

## A STUDY OF OCCUPATIONAL HEALTH HAZARDS AMONG SALT WORKERS WORKING IN PHALODI OF RAJASTHAN

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Ms. Soniya Soni\*  
Dr. Rameshwar Jat\*\*

### ABSTRACT

*Occupational health has been ignored in plans and strategies for development. Workers are exposed to industrial chemicals and environmental pollutants resulting in serious health hazards among the workers. A study of work-related health problems among salt workers revealed that prevalence of ophthalmic symptoms was 56.9%, dermatological symptoms was 42.3% and other symptoms like headache, giddiness, breathlessness, muscular and joint pains were experienced by 50.4% salt workers. A better way to think of occupational health is as an investment, which pays off in worker health and fitness, lower costs for medical care, greater productivity and social well being. This is a crucial issue because occupational health can contribute a great deal to economic progress by providing family income security, protecting the most economically productive segment of the population, reducing the cumulative burden of disability, making health gains at a time when costs are low, and promoting equity in the workplace. It suggested that there should be more focus on the promotion of health, prevention measures, surveillance and assessment of health risks at workplace, dissemination of occupational health information providing required health precautions and advice and conducting health examinations.*

**KEYWORDS:** Health Hazards, Salt Workers, Environmental Pollutants, Industrial Chemicals.

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### Introduction

India has 7.8 percent of the world's salt supply as one of the largest producers of salt. Salt is provided by solar sea/sub-soil/inland salt evaporation in India. India is after China and the US, the world's third largest salt producer, supplying about 230 million tonnes annually worldwide. Salt manufacturing is one of India's largest industries, which has a massive workforce. The leading salt productive states in the country are Gujarat Tamilnadu, Rajasthan Andhra Pradesh. Workplaces pose a number of dangers due to toxins, biologics, physical causes, repulsive ergonomic conditions, allergens, a dynamic safety network and various psychosocial factors.

In today's world, each country has made development plan and strategies in order to enhance growth rate of the economy. For this purpose, more attention has been giving on industrialization in the development strategies. However, Occupational health tends to be left out of plans and strategies for development. This is a crucial issue because occupational health can contribute a great deal to economic progress by providing family income security, protecting the most economically productive segment of the population, reducing the cumulative burden of disability, making health gains at a time when costs are low, and promoting equity in the workplace. In many countries, occupational health, with extensions of care to dependents, in the form of a social security health system has been the foundation for health care and social security as the economy develops.

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\* Research Scholar, Department of Economics, University of Rajasthan, Jaipur, Rajasthan, India.

\*\* Associate Professor, Department of Economics, University of Rajasthan, Jaipur, Rajasthan, India.

The World Health Organization (WHO) reports that “each year an probable 160 million fresh cases of work-related illness crop up and takes 1.7 million lives, accounting for 3% of all deaths. Salt workers are exposed to occupational hazards like contact with salt crystals and brine, physical stress, sunlight and glare due to sunlight reflected by salt crystals”. WHO advocates integration of a package of “Basic Occupational Health Services” into the primary health care system as countries develop. Occupational health is typically viewed as a consumptive expense, one that consumes resources but does not provide a tangible return. A better way to think of occupational health is as an investment, which pays off in worker health and fitness, lower costs for medical care, greater productivity and social well being.

WHO prepared a report at the request of the Ministry of Health of Poland. The report examined occupational health in Poland based on national data and information and recommends steps to improve it. It recommended promotion of health, prevention measures, surveillance and assessment of health risks at workplace, dissemination of occupational health information, providing required health information and advice and conducting health examinations. As per this report, workplace health promotion can reduce non- communicable disease (NCDs) risk factors by addressing physical inactivity unhealthy dietary habits, psychosocial risk factors and by encouraging implementation of smoke and alcohol work free environments. About 400 million European workers are employed in very diverse conditions which have both positive and negative consequences on their health and wellbeing. Unfortunately, annually more than 300,000 lives are lost in WHO European region from various works – related disease, the majority of which were NCDs.

