

STATE REVIEWS



Indian Minerals Yearbook 2017

(Part- I)

56th Edition

STATE REVIEWS
(Rajasthan)

(FINAL RELEASE)

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RAJASTHAN

Mineral Resources

Rajasthan is the richest state in terms of availability and variety of minerals in the country and produces about 16 different minerals along with minor minerals. Rajasthan is the sole producer of lead & zinc ores, selenite and wollastonite. Rajasthan was the sole producer of garnet (gem) till 2004-05. Almost entire production of silver in the country comes from Rajasthan. The State is a major producer of copper ore/conc., limestone, ochre, phosphorite/rock phosphate and talc/soapstone/steatite. The State is also an important producer of marble of various shades. Makrana area is the world famous centre for marble mining.

The State possesses substantial share of the total resources of potash (94%), lead & zinc ore (89%), wollastonite (88%), silver ore (88%), gypsum (82%), ochre (81%), bentonite (75%), fuller's earth (74%), diatomite (72%), feldspar (66%), marble (63%), asbestos (61%), copper ore (54%), calcite (50%), talc/steatite/soapstone (49%), ball clay (38%), rock phosphate (31%), fluorite (29%), and tungsten (27%).

Important minerals that are found to occur in the State are: **asbestos (amphibole)** in Ajmer, Bhilwara, Dungarpur, Pali, Rajsamand & Udaipur districts; **ball clay** in Bikaner, Nagaur & Pali districts; **barytes** in Alwar, Bharatpur, Bhilwara, Bundi, Chittorgarh, Jalore, Pali, Rajsamand, Sikar & Udaipur districts; **calcite** in Ajmer, Alwar, Bhilwara, Jaipur, Jhunjhunu, Pali, Sikar, Sirohi & Udaipur districts; **china clay** in Ajmer, Barmer, Bharatpur, Bhilwara, Bikaner, Bundi, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Kota, Nagaur, Pali, Sawai Madhopur & Udaipur districts; and **copper** in Khetri belt in Jhunjhunu district & Dariba in Alwar district. Deposits of copper are also reported at Ajmer, Bharatpur, Bhilwara, Bundi, Chittorgarh, Dausa, Dungarpur, Jaipur, Jhunjhunu, Pali, Rajsamand, Sikar, Sirohi and Udaipur districts. Occurrence of other minerals, namely, **Dolomite** in Ajmer, Alwar, Bhilwara, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur, Sikar & Udaipur districts; **feldspar** in Ajmer, Alwar,

Bhilwara, Jaipur, Pali, Rajsamand, Sikar, Tonk & Udaipur districts; **fireclay** in Alwar, Barmer, Bharatpur, Bhilwara, Bikaner, Dausa, Jaisalmer, Jhunjhunu & Sawai Madhopur districts; **fluorspar** in Ajmer, Dungarpur, Jalore, Jhunjhunu, Sikar, Sirohi & Udaipur districts; **garnet** in Ajmer, Bhilwara, Jhunjhunu, Sikar & Tonk districts; **gypsum** in Barmer, Bikaner, Churu, Sri Ganganagar, Hanumangarh, Jaisalmer, Jalore, Nagaur & Pali districts; **iron ore (hematite)** in Alwar, Dausa, Jaipur, Jhunjhunu, Sikar & Udaipur districts; **iron ore (magnetite)** in Bhilwara, Jhunjhunu & Sikar districts; **lead-zinc** in Zawar in Udaipur district, Bamnia Kalan, Rajpura-Dariba in Rajsamand & Rampura/Agucha in Bhilwara district. Lead-zinc occurrences have also been reported from Ajmer, Chittorgarh, Pali and Sirohi districts. **Lignite** deposits are found to occur in Barmer, Bikaner, Jaisalmer, Jalore, Nagaur and Pali districts. Flux grade **limestone** occurs in Jodhpur and Nagaur districts and chemical grade limestone in Jodhpur, Nagaur and Alwar districts. Cement grade deposits of limestone are widespread in Ajmer, Alwar, Banswara, Bhilwara, Bikaner, Bundi, Chittorgarh, Churu, Dungarpur, Jaipur, Jaisalmer, Jodhpur, Jhunjhunu, Kota, Nagaur, Pali, Sawai Madhopur, Sikar, Sirohi and Udaipur districts. **Magnesite** in Ajmer, Dungarpur, Pali & Udaipur districts; **marble** in Ajmer, Alwar, Banswara, Bhilwara, Bundi, Chittorgarh, Dungarpur, Jaipur, Nagaur, Sikar, Sirohi & Udaipur districts; **mica** in Ajmer & Bhilwara districts; **ochre** in Baran, Bharatpur, Bhilwara, Bikaner, Chittorgarh, Jaipur, Sawai Madhopur & Udaipur districts; **pyrite** in Sikar district; **pyrophyllite** in Alwar, Bhilwara, Jhunjhunu, Rajsamand & Udaipur districts; **quartz/silica sand** in Ajmer, Alwar, Bharatpur, Bhilwara, Bikaner, Bundi, Chittorgarh, Dausa, Jaipur, Jaisalmer, Jhunjhunu, Jodhpur, Kota, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk & Udaipur districts; **quartzite** in Ajmer, Alwar, Jhunjhunu & Sawai Madhopur districts; **rock phosphate** in Alwar, Banswara, Jaipur, Jaisalmer & Udaipur districts; **talc/steatite/soapstone** in Ajmer, Alwar, Banswara, Bharatpur, Bhilwara, Chittorgarh, Dausa, Dungarpur, Jaipur, Jhunjhunu, Karauli, Pali, Rajsamand, Sawai Madhopur,

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Table – 1 : Reserves/Resources of Minerals as on 1.4.2015: Rajasthan

