

The endosulfan controversy in padre village kasargod kerala



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Abstract

A raging controversy has been going on about the aerial spraying of Endosulfan, an organochlorine, pesticide in the cashew plantations of Enmakaje Panchayat in Kasargod district of Kerala and its role in the causation of high morbidity and greater prevalence of congenital malformations and malignancies in the area. None of the studies conducted were able to exonerate the pesticide from its harmful role and the apex court in the state has ordered interim stay on the use of Endosulfan. A team of IMA office bearers and experts have visited the area and made a preliminary assessment. The high morbidity due to respiratory and dermatological illnesses and the high prevalence of congenital malformations, Central nervous system afflictions and malignancies were evidently clear. Looking at all the possible causes, the suspicion of blame clearly falls on the widespread aerial spray of Endosulfan, going on in the area for more than the past two decades. The reversal of some of the changes on withdrawing the spray for the past two years further supports this claim. The pesticide lobby seems to be strongly against the cause of the villages, as it is evident that accepting the claim of the villagers may play havoc on their business interests. This may add momentum to the movements demanding global ban on Endosulfan which means losses to the tune of crores of rupees to the manufacturers. One point is beyond doubt that the villagers of Padre have very high morbidity and handicap. It is only the genuine responsibility of the medical profession to intervene in such a situation to fetch them help. Activism to establish the cause of the morbidity and measures, both curative

and rehabilitative, to alleviate their sufferings assume equal importance in this situations.

Background

The lay press and media are flooded with news items and stories about a small village in the Karnataka border of Kasargod district. The small remote village, Padre in Kasargod has gone in to lime light for its tragic condition in terms of morbidity to the majority of its inhabitants, especially the young and in productive age group, that the villagers vehemently attribute to the irrational use of Endosulfan- a pesticide used in abundant quantities as aerial spray in the cashew plantations owned by the state owned Plantation Corporation of Kerala (PCK). Several committees and experts have studied the matter from various angles and the reports even go to the extent of contradictions in various aspects. One major drawback attributed to almost all of the studies is the absence of adequate medical expertise in assessing the morbidity and health conditions of the population and trying to evolve a cause effect relationship based on epidemiologic evaluations. Indian Medical Association (IMA), the largest organisation of Modern Medical doctors in India has the proclaimed mission statement of involving in various issues related to the health of the population. IMA Kerala State Branch, the largest IMA state branch in the country has never shied away from the problems of the community and it was decided to look in to the issue impartially. In this background, a four member team from IMA led by Dr. P. V. Ramachandran, Vice President Of IMA Kerala State and Dr. V. Mohanan Nair, Convener, IMA Research Cell visited the village on 25th September 2002. Dr. K. M.

Venkatagiri , from . Kasargod branch of IMA and Dr. N. Raghavan from <https://assignbuster.com/the-endosulfan-controversy-in-padre-village-kasargod-kerala/>

Kanhangad branch of IMA, both members of State working committee, were the other members in the team. The team met various important people in the area, visited some of the households with affected people and also the area outside the plantation implicated in the tragedy.

Endosulfan – what is it?

Endosulfan is an organochlorine insecticide and acts as a contact poison in a wide variety of insects and mites. It is effective against a wide variety of pests on cereals, coffee, cotton, fruit, oil seeds, potato, tea, vegetable and other crops. It is sold as a mixture of two different forms of the same chemical (alpha and beta Endosulfan) and is cream to brown in colour and has the smell of turpentine. It is a highly toxic substance and the WHO classifies Endosulfan in Category II (moderately hazardous) based mainly on the LD 50 value taken from the manufacturer, whereas the US Environmental Protection Agency (US EPA) classifies it as Category 1b (highly hazardous) pesticide. Endosulfan is easily absorbed in the stomach, by the lungs and through the skin meaning that any of these routes can pose hazard to humans. Thus exposure can occur when breathed through air (when sprayed), drinking water contaminated with it, eating contaminated food, touching contaminated soil, smoking cigarettes made from tobacco with Endosulfan residue or working in an industry where Endosulfan is used. Stimulation of Central Nervous system is the most important acute toxic feature of the pesticide. People with low protein diets are more sensitive to the effects.

Long-term toxicity of the chemical is also somewhat well documented.

Toxicity on kidneys, on intrauterine fetuses, on liver and suppression of
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immunity are well documented. Organochlorine compounds including DDT and Endosulfan are also implicated in the causation of decrease in quality of semen, increase in the incidence of testicular and prostatic cancer, increase in defects of male sex organs and increase in incidence of breast cancer.

