

COMMUNITY OF PRACTICE ON HIGHLY HAZARDOUS PESTICIDES

Organized by the SAICM Secretariat and the University of Cape Town

Issue: 2 of 2021

Discussion date: 19 May 2021

DISCUSSION 2 DIGEST

Topic of Discussion: The Role of Alternatives in Phasing out Highly Hazardous Pesticides (HHPs)

INTRODUCTION

This discussion aimed to promote engagement with and an understanding of alternatives to highly hazardous pesticides.

Availability of alternatives:

There may often be a perception that HHPs need to remain available because there are no good alternatives. This can prove to be a misconception that may persist because of user habits or advice based on limited knowledge or by persons with financial interest in the products concerned. In most cases, there are alternatives that pose less risk. These may include suitable biopesticides or non-chemical pest management approaches, less hazardous chemicals, or different formulations that pose less risk. Pest and vector management based on Integrated Pest Management (IPM) and Integrated Vector Management (IVM), for which pesticides are only used as a last resort, would be preferred. The same applies to other agroecologically based production systems that reduce dependence on pesticides.

Finding viable alternatives to highly hazardous pesticides can either be relatively fast or require several months or years, depending on factors such as the extent to which the pesticides are in use, the complexity of the pest problem(s) and, more importantly, the resources and technical capacity available in the country acting.

Identifying alternatives to highly hazardous pesticides:

- ***starts with the understanding of the pest/crop problem.*** *The need to register new pesticide active ingredients, products or specific pesticide uses, including low-risk or biological active ingredients, should always be assessed against the pest problem and within an Integrated Pest Management (IPM) approach.*
- ***is not the mere replacement*** *of a hazardous pesticide (or a class of pesticides) with another, less hazardous product? Pesticide history has shown the limitations of the replacement approach leading to a pattern known as “regrettable substitution”.*
- ***is a multi-stakeholder, consultative process*** *aimed at improving the overall crop performance and pest management strategy and it therefore involves several agricultural stakeholders including farmers, researchers, extension officers, agro-chemical industry and civil society and financing sector including finance ministry (Incentives). This means a wider process beyond pesticide management and beyond pesticide regulatory stakeholders (registrars)*

ABOUT THE PRESENTERS



Francesca Mancini is a tropical agronomist. She has been working with FAO for over 20 years in sustainable agriculture programmes with a focus on ecological pest management in Asia and in Africa. She is currently based in the Pacific where she coordinates the ACP MEAs3 programme on mainstreaming biodiversity across sectors in the region.



Mark Davis is an independent consultant specializing in pesticide management and sustainable agriculture. He currently works with the University of Edinburgh based Centre for Pesticide Suicide Prevention (CPSP) and is collaborating with PAN-UK, FAO, UNEP and WHO on HHP risk reduction initiatives. Mark worked for 17 years with FAO successively leading the field programme on obsolete pesticides, the Pesticide Management Unit of FAO, FAO's Climate Change Strategy and the FAO Environmental and Social Risk Management Unit.



Alex Stuart

Alex joined PAN UK in August 2020. He has over 10 years of experience conducting research and training in agroecology and sustainable crop management and conducted his PhD on rodent ecology and management. Before joining PAN, Alex worked at the International Rice Research Institute, based in Philippines and Indonesia.