Mineral	Unit	Reserves				Remaining Resources						Total resources (A+B)		
		Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Apatite	tonne	-	-	-	-	-	-	51521	1016000	-	-	1067521	1067521	
Asbestos	tonne	-	-	-	1803183	3070449	4027514	87802	42101	4526861	57800	13615710	13615710	
Ballclay [#]	tonne	26804980	10979851	3735497	5080531	1443858	3162346	221176	218550	25262892	-	35389353	76909682	
Barytes [#]	tonne	134416	-	72751	6018	15890	108577	37808	311500	2304688	-	2784481	2991648	
Bauxite	'000 tonnes	-	-	-	-	-	-	-	-	528	-	528	528	
Bentonite [#]	tonne	4705000	50000	-	4755000	2718630	56172302	24356005	222017000	92523096	25730000	423517033	428272033	
Calcite [#]	tonne	911597	790072	1597877	909511	182713	2873548	539746	1041668	3371912	-	8919099	12218645	
China clay [#]	'000 tonnes	73434	29510	22493	47554	26157	40542	1584	3221	294386	11428	424874	550311	
Copper														
Ore	'000 tonnes	15333	-	29718	11110	228	51226	18603	102088	580541	4480	768276	813327	
Metal	'000 tonnes	175.12	-	433.55	12.94	3.29	492.46	338.66	699.24	2291.94	28.61	3867.14	4475.81	
Corundum	tonne	-	-	-	-	-	-	-	-	11925	-	11925	11925	
Diatomite [#]	'000 tonnes	-	-	-	634	-	-	-	-	1440	-	2074	2074	
Dolomite [#]	'000 tonnes	57910	4579	13994	20483	10807	121082	16132	25480	327838	784	522607	599089	
Felspar [#]	tonne	161965311	102283772	41417085	35514780	40938272	33919764	12410200	8488066	132329070	2866777	266466928	572133096	
Fire clay [#]	'000 tonnes	6561	-	3932	1548	1718	697	2256	2580	35363	-	44163	54656	
Fluorite	tonne	-	-	-	631630	592258	562023	1528348	489488	1294529	145183	5243458	5243458	
Fullers														
Earth [#]	tonne	3941000	-	-	-	-	-	-	350000	190409080	-	190759080	194700080	
Garnet	tonne	33566	35926	5556	3100	26663	29629	5207	21432	123587	333	209952	285000	
Gold														
Ore (Primary)	tonne	-	-	-	-	-	-	4600000	50193000	69747720	63000	124603720	124603720	
Metal														
(Primary)	tonne	-	-	-	-	-	-	6.67	103.34	123.03	0.07	233.11	233.11	
Granite [#]														
(Dimension Stone)	'000 cum	5581	100380	4500	38462	-	-	-	-	9021742	20000	9080204	9190665	
Graphite	tonne	-	-	-	47600	-	165920	-	250000	1450034	-	1913554	1913554	
Gypsum [#]	'000 tonnes	23617	153	658	6201	82814	18663	750	710604	236847	-	1055878	1080306	
Iron ore														
(Hematite)	'000 tonnes	2103	2175	380	8764	6105	471	-	11510	6897	-	33745	38404	
Iron ore														
(Magnetite)	'000 tonnes	17148	2185	16090	595	460	10113	-	-	554904	15422	581493	616916	
Kyanite	tonne	-	-	-	13097	-	10606	-	-	-	-	23703	23703	
Laterite [#]	'000 tonnes	-	-	-	-	-	-	-	-	60490	62860	123350	123350	

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Table - 1 (Concltd.)

Mineral	Unit	Reserves				Remaining Resources						Total resources (A+B)		
		Proved STD111	Probable		Total (A)	Feasibility STD211	Pre-feasibility		Measured STD331	Indicated STD332	Inferred STD333		Reconnaissance STD334	Total (B)
			STD121	STD122			STD221	STD222						
Lead-Zinc														
Ore	'000 tonnes	311662	68687	5767	106116	2965	12888	29734	28779	170547	317929	1380	564222	670338
Lead metal	'000 tonnes	624.56	1666.02	191.76	2482.34	45.21	390.22	733.23	490.82	1860.47	5462.09	-	8982.04	11464.38
Zinc metal	'000 tonnes	2871.75	6728.14	399.63	9999.52	235.38	772.17	1289.91	1514.15	7145.53	13435.31	0.53	24392.98	34392.5
Lead-Zinc metal	'000 tonnes	-	-	-	-	-	-	-	-	-	119.86	22.37	142.23	142.23
Limestone	'000 tonnes	2471143	933889	863351	4268382	367799	1538090	4529048	596071	761855	11365794	939808	20098465	24366847
Magnesite	'000 tonnes	-	-	-	-	912	1589	2121	-	149	49033	-	53804	53804
Manganese ore	'000 tonnes	1051	-	647	1697	-	-0	-	-	4030	-	-	4030	5727
Marble [#]	'000 tonnes	-	-	-	104236	-	173875	25703	-	90000	837615	-	1231429	1231429
Mica [#]	kg	20245098	1742047	12209547	34196692	19292500	10605400	5732418	49522483	16922016	36385724	3415315	141875856	176072548
Ochre [#]	tonne	15009099	4253584	8474360	27737043	42838694	11819905	23478699	1824210	942087	21728459	841236	103473290	131210333
Potash	million tonnes	-	-	-	-	-	-	-	-	16936	3462	22	20419	20419
Pyrite	'000 tonnes	-	-	-	13667	-	22917	9590	26310	18392	-	-	90876	90876
Pyrophyllite [#]	tonne	368774	214870	179514	763158	156136	38989	210982	219612	119469	551225	-	1296413	2059571
Quartzite [#]	'000 tonnes	140	-	86	226	-	18	18	-	706	-	-	742	968
Quartz-Silica sand [#]	'000 tonnes	239131	58049	51719	348900	160380	34587	50216	5464	8001	131816	1098	391561	740462
Rock														
Phosphate	tonne	37833537	-	477000	38310537	1154961	20857437	4453355	152633	79750	28043783	2627650	57369569	95680106
Sillimanite	tonne	-	-	-	-	300	-	519	-	-	-	-	819	819
Silver														
Ore	onne	58657075	6683000	72753828	138093903	-	8820029524218	27732000	60240000	191542579	-	-	309126997	447220900
Metal	tonne	4307.07	220.53	2641.39	7168.99	-	0.26	127.57	1876.39	3045.91	17140.37	-	22190.5	293559.49
Talc-Steatite-														
Soapstone [#]	'000 tonnes	52812	2989	22189	77990	11249	6167	17498	1640	858	63411	151	100975	178965
Tungsten														
Ore	tonne	-	-	-	-	-	-	-	-	963666	17000628	5964000	23928294	23928294
Contained														
WO ₃	tonne	-	-	-	-	-	-	-	-	1421.44	90171.5	2115	93707.94	93707.94
Vermiculite	tonne	-	-	-	20623	-	2759	4428	-	13000	2883	-	43693	43693
Wollastonite	tonne	1953384	48075	240003	2241462	3750118	12000	3748191	76088	3325042	1322852	-	12234291	14475753

Figures rounded off

Note: The proved and indicated balance recoverable reserves of crude oil and natural gas as on 1.4.2016 are 31.72 million tonnes and 35.66 billion cu m, respectively

Declared as Minor Mineral vide Gazette Notification dated 10.02.2015

Minor Mineral before Gazette Notification dated 10.02.2015

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Sirohi, Tonk & Udaipur districts; **vermiculite** in Ajmer & Barmer districts; and **wollastonite** in Ajmer, Dungarpur, Pali, Sirohi & Udaipur districts.

