

Community Based Monitoring and the Chemical Conventions



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PESTICIDE
ACTION
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Community monitoring is a locally-based process of documenting the **effects of pesticides**.



Evidence of pesticide impacts can **help** governments to **improve** national pesticide regulation and help **shape** international instruments and policies for pesticide **control**.

Through the process of documenting pesticide **exposure and impacts**, communities become more aware of the risks, a first step toward adopting more **ecological and sustainable** agricultural practices and reducing their **dependence** on pesticides.

Pesticide impacts on health and the environment

The extent of pesticide poisoning is unknown: the WHO estimated around 3 million a year (in 1990), and estimates of under-reporting of poisoning reach 98%.

Systematic evidence of negative impacts should affect pesticide registration decisions. In many countries, governments do not have the resources to conduct comprehensive monitoring, particularly in rural areas where incidents happen. The lack of accurate data makes it impossible to assess and manage the real risks of pesticides.

This report presents community based monitoring approaches, and how they were adapted and used in Africa in 2005-2007, including a link with the Rotterdam Convention and its Severely Hazardous Pesticide Formulation procedure.



“ We had even a meeting with leaders from top level to village level and everybody was saying that was the **first time people from the villages met with the bosses from the regional office and aired their views in discussion with them** ”

The legal basis for monitoring

International Code of Conduct on the Distribution and Use of Pesticides

- 5.1.3 carry out health surveillance programmes of those who are occupationally exposed to pesticides and investigate, as well as document, poisoning cases:
- 5.1.6 utilize all possible means for collecting reliable data and maintaining statistics on health aspects of pesticides and pesticide poisoning incidents
- 5.1.9 utilize all possible means for collecting reliable data, maintaining statistics on contamination and reporting specific incidents related to pesticides

Rotterdam Convention on Prior Informed Consent (PIC)

Article 6: Any Party that is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory, may propose to the Secretariat the listing of the SHPF in Annex III. The proposal shall contain a clear description of incidents related to the problem, including the adverse effects and the way in which the formulation was used.

Stockholm Convention on Persistent Organic Pollutants (POPS)

Article 11: the parties shall.. encourage and/or undertake appropriate research, development, monitoring and cooperation pertaining to POPs, including on their effects on human health and the environment; socio-economic and cultural impacts

Community-based monitoring



Pesticide health and environmental problems arise due to information gaps on actual impacts and poor practices by farmers, who do not or can not apply label safety precautions. Both elements need to be addressed to reduce the devastating health and environmental costs of pesticide use.

Environmental damage has negative impacts on eco-system 'services' that communities rely on, such as clean water, fertile soils, and pollinators and other beneficial insects that provide pest control. Poisoning the environment affects the poorest peoples' livelihoods disproportionately.

Hospitalised poisoning cases often involve suicide attempts or serious accidents. 'Mild' work-related cases are not reported, or if they are,

health practitioners may not recognise and handle them because signs and symptoms are similar to other health problems. Long term pesticide poisoning has un-quantified costs on lost productivity and the ability to support families.

Pesticide labels set out basic measures to be adopted when using the product. However personal protective equipment (PPE) is not available or affordable to many farmers, there are few collection systems to allow sound disposal of containers, and label precautions regarding spraying and mixing often can't be accessed or read by workers. A lack of understanding of the risks of pesticide use, to health and particularly to the environment, leads to risky and 'off-label' behaviour.

Farmers, often illiterate, have no source of information except pesticide dealers. Involving them closely in regular monitoring of health and environmental impacts can help plantation workers and farming communities realise they are being poisoned. A deeper understanding of the risks of pesticide use may drive behavioural changes to prevent incidents from happening. The process of monitoring also increases the level of scientific and technical competence at the local level and helps communities take charge to address community exposure.



Community Pesticide Action Monitoring (CPAM) was developed by PAN Asia and the Pacific in the 1990's to document and create awareness of pesticide impacts. CPAM is done with informed and consenting communities (especially women and under represented groups), based on Participatory Action Research, and encouraging organising and action among the community members. External partners are accountable for providing legal or medical support and sharing alternatives (such as biodiversity-based ecological agriculture and IPM) if needed.

CPAM was used by Malaysian plantation workers to identify paraquat as a major problem, and take action to prevent further exposure. Communities in Kasargod District, Kerala (India) successfully used CPAM to identify health and environmental impacts of endosulfan and achieved a state ban.

