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राष्ट्रीय व्यावसायिक स्वास्थ्य संस्थान
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Director

No.3/4/Endo/2004/5874

March 18, 2004

Ms Sunita Narain,
Editor,
Down to Earth,
Centre for Science and Environment,
41, Tuglakhabad Institutional Area,
New Delhi - 110062

~~19 MAR 2004~~ S.N.

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Dear Madam,

We would like to respond to the letter written by Dr. CC Abraham, EMFWA and published in March 15 issue of Down to Earth, wherein he has leveled a number of allegations against NIOH.

In the past two years, many groups representing Pesticide industry have written letters to NIOH and also made visits to the institute. We have always responded to them and answered all their queries. One such letter written by EMFWA dated 8.7.02 and our reply-dated 30.7.02 is enclosed for publication. Therefore we do not understand why EMFWA says that NIOH has not responded to them. We would once again like to answer many of the so-called scientific objections made by Dr. Abraham, which they have been repeating at many fora including meetings of the expert committee.

1. Selection of Exposed and control areas: Before selecting the Meenja school children as controls, we had taken care of all the confounding variables, which could affect the outcome of the study. Even in our paper published in Environmental Health Perspective (EHP; Dec.2003; 111:1958-1962), we have clearly mentioned that major difference between the two groups was presence or absence of aerial exposure to endosulfan. Our major concern from topographic study of the area was what was sprayed on the cashew plantations, which covered very large area of the hills in Padre village. We requested Plantation Corporation of Kerala to give us information on all pesticides sprayed by them in the study area. On 20-8-2001, PCK informed us that since 1980, they were aerially spraying endosulfan (0.1% of 35 EC) twice a year almost every year (letters enclosed). They did not mention about the use of any other pesticides on the plantations. The major crop in the valley in the study area and also in the control area is areca nut and in both the areas, the main pesticide used on arecanut was Bordeaux mixture (mixture of copper sulfate and lime). Besides

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this, on the small family farms, there may be localized use of other pesticides but it is unlikely to cause widespread exposure and any effect of this localized exposure is likely to be nullified by their use in both the areas. Before starting our study, we were very much aware of our study parameters of exposure and effect because the study was designed and executed by a team of experts, which included epidemiologists, pediatricians, statisticians, medical toxicologists, biochemists, analytical chemists and trained technicians who have decades of experience in conducting research studies and have many publications to their credit. During the field study, we took all the precautions so that the same doctors examined the study and control subjects and same equipments and instruments were used. An expert group from the Scientific Advisory Committee of NIOH approved our study design.

2. Endosulfan exposures in the study area: We have repeatedly said that topography of the area played a major role in endosulfan exposures in the study area. Even before starting the field study, we had asked the Regional Remote Sensing Service Centre (RRSSC), Govt. of India, to provide us a quick analysis of the physiography of the Padre village and as per their letter written on 19.9.2001 (copy enclosed),

" Padre is located in the 1: 25,000 toposheet No. 48/p/2/SE Grid 01. The northwestern and southwestern part of the village has extensive cashew plantations at an altitude of 100-200 metre above MSL. The first and second order streams are taking birth in these cashew plantations and joining the valley that has extensive croplands". In the conclusion of their analysis (which also included many other villages), they wrote

" It appears that location of villages, topography and land use setting of the problem villages are favorable for any persistent toxic pollutant to travel considerable distance from the catchment area to the croplands around the villages. The pollutants brought down through runoff or seepage tend to get accumulated in the soils. The crops cultivated over these soils may act as stores through which the toxicant gets entry into the target organisms (including human populations). Therefore, there is a need for chemical analysis of pesticide residues in the run off water, soil samples from croplands, and samples of edible crops of the areas affected".

The downward movement of endosulfan is further supported by the analysis of soil samples collected and analysed by Kerala Agricultural University in February 2001. Dr. Samuel Mathew presented these results on 12-13/9/2002 at NIOH. He showed altitude wide distribution of endosulfan residues wherein the level endosulfan in soil at the hill top was 900-3800 ppb, in the mid hill was 55 ppb and in the pond sediment in the valley was 315 ppb. This clearly shows downward movement of endosulfan sprayed on cashew plantations on the hilltops to the valley where there are residential premises.

3. Endosulfan residues in soil, water and blood samples: The pesticide industry was critical of our finding mainly α -endosulfan in the biological and environmental samples and this can be seen in their above mentioned letter.

However FIPPAT, the organization that carried out endosulfan residue analysis for PCK from samples collected between March to May, 2001, strangely reported endosulfan sulfate only but the chromatograms in their report showed that alpha-endosulfan was present in 22 of 29 cashew leaf samples and 26 of 32 soil samples; beta-endosulfan was present in 14 of 29 cashew leaf samples and 13 of 32 soil samples; whereas endosulfan sulphate was present only in 2 of 29 cashew leaf samples and 3 of 32 soil samples. In one of the blood sample, the chromatogram in their report showed significant presence of alpha and beta endosulfan which was reported as nil.

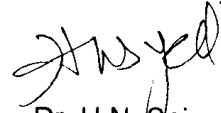
This point was highlighted by NIOH team in the expert group meeting held on 31.1.2003 held at IARI, New Delhi but the committee did not take cognizance of our observations.

4. Sexual maturity of the children in study and control area: We do not understand what Dr. Abraham means by +12 or +13 when the age factor was clearly taken into account for statistical tests. We have considered all the variables including effect of age on sexual maturity in both the groups and carried out multiple regression analysis and this can be seen in our publication.

We would be grateful if you can publish our responses to the questions raised by the Pesticide industry in your magazine.

With kind regards,

Yours sincerely,



Dr. H.N. Saiyed