Other important minerals that occur in the State are: **apatite** in Udaipur & Sikar districts; **bauxite** in Kota district; **bentonite** in Barmer, Jaisalmer & Jhalawar districts; **corundum** in Tonk district; **diatomite** in Barmer & Jaisalmer districts; **emerald** in Ajmer & Rajsamand districts; **fuller's earth** in Barmer, Bikaner & Jodhpur districts; **gold** in Banswara, Bhilwara, Dausa, Sirohi and Udaipur districts; **granite** in Ajmer, Alwar, Banswara, Barmer, Bhilwara, Chittorgarh, Jaipur, Jaisalmer, Jalore, Jhunjhunu, Jodhpur, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk & Udaipur districts; **graphite** in Ajmer, Alwar & Banswara districts; **kyanite** and **sillimanite** in Udaipur district; **manganese ore** in Banswara, Jaipur, & Pali districts; **potash** in Jaisalmer & Nagaur districts; **silver** in Ajmer, Bhilwara, Jhunjhunu, Rajsamand, Sikar & Udaipur districts; and **tungsten** in Nagaur & Sirohi districts (Table - 1). District-wise reserves/resources of lignite in the State are provided in Table-2.

Deposits of **petroleum** are located in the Bikaner-Nagaur and Barmer-Sanchore basin and those of **natural gas** in Jodhpur and Jaisalmer basins in the State.

Exploration & Development

National Oil Companies (NOC) continued their seismic survey for petroleum and natural gas during 2016-17.

The details of exploration activities conducted by various agencies GSI, MECL, HZL, State DMG, RSMML etc. for limestone, gold, base metals (Cu,Pb & Zn), lignite and other minerals including minor minerals during the year 2016-17 are furnished in Table - 3.

Production

Production of different type of of minerals has been reported from the state of Rajasthan.

The value of minor minerals production was estimated at ` 9,868 crore for the year 2016-17.

The number of reporting mines in Rajasthan was 83 in the year 2016-17 in case of MCDR minerals (Table-4).

Table – 2 : Reserves/resources of Lignite as on 1.4.2017 : Rajasthan

(In million tonnes)

District	Proved	Indicated	Inferred	Total
Total	1168.53	2670.84	1896.60	5735.97
Barmer	457.83	2380.54	1338.79	4211.75
Bikaner	559.30	229.72	309.19	1098.21
Jaisalmer & Barmer (Khuri)	-	-	13.80	13.80
Jaisalmer & Bikaner	-	-	9.26	9.26
Jalore	-	-	76.08	76.08
Nagaur & Pali	113.00	60.58	79.04	252.62
Jaisalmer	-	-	70.44	70.44

Source: Coal Directory of India, 2016-17

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Table – 3 : Details of Exploration Activities in Rajasthan, 2016-17

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
GSI							
Base metal							
(Cu, Pb & Zn)							
Alwar	Angari block Thanagazi Teh	1:2000	1.5	3	565	-	G4 stage investigation for copper and associated precious metals, has been carried out in this block by detailed mapping. On the basis of surface indications, four mineralised zones have been delineated. First zone is in the western part of the block within dolomitic marble having strike length 250 m and width varying from 15 to 35 m. Other three zones are present in the eastern part of the block with widths varying from 8 to 20 m and strike lengths varying from 60 to 145 m. The analytical results of channel samples show 5 m zone of average 0.24% Cu, 3 m zone of average 0.2% Cu, 1 m zone of 0.18% Cu and 1m zone of 0.17% Cu in the western part of the block. In the eastern part analytical results of channel samples show occurrence of zinc, i.e. 6 m zone with average 0.2% Zn. Subsurface exploration involving 565 m of drilling in three scout boreholes was carried out in Angari block. Boreholes were drilled at central part of the block intersected three Cu lodes and each one having 2 m width with 1.19%, 0.36% and 0.31% Cu value at 0.2% Cu cut-off. The other borehole was drilled in dolomitic marble at the western part and it intersected two Cu lodes with 0.2% Cu value at 0.2% Cu cut-off. The lodes have 3.5 m and 2 m width, respectively. The Angari block has been recommended for further investigation.
Copper and associated precious metals							
Alwar	Bisoni block Thanagazi Teh	1:2000	1.25	3	567.5	-	G4 stage reconnaissance survey for copper and associated precious metals, was carried out along with drilling of 3 scout boreholes and sampling. Surface evidences of mineralisation are manifested in the form malachite stains, presence of fresh sulphides like bornite, covellite, chalcopyrite, pyrrhotite, arsenopyrite and also in the form of old workings. A total of three scout boreholes with 567.50 m were drilled, which sulphide mineralisation in the form of specks, disseminations, foliation parallel vein

