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Pesticides uses and risk perceptions

I will talk today about an anthropological research conducted between June 2018 and March 2019.

Anthropology and others social sciences are really crucial in order to understand the health hazards of pesticides.

Technical tools, conceptual framework and knowledge from environmental and medical sciences are not sufficient to understand the dynamic of circulation of pesticides. The “social life” of pesticides is really different than the one imagined in industry and regulation institutions.

In anthropology, I mainly use qualitative methods.

Anthropologist do not produce statistics or results that can be generalized to a large category of the population.

However, we conduct long term investigations on the field, we met a lot of people in their natural environment and we try to become as closer as possible with them to understand their daily life with pesticides.

I’ve conducted repeated interviews and observed them in their everyday life, in order to access to their deep thought and to understand their practices. The methods allow to access to a variability of logics, and also to understand trends and dynamics.

Once we have, what we call, “saturation of the information”, that is to say when the information is repeated by our research population, we can identify some trends.

This research has been funded by The Fondation de France. Since 50 years, this foundation funds research and developing activities in order to serve the general interest of the people.

The **aim of the project** was to explore in Cambodia the everyday life with pesticides, among rice farmers in Battambang and Svay Rieng, and among vegetable farmers in Kandal and Svay Rieng province but also among consumers in Phnom Penh and Battambang.

Through interviews and observations, I’ve studied the **risk perception** and the **strategies of control** developed by people to protect themselves against the risks.

¹ <https://centrenorbertelias.cnrs.fr/equipes-de-recherche/chercheurs/eve-bureau-point/>

Table 1. Survey population

	Phnom Penh	Battambang	Kandal	Svay Rieng
Rice farmers		12		2
Mango farmers			6	
Vegetables farmers		3	8	5
Residents		1	1	
Input sellers	5	5	3	1
Rice and fresh vegetables retailers	13	3	2	4
Health professional	2	2	4	2
State officers	10	2	1	
IO/NGO representants	9	3	1	2
Urban citizen	8	3		
Total (113)	47	34	26	16

Pesticides uses (follow-up)

I've also conducted a follow-up of the different pesticides used by 10 farmers from March 2019 to October 2019 (8 months) in order to get a clearer idea of

- the different pesticides used by the farmers
- their provenance
- the frequency of use
- the number of inputs mixed together

It is not easy to implement such a follow-up, logistically speaking, that's why we were not able to follow more farmers. It takes time to visit them, to take pictures of all the products, especially with vegetables farmers who spray a lot. The objective was to have more details about the technical itinerary followed for one crop.

We visited the farmers every 15 days to 20 days to register:

- the common name of the molecule
- its commercial name
- the active ingredient (+ concentration)
- its provenance
- the place where the farmers bought the products
- the quantity applied

- the harvest date, etc.

This data has just been collected and it is not yet analyzed. **I can however share some general results.** These results will be detailed in few publications.

Everybody here may know already that vegetable farmers use more pesticides than rice farmers. For one crop circle, they apply in average in one month and half 8 times. And they can mix at the same time till 11 products (still in average). The pesticides were mainly bought at the same place, at one input seller near their house. The provenances of the pesticides were mainly Vietnam, China, Taiwan, USA, Thailand. They preferred to buy directly those from Thailand or Vietnam.

They used herbicide, insecticide, fungicide, acaricide, hormone and grow accelerator. For the same crop they can use till 14 different active ingredients for one crop circle.

Here are the main active ingredients recorded during our follow-up:

Herbicide: *paraquat, glyphosate, metolachlore, quizalofop, 24D, bentazone, bispyribac sodium, cyhalofop-butyl, fenoxaprop, pyrazosulfuron*

Insecticide, acaricide: *acetaminiprid, buprofezin, chlorpyrifos, cypermethrin, emamectin, fipronil, profenofos, spinetoram, metolachlor, phenthoate, abamectin, chlorantraniliprole, lufenuron, metaldehyde, trichlorfon*

Fongicide: *azoxystrobin, propiconazole, mancozeb, hexaconazole, diphenconazole, imidazole, prochloraze-imidazole, propined, pyraclostrobin, triazole, carbendazim, izoprothiolane*

Risk perception

Now I would like to share some results about the risk perception.

