



HYGIENE AND HEALTH AWARENESS MAPPING IN COMPARISON WITH AVAILABLE MINERAL RESOURCES IN UDAIPUR: CHALLENGES FOR HOLISTIC GROWTH

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ABSTRACT Mineral resources are most valuable and important natural resource in our country. Mineral deposits determine the economic status of any area. Excavation of minerals from deep inside the earth has been done since pre- historic times. There are two kind of techniques for excavation of mineral resources those are mostly practiced are – surface mining and subsurface mining. The mining in Udaipur is the second largest employment sector after agriculture. Mining is mainly manual oriented. Mining is the backbone of economic development in Udaipur. But these mining activities perform several dangerous impacts on environment, water resources and on human health. Heavy machines and drills are used for extraction by miners, which impacts harm their respiratory system because when they inhale that dust of mining then they have an increased risk of dying from lung cancer. Due to heavy lifting they injured badly and even medical treatment cannot cure these injuries. Asthma, nose infection, inflammatory changes and many more are health issues for long and short term make them helpless and poorer in living status.

KEYWORDS : Mineral Resources, Excavation, Mining, Health issues

INTRODUCTION:

The minerals found in the district are Lead, Zinc & Silver, Rock Phosphate, Lime stone (Cement Grade and Burning), Wollastonite, Iron ore, Copper, Fluorite, Bauxite, Marble, Serpentine, Granite, Soapstone, Dolomite, Phyllite schist, Pyrophyllite, Quartz, Feldspar, Silicas and. In mining and processing of white marble, Udaipur stands 1st and Asia's largest market for green, pink and other marbles. There are Zinc and lead deposits in Dariba near Udaipur, which is the largest production area of these minerals. This gives employment to the thousands of workers. These mineral resources developed major industries, economic growth, capital and employment for workers but this is the only one happy side of this occupation because there is one ugly face of this employment giving sector i.e. devastating effects on human health and environment degradation. When these minerals in Udaipur excavated by miners from deep within the earth or in rock form causes a health hazard. There are many Government schemes and welfare NGOs for their help but the main point "is it worth it".

STUDY AREA:

Udaipur district is one of the 33 districts of Rajasthan state in western India. There are 11 tehsils in Udaipur. Girwa tehsil has the highest number of villages (325) whereas Lasadiya tehsil has lowest number of villages (114). The total area of Udaipur is 11724sq. km (4527sq.miles). The total population of Udaipur as per 2011 census is 3068420 (three million sixty- eight thousand four hundred twenty) and density is 260/sq. km. primarily the district's economy was engaged with agriculture, about 61.7% of the agricultural laborers worked as cultivators. Udaipur district is rich in mineral resources, and produces greater value of minerals than the rest of the state combined.

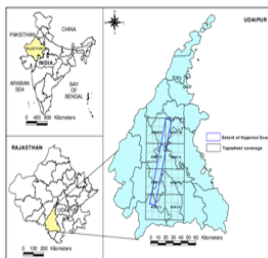


Figure1: Udaipur study area

OBJECTIVES OF THE STUDY:

- To highlight the status of mining and its economic and social effects in Udaipur.
- To indicate the policies for mining and mine workers in Udaipur.
- To key out the Government institutions relevant to mining in Udaipur.
- To ascertain the health status of mine workers in Udaipur.

DATA AND METHODOLOGY:

The data has been collected for the study of health and hygiene status among mine workers and how they are badly affected by the excavation of mineral resources. The required data was collected from secondary

sources are- the websites looked into in order to gather the prior information and the related literature about the topic. This information is descriptive and analytical in nature.

