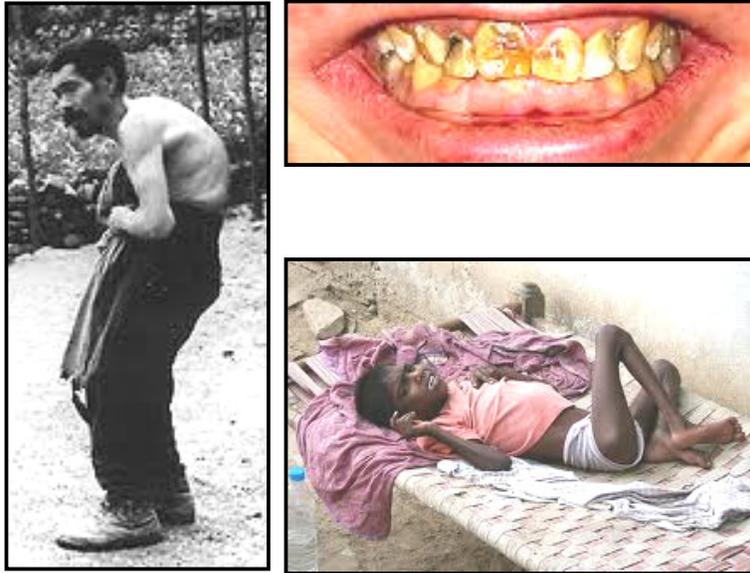


**Project Proposal**  
(For Financial Assistance)

**STUDY ON HEALTH HAZARDS DUE TO NON-OPTIMAL FLUORIDE CONTENT IN  
GROUND WATER**



:Project Area:

**Jodhpur District of Rajasthan State**

:Proposal Submitted By:

**SHRI OM SAI CHARITABLE HEALTH AND EDUCATIONAL TRUST**

*37-B, Umaid Club Road, Raika Bagh, Jodhpur- 342006 (Rajasthan)*

*www: saieducation.com e-mail: yudi12@sify.com*

*Communication: +91-9414125443*

*Fax: 0291-2517452*



***Organization's profile***

## **1. Name and Address of NGO:**

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Shri Om Sai Charitable Health and Educational Trust  
37-B, Umaid Club Road, Raika Bagh, Jodhpur- 342006 (Rajasthan)  
www: saieducation.com  
e-mail: yudi12@sify.com  
Communication: +91-9414125443  
Fax: 0291-2517452

## **2. Contact person:**

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Mr. Manoj Kumar Vidhani, Secretary

## **3. Registration details:**

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Registered under Public Trust Act 1959 (42 of 1959)  
No. 08/2009/Jodhpur  
Date: 28 May 2009  
Place: Jodhpur district Headquarter

## **4. Introduction of NGO:**

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Om Sai Charitable Health and Educational Trust is working as an NGO that aims to provide people from the all over the opportunities for improved health and quality education. Trust formed during the first quarter of year 2009 by local youth and social activists of Jodhpur. It is secular, non-political, non-governmental and no-profit making in nature, registered under Public Trust Act 1959 (42 of 1959). Its programs are selected that best match the skills, area of interest, expertise, and time availability of the individual, with a view to strengthen and add values to the ongoing work trust team in social development sector.

The trust's vision is to influence positive social change with justice for all. The mission of trust is 'aiming to bridge the distance between people by providing opportunities to individuals to influence positive social change through an exchange of ideas, knowledge, skills and learning by facilitating volunteering in social development sector. The establishment of trust in 2009 became a fact after a group of people felt that there was a requirement for more volunteering initiatives in

development sector. Volunteering was already happening, but, more could be done to benefit both the volunteers as well as target groups.

The trust acts as a facilitator between target groups and volunteers, who come from diverse backgrounds, by providing them the right match to utilize their skills in the best possible manner to the beneficiaries' advantage. So far, the trust has placed altogether the volunteers over a period of 2 years, in the field of social work. Our group of volunteers and trust team members work at the grassroots level on a variety of social issues like education, health, equal rights, environment, social interaction and rural development and have already positively impacted the lives of thousands of people living in socially deprived circumstances.

Many women have been helped by programs defending equal rights, many children of all ages have had chances to develop through literacy support and other educational activities, many lives have been improved by well-developed health and awareness on personal hygiene and sanitation. Our ongoing investment in our volunteering efforts will enable us to effectively and positively keep on impacting the lives of many most disadvantaged people.