ICMR (2005-06) in its report has showed that workers are at great exposure to industrial chemicals and environmental pollutants result in serious health hazards among the factory workers. The report shows occupational health hazard among salt workers like skin and eye symptoms. Salt workers are felt more comfortable with use of gumboots and goggles while working with salt. The computer worker faces musculoskeletal problems. The pencil workers are exposed to silica and suffer from tuberculosis. Further, due to air water and soil pollution various health hazards such as hypertension, asthma, acute lower respiratory tract infections are caused.

The salt workers have a certain attitude to the way salt is processed and they are not ready to change it. Therefore, their wellbeing has been compromised, they also follow rudimentary methods and obsolete layout of the salts work. Good quality salt with high yields per acre under various climatic conditions must be demonstrated before them. SCO (Salt Commissioner's Organization) has set up Model Salt Farms (MSF) in Rajasthan, Odisha and Tamilnadu in collaboration with Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar. Therefore, it is realized that if salt workers are well trained and exposed to modern technology, they will manufacture high quality and affordable salt under better health conditions.

Phalodi, known as the salt town in Rajasthan's Jodhpur district, is losing its sheen. The workers engaged in salt preparation are faced with multiple problems. Facilities are not up to the mark Reen village, around 20 kilometres from Phalodi town, is famous for its salt business, and also known for its record-breaking heat during summers.

“The salt business in Phalodi town began in 1960. The water level used to be low but as the salty water increased, water level also rose by around 100 feet. Reen's temperature is suitable for salt extraction. From salt extraction to packing, the entire procedure is done in Reen village. There is no denying fact that the salt industry has brightened the prospects of locals, and expanded the job opportunities but at the same time it is equally true that the workers engaged in salt preparation and packing are faced with various problems. Remuneration the workers get here are also not adequate.” A mechanism to avoid these problems needs to be created. Therefore, this paper seeks to analyze health issues related faced by the salt workers.

### **Objectives of the Study**

The main objective of the study is to identify work-related health problems experienced by the salt workers.

- To study the prevailing working conditions of the salt workers in the study area.
- To identify the health problems of the salt workers in the study area.
- To suggest the measures to reduce the occupational health problems of workers engaged in salt production

The present study is mainly based on the primary data, collected from the Phalodi, the salt town in Rajasthan's Jodhpur district. The simple random sampling has been applied for the selection of respondents in order to assess their opinion towards health hazard. The secondary data has been used regarding the total numbers of workers in India and funds allocated for the welfare activities for the salt workers.

