCPs in KPK, Pakistan.

	pH		EC		TDS		Cd		Cr		Pb		Ni		Cu	
UCPs	**Range**	**Mean ±**	**Range**	**Mean ±**	**Range**	**Mean ±**	**Range**	**Mean ±**	**Range**	**Mean ±**	**Range**	**Mean ±**	**Range**	**Mean ±**	**Range**	**Mean ±**
BPC	6.40 –7.50	6.95 ± 0.78	478–892	685 ± 293	220–405	313 ± 131	1.31–7.40	4.35 ± 4.31	5.96–17.3	11.6 ± 8.0	2.99–14.0	8.49 ± 7.79	7.37–31.6	19.5 ± 17.1	2.40–59.9	31.1 ± 40.6
SPC	6.82 –7.96	7.39 ± 0.81	412–758	585 ± 245	275–498	387 ± 158	3.36–10.5	6.95 ± 5.08	3.44–21.6	12.5 ± 12.8	6.17–12.6	9.37 ± 4.53	6.36–22.8	14.6 ± 11.7	5.60–32.5	19.0 ± 19.0
ZPP	6.75 –7.58	7.17 ± 0.59	560–996	778 ± 308	345–636	491 ± 206	1.01–7.10	4.05 ± 4.31	1.92–16.9	9.40 ± 10.6	11.1–32.8	21.9 ± 15.3	9.01–29.4	19.2 ± 14.4	9.50–18.6	14.0 ± 6.40
TPP	6.80 –7.90	7.35 ± 0.78	625–1245	935 ± 438	382–552	467 ± 120	1.28–5.92	3.60 ± 3.28	2.28–24.8	13.5 ± 15.9	3.68–15.4	9.54 ± 8.29	2.25–17.1	9.70 ±1 0.5	39.2–174	106 ± 95.7
JPN	7.20 –8.15	7.68 ± 0.67	490–1394	942 ± 639	646–1058	852 ± 291	0.57–1.68	1.12 ± 0.78	4.33–28.6	16.5 ± 17.2	0.95–4.0	2.45 ± 2.12	5.59–37.3	21.4 ± 22.4	17.4–133	75.5 ± 82.2
DWPN	7.60 –8.00	7.80 ± 0.28	574–1165	870 ± 418	727–1245	986 ± 366	0.24–0.61	0.42 ± 0.26	6.45–35.7	21.1 ± 20.7	1.19–8.80	4.97 ± 5.35	4.24–14.0	9.10 ± 6.90	26.6–134	80.6 ± 76.4
PWLPH	6.65 –7.80	7.23 ± 0.81	510–1252	881 ± 525	265–852	559 ± 415	0.89–2.48	1.68 ± 1.12	16.5–86.3	51.4 ± 49.4	8.21–22.4	15.2 ± 10.0	10.8–40.8	25.8 ± 21.2	38.8–222	130 ± 129
APH	6.80 –8.20	7.50 ± 0.99	532–1385	959 ± 603	372–785	579 ± 292	1.18–3.05	2.11 ± 1.32	13.7–84.7	49.2 ± 50.2	1.73–15.2	8.45 ± 9.51	8.13–28.2	18.2 ± 14.2	18.1–90.4	54.2 ± 51.1
SKIPS	6.45 –7.52	6.99 ± 0.76	348–635	492 ± 203	255–635	445 ± 269	0.61–1.02	0.81 ± 0.29	12.3–79.8	46.1 ± 47.7	1.03–10.4	5.69 ± 6.60	6.61–26.4	16.5 ± 14.0	29.6–168	98.8 ± 97.9
WWPS	6.60 –7.66	7.13 ± 0.75	460–865	663 ± 286	375–690	533 ± 223	1.49–4.01	2.75 ± 1.78	37.7–98.8	68.3 ± 43.2	0.78–7.90	4.35 ± 5.05	12.8–36.4	24.7 ± 16.6	19.4–102	60.7 ± 58.4