Pesticide Used		Date			
No.	Symptoms of Poisoning				
1	 Eye Itchiness				
2	 Blurred Vision				
3	 Discoloured Nails				
4	 Nails Dropping Off				
5	 Rashes/ Itchiness				

Collection technique for measuring sprayer flow rate

EQUIPMENT: Notebook; pen; stop-watch or watch with a second hand; measuring cylinder (100 ml or 500 ml); bucket; protective clothing; soap and water; sprayer; insecticide with label.

This technique is for use when spray liquid can be collected easily as it is emitted.

Method

- Put on protective clothing.
- Fill the sprayer and position it to deliver insecticide into a bucket.
- Allow the insecticide to flow from the sprayer into the container for a measured number of minutes (M). Generally 3 min is sufficient.
- Decant the contents of the bucket into the measuring cylinder to measure the number of litres emitted and collected (E).
- Calculate the flow rate (f) as l/min by using the formula below:
$$f \text{ (l/min)} = \frac{E \text{ (l)}}{M \text{ (min)}}$$
- Adjust the flow rate of the spray equipment by twisting the nozzle or making other adjustments. (see manufacturer's manual) to bring it closer to the required value and check it again. Keep altering and checking until the required flow rate has been achieved.
- When the required flow rate has been achieved, repeat the flow rate check two more times to be sure there have been no errors in measurement.

OTHER CONSIDERATIONS

The manufacturer's manual should be consulted before setting flow rates for the first time. It usually gives calibration information which provides a starting point for the flow rate settings. A running check can be kept on flow rate (especially in the case of aircraft) by recording the time spent spraying and the amount of insecticide being used. If the amount of insecticide being used seems too great or too small the flow rate should be measured and reset if necessary.

CHERRY, A. PESTICIDE APPLICATION: MASTERING AND MONITORING. H. DEXTER and W. KING

Monitoring questionnaires can be completed by 'outsiders' during interviews (always in consultation with the community however); or by communities themselves in a written questionnaire or simple illustrated self-surveillance cards they design themselves, e.g. on pesticide use and specific health symptoms. Blood testing and medical investigation can complement initial documentation and recording of symptoms.

Some of the most important **environmental incidents** caused by pesticides will be easily noticeable – frog, toad, snake or bird deaths, widespread fish or bee kills, plant damage – and anyone in the community can be empowered to record and report them. More detailed field monitoring of ecological impacts can assess population status of fauna and ecological processes, and may establish a cause and effect relationship.

The publication *'Ecological Monitoring Methods'* provides a comprehensive range of field methodologies suitable for use in the tropics. It was written specifically for people with some scientific training and field experience; however a number of the methodologies are simple and could be used by non-scientists. Analysis and interpretation of results does not require a scientific background. The manual and handbooks are now available in English and French and online at the University of Greenwich website.

Findings: Monitoring training and studies in Africa

PAN partners in Africa, Asia and the Pacific, and the UK built capacity for pesticide impact monitoring in Africa through the project 'Pesticides & Poverty' from 2005-2008. At community level, the Asian model of community based pesticide monitoring (CPAM) was adapted and disseminated. Through collaboration with the Rotterdam Convention Secretariat, the community-based approach was linked to the government reporting of severely hazardous pesticide formulations for international conventions. Finally, scientists from academic, government and non-government institutions were trained and practiced ecological monitoring.