#### **5. Broad Objectives of the Organization:**

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- ❖ To provide financial and need based support to poor and helpless individuals for their health and education related requirements
- ❖ To provide financial and need based support to neglected and unable to help elders for their health related requirements
- ❖ To provide shelter facilities to economically and physically deprived elders and to establish old age homes, Naari Niketan and Shishu Bal Niketan and ensure financial aid for these.
- ❖ To provide financial, need based and fee support to the children of every societal section, cast, creed and community to make them literate at the level of school, college, training centres, libraries or education in other institutions and training for sports.
- ❖ To ensure drinking water availability for all and make sustainability of existing water hut, establishment of additional water huts is also considerable.

- ❖ To acquire the land and construction of building from trust funds for centralizing education and health facilities, make sustainable the existing centres operating for the same purpose, timely extension of these centres and to provide all facilities.
- ❖ To provide financial and need based support to existing educational and health institutions, those are unable to provide facilities and services due to lack of funds.
- ❖ To generate financial and need based support for another one specific objective which will be in favor of children, adults and elders of every societal section, cast, creed and community.

#### **6. Present Activities of the Organization:**

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- ❖ Promotion of primary education with focus on girl child education
- ❖ Financial support for the marriages of poor girls
- ❖ School support programme (Donations to 'Vidyadhan' Fund)
- ❖ Help for helpless through financial and other supports ('Daan' tradition)
- ❖ Social and economic security to elderly and widows
- ❖ Scholarships to talented school going children
- ❖ School Fee support to poor children
- ❖ Financial back up to other trusts/ organizations
- ❖ Shelter and caring of old age persons
- ❖ Support for improved health status and medical aid to poor
- ❖ Promotion of religious faith of people
- ❖ To ensure accessibility of Government services facilities up to people
- ❖ To ensure availability of qualitative drinking water
- ❖ Preparation to get financial support from Government sources for social development projects/ activities
- ❖ Other programmes/ activities in favour of society

***Project details***

## 1. The Context

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Of the water related health hazards, the problem of 'fluorosis' has been known in Rajasthan for a fairly long time. The term 'Banka Patti' (a strip where people become deformed by non-optimal fluoride content in ground water) has been in use in Rajasthan for over a century and refers to a specific belt near Makrana in Nagaur district. Though fluorosis is an incurable disease, its extent and nature have remained unassessed.

Shri Om Sai Charitable Health and Educational Trust is a non-profit making agency (NGO) dedicated to the aim of 'Health for All'. Apart from campaign / lobbying, training and communication activities, it also undertakes studies on health problems that have a wider impact.

It was in this context that the organization wants to carry out a comprehensive study not only to find out its nature and extent but also to assess the socio-economic impact on the affected population. It is for the first time that such a study has been undertaken on a larger level in identified Jodhpur district of Rajasthan.

## 2. The Introduction:

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Fluorine is an essential element for all living being from the point of view of health. It helps in the normal mineralization of bones and formation of dental enamel. About 96% of the fluoride in the body is found in bones and teeth. The main source of fluoride to man is drinking water. The countrywide average fluoride content of drinking water is about 0.5-mg/ liter (0.5 p.p.m.) but in fluorosis endemic areas the natural waters have been found to contain 3 to 20 mg of fluorides per liter. Food is another source of fluoride intake. Fluoride occurs in traces in many foods but some foods such as sea fish, cheese and tea are rich in fluorine.

The average adult man may ingest about 1 mg of fluoride daily from drinking water. In addition to this the daily diet may provide 0.25 to 0.35 mg of fluorine. Drinking water is the main source of fluorine to man and a concentration of 0.5 to 0.8mg/ liter is considered a safe limit in this country. In temperate climates where the intake of water is low, the optimum level of fluorine in drinking water is accepted as 1 mg/liter. Fluorine is a double-edged sword. Ingestion of large amounts is as harmful as ingestion of inadequate amounts.