APS	6.85 –8.20	7.53 ± 0.95	525–722	624 ± 139	350–775	563 ± 301	0.27–1.08	0.67 ± 0.57	3.98–44.8	24.4 ± 28.8	0.62–8.20	4.39 ± 5.33	0.24–5.10	2.60 ± 3.40	11.3–28.1	19.6 ± 11.9
GCGPS	7.60 –8.10	7.85 ± 0.35	440–658	549 ± 154	395–742	569 ± 245	1.21–2.30	1.75 ± 0.77	43.2–98.9	71.1 ± 39.4	1.14–8.0	4.56 ± 4.84	11.0–28.0	19.5 ± 12.0	25.2–106	65.7 ± 57.3
SCPM	6.70 –7.80	7.25 ± 0.78	368–758	578 ± 276	240–482	361 ± 171	0.87–4.46	2.66 ± 2.54	33.1–89.8	61.5 ± 40.1	3.88–18.9	11.3 ± 10.6	8.02–31.0	19.5 ± 16.3	18.6–169	94.0 ± 106
YSPM	6.95 –8.20	7.58 ± 0.88	410–948	679 ± 380	276–498	387 ± 157	0.38–1.60	0.99 ± 0.86	40.9–81.5	61.3 ± 28.7	1.68–13.7	7.69 ± 8.50	13.5–25.0	19.2 ± 8.10	39.3–206	122 ± 118
GNPC	6.30 –8.10	7.20 ± 1.27	460–825	643 ± 258	286–522	404 ± 167	0.24–0.63	0.43 ± 0.28	5.52–37.3	21.4 ± 22.4	0.38–1.80	1.08 ± 0.99	4.01–13.1	8.50 ± 6.40	21.2–188	104 ± 118
PTPC	6.10 –7.80	6.95 ± 1.20	426–728	577 ± 214	266–488	377 ± 157	0.09–0.19	0.14 ± 0.07	9.89–59.5	34.7 ± 35.1	0.37–7.0	3.69 ± 4.70	0.21–9.20	4.70 ± 6.30	1.90–15.2	8.50 ± 9.40
HNPDK	7.20 –8.15	7.68 ± 0.67	335–1095	715 ± 537	568–974	771 ± 287	0.15–1.02	0.58 ± 0.62	17.6–65.7	41.7 ± 34.0	0.82–10.2	5.51 ± 6.63	0.61–10.5	5.60 ± 7.0	2.20–18.0	10.0 ± 11.2
IPDK	7.48 –8.36	7.92 ± 0.62	470–980	725 ± 361	470–875	673 ± 286	0.30–1.05	0.67 ± 0.53	25.9–69.5	47.7 ± 30.8	0.67–3.80	2.25 ± 2.24	2.82–12.3	7.60 ± 6.70	8.30–30.1	19.1 ± 15.4
LGPPA	7.60 –8.46	8.03 ± 0.61	192–470	331 ± 197	246–724	485 ± 338	0.10–1.01	0.55 ± 0.64	9.16–28.2	18.7 ± 13.5	1.61–12.9	7.25 ± 7.98	11.7–23.4	17.6 ± 8.30	22.2–98.0	60.1 ± 53.6
SPPA	7.55 –8.20	7.88 ± 0.46	238–510	374 ± 192	352–680	516 ± 232	0.11–1.06	0.58 ± 0.67	6.81–48.6	27.7 ± 29.5	0.44–5.30	2.85 ± 3.41	5.58–37.8	21.7 ± 22.8	26.1–76.1	51.1 ± 35.3
WHO	6.60–8.50		1000		1000		3		50		10		70		2000	
PAK-EPA	6.50–8.50		-		-		5		50		10		70		2000	

±: Standard Deviation

Table S4. The DMI values of selected PTEs via ingestion for drinking water in UCPs.