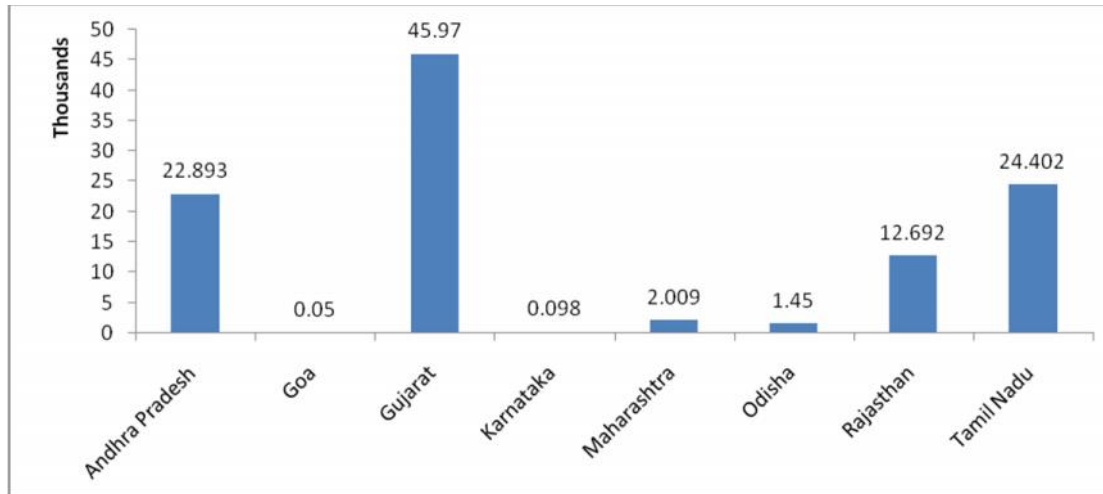
### Analysis and Discussion

Salt is produced by solar evaporation of sea/subsoil/ inland brines. India is one of the major producers of salt accounting for eight percent of the world's salt production. India is the world's third largest producer of salt. The four major salt production states in India are Gujarat, Rajasthan, Andhra Pradesh and Tamilnadu. In the coastal districts of Ganjam, Puri and Balasore, also salt is processed in Orissa, with about 30 thousand tonnes of salt produced. The salt industry provides employment to more than 1.5 lakh workers. The table 1 shows the total number of salt workers for leading producer of the salt in the country.

**Table 1: Number of Salt Workers in Leading Salt Producer States of India 2018-19**

State	No. of Salt Workers
Andhra Pradesh	22893
Goa	50
Gujarat	45970
Karnataka	98
Maharashtra	2009
Odisha	1450
Rajasthan	12692
Tamil Nadu	24402
<b>India</b>	<b>109564</b>

Source: Various reports of National Institute of Occupational Health (ICMR), Ahmedabad.



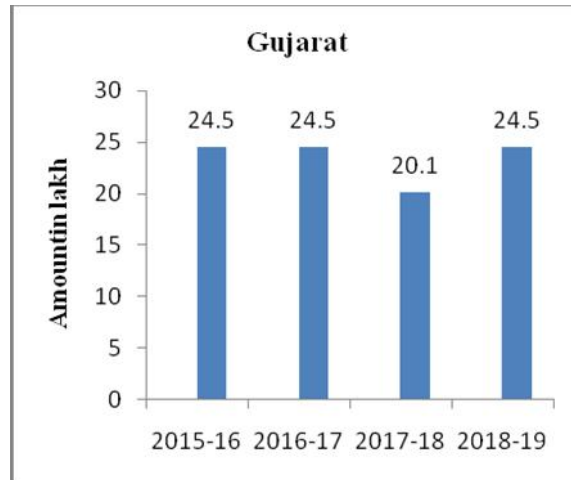
**Fig.1: Number of Salt Workers in Leading Salt Producer States**

**Table 2: Funds Allocation for Welfare Activities of Salt Workers in India (2015-16 to 2018-19)**

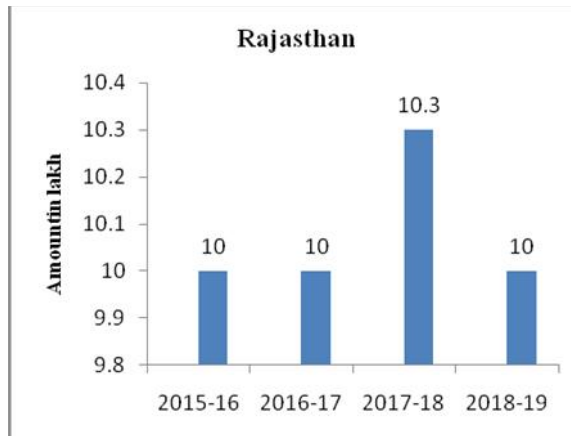
(Rs in Lakh)

Salt Region	2015-2016	2016-2017	2017-2018	2018-2019
Ahmedabad (Gujarat)	24.50	24.50	20.10	24.50
Jaipur (Rajasthan)	10.00	10.00	10.30	10.00
Chennai (Including States of Tamil Nadu, Andhra Pradesh and Odisha)	19.90	19.90	6.00	22.50
Mumbai (Maharashtra)	2.10	2.10	2.10	2.10
Kolkata (West Bengal)	2.60	2.60	-	-