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Table – 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							filling, fracture filling and occasional massive bornite, covellite, chalcopyrite, arsenopyrite and pyrrhotite. Pitting and trenching were carried out to establish the strike continuity of mineralisation. The first borehole intersected cumulative thickness of 13.5 m Cu lode with 0.22% Cu at 0.2% Cu cut-off along with Au value at 46.50 m to 47.0 m and 48.50 to 49.50 m thickness as 0.13 ppm & 0.10 ppm, respectively. The second borehole intersected cumulative thickness of 14 m Cu lode with 0.23% Cu at 0.2% Cu cut-off. The MiseA-la masse survey carried out in two boreholes indicates both north and southward strike continuity of the mineralised zone. The Bisoni block have been recommended for further investigation.
Copper, Lead, Zinc, Bismuth and Tungsten							
Ajmer, Bhilwara & Udaipur	Badnor area	1:1000	148	-	-	-	G4 stage reconnaissance survey for copper, lead, zinc, bismuth and tungsten mineralisation was taken up by large-scale mapping. An area of 148 sq km was mapped on 1:10,000 scale. Malachite stain was observed in dolomite and oxidised/limonitic stain in cherty quartzite. Out of the chemical results received one bedrock sample yielded 0.14% Zn, 280 ppm Co and 180 ppm Ni in the NW of Baiyawas. Bedrock samples yielded Bi values ranging from 23 to 975 ppm in the NW of Dungarkhera and tungsten values ranging from 314 to 461 ppm in the north of Badnor.
Copper and Iron							
Banswara	Talwara- Kushalpur area	1:12500	126	-	-	-	G4 stage reconnaissance survey for copper and iron mineralisation was taken up in this area by large-scale mapping along with systematic sampling. In the central-west & central part of the area is chiefly occupied by the marble, impure marble and dolomite and exhibit the evidences of mineralisation in the form of extensive ferruginisation, limonitisation, brecciation, few patches of malachite stains and the long old working zone with more than 15 opening starting from south of Kewaria in the south running up to north of Bhamriatalai in the north of around 6.5 km strike length.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							Occurrences of manganese bearing pyrolusite and psilomelane have been noted in old workings. One sample has yielded presence of Hollandite in XRD analysis.
Copper Bhilwara	Kamalapura (NE) block Pur-Banera belt	-	-	4	805.0	-	G3 stage preliminary exploration was carried out for copper followed by drilling. Core samples, BRS (channel samples) and petrological samples were collected for base metal analyses. Chalcopyrite, pyrite and pyrrhotite with occasional bornite grains are the sulphide minerals. All the four boreholes drilled have intersected copper mineralisation. Three copper lodes at 0.20% Cu cut-off and 1.50 m stoping width are intersected in first borehole (i) 141.0-147.0 m thickness with 0.56% Cu, (ii) 151.0-156.50 m thickness with 0.58% Cu and (iii) 176.0- 184.50 m X 0.35% Cu. The mineralisation is in the form of specks, disseminations, stringers and veins. The drilling results indicate that copper mineralisation continues to occur towards north of the main Kamalpura block. The analytical results of other three boreholes are still awaited. However, visual estimate of copper mineralised zone is about 0.2% - 4%.
	Kamalapura block - Pur-Banera belt	-	9	2074.0	-	-	G2 stage general exploration was carried out along with drilling. The five first level boreholes were drilled up to a depth of 200±10 m in between drilled between earlier drilled borehole to ascertain the strike continuity of the copper mineralisation encountered in the earlier drilled boreholes. The second level boreholes were drilled up to a depth of 250+ m. Core samples, BRS and petrological samples were collected. Chalcopyrite, pyrrhotite and pyrite with occasional bornite grains are the sulphide minerals present in the area. All the nine boreholes intersected 35 lodes of copper mineralisation. The mineralisation are in the form of specks, disseminations, stringers and veins.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Basemetal (Tin, Gold, Tungsten and Molybdenum)							
Bhilwara	Kanti-Haziwas- Devtalai-Paroli area	1:10000	118	-	-	10	During G4 stage reconnaissance survey, mapping & sampling were carried out. The chemical analytical results show only 10 nos of samples have above 1000 ppm Cu value ranging from 1000 to 19000 ppm with an average 4864 ppm. It has been observed that all these higher values shown by sample from quartz vein from Devtalai-Gudaliay area. Samples show copper value ranges from 5 to 850 ppm with an average 137.68 ppm. The analytical results show zinc value ranges from 5 to 1400 ppm with an average of 147.91 ppm. Analytical result of tungsten (W) shows an average of 123.08 ppm and value ranges from 0.50 to 566.24 ppm. The tungsten value is normally higher in quartz veins, pegmatite and garnetiferous mica schist in northern part of area. The REE analytical results of the samples show that the total REE value ranging from 0.20 to 556.52 ppm with average 105.05 ppm. The LREE analysis result shows values ranging from 0.62 to 496.15 ppm and HREE value ranging from 0.69 to 52.62 ppm.
Lead, Silver and Gold							
Sawai Madhopur & Bundi	Chauth Ka Barwara-Aligarh area	1:10000	115	-	-	273	During G4 stage reconnaissance survey, large-scale mapping was carried out. Evidences of sulphide mineralisation were observed in the form of crystals of pyrite, galena and specks of chalcopyrite and bornite. Ground geophysical survey of 21 L.km show some interesting responses of moderate SP, low resistivity, high IP chargeability values and are indicating probable zone of mineralisation. Bedrock (206), pitting/trenching (41) and petrochemical (26) samples were collected. Analytical results of 188 nos of samples were received so far. Two samples from the ferruginised zone analysed 0.27% and 0.13% Pb. The analytical results of remaining samples are awaited.

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Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Copper							
Jhunjhunu	SW of Bansiyal Village	1:2000	1.59	-	-	-	During G4 stage reconnaissance survey, mapping & sampling was carried out. Different types of samples including chip/groove, pitting/trenching samples and grab samples also have been collected. Vein type chalcopyrite and pyrite mineralisation noticed in the impure marble and micaceous quartzite. The partial analytical results of grab samples collected from the area have shown the anomalous values of copper ranging from 0.1% to 1.3%.
Basemetal							
Sikar	Southern extension of District Toda- Ramliyas block	1:2000	-	-	-	-	During G4 stage reconnaissance survey, the area was mapped along with collection of bedrock samples, channel and trenching/pitting samples. On the basis of presence of malachite staining and fresh sulphides, a mineralised zone of 1.2 km strike length with width of about 10-50 m has been delineated on the surface. The analytical results of grid bedrock (50 x 10 m) samples indicate encouraging copper values ranging from 10 to 4300 ppm. Channel samples have been analysed for basemetal. Some of the channel samples show encouraging values to the range of 10 ppm to 0.21% Cu
Copper and associated precious metals							
Alwar	Thanagazi tehsil	1:2000	1.50	-	-	-	.During G4 stage reconnaissance survey mapping and surface geochemical evaluation was done by collecting BRS, channel sampling, PS, ORM, XRD and EPMA samples for assessment of basemetal mineralisation and associated precious metals in the area. Occurrences of chalcocite and bornite as dissemination have been recorded. Two mineralisation zones have been demarcated in the area. The width of Zone 1 is about 5-100 m and strike length is about 1.5 km. The width and strike length of Zone 2 are about 15 -20 m and 300 m, respectively. Six channels have been laid across the mineralised zone. Bedrock samples show anomalous values of Cu of 0.11% to 0.33%.