The compound has adverse effects on the environment and is highly toxic to fish, birds, fowls, wildlife and bees. It is established that Endosulfan may run off immediately after spraying to surface water and may not reach the ground water. Despite rapid degradation in water, it can bind to soil particles and persist for a relatively long period. While its half life in water and most fruits / vegetables is 3 to 7 days, in sandy loam its half life is 60 to 800 days. The breakdown product Endosulfan Sulphate is also toxic and more persistent than the parent compound and accounts for 90% of residue in 11 weeks. Sulphate formation increases as temperature increases and this has to be borne in mind while using the chemical in the tropics. The degree of pollution it causes as Persistent Organic Pollutant (POP) is still vague and that is the grounds under which the chemical is widely being used as pesticide. At least ten countries have

completely banned the use of Endosulfan, including Germany, Netherlands, Sweden, Denmark and Singapore. Its use in rice fields is not allowed in Bangladesh, Indonesia, Korea and Thailand. Its use is severely restricted in Canada, Finland, UK, Kuwait. While umpteen number of scientists representing pesticide lobby have tried to trivialize the damage that endosulfan is known to be capable of doing, it was only once, a group of experts came from Philippines, which could get endosulfan banned only after

long drawn legal battles. The team of experts led by Professor Romeo F. Quijano, Co-Chair,

International Persistent Organic Pollutants Elimination Network (IPEN) and member, Pesticide Action Network Steering Council confirmed that the health problems at villages in Kasargod are most probably caused by the pesticide Endosulfan. Dr. Romeo, who is Professor of Pharmacology and Toxicology at the University of Philippines, is technical consultant to the Fertilizer and Pesticide Authority, Agricultural Department as well as the Health Department in the Republic of Philippines. The Philippine Government has not only banned endosulfan since 1994 and has been pushing for the inclusion of endosulfan in the list of Persistent Organic Pollutants (POPs) for global elimination as provided for in the Stockholm Convention, 2001.

Several countries are also planning to

ban the use of Endosulfan and worldwide campaign had been going on for several years to ban the use of this Organochlorine pesticide.

Several instances of acute poisoning and death due to Endosulfan had been reported from various parts of the world. One of the reports with massive casualty had been from the province of Borgou documented by the official sources in Benin in Africa. Farmers using endoisulfan as a cotton pesticide in Benin had reported dramatic effects on the environment at large. One farmer in the Borgou province stated that: ‘ Earthworms emerged from the soil, and subsequently died. Then, birds came to eat the earthworms and they died as well. Another farmer in the Banikoara region witnessed the break-up of the food chain by endosulfan: ‘ Some termites were killed in a cotton farm <https://assignbuster.com/the-endosulfan-controversy-in-padre-village-kasargod-kerala/>

sprayed by endosulfan. A frog fed on the dead termites, and was immobilized a few minutes later. An owl which flew over saw the immobilized frog, caught it as a prey, and then sat on a tree branch to enjoy its meal. Ten minutes later, the owl fell down and died.

Havoc in Padre, Kasargod, Kerala

The unusual clustering of congenital malformations, malignancies and increased morbidity due to epilepsy and respiratory disorders was noticed by Dr. Y. S. Mohan Kumar, a modern medical practitioner in Padre village in Enmakaje Grama Panchayat of Kasargod. He had been practicing in the area for nearly two decades. Further, he noticed that the congenital malformations and malignancies struck mainly the residents on both the sides of a stream “ Kodenkiri thodu” flowing down the Western Ghat hills on the upper reaches of which are the cashew plantations owned by the PCK. The local inhabitants used to attribute these to the curse of a local deity, Jatadhari, the guardian spirit (theyyam). Well ahead of any of the current controversies Dr. Mohan Kumar has expressed his clinical suspicion about the presence of some obnoxious substance like some minerals or radiation in the stream water that may be playing harm. Later some environmentalists, informed local farmers and journalists joined Dr. Mohan Kumar and they attributed the added morbidity and the increased incidence of congenital malformations and malignancy to the rampant and injudicious use of Endosulfan as aerial spray in the cashew plantations in the area. In different places along Kerala - Karnataka , the Plantation Corporation of Kerala (PCK) sprays endosulfan two-three times a year (between December and March)

through helicopter to prevent tea-mosquito attack to cashew inflorescence.

