

Interview with Dr. Gamini Manuweera. 23rd November 2016

Dr. Manuweera was speaking in his personal capacity regarding his previous work as Registrar of Pesticides in the Sri Lankan Department of Agriculture. He is now a Programme Officer of the United Nations Environment Programme. Nothing in this note reflects the views of the United Nations.

These notes have been edited for brevity and clarity. They were checked by Dr. Manuweera to ensure they correctly reflect his views.

Participants:

Dr. Gamini Manuweera, former Sri Lankan Registrar of Pesticides

James Snowden, Centre for Effective Altruism

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Can you tell us about your background?

I was Registrar of Pesticides for 15 years between 1994 and 2009; the person responsible for the implementation of the Control of Pesticides Act in Sri Lanka. This was the legal framework for managing pesticides and included imports, production, formulation and distribution regulations. I was responsible for all the decisions on deciding which pesticides should be banned.

How did you weigh the costs and benefits of banning particular pesticides?

We used the evidence primarily from the health sector and agricultural sector. We would hear from the Ministry of Health about pesticides which were a problem, and then work out how important the pesticides were to agricultural production. The health problems were largely related to suicide, but also included occupational and accidental poisoning.

We didn't do a full quantitative cost-benefit model which brought all the costs and benefits into a single metric. There wasn't enough data. We used quantitative data on suicide rates from different pesticides but factored other considerations in qualitatively. One of the most important factors was whether there were alternative pesticides which could be just as effective as restricted pesticides.

What were the alternatives to the banned pesticides?

Class I Organophosphates were banned in 1995. They are broad spectrum insecticides which kill a variety of insects. There were lots of alternatives so it was quite obvious that it wouldn't have a large impact on crop yields without quantifying exactly. There were more than 120 different active ingredients then and 400-500 different products. There were about 70-80 different insecticides. If you looked at the benefits, particularly the number of suicides, it was huge. Sri Lanka was top five in the world in suicide death rates. We didn't think the cost-benefit was close enough to warrant full quantification.

Endosulfan wasn't replaced with just one pesticide. There are lots of broad spectrum insecticides, carbamates, pyrethroids and even some Class II organophosphates in Sri Lanka which were used.

Would farmers generally use the profit-maximising pesticides, so restricting these would have had some cost?

Farmers don't only use pesticides when it's needed. They tend to just do what they did before, sprayed according to the calendar. Five days after seeding they would use pesticide A, after 10 days B, after 2 weeks C etc. There are some times when you have to do this, particularly with herbicides, but often, these pesticides weren't required.

The pesticide industry was very effective at promoting pesticide use. There were huge marketing campaigns, and farmers would simply use pesticides, whether they had a pest problem or not. I agree there is a risk of reducing crop yields with some pesticides but there are other pesticides, particularly insecticides, where you can remove them without any problem.

There are some safer pesticides which aren't used because they are promoted less well. It's very hard to bring a new chemical to market unless you have a huge marketing campaign so farmers tend to just go for the old chemical.

The typical farmer uses a lot of different pesticides on their crops. They bring pesticides and often rely on the advice on the vendors, who say it will work. There are quite slow feedback mechanisms and you don't see the results immediately. Sometime the low toxicity insecticides may take a couple of days or a week to see that the pest targeted is no longer there on the crop. But they, in fact, stop damaging the crop as with any other insecticides. In the meantime, farmers might think it's not effective – they will buy another one and spray again.

Did you get any pushback from the agricultural sector after banning pesticides?

The short answer is no. We consulted farmers before bans to ask them what alternatives there were and worked closely with the agricultural extension system to make sure there were equally effective pesticides for the pests that needed targeting. We didn't get any backlash from farmers or associations.

The only partial exception was paraquat. The estate sector said they needed it because there would be serious cost implications for their production. These were tea estates and they had to spray between the crops. This is a very organised sector compared to most agriculture in Sri Lanka so distribution and use is very well monitored. We allowed them to continue using it because I knew they could control distribution and access to these chemicals.

How were the bans implemented?

We had phase out periods of one to two or more years, which meant farmers could adjust themselves into other chemical options and there was some breathing space for producers to move into other chemicals they can promote instead.

Rural farmers are generally poorer in India than Sri Lanka, would this mean the risks of reducing agricultural production are more important?

Sri Lanka was a poor country and there were lots of poor farmers. It's difficult to compare my experience with what's happening in India. On the other hand, I guess that rural India would have an even greater problem with using pesticides properly because of challenges in efficient communication.

Did you ever decide not to ban a pesticide because of the agricultural impact?

Paraquat was the most difficult one. There were serious problems with paraquat and suicides but it was difficult to make a decision on this because it was important for rice paddies and tea, and was used in preparation of the fields. It's very effective.

Syngenta was the supplier of paraquat. I talked to them and told them the problem was it was very lethal in attempted suicide. I think it was more than 60% ended up in death, which is a lot more than others. I asked them to come up with a formulation that was less toxic. They responded to my request and came back after a year with a new formulation but it didn't help much. We decided we had to ban it in the end in 2008 but it was a difficult decision. It took me five years to take action.

Was suicide the primary reason for banning most of the pesticides, or were there other reasons?