(Contd.)

STATE REVIEWS

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Basemetal							
Sikar	Dhabala block Kharabinjpur area	-	-	6	973	-	G3 stage preliminary exploration was carried out along with drilling varying in length from 197 m to 127 m below ground level to test the depth persistence and potential of basemetal mineralisation in the area along the 1.1 km strike length. The first two boreholes, located at two ends of the mineralised zone, were planned along channel with average Cu 0.35%, 18 m thickness and with average Cu 0.21%, 2 m thickness, respectively. In first borehole, three mineralised zones have been intersected as 23.60 m thickness of 0.51% Cu, 9.0 m thickness of 0.29% Cu and 21.0 m thickness of 0.43% Cu. The host rock containing copper mineralisation is mostly impure dolomite marble. Core samples have been submitted for sulphur isotope, fluid inclusion, geotechnical, petrography, XRD and EPMA studies.
Copper and associated metal							
Sikar	Dariba North block	-	-	-	-	-	G2 stage general exploration was carried out in this area. Previously during G3 stage exploration (FS-2012-14) in the area, three mineralised zones (MZ-I,II & III) were identified. Explored 2 km long and 10 to 18 m wide MZ-I and estimated 2 million tonnes copper resources with average grade of 0.27% Cu. Ten first level boreholes and five second level boreholes and one deeper borehole have been drilled. The surface indication of mineralisation is mostly observed as malachite and azurite stains in impure banded dolomitic marble. The main sulphide minerals observed are chalcopyrite, bornite, chalcocite, pyrite, pyrrhotite and covellite. Chemical analysis of the borehole core sample received so far, shows copper lodes of 12 m, 6 m, 6 m & 3 m, 2 m and 7 m with average grade of 0.20%, 0.29%, 0.43% & 0.35%, 0.34 and 0.33% respectively.

(Contd.)

STATE REVIEWS

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
Sikar	Mahawa North block	-	-	4	501	-	G3 stage preliminary exploration was carried out in this area, four scout boreholes were drilled for a total depth of 501.0 m to check the sub-surface continuity of mineralised zone established on surface. Only 2 boreholes intersected any significant mineralisation that can be identified visually. Core samples sent for analysis.
	Northern part of Toda-Ramliyas block	-	-	7	1059.0	300	G3 stage preliminary exploration for basemetal mineralisation has been carried out along with drilling to check the sub-surface continuity of mineralised zone established on surface. About 300 nos of core samples were sent for various types of analysis. Bedrock (channel) samples & soil samples were also collected as surface samples.
	Toda-Ramliyas block	-	-	22	5882.10	-	During G2 stage general exploration, total 22 boreholes were drilled for a cumulative depth of 5882.10 m. Core samples were sent for chemical analysis and also for fluid inclusion studies, sulphur isotopes studies and EPMA studies.
Udaipur	Devimata-Pipaldaran area	1:2000	1.60	-	-	-	G4 stage two year investigation for copper and associated mineralisation has been carried out by detailed geological mapping programme which was started in field session (FS) 2015-16 to delineate the copper zones with pitting/trenching and collection of bedrock samples. The analytical result of bedrock samples collected from the old workings and nearby areas shows Cu values ranging from 550 ppm to 3.2%, Pb values 90 to 740 ppm and Zn values range between 150 ppm to 1.14%. Based on the old workings and anomalous Cu value in bedrock samples, two promising Cu mineralised zones have been delineated in the north of Devimata and near Pipaldaran. The mineralised zone of Devimata is approximately 700-900 m in length and 150 m in width, whereas mineralised zone of Pipaldaran is

(Contd.)

STATE REVIEWS

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							approximately 200 m long and 100 m wide. On the basis of detailed geological mapping (1:2,000 scale) two mineralised zone MZ-I and MZ-II have been delineated in the Devimata block. MZ-I is more prominent mineralised zone. The partial analytical results of the channel & trench samples from the Devimata block show Cu values ranging from 764 ppm to 0.79%, Pb values from 288 ppm to 0.45% and Zn values from 140 ppm to 0.29%.
Copper, Gold and Iron							
Udaipur	Padla-Chawand-Sarara area	-	1.91	-	-	-	G4 stage reconnaissance exploration was taken up by large-scale mapping with the objective to assess the nature and potentiality of copper, gold and iron mineralisation in the area. In order to evaluate the possibility of gold, copper & iron mineralisation in the area, BRS, PT, trenching. Channel samples were carried out. Results are awaited.
Gold							
Pratapgarh	Mahuri Khera extension area	-	-	-	-	-	A G4 stage reconnaissance survey was taken up for gold and associated base metal mineralisation. Six mineralised zones have been delineated on the basis of surface evidences, which vary in length from 50 to 180 m and in width from 2 to 35 m. The mineralisation is mainly present at the contact of dolomite & quartz-muscovite schist & within chlorite schist. The fresh sulphide in the form of pyrite, chalcopyrite and bornite are seen as disseminations and stringers along the quartz veins. Analytical results indicate presence of anomalous copper values ranging from 10 ppm to 0.57% and gold values ranging from <0.050 to 6.24 ppm. At 0.10% cut-off a copper zone of width 23m with average copper content 0.12% has been recorded.
	Mahuri Khera	-	-	3	-	-	G3 exploration was carried out for gold and associated basemetal mineralisation. Based on surface indications, seven mineralisation zones have been identified. Boreholes at 100 m intervals were

(Contd.)