	Children					Adults				
UCPs	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**
BPC	4.89E-04	1.31E-03	9.55E-04	2.19E-03	3.50E-03	1.24E-04	3.32E-04	2.43E-04	5.56E-04	8.89E-04
SPC	7.82E-04	1.41E-03	1.05E-03	1.64E-03	2.14E-03	1.99E-04	3.57E-04	2.68E-04	4.17E-04	5.43E-04
ZPP	4.56E-04	1.06E-03	2.47E-03	2.16E-03	1.58E-03	1.16E-04	2.69E-04	6.28E-04	5.49E-04	4.00E-04
TPP	4.05E-04	1.52E-03	1.07E-03	1.09E-03	1.19E-02	1.03E-04	3.87E-04	2.73E-04	2.77E-04	3.03E-03
JPN	1.26E-04	1.85E-03	2.76E-04	2.41E-03	8.49E-03	3.20E-05	4.71E-04	7.00E-05	6.13E-04	2.16E-03
DWPN	4.73E-05	2.37E-03	5.59E-04	1.02E-03	9.07E-03	1.20E-05	6.02E-04	1.42E-04	2.60E-04	2.30E-03
PWLPH	1.89E-04	5.78E-03	1.72E-03	2.90E-03	1.46E-02	4.80E-05	1.47E-03	4.37E-04	7.36E-04	3.71E-03
APH	2.37E-04	5.53E-03	9.51E-04	2.04E-03	6.10E-03	6.03E-05	1.40E-03	2.41E-04	5.19E-04	1.55E-03
SKIPS	9.11E-05	5.18E-03	6.40E-04	1.86E-03	1.11E-02	2.31E-05	1.32E-03	1.63E-04	4.72E-04	2.82E-03
WWPS	3.09E-04	7.68E-03	4.89E-04	2.77E-03	6.83E-03	7.86E-05	1.95E-03	1.24E-04	7.04E-04	1.73E-03
APS	7.54E-05	2.74E-03	4.94E-04	2.97E-04	2.21E-03	1.91E-05	6.96E-04	1.25E-04	7.54E-05	5.60E-04
GCGPS	1.97E-04	8.00E-03	5.13E-04	2.20E-03	7.39E-03	5.00E-05	2.03E-03	1.30E-04	5.58E-04	1.88E-03
SCPM	2.99E-04	6.92E-03	1.28E-03	2.19E-03	1.06E-02	7.60E-05	1.76E-03	3.25E-04	5.57E-04	2.69E-03
YSPM	1.11E-04	6.89E-03	8.65E-04	2.16E-03	1.37E-02	2.83E-05	1.75E-03	2.20E-04	5.50E-04	3.49E-03
GNPC	4.84E-05	2.41E-03	1.22E-04	9.61E-04	1.17E-02	1.23E-05	6.11E-04	3.09E-05	2.44E-04	2.97E-03
PTPC	1.58E-05	3.90E-03	4.15E-04	5.27E-04	9.60E-04	4.00E-06	9.91E-04	1.05E-04	1.34E-04	2.44E-04
HNPDK	6.53E-05	4.69E-03	6.20E-04	6.27E-04	1.13E-03	1.66E-05	1.19E-03	1.57E-04	1.59E-04	2.86E-04
IPDK	7.54E-05	5.37E-03	2.53E-04	8.49E-04	2.15E-03	1.91E-05	1.36E-03	6.43E-05	2.16E-04	5.46E-04
LGPPA	6.19E-05	2.10E-03	8.16E-04	1.97E-03	6.76E-03	1.57E-05	5.34E-04	2.07E-04	5.01E-04	1.72E-03
SPPA	6.53E-05	3.12E-03	3.21E-04	2.44E-03	5.75E-03	1.66E-05	7.91E-04	8.14E-05	6.20E-04	1.46E-03

Table S5. The DMI values of selected PTEs via dermal contact for drinking water in UCPs