### 3. Excess fluoride consumption and health hazards:

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Fluoride when consumed or inhaled in excess (more than 0.8mg/ liter in Indian conditions) can cause several different kinds of health problems. It affects young and old alike. Fluoride is also known to induce ageing. An individual may suffer from:

- (a) Skeletal fluorosis or
- (b) Dental fluorosis or
- (c) Non-skeletal manifestations or
- (d) All or a combination of the above

#### **(a) Skeletal fluorosis:**

It affects young children as well as older individuals. Fluoride can also damage a fetus if the mother consumes water /food with high concentration of fluoride during pregnancy. Ingestion of high fluoride contents during breast feeding can cause infant mortality due to calcification of blood vessels. The following symptoms are quite common among individuals suffering from skeletal fluorosis:-



- Severe pain in the back bone
- Severe pain in the joints
- Severe pain in the hip region (pelvic girdle)
- Stiffness of the back bone
- Immobile/stiff joints
- X-Ray reveals increased girth/thickening and density of bone besides calcification of ligaments
- Constriction of vertebral canal and inter vertebral foramen-pressure on nerves
- Paralysis

#### **(b) Dental fluorosis:**



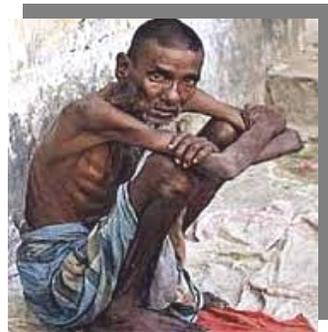
Dental fluorosis is highly prevalent among children who are born and brought up in fluorosis endemic areas. Dental fluorosis can occur in milk teeth as well as permanent teeth. The following symptoms are quite

common among individuals suffering from dental fluorosis:

- ❑ Glistening teeth become dull and develop yellow-white spots
- ❑ Yellow-white spots turn brown and present themselves in horizontal streaks
- ❑ If the brown streak is at the tip of the teeth then it indicates that the child has ingested high fluoride content food or water or both up to the age of 2 years
- ❑ If the brown streaks are in the middle of the teeth then it indicates that the child has ingested high fluoride content foods or water or both from the age of 2 years to 4 years.
- ❑ If the brown streaks are in the upper part of the teeth then it indicates that the child has ingested high fluoride content food or water or both from the age of 4 years to 6 years and after.
- ❑ In the advanced stage the teeth become black. They also get pitted or perforated and eventually get chipped off.

**(c) Non-skeletal manifestations:**

This aspect of fluorosis is often overlooked because of the wrong notion prevailing that fluoride will affect only bone and teeth. Fluoride when consumed in excess quantities can cause several ailments such as:



- ❑ Neurological manifestations: Nervousness, depression, tingling sensation in fingers and toes, excessive thirst and tendency to urinate frequently (Polydypsia and polyurea which are controlled by the brain appears to be adversely affected)
- ❑ Muscular manifestations: Muscle weakness, stiffness, pain and loss of muscle power
- ❑ Allergic manifestations: Very painful skin rashes which are per vascular inflammations and are prevalent among women and children in the form of pinkish red or bluish red, round or oval spots which fade and clear up in 7-10 days.
- ❑ Gastro-intestinal problems: Acute abdominal pain, diarrhea, constipation, blood in stool, bloated feeling (gas), tenderness in stomach, feeling of nausea (flu like symptoms) and mouth sores.
- ❑ Urinary tract manifestations: Urine may be much less in volume having a reddish yellow color and there may be itching in the region
- ❑ Headache

- Tooth loss at an early age

#### **4. Inadequate fluoride consumption and health hazards:**

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Fluoride when consumed in inadequate quantities (less than 0.5 mg/liter) causes health problems especially among children. A child may suffer from:

- (a) Dental caries or
- (b) Lack of formation of dental enamel or
- (c) Lack of normal mineralization of bones or
- (d) All or a combination of the above

Therefore it is of utmost importance to prevent the development of fluorosis as there is no specific treatment. Some of the preventive measures may not be easy to practice but there is no other choice.

#### **5. Statement of the problem**

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Fluorosis has always been a health hazard in Rajasthan. A number of studies have been carried out in the past by the government as well as academicians and non-government organizations but no study has been carried out on a larger level in the area at one point of time. Therefore, though the existence of the problem was recognized it was not possible to gauge its nature and extent. It was in this context that the Shri Om Sai Charitable Health and Educational Trust decided to carry out a comprehensive study not only to find out the nature and extent of the problem but also to study the socio-economic impact on the population.

#### **6. Objectives of proposed study:**

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The specific objectives of the study are:

- (i) To estimate total number of villages affected by high fluoride content in ground water at project area level.
- (ii) To estimate the population affected and find out its socio-economic status.
- (iii) To study the impact of high fluoride water on health.
- (iv) To estimate total number of villages affected by low fluoride content in ground water at project area level.
- (v) To estimate the population affected by low fluoride content.
- (vi) To study the impact of low fluoride content water on health, and
- (vii) To develop an action plan to fight with problem of fluorosis.