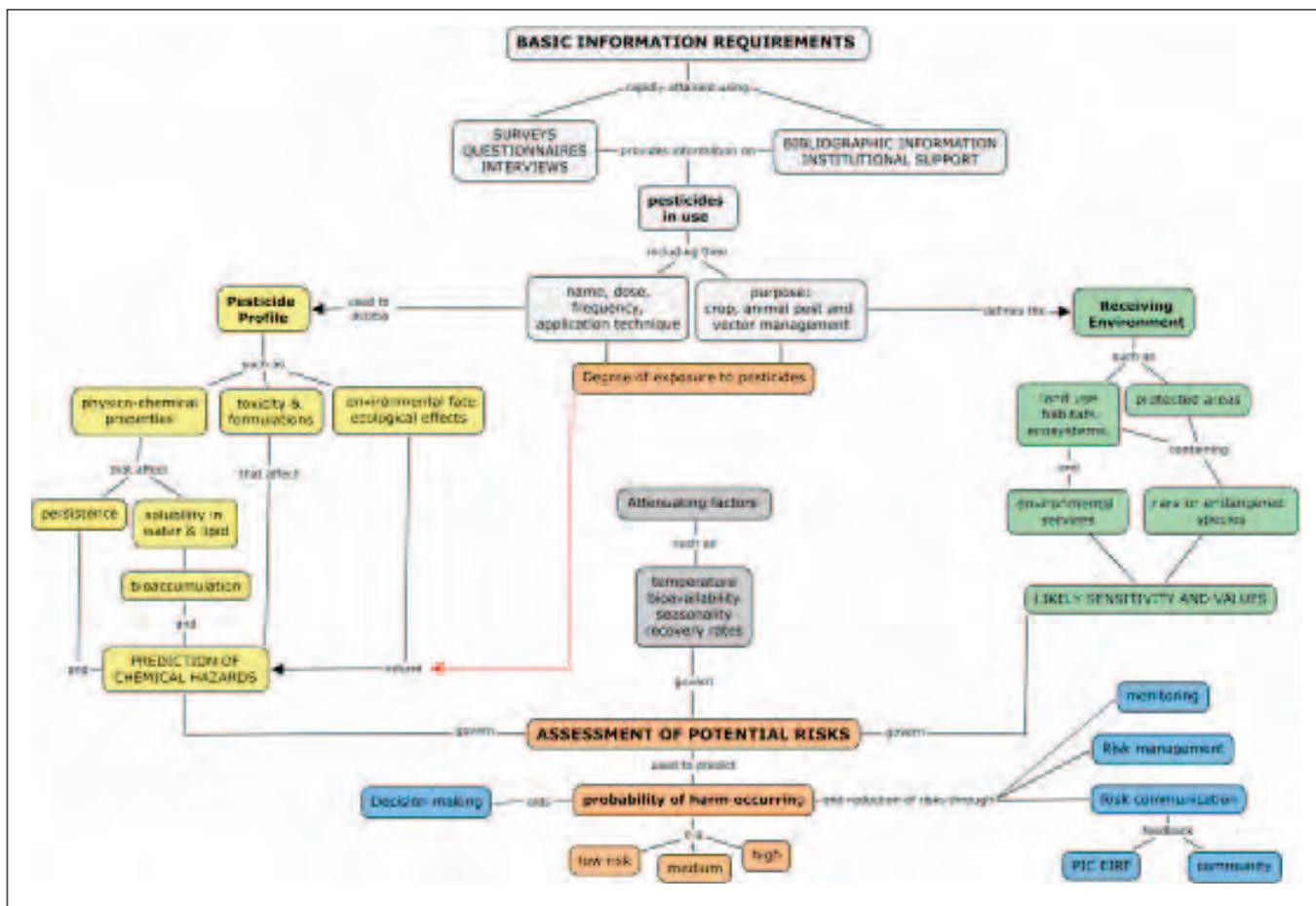
The Asian CPAM modules were updated with African case studies, re-illustrated and translated into French, and used to train 72 NGO and government representatives in the methodology. NGOs in five communities carried out health monitoring studies, including two linking up community monitoring with the Rotterdam Convention Designated National Authorities (DNA).



The ecological monitoring handbook was translated and used to train 64 people from 8 countries. The training covered the Rotterdam Convention Environmental Incident Report Form (EIRF), and included lab and field work. Pre- and post-training technical test scores in practical ecological monitoring methods and conventions show a 22.5% average improvement, while physical capacity was also improved through provision of basic field and lab equipment.

Three eco-tox mini-projects were conducted in Ethiopia, Mali and Tanzania including:

- Survey of farmers on pesticide use and conditions.
- Rapid risk assessment based on the survey results.
- Community meetings to report on results, and provide further information.