I cannot go into details today.

Some results have just been published related to food scares in Cambodia associated with chemical substances. It is in French and in open access.

Substances chimiques et peurs alimentaires au Cambodge

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Dessin: Boots.

Ève Bureau-Point et Seyha Doeurn, « Substances chimiques et peurs alimentaires au Cambodge », *Moussons*, 34 | 2019, 109-140.

During my interviews with the farmers, I've discussed with them about their **chemical experience of pesticides**.

It's hard to say that people are aware/ not aware of the risk. Finally those perceptions are really changing according to the people and the situation of risk. Some person can be really careful

during application but less during preparation. Then it is hard to evaluate and say people know, or don't know. What I'm sure it's that they all know from their own perspective (like us). Another important thing is also not explaining their thinking and practices by ignorance of farmers. They all know a lot in their field and if they develop some practices that are negative for their health and environment, there is always reasons that are linked to external and structural factors (such as market forces, lack of guidance from state organization etc.). It is better to think that farmers and consumers just need help to improve their practices. We have to keep this in mind and, roughly speaking, our research demonstrated that the farmers were all aware that pesticides can affect their health.

They **mainly put the stress on** long term effects of pesticides and less on short term effect. People are convinced that pesticides, during application or through eating, have negative action on their body. People talked about a massive decline of life expectancy.

« Before in Cambodia, we live till 80, 90 years old, now till 60, 50 even 30 years old. Close to here, few days ago a woman just died of hypertension at 30 years old ».

Domestic employee, Phnom Penh, January 2019

Correlation between pesticides and health problems are pervasive. People explain that now they are sicker and that they consume more medicine, and they explain this with the presence of chemical in food and agriculture. They talked about the emergence of new diseases. We discussed with three rice farmers in Svay Rieng, they were talking about the *kimi*:

M1: If we talk about the health of people during the time we haven't used Kimi, their health is good, and they have a long life. But now, we used a lot of Tnam in agricultural sector, so the human's health is not good, and we will have a short life too.

M2: The diseases are also changed too. Before, we don't have any dengue fever, typhoid fever.

M1: liver problem, and other diseases. There're so many diseases nowadays.

M2: Yes, stomach problem, liver problem, heart disease, and so on. Before, we don't have all of this. Like we already knew, the old people are never sick like this.

M3: (laughing) nowadays, 30 or 20 years old, some are already die.

Community Health workers, Svay Rieng province, June 2018

However, when **I talked directly with farmers who are used to apply pesticides**, the discourses on negative effects of pesticides are more **unusual**. We can easily see that they are aware of the toxicity of pesticides: they try to protect themselves with mask, they change their clothes, they try to stock the pesticides far from the kids, etc. But finally, when we talk about health, they mention small inconveniences such as headache, tiredness, dizziness, and they often talk about **adaptation**.

F: Sometimes, *pol* is just because it's happened while I was not feeling well by myself too, and when I breathe it in, sometimes, I felt dizzy, headache, or get a cold. We cannot just put the blame on the *tnam*. It's because we are not feeling well by ourselves, when we go to use it, so

it will make us become like that – *pol tnam*. If our *komlang* (energy) is normal, after we spray, we will be normal, we will be fine. It's Okay.

Province of Kandal, March 2019

However, we understood through their discourses that all the bodies cannot adapt to the chemical. Certain persons are considered more vulnerable than others.

One farmer talking about one of his employee said:

For spraying *tnam*, sometimes I asked him to do. But he doesn't have much *Komlang* (energy). He got sick a lot of times. He just can help watering, and do other things a little bit.