All the different benefits were important and it depended on the particular pesticides. Endosulfan and paraquat were mostly about suicide but before that it was often environmental reasons. We banned all the Persistent Organic Pollutants in the Stockholm Convention. These were the first to go in the early 1980s. The process then was a bit different – it wasn't based on Sri Lankan assessments (which we didn't have the capacity to make), but the assessment of the hazard/risk of the particular chemical from the literature, various international organisations like UNEP, and the voluntary prior-informed consent (PIC) procedure (earlier version of the Rotterdam convention). So we just banned the pesticides based on the knowledge gained from international initiatives on information sharing. Mostly because of evidence about their environmental issues.

Apart from pesticide bans, what other methods did you use to try to reduce pesticide suicides?

The media glamourized suicides using pesticides and I think they played a large role. We had the Presidential Task Force look into it. The media interventions, after the bans of endosulfan organophosphates – I can't remember exactly but it was some time between 1998 and 2000.

What are the main barriers to other countries implementing pesticide bans?

With suicide, different countries will may have different sets of pesticides. You need to generate a lot of background information which is often lacking.

We had all the import statistics for different pesticides. Quantity-wise endosulfan was one of the top 10-15 insecticides. These are the quantities coming into the country but there are so many other factors – different rates of application and different crops. You cannot immediately use these numbers – if it's useful in paddy farming and rice, anything that goes into that it's very widely used. The distribution may be more but the quantity less for other crops.

Was promotion of Integrated Pest Management an important part of your strategy?

Integrated Pest Management was something we were constantly promoting. At one point I decided that no more pesticides can be registered unless it's compatible with the IPM program. Otherwise farmers wouldn't use it – they wouldn't use IPM things that would decrease yields.

One of the objectives of the IPM programs was to reduce the use of pesticides. Sometimes people say you get more yield with IPM. There's a lot of noise in the data so it's very hard to say but overall the impression was it was equally effective in terms of crop yields.

The challenge with IPM, and this is true of pesticides as well, is that information needs to constantly be flowing into the farming community. In the case of pesticide, it goes through the private sector. In the case of IPM, unfortunately, there was little private sector involvement so the whole burden on

continuous education is on the shoulders of the extension staff. The farmers keep changing and new generations come in so they have to be trained.

Your paper (Manuweera et al. 2008) notes there was no noticeable decline in crop yields. What kind of effect size would you have considered to be a noticeable decline?

The statistical part was done by one of my colleagues and I was focusing on the technical aspects. Yield change is very responsive to other factors like weather. There are so many variables and so much change in the crop so it's very hard to isolate unless it's a very significant drop. Based just on the data, I think it's very unlikely that we saw a 1% counterfactual decline but it's difficult to say about less than that.

Do you think it's most likely that crop yields a) increased 1%, b) increased 0.1%, c) stayed the same, d) declined 0.1%, e) declined 1% as a result of the ban, what do you think is closest to the truth?

In the case of Sri Lanka I would say the most likely answer is (c), no effect at all. I don't know how it would increase the yield, I doubt that happened. But I don't think there was any decrease. My sense is it's closer to 0 than a 0.1% decrease, certainly for insecticides.

Would it have been different for paraquat?

Paraquat may have been a slightly different situation. It's less likely to be a decline in crop yields than a slight increase in cost of production. Farmers may have to spend more on different herbicides. Manual weeding in particular is expensive and less cost-effective. There may have been some decrease in crop yields as well.

Did you face substantial resistance from the pesticide industry?

I always worked with the pesticide industry - they always knew what my objectives and goals were. When I talked to them I always asked them to come up with a solution first. Of course, we didn't always agree. They would come up with various different arguments for other solutions and I'd give them a chance, but usually they weren't as effective.

What alternatives were considered?

Different formulations of pesticides were considered, like including a stench to stop people drinking. But people were doing it anyway and it wasn't working.

Limiting accessibility has some impact – it would definitely help. So providing locked storage boxes or central storage facilities. But the most effective thing was people using less hazardous pesticides.

We had a strict regulation on what containers they could market. We had 50ml bottles in the early days and we found most people were using the smallest bottles for suicide. So we stopped allowing bottles under 50ml for highly toxic chemicals. We allowed them only for less toxic chemicals.

Could you make the bottle harder to drink out of?

You might be able to but it would increase the cost of the product.

How important was external assistance in deciding which pesticides to ban?

Professor Eddleston had a huge impact. We had really bad data – no local information on which pesticides were being used for suicide. Professor Eddleston was very helpful in providing the facts

for me to move forward. His research was on pesticide suicides and he collected lots of data on which pesticides were used and what were the best treatments.

In a normal circumstance, a patient would come and a doctor would treat him on the symptoms, register the outcome and move on. Nobody was systematically compiling pesticide-specific suicide data apart from him. We would have had basic information about pesticide poisoning rates, but not known which chemicals were used.

He saw the same chemical kept coming up, came to me and we had lots of discussions. He was giving us more details than we'd ever had before. He had funds, resources and time which were all lacking in Sri Lanka.

He would be helpful elsewhere, particularly gathering data on the poisoning aspect – that's his expertise. If your country had a serious pesticide poisoning situation he would be useful in terms of gathering and analysing data.