## 7. Methodology

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It will be an empirical analytical study based on the census method. Information regarding fluoride content in the ground water of all the 1607 villages of project area will be collected from secondary sources. The Public Health Engineering Department (P.H.E.D.), Govt. of Rajasthan regularly carrying out water testing of groundwater sources of the area, but there is no any analysis for effects on human health by high or low fluoride content in ground water. From the list obtained from P.H.E.D. we separated the villages into three categories. The first category listed those villages having less than 0.5 p.p.m. Fluoride content. The next group is of those villages having 0.5 to 0.8 p.p.m. Fluoride content and the third group contained villages having more than 0.8 p.p.m. Fluoride content.

Villages having less than 0.5 p.p.m. Fluoride content will analyse separately because the problem there is of less fluoride content in ground water. Villages having 0.5 to 0.8 p.p.m. will be excluded because for our country, this is the ideal amount of fluoride content in ground water. Villages having more than 0.8 p.p.m. will Analyze separately. The socio-economic information about these villages will also been gathered from secondary sources. Wherever we have doubts regarding P.H.E.D. information, we also will collect samples of ground water and get them tested for verification.

According to the “Survey on status of drinking water supply in rural habitations” conducted in 1993 by Rajiv Gandhi National Drinking Water Mission, Ministry of Rural Development, Government of India, there are more than 1000 villages in our project area having fluoride content of more than 1.5 p.p.m. in groundwater. Even our study will be based on the same data (for our project area) but with deferent criteria. The first criteria are that even if one well in a village has optimum fluoride level –0.5 p.p.m. to 0.8 p.p.m. then that village is not a problematic village. The second criteria is that even if the groundwater contains high fluoride level but there is alternate source of water such as canal water, then those villages will not been treated as problematic villages.

Field Researchers will collect water samples and other relevant information at each village level. One field researcher will cover all villages of one Panchayat Samiti area in project coverage limits. Testing of collected ground water samples will be go on simultaneously with the fieldwork.

**8. Project Period:**

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Six months from the budget allocation

**9. Plan of Action:**

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S.N.	Activity	Months					
		1	2	3	4	5	6
1	Collection of ground water samples and data from villages	*	*	*	*		
2	Testing of ground water samples	*	*	*	*		
3	Interaction with village community on the problem	*	*	*	*		
4	Sharing of experiences with village community on health hazards due to non-optimal fluoride content In groundwater	*	*	*	*		
5	Meetings with the people surviving with health problem due to non-optimal fluoride	*	*	*	*		
6	Analysis of data collected from field					*	*
7	Documentation and presentation of Report					*	*

*Project area/ Staff & Budget*

## **1. Coverage Limits:**

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All 1157 villages of 339 Gram Panchayats will be covered within the area of following ten Panchayat Samities of Jodhpur district of Rajasthan:

Luni, Mandore, Balesar, Shergarh, Osia, Bhopal garh, Bilara, Phalodi, Bap and Baori

## **2. Profile of Project Area (The Jodhpur District):**

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### LOCATION

Jodhpur, one of the largest district of Rajasthan state is centrally situated in Western region of the State, having geographical area of 22850 sq. Kms. It has population of 28.81 lacs as per 2001 census. The district stretches between 2600' and 27037' at north Latitude and between 72 55' and 73 52' at East Longitude. This district is situated at the height between 250-300 meters above sea level.

Jodhpur is bound by Nagaur in East, Jaisalmer in west, Bikaner in North and Barmer as well as Pali in the South. The length of the district from North to South and from East to West is 197 Km.& 208 Km. respectively. This district comes under Arid zone of the Rajasthan state. It covers 11.60% of total area of arid zone of the state. Some of the area of Great Indian Desert THAR also comes with in the district. General slope of the terrain is towards west. Despite its arid climate, Jodhpur is blessed with a variety of flora and fauna. A survey conducted by district administration with the help of forest officials shows 162 flora and 144 fauna at Machia Safari situated only 10 kms from Jodhpur.

