

Supporting Materials for
**Toxicity of Chemical Substances in Groundwater of Jhunjhunu District of
Rajasthan, India: A Physicochemical Analysis**

Anil Kumar,¹ Man Vir Singh,^{2,3*} Priyanka Wasnik,⁴ Deepak Sridhar,^{4,5} and Zhanhu Guo⁴

¹Department of chemistry, Rakesh PG college, Pilani Jhunjhunu 333031, India

²Department of Chemistry, Dev Bhoomi Uttarakhand University, Dehradun 248007, India

³University Centre for Research & Development, Chandigarh University, Mohali, Punjab 140413, India

⁴Department of Mechanical and Construction Engineering, Faculty of Engineering and Environment, Northumbria University, Newcastle upon Tyne, NE1 8ST, UK

⁵ Zentek Ltd. 24 Corporate Crt, Guelph, Ontario, N1G 5G5 Canada

Email Address: manvir24365@gmail.com

Table 1. Physico-chemical properties of the groundwater samples of the Jhunjhunu district

Code	Sampling Site	Teh sil	pH	EC	Turb.	TD S	TH	TA	SO ₄ ²⁻	NO ₃ ⁻	TP	Cl ⁻	F ⁻	Na ⁺	K ⁺	Fe ⁺²	Cu ²⁺
S-1	Pilani Water Box	Surajgarh	7.61	568	2	426	120	296	28.5	4.8	1.1	152	0.7	128	132	0.44	1.95
S-2	Pilani Bus Stand	Surajgarh	7.63	616	2	462	126	286	29.6	4.9	1.2	160	0.8	132	120	0.65	1.97
S-3	Pilani Hospital	Birla Surajgarh	7.65	605	2	454	122	280	32.2	5.1	1.1	148	0.9	124	140	0.66	1.75
S-4	Jherli	Surajgarh	7.7	580	2	435	128	286	31.2	5.3	1.2	156	0.8	134	140	0.45	1.88
S-5	Hameempur	Surajgarh	7.61	624	2.5	468	148	290	32.4	4.9	1	160	0.9	134	130	0.82	2.05
S-6	Bangothari Kalan	Surajgarh	7.63	680	2	510	168	300	30.6	5.5	1.1	148	0.8	148	152	0.82	2.88
S-7	Beri	Surajgarh	7.65	710	2	532	148	290	33.5	5.2	1.2	160	1	150	140	0.82	3.19
S-8	Dulania	Surajgarh	7.75	596	1.5	450	142	302	35.6	5	1	150	0.8	152	155	0.77	3.08
S-9	Dheendhwa Aguna	Surajgarh	7.61	624	1.5	468	158	290	29.8	5.2	1	162	0.9	148	136	0.85	2.74
S-10	Morwa	Surajgarh	7.61	590	1.5	442	138	278	28.5	4.9	1	152	0.7	160	158	0.52	2.22
S-11	Kherla	Surajgarh	7.68	620	3.5	465	160	194	30.5	5.3	1	156	0.9	120	126	0.69	2.15
S-12	Devrod	Surajgarh	7.68	660	3.5	465	166	202	30.5	5.3	1	156	0.9	126	132	0.73	2.95
S-13	Lakhu	Surajgarh	7.68	690	4	522	240	212	30.5	5.3	1.1	186	0.9	107	91	0.79	3.12