STATE REVIEWS

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated																						
		Scale	Area (sq km)	No. of boreholes	Meterage																								
							<p>planned to intersect the mineralisation zones. All the boreholes made positive intersection and have proved sub surface extension of the surface mineralization zones. The main sulphide minerals are pyrite, pyrrhotite, chalcopyrite and arsenopyrite in decreasing order of abundance. Analytical results of gold for core samples of 3 boreholes indicate following gold zones at 0.1 ppm cut-off.</p> <table border="1"> <thead> <tr> <th rowspan="2">S.No.</th> <th colspan="2">Depth (m)</th> <th rowspan="2">Width (m)</th> <th rowspan="2">Average Au</th> </tr> <tr> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>107.10</td> <td>108.30</td> <td>1.20</td> <td>0.63</td> </tr> <tr> <td>2</td> <td>64.60</td> <td>67.85</td> <td>3.25</td> <td>0.12</td> </tr> <tr> <td>3</td> <td>110.45</td> <td>112.3</td> <td>1.90</td> <td>0.22</td> </tr> </tbody> </table>	S.No.	Depth (m)		Width (m)	Average Au	From	To	1	107.10	108.30	1.20	0.63	2	64.60	67.85	3.25	0.12	3	110.45	112.3	1.90	0.22
S.No.	Depth (m)		Width (m)	Average Au																									
	From	To																											
1	107.10	108.30	1.20	0.63																									
2	64.60	67.85	3.25	0.12																									
3	110.45	112.3	1.90	0.22																									
Dungarpur	Pal Nithuwa area	1:2,000	-	-	-	-	<p>G4 reconnaissance survey was carried out for gold and associated metals mineralisation. Detailed geological mapping has been carried out with an objective to assess the nature and potentiality of gold and associated metal mineralisation. Cu values ranging from 0.10 to 0.15% have been recorded, in samples collected from quartz-tourmaline rock. Corresponding to the high Cu values, Au ranging from 0.14 to 0.19 ppm has also been recorded whereas samples from ferruginised quartz-tourmaline rock has given 0.18 to 0.23% of Cu values. Samples from quartz-tourmaline rock has revealed Cu values ranging from 0.12 & 0.15%. Dolomitic marble with oxidised veins bearing malachite and sulphide minerals indicated anomalous Cu values ranging from 0.10 to 0.48%. Cu values ranging from 0.12 to 0.38% have been recorded in samples collected from ferruginised quartz tourmaline rock.</p>																						
Limestone Jaisalmer	Jiraj ka Toba-Asu Tar (Main) block	1:4000	3.06	39	1665m	-	<p>G2 level general exploration for SMS/cement grade limestone was carried out in the area. The main litho units exposed in the block are hard and compact fossiliferous limestone, ferricrete/fragmentary ironstone and gritty sandstone. Drilling is completed in 39 numbers of vertical boreholes at</p>																						

(Contd.)

STATE REVIEWS

Table - 3 (Contd.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							a grid pattern of 250 m x 250 m. The borehole depth varies from 30 to 50 m depending upon intersection of limestone. All the boreholes drilled have intersected hard and compact fossiliferous SMS grade limestone at varying depth which is visually interpreted as SMS grade limestone. Two types of occurrences of limestone i.e. massive thick band and intercalation with clayey limestone and clay are noticed. Total 1591 core samples submitted for the analysis of major oxides. Five samples are submitted for each of petrographic as well as for XRD studies. The analytical results are still awaited.
Jaisalmer	Ramgarh block	1:4000	2.56	16	800	-	G3 level preliminary exploration was carried out for SMS/cement grade limestone and to know the further extension of the concealed Khuiala limestone. Drilling in vertical boreholes was carried out at 400 m X 400 m grid pattern. The important litho units intersected in different boreholes are sandy soil, ferricrete/calcrete, calcareous clay, pale yellow clayey limestone, bioclastic foraminiferal limestone, chalky limestone, hard and compact limestone, grey clayey limestone and grey shale. Clayey limestone has been intersected in all the boreholes with thickness varies from 0.30 to 6.95 m. This limestone seems physically unsuitable to fit into the SMS grade. Chalky limestone is off-white to pure white in colour with thickness varies from 0.30 to 15.70 m and seems fit well in Chemical Grade. Resources will be estimated after the receipt of analytical data of all samples.
	Minyun ki Dani (East) block	1:4000	3.75	81	4,050	-	G2 level general exploration for SMS/cement grade limestone has been carried out by detailed mapping & drilling. Various litho units intersected in the boreholes are chalky/soft limestone, bioclastic foraminiferal limestone, clayey limestone, variegated sub-bentonitic clay with

(Contd.)

STATE REVIEWS

Table - 3 (Concl.d.)

Agency/ Mineral/ District	Location	Mapping		Drilling		Sampling (No.)	Remarks Reserves/Resources estimated
		Scale	Area (sq km)	No. of boreholes	Meterage		
							occasionally well developed crystals of gypsum and pyrite and banded shale. Thin bands of gypcious clay have been recorded in the northern parts of the area. Clayey limestone southern part of the block have been intersected at depth of 1 to 4 m as compared to the northern part where it has been intersected at 15 to 20 m bgl. In the northern part of the block, bands of hard and compact limestone (expected to be of SMS grade) have been intersected varying in width from 2 to 3 m. Thin bands of fragmentary iron stone and gypsum (selenite) have been observed at shallow depth of 2-4 m. In the central part of the block, bands of hard and compact limestone (expected to be of SMS grade) varying in width from 3 to 5 m have been intresected within the depth range of 19 and 33 m, respectively. Analytical results for the core samples of two boreholes have confirmed chemical grade of hard and compact limestone.
	Gorumukhan ki Dani (South) block	1:4000	5.00	29	1350	716	Preliminary exploration was carried out for SMS grade limestone by detailed mapping & drilling. Vertical auger drilling had been carried out in 400m X 400m grid pattern and generated a total of 716 core samples of chemical analysis. Two prominent bands of hard and compact limestone had been intersected in all the boreholes drilled. The upper band is intersected in the depth range from 5.0 to 26.0 m, with thickness ranging from 6.60 to 9.50 m. The lower band is intersected in the depth range from 18.75 to 35.70 m, with thickness varying from 2.40 to 5.20 m. The weighted average grade of SMS (LD) grade limestone shows CaO-53.37%, SiO ₂ -1.92%, MgO-0.49%, Al ₂ O ₃ -0.49% & Fe ₂ O ₃ -0.81%. The weighted average grade of cement grade limestone shows CaO-47.97%, SiO ₂ -9.93%, MgO-0.65%, Al ₂ O ₃ -0.21% & Fe ₂ O ₃ -2.45%
Potash							
Hanumangarh	Satipura sub-Basin of Nagaur-Ganganagar evaporite basin	-	-	6	4687.6	-	G3 stage detailed sub-surface exploration (G3) was carried out for the search of potash bearing mineral in Hanseran Evaporite Group (HEG) of Nagaur - Ganganagar evaporite basin.