GEOLOGY AND MINERALS OF UDAIPUR:

S.No.	Name of Mineral	Production (MT)
1	Lime Stone	81870
2	Marble	17630
3	Lead	22,217
4	Zinc	58,970
5	Asbestos	13,670
6	Rock phosphate	971440
7	Calcite	2,580
8	Banite	6,100
9	Building stone	219870
10	Bajri	1533610

SOURCE: DEPT. OF MINES & GEOLOGY, Udaipur

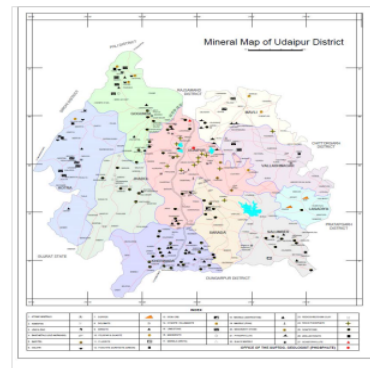


Figure 2: Mineral Map of Udaipur

(Source-Udaipur District Mineral Survey Report 2018)

MINERALS FOUND IN UDAIPUR MOSTLY:

Udaipur district is richest district in Rajasthan in mineral resources. A large variety of important metallic and non-metallic minerals are found here.

Copper:

Copper occurrence has been reported from Gopakunda, Khadi Jacket, Belui, Kilkikui, Agar, Kun, Umra, Lasodia, Sunar Kur, Oda, Sayon- Ka- Khoda, Kewda, Beras, Ballu- Bairi, Dantlia etc in the district.

Lead, Zinc and Silver:

In Udaipur, lead zinc lies along Zavar belt which extends from Hameta Maqra to Parsad for over 20kms. This belt has been divided into 5 blocks viz. Parsad, Paduna, Zavar and Hameta, Magra.

Iron Ore:

The iron is in Nathra - Ki – pal area of district Udaipur has been investigated by State department and a reserve of 11 million tons with 48% to 52% Fe has been estimated.

Rock Phosphate:

The important deposit in Aravali rocks are near Maton, Kanpur, Dakankotra, Karbaria- ka- guda, Theman Katra, Berwas, Undri, Badgoan, Manoharpura, Neemuch Mata, Sisarma, Lakharwas, Bhil, Umra, Machuri etc. in the district.

Limestone:

The lime stone deposits of Raialo snirs near Maharaj- ka- khera, Hariav, Joparo, Daroli, Jaspura, parampara has been investigated by the department of Mines & Geology and a reserve of cement grade limestone of about 200 million tonnes has been estimated.

Barytes:

The deposits of barites occur near Garli, Junagarh, Dhariyawad, Railpatliya, Niarch, Ramila, Kagmadan, Jagat, Babarmal, Pipalawas and Barwalia area. Out of these Railpatliya Jagat barites deposit is important.

Marble:

In Udaipur district 527 million tons reserve of white marble has been assessed. The white marble deposits are found in padrada, Maharaj- Ka- Khera, Hairo etc. Pink marble is available in Babanmal area whereas Green marble is available in Kesariyaji, Parsood, Odawas and Kalyanpur.

Soapstone and Pyrophyllite:

In Udaipur district occurrences of soap stone have been reported from Undithasm Rathora-Ka-Gude, Bansera, Orda, Dipura, Gogunda, Sonai, Brammo- Ka- Varla, Padala, Pansola, Bhangabhat, Bharkundi, Sanjila, Gurli, Dingri, Kagadaon, Jhadol, Usan, Natlira- Ki- Pal, Paraya, Deopur, Kherwara, Rama, Bari etc. Like soapstone there are abundant deposit of pyrophyllites in Udaipur district and mainly occur at Sakroda, Bisnwas, Chandaria, Katani, Dilwara, Thor and Madan etc.

Calcite:

In Udaipur district at Sayera, Sadarla, Gogunda, Gojial, Padrada, Jhadol, Mali Khera, Maharaj- Ka- Khera, Dhinkoli, Thori, Amba, Bera-Ki- Bhayal etc.

Source: Department of Mines & Geology, Udaipur.

HOW MINING AFFECT HUMAN HEALTH:

Occupation like mining means excavation of mineral resources from deep inside the earth which creates perilous results for human health those engaged in this kind of work.