Extreme of heat in summer and cold in winter is the characteristic of the desert. Jodhpur is no exception. The temperature varies from 49 degree in summer to 1 degree in winter. The sandstorm (aandhi) spectacle for people from other region of India. The rainy days are limited to maximum 15 in a year. The average rainfall is 302 mm. Soil of the district is classified mainly as sandy and loamy. Bajra ( pearl millet) is the major crop in Kharif. Jodhpur has excellent ground water taste in many part of district. In Rabi Wheat, Pulse and a variety of masala like Jeera, Dhania and Red chilly are also grown. Jodhpur has a name for its red chilly, onion and garlic. It is one of the major production centre for Guar. There is no perennial river in the district. However, there are important rivers in the district viz. Luni and Mithri rivers but their basis saline water. Main sources of irrigation besides rainwater are dug-wells tube-wells. The heighest-irrigated area in district is in Bilara Tehsil followed by Bhoplgarh and Osian tehsil.

The major and important minerals of the district are sand stones and Lime stones. Fawn & Red colours sandston of the district is very popular and found in abundance. Besides this Buliding stones, stone slabs and flagstones are mined in the district on regular basis. Minerals like quartz & clays of various colours & dolomite are also available in the district.

#### POPULATION

District/Tehsil	Area	Population			Sex Ratio
		Male	Female	Total	
Jodhpur district	Rural	994172	915251	1909423	921
	Urban	519718	457364	977082	880
	Total	1513890	1372615	2886505	907
<b>Tehsil</b>					
Phalodi	Rural	202945	184237	387182	908
	Urban	23546	21322	44868	906
	Total	226491	205559	432050	908
Osian	Rural	183574	169361	352935	923
	Urban	-	-	-	-
	Total	183574	169361	352935	923
Bhopalgarh	Rural	140057	131510	271567	939
	Urban	-	-	-	-
	Total	139909	131551	271460	939
Jodhpur	Rural	109560	99276	208836	906
	Urban	459198	401620	860818	875
	Total	568758	500896	1069654	881
Shergarh	Rural	176091	160744	336835	913
	Urban	-	-	-	-
	Total	176091	160744	336835	913
Luni	Rural	88468	83050	171518	939
	Urban	-	-	-	-
	Total	88468	83050	171518	939
Bilara	Rural	93477	87073	180550	931
	Urban	36974	34422	71396	931
	Total	130451	121495	251946	931

## FOREST/FLORA/FAUNA

On account of arid climate, negligible percentage of the total reporting area for the land use in the district is covered under forests. Due to sandy soil only scrub and thorny bushes of vegetation are found in the forest areas of the district. The main species of trees are Kumat, Kair, Khejri, Babul, Bir, Jal khara, Pilu, etc. Fruit bearing trees are promegranates and guavas. The funa of the district include jackal, Jungle Cat, Indian Fox, Black Buck, Chinkara, common hare, etc. The birds commonly found are aya, koyal, parrot, Vulture, Jungle Crow, bulbul, House Sparrow, Kite, Sand Grouse, Common quail, grey partridge, little egrit, etc.

## BIRD'S EYE VIEW ON DISTRICT

Total Geographical Area	2256405 Hectares
Total Irrigated Area	131752 Hectares
Total Unirrigated Area	911166 Hectares
Pasture Land	125701 Hectares
Rural Population	1909423
Urban Population	977082
Literacy Rate	57.38%
General Rain Fall	318.7 mm
State Assembly Seats	10 (Jodhpur, Sardarpura, Sursagar, Phalodi, Osian, Bilara, Bhopalgarh, Luni, Shergarh, Lohawat)
Subdivisions	07 (Jodhpur, Pipar City, Phalodi, Osian, Luni, Shergarh, Bhopalgarh)
Tehsils	07 (Jodhpur, Luni, Bilara, Bhopalgarh, Osia, Phalodi, Shergarh)
Uptehsils	04 (Bap, Jhanwar, Balesar, Tinwari)
Panchayat Samiti	10 (Luni, Mandore, Balesar, Shergarh, Osia, Bhopal garh, Bilara, Phalodi, Bap, Baori)
Gram Panchayat	339
Revenue Villages	1157
Municipal Corporation	01 (Jodhpur)
Municipal Board	03 (Phalodi, Bilara, Pipar city)
Land Records Circles	55
Major Hospitals	08
A Grade Veterinary Hospitals	07

Veterinary Dispensaries	00
Poly Clinic	01
Veterinary Hospitals	84
Veterinary Sub-Center	46
University	03
Colleges	12
Schools	6388
Post Offices	559
Superintendent of Police	02 ( Urban and Rural)
Police Stations	30
Jails & Subjails	03