STATE REVIEWS

**Table – 4 : Mineral Production in Rajasthan, 2014-15 to 2016-17
(Excluding Atomic Minerals)**

(Value in ` '000)

Mineral	Unit	2014-15			2015-16			2016-17 (p)		
		No. of mines	Qty	Value ^{\$}	No. of mines	Qty	Value ^{\$}	No. of mines	Qty	Value ^{\$\$}
All Minerals		545		171056690	93		191685442	89		194694335
Lignite	'000t	6	10763	12590000	6	9492	11103300	6	8480	-
Natural Gas (ut.)	m c m	-	1178	-	-	1338	-	-	1277	-
Petroleum(crude)	'000t	-	8848	-	-	8601	-	-	8164	-
Copper Ore	t	-	947400	-	-	1103992	-	-	1117241	-
Copper Conc.	t	2	44150	2609939	2	63982	2946547	2	56798	3045512
Iron Ore	'000t	8	1180	3201253	14	1146	1768585	14	1228	2993399
Lead & Zinc Ore	t	-	9362659	-	-	10453038	-	-	11881236	-
Lead Conc.	t	8	197668	5640013	8	261857	7885122	8	268051	9669168
Zinc Conc.	t	*	1489374	31572181	*	1473811	34943088	*	1484245	43385607
Manganese Ore	t	1	7910	23501	1	3457	10350	1	2545	7567
Silver	kg	**	327508	11941925	**	426321	15208326	**	460642	18314119
Phosphorite	t	2	1527951	3691808	2	1505603	3708221	2	1112504	3836498
Ball Clay [#]	t	44	1760526	842596	-	-	-	-	-	-
Barytes [#]	t	1	3380	2199	-	-	-	-	-	-
Calcite [#]	t	4	87661	32371	-	-	-	-	-	-
Clay (others) [#]	t	6	122784	50447	-	-	-	-	-	-
Dolomite [#]	t	2	381314	99576	-	-	-	-	-	-
Felspar [#]	t	169	767091	195734	-	-	-	-	-	-
Fireclay [#]	t	13	253166	62845	-	-	-	-	-	-
Garnet (abrasive)	t	2	725	993	3	958	1744	2	1481	3624
Gypsum	t	28	2449155	1275263	-	-	-	-	-	-
Kaolin [#]	t	51	633175	385663	-	-	-	-	-	-
Laterite [#]	t	1	-	-	-	-	-	-	-	-
Limestone	'000t	28	61844	12515775	36	67336	15253871	34	67078	14528213
Mica (crude) [#]	t	5	-	-	-	-	-	-	-	-
Mica (waste & Scrap) ^{#+}	t	-	2830	-	-	-	-	-	-	-
Ochre [#]	t	12	1971263	774576	-	-	-	-	-	-
Quartz [#]	t	65	225528	53705	-	-	-	-	-	-
Quartzite [#]	t	1	8285	2485	-	-	-	-	-	-
Silica Sand [#]	t	10	510703	296991	-	-	-	-	-	-
Sand (others) [#]	t	3	7232	1484	-	-	-	-	-	-
Talc-soapstma Steatite [#]	t	65	633216	771047	-	-	-	-	-	-
Selenite	t	2	207	456	3	3103	6206	3	4327	9211
Siliceous Earth	t	-	-	-	13	47386	20735	13	69379	63722
Vermiculite	t	&	1623	1251	&	421	400	&	127	126
Wollastonite	t	6	186524	162113	5	175348	150313	4	166186	158935
Minor Minerals [@]		-	-	82258500	-	-	98678634	-	-	98678634

Note : The number of mines excludes natural gas (utilised) petroleum (crude) and minor minerals

\$ Excludes the value of Petroleum (crude) & Natural Gas (ut.); \$\$Excluding Fuel minerals

* Number of mines covered under lead concentrates

** Recovered at Chanderiya Lead-Zinc Smelter of HZL from lead concentrates produced in Rajasthan

+ Includes mine waste and that obtained while dressing of crude mica.; &: Associate mine

@ Figures for earlier years have been repeated as estimates, wherever necessary, because of non-receipt of data

STATE REVIEWS

Mineral-based Industry

The present status of each mineral-based industry is not readily available. However, the important mineral-based industries in the organised sector in the State are given in Table - 5.

Table - 5 : Principal Mineral-based Industries in Rajasthan

Industry/plant	Capacity ('000 tpy)
Cement	
ACC Ltd, Lakheri, Dist. Bundi.	1500
Ambuja Cements Ltd, Rabriyawas, Dist. Pali.	1800
Binani Cement, Binanipuram, Dist. Sirohi.	4850
Binani Cement, Neem Ka Thana, Sikar (G).	1400
Birla Corporation Ltd (Birla Cement Works & Chanderia Cement Works), Chittorgarh.	3500
J.K.Cement, Nimbahera, Dist. Chittorgarh.	3300
J.K.Cement, Mangrol, Dist. Chittorgarh.	1000
J.K.Cement, Gotan, Dist. Nagaur.	470
J.K. White Cement Works, Gotan, Dist. Nagaur.	410
J.K.Laxmi Cement, Banas, Dist. Sirohi.	4200
Lafarge India Ltd, Nimbahera, Dist. Chittorgarh.	1970
Mangalam Cement (Mangalam Cement & Neer Shree Cement), Morak, Dist. Kota.	3250
Shree Cement Ltd, Beawar, Dist. Ajmer.	3800
Shree Cement Ltd, Ras, Dist. Pali.	4000
Shree Cement Ltd, Ras (New Unit), Dist. Pali.	2000
Shree Cement Ltd, Kushkhera, Dist. Alwar (G).	4000
Shree Cement Ltd, Suratgarh, Dist. Sri Ganganagar (G).	2000
Shree Cement Ltd, Jobner, Dist. Jaipur (G).	2000
Shriram Cement Works, Kota.	400
Trinetra Cement (Subsidiary of India Cement), Nokhala, Dist. Banswara.	1500
Udaipur Cement Works (Subsidiary of JKCL), Udyog Ltd), Udaipur.	600

(Contd.)