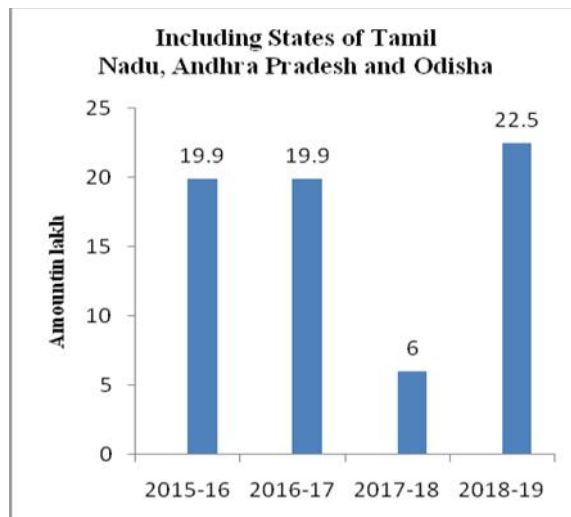
Source: Various reports of National Institute of Occupational Health (ICMR), Health (ICMR), Ahmedabad



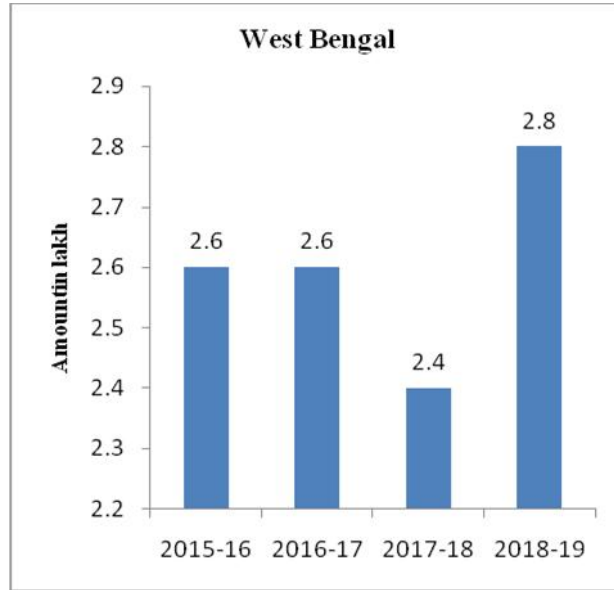
**Fig.2: Funds for Welfare Activities in Gujarat**



**Fig.3: Funds for Welfare Activities in Rajasthan**



**Fig.4: Funds for Welfare Activities in T.N., A.P. Odisha**



**Fig.5: Funds for Welfare Activities in WB**

There is a need that the health-related issues should be given due weightage in the working environment. Adverse health conditions should be avoided by the technical advancement and careful management of machinery from the operating world. Looking at the large number of salt workers exposed to salt and facing occupational health problems like prevalence of ophthalmic symptoms, dermatological symptoms like headache, giddiness, breathlessness, muscular and joint pains. The most prevalent ophthalmic conditions is presumably due to direct sunlight irritation and its glare caused by salt crystals to brine as well as irritation, traumatic ulcers, dermatitis, muscular and joint pains, headache and giddiness were other more common symptoms to salt workers.

**Health Hazard of Salt Workers**

To evaluate the awareness, practices and approach related to occupational health problems, salt workers were interviewed. Table 4 shows the Garret value. Firstly the Garret ranks are calculated by using appropriate garret ranking formula. Then based on the Garret ranks, the Garret table value is ascertained.  $Percent\ position = \frac{100(R_{ij} - 0.5)}{N_j}$ ,  $R_{ij}$  - Rank given for 1<sup>st</sup> item by j<sup>th</sup> sample respondents,  $N_j$  - Total rank given by the j<sup>th</sup> sample respondents. Table 3 explicates the Garret scores for the health hazard of salt workers. As can be seen from the table 4 that the calculated value lies between 8.3 and 91.7. The table value ranges between 23 and 77.

Table 4 indicates the Garret scores. The highest score is awarded to the factors: "dermatological symptoms" is ranked as first health problem, followed that "Ophthalmic symptoms". The least score is awarded to "joint pains". Hence it is inferred that Ophthalmic and dermatological symptoms are the major health problems faced by the salt workers.