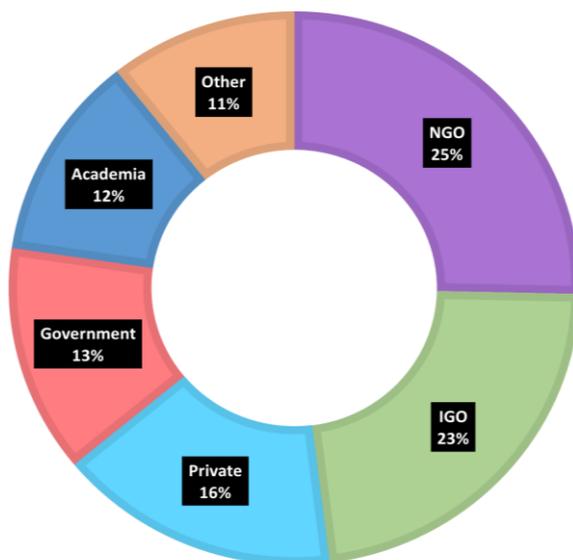
Sheila Willis

Sheila is Head of International Programmes at Pesticide Action Network UK and an Honorary Senior Lecturer at in the Division of Environmental Health in the University of Cape Town. Her academic background is in agricultural entomology and she started her career working in participatory farmers' research in Ethiopia and Kenya. In recent years Sheila has been concerned with pesticide management as well as monitoring incidents of acute pesticide poisoning.

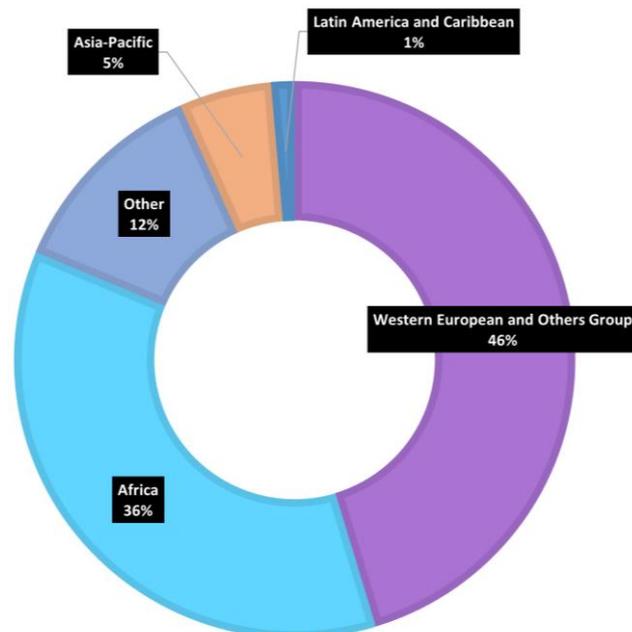
2021 DISCUSSION 2 ATTENDANCE BREAKDOWN

DISCUSSION 2 2021
TOTAL ATTENDEES: 75
Female: 33
Male: 37
Other: 5

STAKEHOLDER REPRESENTATION



REGION REPRESENTATION



KEY:
 IGOs - Intergovernmental organisations
 NGOs- Non-governmental organisations

2021 Discussion 2 Summary Points and Looking Ahead

From this discussion, the following key points were discussed and should be addressed and incorporated into the international discussions and work on HHPs:

1. **“Alternatives” to HHPs may include a range of approaches to pest management. It does not necessarily refer to an alternative pesticide or product.** An agroecological alternative to an HHP could replace several pesticides being used on a farm.
2. After identifying an HHP, it is **important to not only look for a replacement pesticide but rather review the range of prevention and treatment methods that are available** and consider the compatibility of new pest management strategies and tools with broader objectives such as protection of ecosystem services and impact on net income. The compatibility of new pest management strategies should also be considered in terms of national policy objectives, such as sustainability and Sustainable Development Goals (SDGs) attainment. Though there are times that a lower risk pesticide is selected as a replacement, it is still important to understand the root cause of why a pest is economically damaging crop yields.
3. **Academic research institutions were identified by participants as the most suitable institution to lead efforts to identify suitable alternatives to HHPs. It was suggested that they should work closely with farmers and other stakeholders.** They would require financial support to take on this role.
4. **Scaling up financial investment in replacing HHPs with agroecology is vital.** Funding for the identification of HHP and alternatives is urgently needed along with investment in good quality, practical training in agroecology for farmers and extension services. If the funding that is currently invested into the use of HHPs could be directed into safer alternatives, it would go a long way to solving the issue.
5. **Lack of awareness and training were identified by many participants as the main barrier to replacing HHPs with agroecology.**
6. **Alternatives are a multi-stakeholder issue** that should involve, among others, pesticide registration authorities, extension services, farmers’ organisations, academia, and NGOs. Sustainable solutions exist. To make them available to farmers requires a range of measures including removal of perverse incentives, registration of suitable alternatives including biopesticides, local testing and adaptation of alternatives for common pest / crop combinations, training of extension services and farmers in agroecological methods.

