Project Title:

Health improvement of fluoride poisoned children in rural India

Project Summary:

To improve the health of the rural Indian children with devastating effects due to fluoride poisoning using appropriate technologies.

Project need and beneficiaries:

In India fluoride poisoning through drinking water and the community leading a painful life is common knowledge.

This project proposal is addressing the children so that we save the children from the dreadful effects of fluoride on health.

The project beneficiaries are the (1) children and (2) mothers both pregnant and lactating.

The effect of fluoride on the health of the child may commence as early as the child is conceived by the lady, through the period of pregnancy as fluoride pass through the placenta to the growing foetus. The mother's milk is also contaminated with fluoride and it is absolutely necessary to take care of the pregnant lady, as well as breast feeding mother.

The health problems caused by fluoride poisoning, has no drugs or treatment, prevention is the only solution and it ought to start as early as possible so that less damage is caused by fluoride.

Project Activities:

In India 6 million children below the age of 14 years, are devastated due to drinking fluoride poisoned water. In rural India, the community depends on ground water, drawn through tube wells, hand pumps and open wells contaminated with fluoride. The maximum permissible fluoride in drinking water according to Indian norms is 1.0 mg/L, lesser the better as fluoride is injurious to health, water contamination is as high as 48.0 mg/L in India. The effect of the fluoride would commence in children from the time the embryo is growing in the mother's womb. In the attempt to save the children, the pregnant mothers and breast feeding mothers are also taken care. What are the major health problems in children? The children are born with deformities, and have low birth weight. Such children have (a) low intelligence (IQ) / mentally retarded (b) deaf and dump / autism and (c) very short stature (cretin – growth retardation). As the fluoride poisoned water, does not change the color, taste or smell the community consume it until the disaster strikes them. In such children, muscles are not well formed, knees-knock, or shall have bowed legs, It is painful to walk and they need a stick to walk around or they sit outside their huts the whole day (view picture gallery). Such children are a social liability to the family. Fluoride poisoning destroys the thyroid gland from its normal growth and development

with low hormone production. These are the major problems in children, which need to be dealt with effective preventive measures. How can the children be helped: There are 4 objectives with which the prevailing situation can be tackled. (1)By providing safe drinking water with fluoride not exceeding 1.0mg/L. (2) By promoting the use of Iodized salt in cooking, so that thyroid gland hormones are produced. (3)By advising / counseling the family, the importance of consuming a diet rich in proteins, calcium, vitamins besides antioxidants – though agricultural products / farm products. (4) To introduce the family to (i) kitchen gardening (ii) poultry farming (iii) pisceculture (iv) cattle farming for income generation as well as to improve the family's diet. Fluoride Survey: Villages affected by Fluoride poisoning are identified through Dental Fluorosis survey of school children. At that age dental discoloration due to fluoride poisoning is quite visible. All the water samples of such village(s) (i.e. 100%) – which may be 5,10,15 or 20 sources – will be tested for fluoride to assess the extent of fluoride poisoning of the drinking water. When 100% sources are tested, it is possible to identify safe sources (with fluoride less than 1.0 mg/L) which may be existing in the village and can be used for diverting the families of the children to collect water for cooking and drinking purposes. If the water sources are all contaminated with fluoride, then there are technologies developed for rural Indian population viz. defluoridation of water using indigenously developed technologies viz. Domestic filter using Activated Alumina for removal of fluoride or even hand-pump attached systems(view picture gallery). Fluoride Removal Activity: The filter body is fabricated using Terracotta (baked earthen pots) or using food- grade, plastic, or stainless steel. The cost shall vary from Rs.100 (for Terracotta) to Rs.300 (for plastic) or Rs.800 (for stainless steel). In addition to that either 3 or 5 kg Activated Alumina (a material of a special grade - locally available) need to be used for filling the container. That would cost Rs.125/kg X 5 kg = Rs.625/filter (US$ 14). When the fluoride contaminated water is poured into the filter, the family collects the defluoridated water instantaneously in another container. If 5kg of AA is added, the family can use it for a longer period of 3-4 months – before the Activated alumina in the filter is loaded with fluoride and need to be washed for removing fluoride adhered to the surface and that it can be re-used. The family need to use a field testing kit (Rs.2500/kit = US$ 50) to assess whether the filtered water is getting laced with fluoride. Thus they will get to know by practise when to wash the filter i.e. after 8 weeks, 9 weeks or 10 weeks depending upon the raw water fluoride content. The test is very simple; the field testing kit has a chemical solution, and when a drop of it is added to the filtered water (a small volume 1 or 2 ml) if it reveals a pink color then the water is safe; if the color is yellow, then the filtered water is contaminated with fluoride. This is because the efficiency of the activated alumina is over, it need to be washed before using for defluoridation. The washing is done by dilute sulphuric acid and dilute sodium hydroxide solution (It is known as acid-alkali wash). Filter Washing Facility in a village: If there are large number of families in a village using the filter, it is preferred to set-up a washing facility in the village itself in a hired room, where an educated, unemployed youth (girl or boy) does the washing of filters. The village households contribute a sum of Rs.100/month (US