“ We had trained only 25 and we told them to go out and disseminate the new information. Until today they are phoning us: “When are you people coming back? We have collected a lot of information and we need you to come back” because the first time they collected we went back and analysed the data with them showed them how to find solutions from within. But they have regular village meetings and they have forced the village management authorities to give them one hour in every village meeting to disseminate the information about pesticides. So they received it you know. **We didn’t expect the impact to be such....and this was just a pilot.** ”

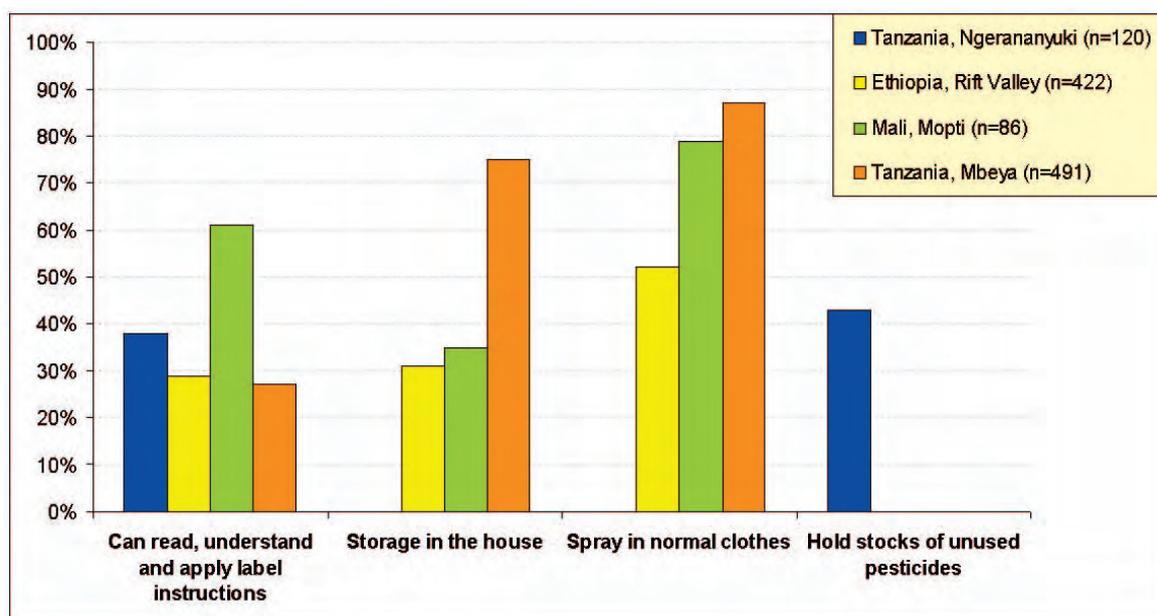
The combined results of the health and eco-tox monitoring studies are presented here.

Conditions of Use

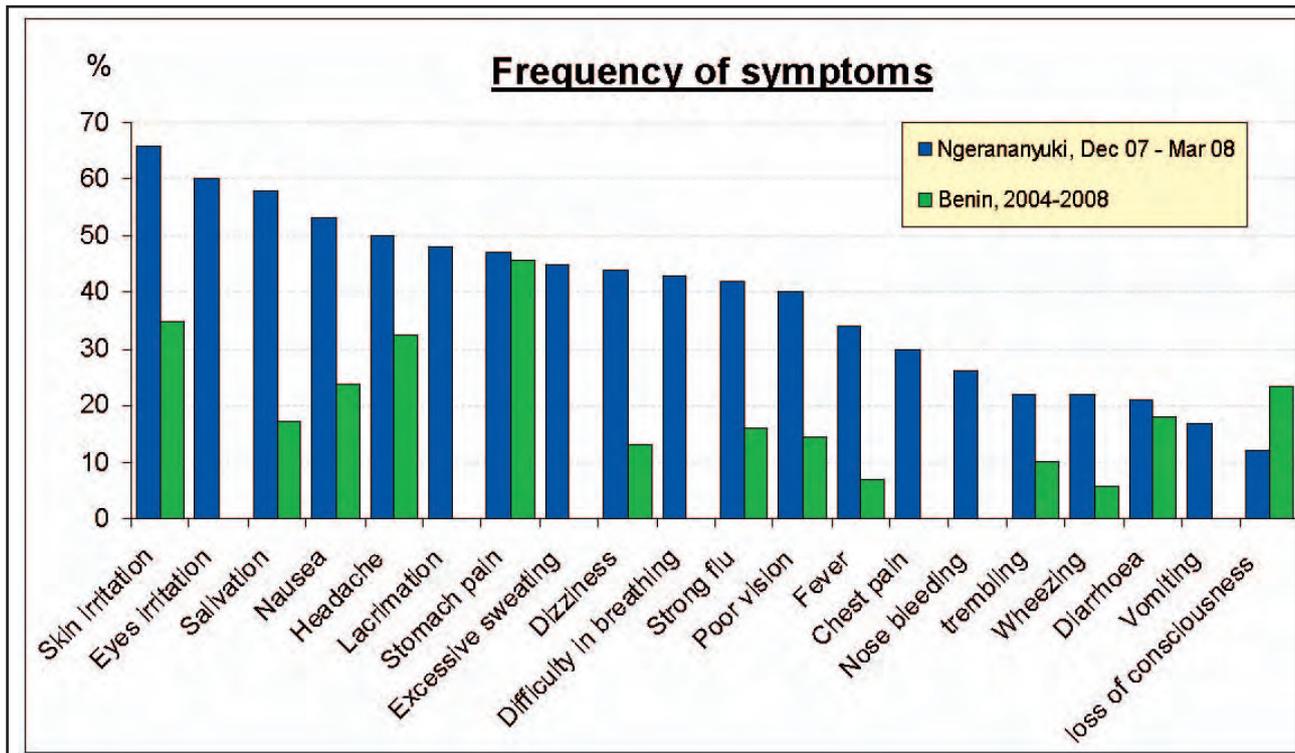
Our monitoring provides evidence of the wide gap between label instructions and the reality of pesticide use in the surveyed communities.