For a more detailed summary of the discussion, see the Annex below.

ANNEX

DETAILED SUMMARY OF DISCUSSION 2 2021:

Disclaimer: The information in this digest represents the opinions of members participating from different stakeholder groups expressed during the discussion. The views expressed in this document do not necessarily represent the opinion or the stated policy of the United Nations Environment Programme, the SAICM Secretariat, the GEF or UCT, nor does citing of trade names or commercial processes constitute endorsement.

THE DISCUSSION WAS STRUCTURED AROUND THREE QUESTIONS AND THE KEY DISCUSSION POINTS ARE PRESENTED UNDER EACH.

Question 1: What is the role of alternatives in replacing Highly Hazardous Pesticides?

SECTOR	ROLE OF ALTERNATIVES IN REPLACING HHPs
NGO	<ul style="list-style-type: none">➤ An agroecological alternative to an HHP could replace several pesticides being used on a farm.➤ The role is wider than just replacing toxicity. An alternative can play an effective role if it takes into consideration a wide range of issues such as cost, availability, skills, the equipment needed, allowed levels of residues in the yield and the applicability of different size of farms (small- and large-scale farms), etc.➤ Farmers need to have confidence in alternatives to HHPs and that requires upscaling extension efforts and FFS to demonstrate that alternatives exist and are effective.
IGO	<ul style="list-style-type: none">➤ Alternatives to HHPs should provide benefits beyond the pesticidal action e.g., result in increased productivity; contribute to resilience to climatic and other shocks; reduce health and environmental risks etc.
ACADEMIA	<ul style="list-style-type: none">➤ The role of alternatives was high in the past but not now a good source of alternatives for HHP are pesticide plants. Approximately 2000 years ago Persians were using powders of Chrysanthemum plants for lice control and exporting them to many other countries.➤ Alternatives are key to phasing out and eliminating HHPs. There needs to be multiple actors/players in the process 1) regulators 2) Farmers 3) consumers for example. The question is, how to promote engagement with them and to provide information.➤ HHPs can be replaced by several solutions. An example of IPM uses many control methods which, however, are sustainable to the environment and beneficial pests.➤ Through the phenomenon of insect- plant interactions: mimicry of insects e.g., mantis, etc. with plants but more important are chemical and biochemical interactions between insects and plants.
PRIVATE	<ul style="list-style-type: none">➤ With respect to the regrettable substitution, it is possible to use approved pesticides to replace some HHPs. Specifically, in the context of the use of scarce resources (land) vs the harvest, these may still play an essential role.
GOVERNMENT	<ul style="list-style-type: none">➤ The alternative may provide the same pesticidal action. However, this may not always be the case as some alternatives like IPM leave pests to levels that may not cause economic loss while HHPs may completely kill the target pest.➤ The role of alternatives in replacing highly hazardous pesticides is to provide a safe and viable action to limit or to eradicate pests, however, alternatives are less efficacious if they are wrongly used.

Poll 1: What do you understand by the concept “alternatives”? (n=44) Below are the responses to this poll grouped under themes:

□ Level of Hazard

- Lower hazard
- Other available, safe, efficacious, and sustainable products
- Something that can represent the existing one by doing the same function at low cost, more effectively and precisely.
- For my understanding the concept of alternatives to hazardous pesticides is to have viable alternatives approaches available, with a low toxic profile, effective to regulate pests in cropping systems the hazardous pesticide is used for.
- product(s) or (importantly) practice(s) that is/are a lower hazard to health and the environment.
- Less toxic activities to achieve the same outcome as HHPs

□ Level of Safety

- Safer and effective methods of controlling pests that have limited adverse impacts on public health and the environment.
- Safer to the environment in the long term
- Alternatives are other pest management options that should be sustainable, effective, safer, more economically viable and certainly not be 'regrettable' solutions.
- Effective and safe (environmental, health) solution which fits the local farmer's needs.
- Safer for both human health and the environment
- All types of alternatives that meet safety needs and expectations, are more sustainable, and at the same time help farmers produce high quality and quantity crops.