**Table 3: Health Hazard of Salt Workers**

Factor	1	2	3	4	5	6	Garret Score	Garret Rank
Ophthalmic symptoms	1540	1990	1600	1980	1920	92	9122	2
dermatological	7700	318	275	1370	268	182	10113	1
Headache	770	3150	4850	88	38	33	8929	3
Giddiness	770	3250	990	460	365	1610	7445	5
breathlessness	1101	534	1145	3698	779	438	7695	4
joint pains	77	693	330	46	2997	1242	5385	6

Source: Field Survey.

**Table 4: Calculation of Garrets**

Calculation of Garrets Percent position = 100 (R <sub>ij</sub> - 0.5)/N <sub>j</sub>		Calculated value	Table value
100 (1- 0.5)/6	50/6	8.3	77
100 (2 -0.5)/6	150/6	25.0	63
100 (3 -0.5)/6	250/6	41.7	55
100 (4 -0.5)/6	350/6	58.3	46
100 (5-0.5)/6	450/6	75.0	23
100 (6 -0.5)/6	550/6	91.7	37

Source: Calculated.

The study conducted in Phalodirevealed the prevalence of ophthalmic symptoms was 56.9%, dermatological symptoms was 42.3% and other symptoms like headache, giddiness, breathlessness, muscular and joint pains were experienced by 50.4% salt workers.

**Table 5: Regression Results**

Variables	Un-standardized Co-efficient	Standard Error	Standardized Co-efficient	t-Value	P-Value
Constant	0.784	0.91		0.861538	0.314
X <sub>1</sub>	0.073	0.024	-0.227	3.041667	0.017**
X <sub>2</sub>	0.143	0.066	0.269	2.166667	0.013**
X <sub>3</sub>	0.329	0.173	0.276	1.901734	0.005**
X <sub>4</sub>	0.168	0.073	-0.171	2.30137	0.007**
X <sub>5</sub>	0.528	0.276	0.176	1.913043	0.001**
X <sub>6</sub>	0.506	0.238	0.148	2.12605	0.001**
R <sup>2</sup> -value	0.893	F-statistic	3.146	P-Value	<0.001*

The following regression model has been applied

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6$$

Where Y= Health problems

X<sub>1</sub>=Dermatological X<sub>2</sub>=Ophthalmic X<sub>3</sub>=Headache X<sub>4</sub>=Breathlessness X<sub>5</sub>=Giddiness

X<sub>6</sub>=joint pains

In the day to day life of the salt workers are facing various "health hazards like salt crystals create brine stress, physical stress, due to sunlight glare reflected by salt crystals through that it would affect eyes and soon. The same study also found that traumatic ulcers, dermatitis, muscular and joint pains, headache and giddiness were other more common symptoms observed among the salt workers. Majority of the salt workers suffered from ophthalmic and dermatological problems."

### Conclusion and Suggestions

Workplaces pose a number of dangers due to toxins, biologics, physical causes, repulsive ergonomic conditions, allergens, a dynamic safety network and various psychosocial factors. The occupational health hazard among salt workers like skin and eye symptoms have been found quite common. There is no denying fact that the salt industry has brightened the prospects of locals, and expanded the job opportunities but at the same time it is equally true that the workers engaged in salt preparation and packing are faced with various problems. The most prevalent ophthalmic conditions is presumably due to direct sunlight irritation and its glare caused by salt crystals to brine as well as irritation, traumatic ulcers, dermatitis, muscular and joint pains, headache and giddiness were other more common symptoms to salt workers. The salt workers have a certain attitude to the way salt is processed and they are not ready to change it. Therefore, their wellbeing has been compromised, they also follow rudimentary methods and the layout of the salts work is obsolete. Good quality salt with high yields per acre under various climatic conditions must be demonstrated before them. It has been observed that the salt workers are felt more comfortable with use of gumboots and goggles while working with salt. Simple necessities such as sanitation, clean water, and adequate accommodation should all be provided. The provision of smokeless stoves would aid in the reduction of indoor air emissions. Attention must also be given to the nutritional condition of the workers and their families.

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