$ 2), initially to set-up the facility. Thereafter they continue to pay the same, which shall be used to provide a salary of Rs 3000/month (US $ 60) for the individual who gets the filter washed and keep it ready for re-use. This is how the sustained supply of safe water is ensured for the family(ies) for cooking and drinking purposes in a village set-up. Alternative to domestic filter : If the community in a particular village, is some what well-off and can afford to set-up a community installation, they can do so by attaching a Activated Alumina system to a hand-pump. This is a hand-pump attached defluoridation unit for a community of 5 or 10 families. Then every family can come to a common central point to take home water for cooking and drinking purposes. Depending upon the option of the village community, they can get safe water and they need to maintain it. The Government agency is responsible for urban water supply; rural areas are under the local self Government or the Panchayat. They (Panchayat) can also step-in to help the community. If it has to be economical, it is advisable for the community to manage their water supply by themselves. Diet counseling and importance of use of Iodized salt, other nutrients along with antioxidants: Iodized salt is available in the market through-out the country – both urban and rural areas. The village community have been using in early days the rock salt and they continue to use that as it is slightly inexpensive compared to the packaged iodized salt. The 1 kg packed Iodized salt cost in the Indian market Rs.7.50 (US 76cents). There is a need for changing the old habits, by convincing them the dangers of using rock salt versus advantages of using Iodized salt and how they can improve their health. In my experience in rural India that, they have abundance of vegetables, fruits at their doorsteps; but they sell all of it for earning money. They hardly consume vegetables and fruits. Here again, the village community need to be counseled on the importance of consuming a diet rich in proteins, carbohydrates, calcium, vitamins and antioxidants. There are simple, easy to make recipes for the village folks, which is tasty and sustainable. The diet counseling does wonders to the health of the community and that is my experience. They are also provided with simple, easy to understand pamphlets, in local language – the need for improvement in the diet and the vegetables and fruits in preference that they ought to consume on a daily basis. Income generation schemes : (1) It is often found that, some of the rural areas which is endemic to the fluoride problem; are very fertile land and one can grow vegetables of all sorts in a small plot of ground. The family may be provided with good quality seeds as a one time gesture so that they develop a Kitchen Garden for family use only. (2) In certain parts of rural India, there are ponds and water bodies where Pisciculture (rearing of fish by artificial methods) is promoted. (3) It is also possible to promote Poultry farming, to begin with for domestic consumption of eggs and chicken and later it may yield better prospects for the family for improving financial situation. (4) In rural areas, keeping a cow, buffalo or goat for milk for consumption for the family is very common. From a one time investment the family can promote better health and happiness among the members of the family. The project aims at providing a new life to the children, those who are born and suffering and also yet to be born. One area of activity shall be in (i) North east of India (ii) Central India and (iii) Southern India. It is

intended to launch and carryout the project at least in 3 states in India. This multicenter study approach is essential as the country is so large, climate is variable, life style is also variable and if the message has to perculate to the community in the rural areas in a “fast-mode”, the only option is simultaneous launching of a project in different parts of the country.

Project expected outcomes:

(1)The first impact will be that the community will learn the water they drink has a poison (“Jahar” in Hindi) and that itself will shock them and that they need to do something about it. (2).The village community will be informed of all the health problems that they and their children face are to a large extend due to fluoride poisoning. The information that the children can be saved if they followed my advice, they would consider as a “blessing”. (3)Such community awareness programs are attended by men, women and children of all age groups in the village and shall have tremendous impact in the neighborhood as well. (4) As I shall be inducting some of the women and men who are the village leaders to participate in the project as “instructors”, it will have more acceptability among the community. (5)When, they are informed of the options and the cost involved for procuring water defluoridation filters which would prevent them from spending for medicines and consulting a Doctor, they understand that they need to do something about it and shall lead to wider consultations among themselves and shall realize their responsibility. (6) Such messages spread in rural areas like “wild fire” and people not only in the neighboring villages but in the adjoining states shall also come to know of it. (7) Until then no scientific team have been to them to their village to educate them on the drinking water problem and poisoned it contains - the major reason for the health problems in them and their children. The disability and the painful disease they suffer from can be rectified within a matter of 10 to 12 days by consuming good water and better diet, provided the health effects due to fluoride poisoning is detected very early stages through testing of the drinking water source for fluoride. (8) As the project is also dealing with advice for health improvement, information dissemination for income generation schemes – like (1) kitchen garden, (2) poultry farm, (3) pisciculture and (4) cattle farming in a very small scale to start with, shall be one of the attractions, which shall lead to sustainability of the project, besides income generation and would certainly improve the daily diet with essential nutrients, a prime requirement to combat fluoride poisoning effects on health. (9) The project, if funded, and completed in a matter of 3years, shall be one of the model programmes for the rest of the states in India to follow. This approach would be given the widest publicity for replication.

Quote:

“The reason why I am so intensely involved in the Fluorosis Control programme in India, is for the simple reason that millions in India suffer from Fluorosis (6 million children and 60 million adults) by just drinking poisoned water as they have no knowledge about it. The disease is very prevalent in rural Indian villages; the people are poor and they have no way to get out of the disease. The

helplessness of the community is terrible to witness. There is a lot of hard work and very few professionals are interested, leaving the sick unattended to in rural areas. Though there is so much knowledge on the disease developed from India, as I myself have researched for 30 years; India is a treasure house of knowledge on Fluorosis; but it does not serve the people of this country, it is a terrible depressing feeling. The Government has programs, but the funds earmarked does not reach the beneficiary. Beurocratic bottle necks are suffocating. I am longing to get sufficient funds, so that I can very easily take care of the community particularly the children – by implementing a project in a couple of villages from "A to Z", through my Non-governmental Organization and that I do not have to depend upon Government funds. The disabled children, unable to walk with pain, clutter under a tree in the village, sit the whole day with a pathetic face is an unbearable site. The kind of project I envisage to implement, in 3 – 5 years, it will be a model not only for the state but for the whole country as well as for the 22 other nations around the globe where Fluorosis is prevalent due to fluoride poisoning. I am also consulted by the sick from different parts of the globe, how to get relief from the disease as my Foundation is one of the very few in the world dedicated to deal with Fluorosis. I am very keen to see that I provide some relief to the poor and the devastated children, so that they have a better future."

Name of person quote above:
Prof.(Dr.)A.K. Susheela

Program designation:
Fluorosis Control and Prevention

Project timeline:
More than 3 Years

Project Activity:
Development

Project continuity:
Ongoing

Project Funding requested:
US$ 1000000

Keywords :
Fluorosis Control Children Safe Drinking Water Rural Population Defluoridation of Water

Contact Name:
Dr. (Prof) Ms. A. K. Susheela, M.Sc., Ph.D., F.A.Sc., F.A.M.S. (India), Ashoka Fellow

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Name Proj personnel 1 :
Prof. (Dr.) A. K. Susheela

Title Proj Personnel 1:
Executive Director

Brief Bio Proj Personnel 1 :

•Produced 7 Ph. Ds, who worked on Fluorosis disease during 1974-1994 in the National Medical Institute (AIIMS) New Delhi.

•Extensively carried out basic and applied research on Fluorosis from 1974 onwards.

•Involved in field work dealing with Fluorosis since 1987 (17years).

•Expert in Human Resource Development for Doctors Engineers and ground-root level functionaries.

•During 1987-1997: was the co-ordinator for a country-wide programme “Fluorosis Control” funded by the Government of India.

•Expert on all aspects of Fluorosis viz. Diagnosis, Prevention and Control of Fluorosis, new research on Fluorosis.

•Provides consultation to the Government of India and UN Agencies working in India and even the British Parliament during 1998 on the harmful side effects of water Fluoridation practised in U.K.

•Brings out, all technical and scientific information, books, pamphlets for Fluorosis Prevention for use in the country.

•Human Resource Development, an important activity of the Foundation.

•During the past 10 years, working as a Non Governmental Organization dealing exclusively with Fluorosis disease and safe drinking water for rural community.

Role as a social change organization through :
(1) Discussions (2) Presentation of case studies (3) Implementing projects with specific aim and result reveal – the impact for the change in the society. (4) The patients who have been prevented of the disease affliction, speak about it and is the most powerful way the change is made in the society.