	Children					Adults				
UCPs	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**
BPC	2.84E-06	1.52E-05	5.54E-06	2.54E-06	2.03E-05	6.49E-07	3.47E-06	1.27E-06	5.81E-07	4.64E-06
SPC	4.53E-06	1.63E-05	6.11E-06	1.91E-06	1.24E-05	1.04E-06	3.73E-06	1.40E-06	4.35E-07	2.83E-06
ZPP	2.64E-06	1.23E-05	1.43E-05	2.51E-06	9.14E-06	6.04E-07	2.81E-06	3.28E-06	5.73E-07	2.09E-06
TPP	2.35E-06	1.77E-05	6.22E-06	1.26E-06	6.92E-05	5.37E-07	4.04E-06	1.42E-06	2.89E-07	1.58E-05
JPN	7.31E-07	2.15E-05	1.60E-06	2.80E-06	4.93E-05	1.67E-07	4.92E-06	3.65E-07	6.40E-07	1.13E-05
DWPN	2.74E-07	2.75E-05	3.24E-06	1.19E-06	5.26E-05	6.26E-08	6.28E-06	7.41E-07	2.72E-07	1.20E-05
PWLPH	1.10E-06	6.71E-05	9.98E-06	3.36E-06	8.48E-05	2.51E-07	1.53E-05	2.28E-06	7.69E-07	1.94E-05
APH	1.38E-06	6.42E-05	5.51E-06	2.37E-06	3.54E-05	3.15E-07	1.47E-05	1.26E-06	5.42E-07	8.08E-06
SKIPS	5.29E-07	6.01E-05	3.71E-06	2.16E-06	6.45E-05	1.21E-07	1.37E-05	8.49E-07	4.93E-07	1.47E-05
WWPS	1.79E-06	8.91E-05	2.84E-06	3.22E-06	3.96E-05	4.10E-07	2.04E-05	6.49E-07	7.35E-07	9.05E-06
APS	4.37E-07	3.18E-05	2.86E-06	3.45E-07	1.28E-05	9.99E-08	7.27E-06	6.55E-07	7.87E-08	2.92E-06
GCGPS	1.14E-06	9.27E-05	2.98E-06	2.55E-06	4.29E-05	2.61E-07	2.12E-05	6.80E-07	5.83E-07	9.80E-06
SCPM	1.74E-06	8.02E-05	7.43E-06	2.55E-06	6.13E-05	3.97E-07	1.83E-05	1.70E-06	5.82E-07	1.40E-05
YSPM	6.46E-07	7.99E-05	5.02E-06	2.51E-06	7.96E-05	1.48E-07	1.83E-05	1.15E-06	5.74E-07	1.82E-05
GNPC	2.81E-07	2.79E-05	7.05E-07	1.11E-06	6.79E-05	6.41E-08	6.38E-06	1.61E-07	2.55E-07	1.55E-05
PTPC	9.14E-08	4.53E-05	2.41E-06	6.11E-07	5.57E-06	2.09E-08	1.03E-05	5.50E-07	1.40E-07	1.27E-06
HNPDK	3.78E-07	5.44E-05	3.60E-06	7.27E-07	6.53E-06	8.65E-08	1.24E-05	8.22E-07	1.66E-07	1.49E-06
IPDK	4.37E-07	6.22E-05	1.47E-06	9.85E-07	1.25E-05	9.99E-08	1.42E-05	3.36E-07	2.25E-07	2.85E-06
LGPPA	3.59E-07	2.44E-05	4.73E-06	2.29E-06	3.92E-05	8.20E-08	5.57E-06	1.08E-06	5.23E-07	8.96E-06
SPPA	3.78E-07	3.61E-05	1.86E-06	2.83E-06	3.33E-05	8.65E-08	8.26E-06	4.25E-07	6.47E-07	7.62E-06

Table S6. Non-carcinogenic risks posed by each PTE via ingestion of UCPs water in KPK.