Table - 2 Mineral Production In The District

SR.NO.	MINERAL	LEASE NO.	PRODUCTION(TONS)	EMP.(NOS.)
MAJORMINERALS				
1	Lead,Zinc,Silver	1	65003.48	2123
2	Rockphosphate,Bauxite,Cadmium,Wollastonite	5	788451.00	621
3	Limestone,Kyanite,Selenite	4	305000.00	117
	Total	10	1158454.48	2861
MINORMINERALS				
1	Marble	101	39873.00	1320
2	Barytes,BrickEarth	1	3683.00	11
3	Granite,Gravel	3	9716.00	18
4	Limestone(burning)	38	63900.00	228
5	Masonarystone	153	3187870.33	772
6	Phylite-shist,Kankar-Bajri	9	8533.00	40
7	Serpentine	178	589377.17	1280
8	Soapstone	73	196658.71	642
9	Dolomite	4	242235.00	215
10	Phyrophyllite	8	4413.00	18
11	Ochres(redochre),ChinaClay	2	61633.00	29
12	Calcite	12	50584.00	57
13	Feldspar	11	2466333.00	130
14	Quartz	102	12016.00	185
15	Silicasand	2	714.00	2
16	Quartzite	1	210.00	2
	Total	698	7311150.206	4949

Causes of Mining:

- Population growth and urbanization
- No substitutes of mined products
- Mining for economic growth
- Demands of minerals from technological companies are increasing
- To accomplish the demand of increasing population

Effects of Mining on Human Health:

- Due to blasting and drilling, the fine mineral particles of dust are inhaled in the lung and causing respiratory problems
- Radioactive gases are emitted and causing lung cancer
- Mining occupation associated with heavy lifting which causes several injuries in labourers
- Emission of hazardous gases

Organ damage due to heavy metal exposure

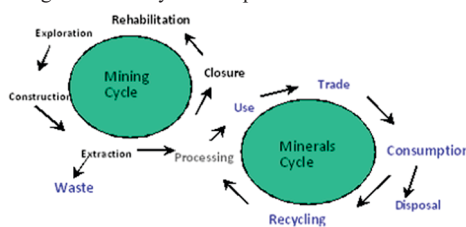


Figure 3: Process of Mineralization

(Source- Carolyn Stephens & Mike Ahern, London School of Hygiene & Tropical Medicine)

Mining affects all the components of environment. These impacts can vary in magnitude and can be permanent or temporary. Mining activities result in extraction of minerals from nature and often create imbalances in the environment (Mehta, 2002). Mining activities like digging and blasting disturb the terrestrial configuration and generate huge volumes of overburden removal (layers of topsoil and underlying rocks). According to the Economic Review 2014-15, mining contributes more than 4% in the state Gross Domestic Product (Government of Rajasthan, 2015). State has 79 varieties of minerals out of which 57 minerals are produced in the State (Government of Rajasthan, 2015) contributing annual revenue of more than 3,500 crores (Government of Rajasthan, 2015). A survey conducted in 2011 by NIMH on 682 workers in opencast mines showed that 20-25% had evidence of noise induced hearing loss (Elgstrand & Vingard, 2013, p. 13). Mineworker belongs to the lower segment of the society whose income ranges from Rs.40 to 100 per day. The burden of a big sized family (Average size of family is 5) and low income from the mines weakens the mineworker day by day.

CONDITION OF WORKERS IN UDAIPUR MINES:

According to a rough estimate, some 150 accidental deaths have taken place in quarries situated in Rajsamand- Udaipur belt in past three years. Every year, thousands of miners die in accidents and many more get injured, especially in the process of coal mining and hard rock mining. In Rishabdeo, an area known for green marble mines in Udaipur, due to excessive excavation many of the mines are reported to have gone 300 feet underground, while huge blocks which have not been removed from sideways pose high risk to the labourers working down. Excavation work continued day and night. There are around 100 odd green marble mines in gram Panchayat Odwas area at Rishabdeo where mining operations are held 24 hours. More than 4000 tribal labourers are engaged in the mining activity who toil 24 hours. The workers live a dreaded life since they are paid very less but prone to high risk and dangers in the mines operating without any safety measures as per the government norms, sources claim.