From 1963 to 1980, it was spraying endrin

(a substance in disrepute now, as a member of dirty dozen of Persistent Organic Pollutants (POP) and from 1980, endosulphan has been sprayed. Nearly 4, 600 hectares of Cashew Garden is being sprayed with this hazardous chemical. The Corporation is supposed to temporarily cover all the water sources like dug-wells, tanks etc., before spraying. It seldom takes this precautionary measures, as has been corroborated by various elected bodies and district administration in addition to the persistent complaints by local villagers. One of the local residents fought an one-woman war against spraying of Endosulfan and this was the ignition point for the present protest against the current agitations. Repeated opinions from apex centers like National research center for Cashew, Puttur, Karnataka , whose chief has several times requested his colleagues to refrain from the continuous , unscientific use of same pesticide for a quarter century has also fallen in deaf years of PCK sponsored scientists and committees.

The available evidences show clearly that the sort of morbidity and congenital malformations reported in the area well suit with the reported toxicity of the pesticide. The committee constituted by the government to look in to the matter once again reiterated this. The latest committee headed by the renowned environmentalist Dr. A. Achuthan clearly said that the only abnormal activity in the area of high morbidity, which has no causes of industrial or other pollutions , was aerial spraying of endosulfan . Though it is difficult to prove the cause effect relationship of chronic low dose

environmental poisons and miseries of living beings, the committee clearly
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opined that absence of proof can not be considered as proof of absence. In any case as the Achuthan committee has said " the onus of responsibility to prove or disprove the cause effect relationship should be that of the polluter and not of the general public who are the victims of the pollution " .

IMA team in the village

The IMA team met Dr. Mohan Kumar, some of the activists in the forefront of the struggle, several of the local residents, several affected households and also visited the Kodenkiri stream in the outskirts of the cashew plantations. It was a preliminary fact finding mission and an epidemiologic evaluation of the situation was not attempted at. Even then, we could find enough anecdotal evidences to believe that there is sufficient justification in the issues raised by the villagers. It is shown beyond doubt that the village has greater morbidity and incidence of congenital malformations, malignancies and CNS diseases like seizure disorders , when compared to any of its counterparts in the district or over the whole state. There is no other industrial or other activities in the area, other than the Endosulfan spraying, that could be attributed to the causation of these state of affairs.

The villagers have a point. How?

A meticulous medical evaluation of the situation clearly shows that the villagers have a point. Let us examine some of them:

Almost all of the people affected with congenital malformations in the area are all below the age of 30 years, the duration of aerial spray of Endosulfan in the area.

The chronic morbidity including malignancies found in the area, fit well with the identified and authenticated ill effects of the pesticide.

Anecdotal descriptions about the environmental problems sited by the villagers all agree with the toxic effects of Endosulfan. They have described that the local streams and water collections no more breed any fish and frogs have vanished from the area for the past few decades. The toxicity of Endosulfan on these groups of living organisms is well documented. Earlier in the village, bee keeping was a means of supplementing the household income in several households and the bees have altogether disappeared from the region. (This is when Pesticide lobby perpetuates that endosulfan is the most bee friendly pesticide!)

Putting the matter in reverse is also evidence providing. After the court stay, no spraying has occurred in the past two 2 years and after a long gap frogs have appeared in the village. Similarly, bees have also started appearing and some of the hives are active now. These evidences clearly show the effect of Endosulfan in the flora and fauna of the region.

Even the presence of “ tea mosquitoes” in the plantations, against which the pesticide is applied is not proved beyond doubt.

Sufficient studies about the yield of crops in the absence and presence of pesticide use have also not been done. No productivity study has ever been reported by PCK. Some of the locals claim that the plantations had bumper crops last year, when spraying was not done.

Several studies have demonstrated very high content of Endosulfan in earth and water in the region. The simultaneous prevalence of this high degree of pollutant and the disease conditions attributed to it may not be sufficient to elucidate a cause effect relationship. Neither would it be possible to conduct a longitudinal study in the area to conclude on its causation. Still there are points that sufficiently justify the blame on the pesticide for the causation of the morbidity in the area. Kodenkiri stream which is joined by several other streams emerging from the hills atop which the plantations are, was shown to contain very high content of residual Endosulfan. Even though ground water may not be polluted by Endosulfan, this has not much of relevance in the area where the sources of drinking water are the streams and surangas that have close connections with the stream. We found that many of the drinking water sources are closely connected with the stream and the stream itself is the source for several households. Moreover, from a public health point of view it is clearly shown that there is a clear and evident dose response relationship in the prevalence of morbidity and congenital malformations as we travel from the source of the stream downhill. Household close to the source of the stream have maximum prevalence of malformations and the number of members affected and the gravity of affliction also wean down as we travel down the banks of the stream. Moreover hardly any household is spared on the banks of this stream. There is no other factor attributable or can act as a confounder in this area where maximum households bear the brunt.