Organization Name:
Fluorosis Research and Rural Development Foundation

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C – 103, Saransh

Organization Address Line 2:
34, I.P. Extension

City or Province:
National Capital Territory of Delhi

Zip of Postal code:
110 092

Country:
India

Organization Mission :

The organization is dedicated to deal with all aspects of the disease “Fluorosis” and its prevention through provision of safe drinking water along with diet counseling in all sections of the society in India.

The organization is dedicated :

•To educate Professionals and others on all aspects of Fluorosis and removal of fluoride from drinking water, so that the society benefits.

•To inform, educate and communicate, to the poor and the sick, how to get relief or prevent Fluorosis.

•To appraise the management of Aluminium Industry in India and abroad, on all aspects of protecting the health of the smelter / pot-room workers, who have the highest risk of getting Industrial Fluorosis by inhaling the fluoride dust and fumes of hydrofluoric acid, emitted from the Industry.

•To provide all necessary information on Fluoride and Fluorosis to Government Agencies / Ministries of Government of India / UN Agencies working in India and other NGOs, Students, Teachers, Scientists who are keen to learn about the disease and apply the knowledge in field conditions.

Organization Program :

Other projects and activities :

(1). Completed a project studying the prevalence of the Fluorosis problem in 7 villages in New Delhi – sponsored by Government of India. The number of children affected are about 37% of the population. The total number of water sample existing were tested for fluoride and identified the safe and unsafe sources. The information was made available to the families living in the area, so that, they shift safer source for collection 2 pails (bucket) of water for cooking and drinking purposes. Visited 700 families and all the members i.e. 3500 members interviewed to know the health complaints and provided guidance and counseling to deal with prevention of Fluorosis. Project funded by Government of India, Ministry of Environment.

(2). Are also dealing with 360 Aluminium Industry workers, in one of the Indian Aluminium Companies and are monitoring their health so that they do not get affected with Industrial Fluorosis. Funds are provided by the Industry (2002 – 2004)

(3). Move around the country to train Doctors in various Medical schools located in States which are confirmed for Fluorosis disease. During 2002 – 2004 we completed training – 500 Doctors in Medical Schools and 500 Doctors working in rural Hospitals on all aspects of Fluorosis. Project funded by Ministry of Health.

(4.) Have completed writing a volume with 8 contributors entitled “Handbook on Planning and Improvement of Water Supply Programme in Fluorosis endemic areas in India” Funded by UNICEF New Delhi (It will now go to the press and printing is through our funds).

(5). As a routine, function as Fluorosis diagnostic facility to help patients referred by various hospitals in the country.

Geographical Scope:
Global

Full Name of Org Director:
Prof. (Dr.) A. K. Susheela

Title of Org Director:
Executive Director

Total paid staff:
6

Total volunteers:
3

Year org was founded:
1993

Religious Affiliation :
No religious affiliation

Other Funding sources:
(1).Ministry of Environment and Forest (Government of India)
(2).Department of Science and Technology (Government of India)
(3).Ministry of Health (Government of India)
(4).UNICEF
(5).Aluminium Industry(Indian)

List of Board of Directors :
(1).Padma Shri: Prof. P. K. Dave, Orthopedic Surgeon, 3rd President (from June, 2003)

(2).Dr. A. K. Susheela; Ashoka Fellow, Professor cum Scientist, Member Secretary

(3).Prof. S. Ramachandran , Mechanical Engineer, Member and Treasurer

(4).DR. P. K. C. Pillai, Professor cum Scientist , Member

(5).Dr. B.P.Rajan, Dental surgeon, Member

(6).Prof. M.C.Vaidya, Professor cum Scientist Leprologist, Member

(7).Prof. P. Raghunathan, Professor cum Scientist, NMR – Expert, Member

List of Managing Officers :
(1).Dr. A. K. Susheela; Ashoka Fellow, Professor cum Scientist, Member Secretary & Chief Executive Officer

(2).Prof. S. Ramachandran, Mechanical Engineer, Treasurer & Financial Adviser

(3).Prof. P. Raghunathan, Professor cum Scientist, NMR – Expert, Senior Administrator & Consultant Management

List Financial Institutions:
State Bank of India, Ansari Nagar Branch, New Delhi – 110 029
Savings Bank Account No: 32262
Foreign Currency - Current Account No: 42361

Auditors : M/s Yujita Chaudhry & Associates , F-37 DDA Community Center, Triveni, Sheikh Sarai Phase I, New Delhi – 110 017

As per the Government of India orders, the Foundation is exempted from payment of TAX. This is in view of the fact that the Foundation is involved in charitable work.

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The Permanent Eligibility No. of the Foundation is 231660013