Kandal, March 2019

We also often hear that: « *you, women, be careful when going there* ». We observed that regular users of pesticides didn't react to bad smell when showing pesticides bottles and so on. It's like if these chemicals became incorporated and part of their ordinary life. Some told us: « We are used to. Our body is used to it ». It reminded me the work of Françoise Zonabend, an anthropologist who worked on nuclear hazard. She explained that **the more people are exposed to the risk, the more they accept it**. In the context of my research, it was quite the same. There is a kind of denial that help to control the fear of the risk.

Risks from the point of view of consumers

A lot of **food scares** has emerged these last few years. They explain that **natural food has disappeared**. They worry a lot about the **fish and meat** that are feed with artificial food, and about the pesticides residues that are everywhere.

For example, the wife of a farmer in Kandal told us:

Seems like all the things are the same. For example, if we want to eat the banana flower. Or we want to cook the banana trees, but all of that contains *tnam*. Even *prohok* also has *tnam*. That's why I don't often eat them. Even I go to the market, I don't buy those vegetables. For the fish, if I want to eat, I only look for the *trey boeng* (fish-lake). Even they are small, or they are expensive, I will buy. Nowadays, the *jeat kimi* is everywhere.

August 2018

Our research highlighted a **growing distrust toward imported products**. The complexification of the food market creates a feeling of a lack of control. They highlighted that fruits, vegetables, meat, fish have **new taste, new size, new color** and new quality. A lot of discourses emerge about the provenance of the food. **Dependency toward Vietnam** for fresh vegetable reinforce accusation toward Vietnamese. In Cambodia, Vietnam is often the responsible of many problems that occurred in Cambodia. And the fresh products/agriculture sector crystalize these political tensions between the two countries.

Before vegetables were cultivated according to the season but now, vegetables from Vietnam are available at every season.

Phnom Penh, August 2018

We can often hear also that the worse fresh vegetable produced in Vietnam are sold to Cambodia. Also, a **lack of trust** in the state is expressed. However, neighboring countries are always presented as more powerful and more able to apply some regulation.

One orange seller told us:

What is important is the work of the government. The others countries, their government control and avoid problems. For us, they just start.

Orange seller, Battambang, September 2018

We've heard quite a lot of critics going on that way.

Before concluding, I would like to give example of mode of control of the risk, developed by the people in order to try to protect themselves from the chemicals. People mainly **criticize market**: the quality of the products they can find at the market (*phsar*). Some explain that they know some farmers who come to sell at the markets the extra vegetable they produce at home. People are looking for *Sre* products, that is to say local and natural. But vegetable sellers explain that if they don't sell beautiful products, people don't buy. We have permanent adaptations and contradictions between supply and demand. People explained how they select their products : they select the small one, that as the same appearance that the ones that grow in Cambodia. They used their five senses: they touch, they smell, they taste, they look at the products and they develop an experiential knowledge.

In Phnom Penh, Svay Rieng and Battambang, the development of "green shop" start to change the habit of some urban people. The different certification tools that are developed in Cambodia are new for the people but more and more known. The people also mentioned about the big supermarket (*Aeon, Lucky*), some feel more confident in the product sold in supermarket, other don't trust even green shop and supermarket. Human are really diverse and different, no uniformity but different dynamics. Another way of control is when people travel to province: they often bring back some natural products cultivated in their socio-familial network.

Conclusion

Food has become an uncertain and unsure universe, with development of new intensive agricultural practices and development of globalized market. People are less confident and develop, with they lay expertise, strategies of protection and control. Food security affect the intimate life of the people and the confidence in the Cambodian institutions and farming practices.

We all know that since 2012, now Cambodia has a law for regulating pesticides circulation, however, like for pharmaceuticals, their application is difficult. Social sciences are really important for understanding hazard of pesticides, their dynamics of circulation and the dynamics of use of pesticides. Researching only the residues on vegetable cannot help the situation, we need to understand the whole dynamics associated to the circulation of pesticides



at every step, from market, regulation, to their use and persistence in the environment. Today, this workshop is really interdisciplinary. I hope everyone can understand everyone and get some useful knowledge on the topic.

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