Pesticide impacts

DDT is illegally used in Ethiopia by almost 30% of surveyed farmers. The rapid risk assessments identified this as particularly concerning, and a joint workshop was organised with NGOs and government, on how to address this issue.



Frequency of health effects (Ngerananyuki study, Tanzania)	% of farmers
Farmers affected by pesticides in last farming season	69
Number of incidents in last farming season:	
<i>One</i>	9
<i>Two</i>	10
<i>Three</i>	8
<i>More than three incidents</i>	22
Pesticide involved:	
<i>Incident involving Fenon C</i>	27
<i>Incident involving Selecron</i>	21
Action taken:	
<i>Drank milk</i>	43
<i>Went to the hospital</i>	28
<i>Washed with water</i>	2
<i>No action taken</i>	3
Admission to hospital:	
<i>Once</i>	17
<i>Twice</i>	19
<i>Three times</i>	7
<i>More than three times</i>	58



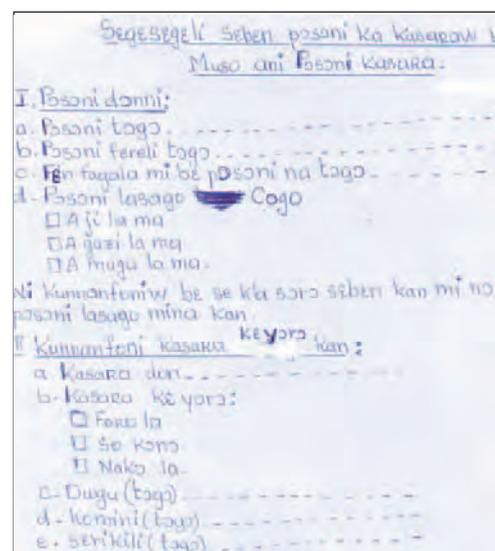
Health risks were also identified for 2,4-D and malathion in Ethiopia and Selecron in Tanzania. The survey of farmers' health incidents in Tanzania confirmed this, with over 20% of farmers attributed a health incident to Selecron. This demonstrates the interplay of health and ecological monitoring.