S-14	Chorodi Auguni	Surajgarh	7.68	1180	5.5	926	296	380	58.8	6.9	1.6	486	1.3	186	170	1.22	3.88
S-15	Khedaro ki Dhani	Surajgarh	7.72	1060	5.5	856	280	390	49.8	6.3	1.5	390	1.3	186	170	0.98	3.81
S-16	Kakoda	Surajgarh	7.68	1048	5	786	270	342	53.9	5.9	1.4	460	1.4	176	146	1.02	3.68
S-17	Surajgarh Station	R. Surajgarh	7.73	1068	5.5	801	276	350	48.9	6.3	1.4	420	1.2	168	148	1.01	3.88
S-18	R.K.J.K. College	Surajgarh	7.68	980	5.5	842	290	330	53.6	6.4	1.5	490	1.1	162	142	1.12	3.86
S-19	Surajgarh Mandi	Surajgarh	7.68	980	5	780	276	296	48.7	6.3	1.4	420	1.2	182	152	1.08	3.55
S-20	Jakhod	Surajgarh	7.72	960	4.5	720	226	290	45.9	6.8	1.4	412	1.3	168	148	0.88	3.45
S-21	Farat	Surajgarh	7.7	940	4.5	705	186	260	48.7	6.3	1.4	326	1.2	152	130	0.85	3.12
S-22	Pilod	Surajgarh	7.68	962	4.5	720	190	268	43.9	6.4	1.4	302	1.2	162	126	1.01	3.16
S-23	Bhavthari	Surajgarh	7.71	920	5	690	142	268	49.6	6.8	1.1	296	1.3	148	152	0.93	2.85
S-24	Bijoli	Surajgarh	7.7	920	4.5	690	180	275	50.9	6.8	1.2	268	1.3	152	148	0.77	2.34
S-25	Kajara	Surajgarh	7.52	912	5	684	140	290	45.2	7.1	1.2	252	1.3	152	160	0.82	2.55
S-26	Jeeni	Surajgarh	7.46	896	4.5	672	134	276	48.6	7.4	1.1	242	1.2	148	152	0.93	2.87
S-27	Narhar	Chirawa	7.7	640	3.5	480	180	225	30.5	5.3	1.2	168	0.8	126	116	0.56	2.97
S-28	Ojtu	Chirawa	7.68	702	3.5	520	180	190	35.6	5.5	1.2	162	1	145	126	0.76	2.17
S-29	Chirawa Water Box	Chirawa	7.8	710	3.5	530	166	190	31.5	4.5	1.4	160	0.8	142	136	0.81	2.29
S-30	Chirawa CHC	Chirawa	7.68	670	3	510	152	236	39.8	5.3	1.3	156	0.7	124	105	0.66	2.73
S-31	Chirawa Station	Chirawa	7.68	720	3.5	540	196	230	32.6	5.3	1	68	1.2	116	100	0.78	2.44

S-32	Ardawata	Chirawa	7.68	720	3.5	580	210	210	33.8	5.3	1	168	1.2	126	105	0.67	2.42
S-33	Chirawa RIICO	Chirawa	7.68	620	3	465	160	212	30.5	5.3	1	156	0.9	117	105	0.54	2.35
S-34	Gadakhera	Chirawa	7.68	710	3	532	232	220	30.5	5.6	1.1	192	1.2	112	95	0.72	3.09
S-35	Bhasawata Kalan	Buhana	7.8	710	3.5	540	226	226	36.5	5.3	1	186	0.9	126	98	0.65	3.15
S-36	Singhana	Buhana	7.71	740	3.5	512	252	236	38.4	6.2	1.1	196	0.8	112	92	0.77	3.22
S-37	Pacheri Khurd	Buhana	7.68	896	4	692	264	280	30.5	6.2	1.2	360	0.9	142	120	0.82	3.15
S-38	Pacheri Bari	Buhana	7.9	912	4.5	726	270	320	39.6	6.5	1.2	400	1.1	170	152	0.96	3.55
S-39	Bhirr	Buhana	7.68	1013	4.5	760	286	326	42.5	5.8	1.1	426	1.3	176	148	1.18	3.68
S-40	Buhana	Buhana	7.68	1026	5	780	290	340	44.8	5.8	1.4	442	1.2	180	160	1.12	3.55
S-41	Dhaka Mandi	Buhana	7.7	1060	6	800	286	326	50.1	6.9	1.5	460	1.3	180	158	0.92	3.85
S-42	Badbar	Buhana	7.68	1216	6	912	290	380	55.9	6.8	1.5	460	1.3	186	170	1.15	4.01