CHILD LABOUR IN UDAIPUR MINING FIELDS:

Lack of education and low sensed value of education among poor peoples are the greatest drivers of child labour in Udaipur, Rajasthan. Child labour is a complicated and complex issue which is going to be increased year by year. Children those working in the mining fields have either dropped out of school or have never been to school. On international level child labour is considered or accepted as a crime or distortion of children rights as defined by Article 32 of the Convention on the Rights of the Child (CRC), as “any work that is likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s health or physical, spiritual, moral or social development”. Child labour in Udaipur mostly engaged in digging shafts, crushing rocks, carrying ore in gold mines, scraping and lifting in salt mines, carrying and crushing large stones in quarries. Children those working in mines as labourers at the age of 10-16 yrs. Got wages vary from Rs. 15 to Rs. 40 per day. More than 60% of child labour force is working as bonded labourers. About 85% of children are not school going but the rest too can be seen working in mines in holidays (Report on ASM in Rajasthan by Rana Sengupta, 2005).

GOVERNMENT SCHEMES TOWARDS MINERS AND PEOPLE AFFECTED IN MINING AREAS:

The department of mines and Geology (DMG) of Rajasthan state, headquartered at Udaipur. In earlier times, the safety measures for problems were simple. But as the time flies and advancement in requirement of minerals with increasing population, the government strict safety measures towards mining activities and miners. DMFT rules:

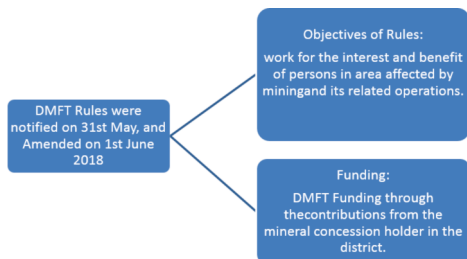


Chart 1: DMFT (District Mineral Foundation) Rules

(Source- Department of Mines and Geology, Rajasthan Government)

In 2015, the central Government announced the *Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)*. This scheme was launched to provide welfare and funds to the people those are affected by mining. Some of their objectives are:

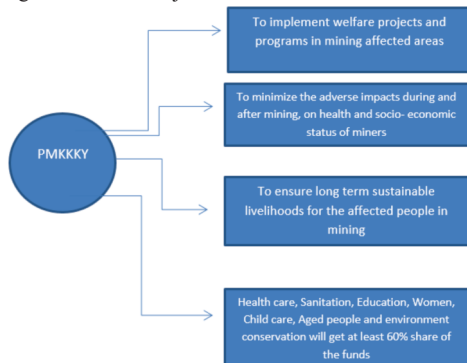


Chart 2: PMKKKY Scheme Objectives (Source- Department of

Mines and Geology, Rajasthan Government)

Mines and Minerals (Regulation and Development) Act No.- 67, (1957) is an act in which Government of India act out enact rules and regulations for mining sector and it was amended in 2015 and 2016.

CONCLUSION:

In spite of all these schemes in Udaipur, Rajasthan the real picture of mine workers are something else. Government cannot do any kind of compensate in return of human life. 1 lakh – 4 lakh rupees of compensation after the death of workers to their families can't fill the gap of loss. Several types of injuries, health issues for long and short term can't be the same as they were before. Due to illiteracy and low standard of living, the poor families produce more children to help them in labour works and earn more amount of money but due to less facilities and poor hygiene, children affected by malnutrition, polio any many other health issues stop their growth physically and mentally too. In early ages, they start working and unable to go to schools because their poor parents wonder if going to school is really worth it, they deprived children of their childhood. The conditions of Female workers in mineral mining sites are the worst because they get less money as compared to male workers. Female's faces sexual exploitation and bear serious health issues even in their reproductive health too affect so badly. Livelihood too but we have to explore some other substitutes for energy. Mining not only affects the human health it also affect our environment and make us vulnerable in getting new health issues. Not only workers it also disastrous for other humans those are forced to breathe in this polluted air. Government should take some valuable and impactful decisions about miner's health and for environmental conservation too. The plantation of maximum trees and to check them time to time. There should be ban on illegal cutting of trees for mining works. Make strict rules towards child labour and women's health. Reduction in blasting and dry drilling activities. During the excavation of mineral resources, there should be proper safety measures for workers and also to make them comfortable during work. Proper arrangement of hygiene and food availability.

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