Very well in advance of the present controversies, the teachers in the local school have recognized that the children coming from the backside of the

plantations have physical and intellectual problems. This is evident in the records of the minutes of School Resource Group, a group of Headmaster and teachers that monitor the activities and progress of the school. Moreover the sort of intellectual impairment described goes well with the described toxicity of the pesticide.

The prevalence of consanguinity is not very high in the area and cannot directly be attributed in the causation of congenital malformations.

Another very strong point in favour of blaming the pesticide is the fact that majority of the congenital malformations are in those who were born after the practice of aerial spray has started.

Once thinking in reverse gear, the morbidity due to respiratory problems, especially acute asthmatic attacks and skin problems have considerably come down after stopping spraying for the past two years. This is evidenced in the hospital records of the area and also in the anecdotal descriptions provided by the locals.

The basic assumptions in the Koch's postulates to non-conclusively implicate an organism in the causation of a disease may be true of other causal factors also. If on the withdrawal of a suspected pollutant, the attributed morbidity also disappears it is only scientific elucidation to attribute the blame to the pollutant in question. This is more so in a village like Padre where no other confounder had been picked up till date.

Why Padre is not being spared?

To unsuspecting less mortals, the resistance shown by the authorities and the pesticide lobby may be beyond comprehension. Initially the authorities of the Plantation Corporation were very vehement in denying the attributable cause of the pesticide. They have even gone to the point of offence and committed some follies. In that process they earned some statements in writing from the "affected or their parents" stating that the diseases were not caused by Endosulfan!!! One point ignored in the process was the ability of these people to vouch on the causation of disease that even the most supplicated scientists are finding it difficult to pin down on. Interviews with some of the people who signed such "testimonials" clearly showed that they were made sign some papers without any knowledge and further manipulations might have occurred in them. However the force with which the Corporation was defending has come down. Now the only stakeholder seems to be the pesticide lobby. For them it is not the matter of a village and its morbidity. Directly or indirectly accepting the attributed role of Endosulfan in the causation of the health problems in the village would have more serious repercussions on their business interests. The ongoing movements world over to ban the use of Endosulfan may gain momentum, if the Padre tragedy is accepted as caused by the pesticide which has shown all the features of a Persistent Organic Pollutant. It is well known that the list of POPs is not complete and newer substances will qualify to enter the list in coming years. Permanent ban on Endosulfan means loss to the tune of millions of crores to the manufacturers. It is reported that out of a total global consumption of 50 million liters of endosulfan, Indian share alone is of 10 million liters.

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Actually, these possible repercussions are forcing the pesticide lobby to fight the genuine cause of the inhabitants of Padre with all the weapons in their armamentarium. The economic and business interests of the pesticide lobby is in stake and this is evident in several instances during the past few months when the controversy was at its helm. The comparison with some other plantations are irrelevant , because of non availability of morbidity data from such areas and unusual characteristics of the geographic terrain with plenty of open water bodies like streams (which are impossible to cover) and water tunnels (Surangas) that come from Ghats to join the streams. Defence of the pesticide by citing use in large areas in Maharashtra without high morbidity reports is similar to the argument put forth with respect to endosulfan deaths of West Africa , comparing it to Australia where morbidity has not been reported. It has been reported that “ cotton growing conditions and socio-economic conditions differ enormously between Australia and West Africa. Australian cotton is irrigated, and produced on immense farms of several hundreds to thousands of hectares. Cotton fields are well demarcated, and cotton is the only crop in the fields. Cattle do not roam around in cotton fields, nor eat cotton stalks left over at the end of the growing season. Packaging materials are destroyed rather than being re-used. And if farmers need pesticides for any specific insect pest for the production or storage of food crops, they can buy them in specialised shops. Also, as pesticides are relatively inexpensive in Australia, there is less pressure to use left-over products on food crops.” The comparison suits ideally to Padre and Maharashtra also in all aspects, except that it is cashew in Padre instead of Cotton .

Padre deserves medical help and rehabilitation

Above all the controversies related to Endosulfan one point is crystal clear. Padre is a village with very high morbidity. Proving the point of doubt may go a long way in preventing such catastrophes. But the medical profession has the moral obligation to attend to this morbidity and address the handicap created in the village. Thus rehabilitative measures assume equal importance to preventive measures. No civilized community and medical profession can turn a blind eye to the human suffering in the village. It is high time that medical profession rise to the occasion to fetch help to the hapless lot in the village. Not only should the profession join in the activism to scientifically evaluate the role of Endosulfan into the causation of the tragedy in Padre but also should join ranks to fetch them medical help, social and economic support and rehabilitative avenues.