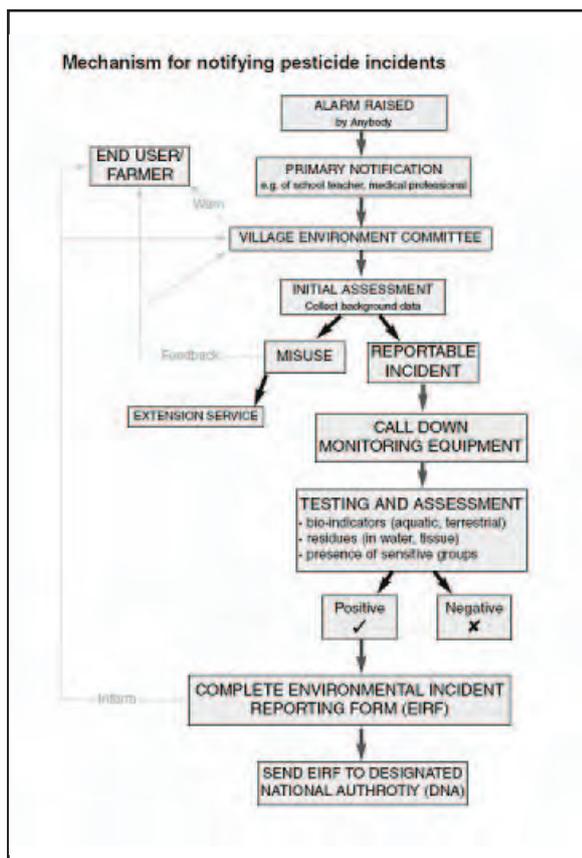
41% of farmers noted a decrease in the numbers of beneficial insects. As well as demonstrating the non-discriminate and unintended consequences of pesticide use, the surveys show how farmers can contribute to community-based ecological monitoring.

Self surveillance of Tanzanian farmers over a three month period shows the frequency and extent of pesticide poisoning symptoms.

Using appropriate language

Surveys must be in local languages, and be pre-tested including both language and cultural aspects to avoid confusion. A local language questionnaire was developed in Sikasso, Mali, and the PIC survey form was translated into Kiswahili by the project in Tanzania. Revised versions of the PIC survey form were developed in Togo and Tanzania to make them easier to use by communities. In Benin, community monitoring of pesticide poisoning involved training university students to conduct field work in their own regions, using their own language.





“ The Ministry is very interested and has started providing some small money to undertake this activity – initiation of community-based monitoring to the “hot spots” areas where we think the problem is – so this is going to be sustainable. ”

Embedding the commitment to monitor and report

While a short term project may equip communities to report incidents of poisoning, or other pesticide impacts, a long-term commitment to reporting incidents in the future should also be established.

In Sikasso, a contract signed with the local radio station Kenedougou provided for radio shows on pesticide issues for 3 months following the project date. One of the radio presenters attended the training, and responded to numerous phone calls from the public following the show. The radio independently organised a round table with local mayors and NGOs, following the popularity of the shows.

A reporting channel for pesticide incidents from grassroots to PIC DNA was defined and proposed in Tanzania, and community monitoring teams established in 7 villages and procedures agreed to implement a successful reporting chain in Tanzan

Tanzania has allocated a new budget line for community monitoring in the Ministry of Agriculture Rotterdam Convention implementation work plan.

In Ethiopia, 422 surveys were conducted by 50 high school students from environment clubs in the Rift Valley, after training based on a module prepared with the crop protection department in the Ministry of Agriculture & Rural Development

Networking between sectors

Networking between NGOs and government bodies was enhanced, with benefits for trainees in their work:

- Addis Abba University is now sharing pesticide residue analytical equipment with the Ethiopian Quality and Standards Authority
- The Division Regionale de l'Environnement et des Etablissements Classees in Matam, Senegal is using ecological monitoring in a locust campaign
- A joint meeting of NGOs and government publicised and discussed the findings of the study relating to illegal use of DDT in Ethiopia
- NGOs in the eco-tox network in Ethiopia commented on the list of pesticides for registration

Community monitoring and behaviour or policy changes

The first African country to ban endosulfan is one where an NGO initiative has been active since 2000 in documenting pesticide impacts. The results in Benin consistently implicated endosulfan for a large proportion of deaths, and this information was used by the government to support its ban on endosulfan in 2008.

“ In one case, dursban was sprayed to cattle to control ticks and those animals died and were consumed. People who ate the meat were poisoned, as they developed symptoms such as stomach problems (diarrhoea). In another incident cattle died after drinking water in the irrigation canal where spraying equipment were rinsed ”

Ngerananyuki, South Africa

Farmers in Ngarenanyuki have stopped disposing of pesticides in a site in the village market, and using Ultra Low Volume (ULV) formulations in water spray

Public outreach and value for money

The mini-projects all demonstrate the value for money of adopting community based approaches, by reaching large numbers of direct beneficiaries with budgets of only around \$10,000. The health monitoring projects reached over 900 people in Benin, Mali, Tanzania and Togo, while 913 farmers were surveyed in Ethiopia and Tanzania during the eco-tox projects. Over 400 additional people attended community meetings and in Mali a debate between government representatives was broadcast in 2 local languages to up to 1.5 million people in Mopti.