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Ultra Tech Cement (Birla White Cement Division), Kharia Khangar, Dist. Jodhpur.	560 (white cement)
Ultra Tech Cement (Aditya I & II), Shambhupura, Dist. Chittorgarh.	5000
Ultra Tech Cement, Kotputali, Dist. Jaipur.	3100
Wonder Cement, Nimbahera, Dist. Chittorgarh.	3300
Chemical	
DCM Shriram Industries Ltd, Kota.	9 (rayon/yarn) 7.7 (sodium sulphate)
Modi Alkalies & Chemicals Ltd, Alwar.	84.2 (caustic soda) 50.3 (Cl), 39.6 (HCl)
Ceramics/Chemicals	
Bikaner Ceramics Pvt. Ltd, Bikaner.	9 (insulators)
Kajaria Ceramics Ltd, Gailpur.	6.5 (mill. sq m)
Kajaria Ceramics Ltd, Malootana.	24.5 (mill. sq m)
Bhalla Chemical Works Pvt Ltd	10 (zirconium Oxychloride & special Zirconia)
Roca Bathroom Product Pvt Ltd, Alwar.	12.9
Roca Bathroom Product Pvt Ltd, Alwar.	2 mill. pc.
Fertilizer	
Adheeshaa Phosphate, Umarada, Udaipur.	132 (SSP)
Arawali Phosphate Ltd, Umra, Udaipur.	40 (SSP)
Arihant Phosphate & Fertilizers Ltd, Nimbaheda, Chittorgarh.	66 (SSP)
Bohra Industries Ltd, Umra, Udaipur.	200 (SSP)
Chambal Fertilizers & Chemicals Ltd, Gadepan, Kota	180 (SSP)
Chambal Fertilizer & Chemical Ltd, Gadepan (Unit I & II), Dist. Kota.	2013 (Urea)
Coromandel International Ltd (Formerly Liberty Phosphate Ltd.), Madri, Udaipur.	264 (SSP)
Coromandel International Ltd (Formerly Liberty Phosphate Ltd.), Jagpura, Kota.	132 (SSP)
Devyani Phosphate Pvt. Ltd, Udaipur.	60 (SSP)
Dharamsi Morarji Chemical Co. Ltd, Khemli, Udaipur.	66 (SSP)

(Contd.)

STATE REVIEWS

Table - 5 (Contd.)

Industry/plant	Capacity ('000 tpy)
Gayatri Spinners Ltd, Hamirgarh, Bhilwara.	30 (SSP)
Indian Phosphate Ltd, Umrada, Udaipur	130 (SSP)
Jagdamba Phosphate, Kota.	132 (SSP)
Jubilant Agri and Consumer Products Ltd, Singhpur, Kapasan, Chittorgarh.	264 (SSP)
Khaitan Chemical & Fertilizers Ltd, Dhinwa, Dist. Chittorgarh.	198 (SSP)
Mangalam Phosphates Ltd, Hamirgarh, Bhilwara.	72 (SSP)
Ostwal Phoschem (India) Ltd, Hamirgarh, Bhilwara.	132 (SSP)
Patel Phoschem (P) Ltd, Umarda, Udaipur.	100 (SSP)
Prem Sakhi Fertx. Ltd, Lakadwas, Udaipur.	66 (SSP)
Rama Phosphates Ltd, Umra, Udaipur.	181 (SSP)
Sadhana Phosphates & Chems Ltd, Gudli, Udaipur.	120 (SSP)
Shriram Fertilizers & Chemicals Ltd, Shriramnagar, Dist. Kota.	379.5 (Urea) 113.8 (caustic soda) 13.2 (bleaching powder) 61.2 (HCl) 61.2 (Cl)
Shri Ganapati Fertilizers Ltd, Kapasan, Chittorgarh.	99 (SSP)
Shurvi Colour Chem Ltd, Madri, Udaipur	12 (SSP)
Plaster of Paris	
Abhishek Plaster Industries, Baramsar, Dist. Hanumangarh.	6.1
Agrawal Industries, Nohar, Dist. Hanumangarh.	6.3
Balaji Plaster Industries, Taranagar, Dist. Churu.	6
Balaji Industries, Taranagar, Dist. Churu.	6.5
Ganesh Plaster Industries, Taranagar, Dist. Churu.	6
Gil Brothers, Taranagar, Dist. Churu.	7.1
Hind Plaster Industries, Taranagar, Dist. Churu.	6

(Contd.)

Table - 5 (Concl.)

Industry/plant	Capacity ('000 tpy)
Jaishri Plaster Industries, Taranagar, Dist. Churu.	6.3
Jagdamba Plaster Industries, Rawatsav, Dist. Hanumangarh.	7
Jai Bhavani Plaster Industries, Baramsar, Dist. Hanumangarh.	6
Jai Sriram Plaster Industries, Taranagar, Dist. Churu.	7.1
M.G. Plaster Pvt Ltd, Taranagar, Dist. Churu.	6.2
Mahabir Plaster Industries, Taranagar, Dist. Churu.	6
Multani Industries, Nohar, Dist. Hanumangarh.	8.4
R.D. Plaster Industries, Nohar, Dist. Hanumangarh.	8.4
R.N. Industries, Bikaner, Dist. Bikaner.	18
Shalimar Plaster & Chemical Industries, Sardarshahar, Dist. Churu.	14
Shri Lakshmi Gypsum, Chak, Dist. Hanumangarh.	6
Shriram Plaster, Taranagar, Dist. Churu.	6.3
SS Plaster Industries, Taranagar, Dist. Churu.	6
Shiv Bhakti Industries, Nohar, Dist. Hanumangarh.	8.4
Tiger Plaster, Sardarshahar, Dist. Churu.	11
The Sardarshahar Plaster & Minerals, Sardarshahar, Dist. Churu.	19.4
Updesh Industries Ltd, Chak, Dist. Hanumangarh.	9
Copper Smelters	
HCL, KCC, Jhunjhunu.	31 (Cu cathode)
Lead & Zinc Smelters	
HZL Zinc Smelter, Debari, Dist. Udaipur.	88 (Zn)
HZL Lead-zinc Smelter, Chanderiya, Dist. Chittorgarh.	85 (Pb) 525 (Zn) 0.833 (Cd)* 168 tonnes (Ag)
HZL, Dariba Smelting Complex, Dariba Dist. Rajsamand.	100 (Pb) 210 (Zn)
* Total for all smelters of HZL (G); Grinding Units	
Note: Data, not readily available for fertilizer and cement industries on respective websites, is taken from Indian Fertilizer Scenario, 2015/FAI Statistics, 2015-16 and Survey of Cement Industry & Directory, 2016 respectively	