#### MEDICAL AND HEALTH INFRASTRUCTURE

Satellite Hospitals	2	Mandor, Paota
Community Health Centres	15	Pipar City, Bhopalgarh, Mathaniya, Salawas, Dundharda, Aasop, Dechu, Luni, Borunda, Phalodi, Osiyan, Baap, Shergarh, Bilara, Balesar
Block	9	Mandor, Luni, Balesar, Bilara, Baap, Osiyan, Bhopalgarh, Shergarh, Phalodi
FRU	8	Phalodi, Bilara, Shergarh, Balesar, Bhopalgarh, Osiyan, Baap, Mandore
Static Centres	10	Phalodi, Pipar City, Bilara, Mandor, Paota, MGH, Ummaid Hospital, Mahilabagh, Salawas

#### CLIMATE & RAINFALL:

Jodhpur has a dry climate with a hot summer. Sand storms are common in summer. The climate of the district is conspicuous by extreme dryness, large variations of temperature & highly variable rainfall. The mercury keeps on rising intensely from March till June. These are the hottest months. The maximum temperature recorded in district is 47<sup>0</sup> C with 0<sup>0</sup> C as the lowest recorded temperature. The average temperature of the district is 23.5<sup>0</sup> C. The winter season in the extends from mid November till the beginning of March. Rainy season is of a short during from July to mid September. There are seven rain gage stations, namely - Phalodi, Osiyan,

Bhopalgarh, Jodhpur, Shergarh, Luni and Bilara in the district. The average rainfall in the district is 36.16 cm & 51.5 percentage humidity.



### 3. Required Project staff:

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- Project Coordinator: One
  - Field Researchers: Ten (@ one at each Panchayat samiti area)
  - Data Analysts: Two
  - Report Writer: One
- Total Man Power: Fifteen

### 4. Estimated Budget (In Rs.):

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SN	Head	Unit Cost	Period/ Quantity	Sub Total	Total Amount
1.	Project Team:				234000
	Project Coordinator	8000	6 months	48000	
	Field Researchers	4000	4 months	160000	
	Data Analysts	5000	2 months	20000	
	Report Writer	6000	1 month	6000	
2.	Research Material:				53500
	Stationary	4000 per month	6 months	24000	
	Xerox/Photo Copies	3000 per month	6 months	18000	
	Files/Folders/Writing material	4500 one time	6 months	4500	
	Computer Typing	3500 per month	2 months	7000	

3.	Sample Testing:				41140
	Plastic Bottles for ground water collection	15	1200 Bottles	18000	
	Testing Fee	20	1157 Bottles	23140	
4.	Travel:	8000 per month	4 months	32000	32000
6.	Miscellaneous/Unforeseen	2000	6 months	12000	12000
7.	Documentation/ Report writing	12000	1 month	12000	12000
	<b>Grand Total</b>				<b>384640</b>

(Rs. Three lacs eighty four thousand and six hundred forty only)

### *Post study Plan*

After the project; 'Study on health hazards due to non-optimal fluoride content in groundwater', the NGO will take following actions;

- Prepare/ design a project for de fluoridation of ground water in Jodhpur district of Rajasthan
  - Prepare/ design a project for treatment, if possible for the people suffering from health hazards due to non-optimal fluoride content in groundwater
- and, NGO will present the proposals to funding agencies for implementation of these projects.

A LOOK ON THE  
PEOPLE SURVIVING  
WITH THE PROBLEM  
OF FLUOROSIS



To,  
The Secretary/ CEO,  
The Hans Foundation  
B - 3/17, G.F., Safdarjung Enclave,  
New Delhi - 110029 India

Sub: To submit a project proposal on water related issue for financial assistance.

Sir,  
We are an NGO working at grass root level in rural Rajasthan. We design a project based on a comprehensive research titled; 'Study on Health Hazards due to Non Optimal Fluoride Content in Ground Water'. The project is planned for Jodhpur district in Rajasthan.

Please consider our project proposal for financial assistance and cooperate. It will be an act of kindness.

Thanks,

Manoj Kumar Vidhani  
Secretary

Enclosed;

- Project Proposal
- Registration certificate of NGO
- Constitution and Bye laws of NGO
- Audited statement of NGO, for last three year
- Annual reports of NGO, for last three years