Starting community monitoring

Whether through a community-led project, or a more technical survey of pesticide impacts, more information is essential regarding the impacts of pesticides as they are currently used in many developing countries.

'Community Pesticide Action Kits' (CPAK) help communities to start monitoring, based on a series of 'modules' with reference material and guidance for trainers. A 'methodology module' provides an introduction to the approach as it has been used in Asia and the Pacific. Further modules cover health, environmental, labour, legislation and corporate aspects of pesticides. All modules are based on case studies, and are completely illustrated for use by communities. They should be complemented by local supports, including video, games, posters, puppets, radio, etc.

The first step is to identify a community who want to start monitoring. Close involvement of the community at all stages of planning is an essential feature of CPAM. Training of facilitators, either within the community or in organisations that work with them (e.g. farmer groups, women's groups), can help build their own capacity and help them lead others. Local examples, training aids, and people can be identified to help make the monitoring more effective.

The first step is to identify a community who want to start monitoring...

The monitoring stage includes development of a monitoring tool, including testing, and a period of collecting data. The PAN Handbook provides a number of possible reporting templates or questions that can be adapted.

Finally, feedback can include public meetings to share results, and discuss what the community can do next to reduce their exposure and prevent harm. One option is to use the results for advocacy, which could include lobbying for a national ban or reporting incidents to the Rotterdam convention.

Ecological monitoring can be included within a community-based approach, as observing and reporting environmental incidents can be done by anyone. A local person should be designated to receive reports and pass them on to official structures for further investigation.

Field monitoring requires trained people with experience of scientific sampling of flora and/or fauna – from a local institution, or from central government (PIC DNA / POPs focal point) – and equipment for field monitoring and sample processing and counting.

Conclusions

The reaction of the high school students on the impact of pesticides was puzzling. I thought they would know of the problems of pesticides from their experience....these young people are really interested in environmental issues and they have now become pioneers

The extent of the lack of awareness of the chemical conventions is enormous. Awareness-raising and capacity building in relation to pesticide hazards and regulatory frameworks are required at all levels.

In Tanzania, not a single farmer, very few village leaders and a minority of agricultural extension workers are aware of any of the international chemical conventions signed and ratified by their country

Even ecotox trainees were not familiar with the details of all the conventions, despite being selected on the basis of their expertise and knowledge

Actual conditions of use of pesticides by rural communities differ markedly from the label conditions. Label conditions are the basis for registration of pesticides and provide a way to prevent health and environmental problems – pesticides should only be registered when the regulators are confident that label conditions are realistically likely to be respected by the average user of the pesticide.

While only certain incidents can be notified to the Rotterdam convention for ‘severely hazardous pesticide formulations’, it is worth documenting and reporting all incidents, as sharing national changes in policy and field evidence is an equally important element of the Convention.

Community based monitoring requires relatively small financial resources to start documenting and acting on pesticide impacts. The results reported in this publication indicate that pesticides are causing real, ongoing damage both to human health and the environment.

Governments are ultimately responsible for ensuring the health and safety of their citizens. The international conventions are intended to protect worker health and the environment. The longest journey starts with a single step – so even if there is a lack of resources and capacity to act on pesticides, community monitoring is a valuable and realistic first step toward better pesticide regulation. Although this project has increased awareness about conventions, and gathered data among trainees and rural communities involved, much work remains to be done.



The future

PAN UK is working to promote and encourage community based monitoring, and to increase awareness and action on the international conventions. Our priorities for the coming years include:

- Collaboration among all PAN groups working with communities, and common reporting of monitoring results, through the PAN International network.
- Using the results to demonstrate the true impacts of pesticide use by small farmers and plantation workers; and generate media and political attention for action on the worst poisons.
- Integrating community based monitoring with global conventions, e.g. by translating PIC severely hazardous report forms into local languages, and establishing collaboration so governments use data as the basis for their notifications.
- Advocating on environmental impacts: Further eco-tox training and support for field work to conduct regular monitoring of pesticide ecotoxicology; and more practice and widening the number of people able to carry out RRAs; and developing materials to enable rural communities in Africa to record environmental incident observations
- Realisation of Tanzanian reporting channel and establishment of others.

Further Information

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