	Children					Adults				
UCPs	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**
BPC	9.79E-04	4.36E-04	6.82E-04	1.10E-04	8.75E-05	2.49E-04	1.11E-04	1.73E-04	2.78E-05	2.22E-05
SPC	1.56E-03	4.68E-04	7.53E-04	8.21E-05	5.34E-05	3.97E-04	1.19E-04	1.91E-04	2.09E-05	1.36E-05
ZPP	9.11E-04	3.53E-04	1.77E-03	1.08E-04	3.94E-05	2.31E-04	8.96E-05	4.49E-04	2.74E-05	1.00E-05
TPP	8.10E-04	5.08E-04	7.67E-04	5.45E-05	2.98E-04	2.06E-04	1.29E-04	1.95E-04	1.38E-05	7.57E-05
JPN	2.52E-04	6.18E-04	1.97E-04	1.21E-04	2.12E-04	6.40E-05	1.57E-04	5.00E-05	3.06E-05	5.39E-05
DWPN	9.45E-05	7.90E-04	3.99E-04	5.12E-05	2.27E-04	2.40E-05	2.01E-04	1.01E-04	1.30E-05	5.76E-05
PWLPH	3.78E-04	1.93E-03	1.23E-03	1.45E-04	3.66E-04	9.60E-05	4.90E-04	3.12E-04	3.68E-05	9.29E-05
APH	4.75E-04	1.84E-03	6.79E-04	1.02E-04	1.52E-04	1.21E-04	4.68E-04	1.72E-04	2.60E-05	3.87E-05
SKIPS	1.82E-04	1.73E-03	4.57E-04	9.29E-05	2.78E-04	4.63E-05	4.39E-04	1.16E-04	2.36E-05	7.06E-05
WWPS	6.19E-04	2.56E-03	3.50E-04	1.39E-04	1.71E-04	1.57E-04	6.50E-04	8.88E-05	3.52E-05	4.34E-05
APS	1.51E-04	9.14E-04	3.53E-04	1.49E-05	5.51E-05	3.83E-05	2.32E-04	8.96E-05	3.77E-06	1.40E-05
GCGPS	3.94E-04	2.67E-03	3.66E-04	1.10E-04	1.85E-04	1.00E-04	6.77E-04	9.31E-05	2.79E-05	4.69E-05
SCPM	5.99E-04	2.31E-03	9.15E-04	1.10E-04	2.64E-04	1.52E-04	5.86E-04	2.32E-04	2.79E-05	6.71E-05
YSPM	2.23E-04	2.30E-03	6.18E-04	1.08E-04	3.43E-04	5.66E-05	5.83E-04	1.57E-04	2.75E-05	8.71E-05
GNPC	9.68E-05	8.02E-04	8.68E-05	4.80E-05	2.93E-04	2.46E-05	2.04E-04	2.20E-05	1.22E-05	7.43E-05
PTPC	3.15E-05	1.30E-03	2.97E-04	2.63E-05	2.40E-05	8.00E-06	3.30E-04	7.53E-05	6.69E-06	6.09E-06
HNPDK	1.31E-04	1.56E-03	4.43E-04	3.13E-05	2.81E-05	3.31E-05	3.97E-04	1.12E-04	7.96E-06	7.14E-06
IPDK	1.51E-04	1.79E-03	1.81E-04	4.25E-05	5.37E-05	3.83E-05	4.54E-04	4.59E-05	1.08E-05	1.36E-05
LGPPA	1.24E-04	7.01E-04	5.83E-04	9.87E-05	1.69E-04	3.14E-05	1.78E-04	1.48E-04	2.51E-05	4.29E-05
SPPA	1.31E-04	1.04E-03	2.29E-04	1.22E-04	1.44E-04	3.31E-05	2.64E-04	5.82E-05	3.10E-05	3.65E-05

Table S7. Non-carcinogenic risks posed by each PTE via dermal exposure pathway of UCPs water in KPK.

	Children					Adults				
UCPs	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**	**Cd**	**Cr**	**Pb**	**Ni**	**Cu**
BPC	5.68E-04	1.01E-03	1.32E-05	4.71E-07	1.69E-06	1.30E-04	2.31E-04	3.01E-06	1.08E-07	3.87E-07
SPC	9.07E-04	1.09E-03	1.46E-05	3.53E-07	1.03E-06	2.07E-04	2.48E-04	3.33E-06	8.06E-08	2.36E-07
ZPP	5.29E-04	8.19E-04	3.41E-05	4.64E-07	7.61E-07	1.21E-04	1.87E-04	7.81E-06	1.06E-07	1.74E-07
TPP	4.70E-04	1.18E-03	1.48E-05	2.34E-07	5.76E-06	1.07E-04	2.69E-04	3.39E-06	5.35E-08	1.32E-06
JPN	1.46E-04	1.43E-03	3.81E-06	5.18E-07	4.11E-06	3.34E-05	3.28E-04	8.70E-07	1.18E-07	9.38E-07
DWPN	5.48E-05	1.83E-03	7.72E-06	2.20E-07	4.38E-06	1.25E-05	4.19E-04	1.76E-06	5.03E-08	1.00E-06
PWLPH	2.19E-04	4.47E-03	2.38E-05	6.23E-07	7.07E-06	5.01E-05	1.02E-03	5.43E-06	1.42E-07	1.62E-06
APH	2.75E-04	4.28E-03	1.31E-05	4.39E-07	2.95E-06	6.29E-05	9.78E-04	3.00E-06	1.00E-07	6.74E-07
SKIPS	1.06E-04	4.01E-03	8.84E-06	3.99E-07	5.37E-06	2.42E-05	9.16E-04	2.02E-06	9.13E-08	1.23E-06
WWPS	3.59E-04	5.94E-03	6.76E-06	5.96E-07	3.30E-06	8.20E-05	1.36E-03	1.54E-06	1.36E-07	7.54E-07
APS	8.74E-05	2.12E-03	6.82E-06	6.38E-08	1.07E-06	2.00E-05	4.84E-04	1.56E-06	1.46E-08	2.44E-07
GCGPS	2.28E-04	6.18E-03	7.08E-06	4.72E-07	3.57E-06	5.22E-05	1.41E-03	1.62E-06	1.08E-07	8.17E-07
SCPM	3.47E-04	5.35E-03	1.77E-05	4.71E-07	5.11E-06	7.93E-05	1.22E-03	4.04E-06	1.08E-07	1.17E-06
YSPM	1.29E-04	5.33E-03	1.19E-05	4.65E-07	6.63E-06	2.95E-05	1.22E-03	2.73E-06	1.06E-07	1.52E-06
GNPC	5.61E-05	1.86E-03	1.68E-06	2.06E-07	5.66E-06	1.28E-05	4.25E-04	3.84E-07	4.72E-08	1.29E-06
PTPC	1.83E-05	3.02E-03	5.73E-06	1.13E-07	4.64E-07	4.18E-06	6.90E-04	1.31E-06	2.59E-08	1.06E-07
HNPDK	7.57E-05	3.62E-03	8.56E-06	1.35E-07	5.44E-07	1.73E-05	8.28E-04	1.96E-06	3.08E-08	1.24E-07
IPDK	8.74E-05	4.15E-03	3.50E-06	1.82E-07	1.04E-06	2.00E-05	9.48E-04	7.99E-07	4.17E-08	2.37E-07
LGPPA	7.18E-05	1.63E-03	1.13E-05	4.24E-07	3.27E-06	1.64E-05	3.72E-04	2.57E-06	9.69E-08	7.47E-07
SPPA	7.57E-05	2.41E-03	4.43E-06	5.24E-07	2.78E-06	1.73E-05	5.51E-04	1.01E-06	1.20E-07	6.35E-07