□ Various Approaches

- IPM based approach which looks at whole crop health and uses pesticides as a last resort.
- Anything that can effectively replace another, whether it be a single or multiple alternatives, depends on the problem at hand.
- They should be broad including existing practices and taking the total input vs harvest on board.
- The 2 last 'R' of the 3R approach (Reduction, Replacement, Removal)
- Positive change
- Understanding of alternatives is other options available with the same effects to achieve the desired outcome.
- A product that is effective in providing pest management and is acceptable to farmers.
- Manageable solutions
- Any economically viable effective and efficient agroecological principle/method applicable on small/medium/large scale, able to replace the chemical based HHPs.
- Effective against the target pest(s), cost-effective, farmer acceptability, that can be effectively managed to minimize adverse impacts.
- In the current context, alternatives would refer to other pests/disease management options that can replace/substitute or contribute to reduced use of an identified HHP. Preferably should be cultural, biological, physical/mechanical methods.
- Addressing farmers needs
- New ways of application technologies, e.g., mechanization, drones
- Holistic approach in addressing the crop-disease-pest problem taking care for the human health and environment.
- Farmers, agroindustry, gov extension services
- Convenience
- high efficacy - serves well a specific need.

□ Chemical

- Not a less toxic active ingredient, rather interventions which will help farmers effectively manage the pest/disease/weed problem, and that it does not have to be a single intervention, multiple ones taken at different stages of crop growth.
- Other products agreed on through multi-stakeholder consultation.
- A product that can be used in place of another one. In the case of HHPs, this can be lower hazard pesticide, cultural methods, biological control, IPM.
- Alternatives are safe practices of eliminating vectors, pest, and rodents. This includes using safe chemicals that are less toxic.
- Pesticide Industry
- Industry association of agrochemicals

□ Non-Chemical

- Non-chemical
- A safer approach to managing the pest than the HHPs being replaced, with priority being given to non-chemical agroecological methods of pest management.
- Other practices that may replace pesticides use. E.g., Use of Natural Enemies
- A non-toxic way to achieve the same outcome.

Poll 2: Have HHPs been identified in your country? (name of country and yes or no) (n=23)

□ Western European and Other

- UK, yes
- UK - Yes
- UK - we have followed EU processes until now. We will see what happens post-Brexit.
- I am from Macedonia. Not aware at this point that the country is aware of this terminology or classification of pesticides and has taken any steps in this regard.
- Germany - yes
- Recently Govt of India (May 2020) has identified 27 A. Is widely used as HHPs. Many more HHPs - as per WHO/GHS/IARC/PAN - are still outside this list and are widely used in agriculture.

□ Africa

- South Africa -yes
- Rwanda - Yes
- Zimbabwe – yes has identified HHPs, and further risk reduction activities are ongoing - needs & risk assessment; identification of mitigation measures for the shortlisted HHPs.
- Kenya – No
- Kenya - No
- Malawi - Yes
- Botswana - Yes
- Tanzania - Yes
- Zambia - Yes
- Uganda: No (not aware of an official HHP identification by the government), though through my work, last year I generated an HHP list from pesticides registered for use by our Government.
- Mozambique - Yes
- Benin - Yes
- Cameroon - Yes

□ Asia-Pacific

- Iran-Yes
- Malaysia - Yes
- New Zealand: no by the government, yes by PAN

□ Other

- Not yet - this also requires a multi-stakeholder approach to the issue of handling HHPs - in the spirit of ICCM4 resolution IV/3 - concerted efforts to reduce risks posed by HHPs.
- HHP criteria 1 to 7 allows straightforward identification; criteria 8 is location/use specific and needs further work and understanding.

Question 2: How might potential alternatives be identified and who should be involved in the process of evaluating and disseminating them?

- Stakeholders should involve the farmers who practice organic or agroecological systems of farming to share their knowledge.
- Academics should research alternatives and extension agents should implement them. In addition, civil society should be involved in the process.
- Essentially, the development of an IPM strategy includes multiple actions of alternatives which require the involvement of many stakeholders.
- In Africa, commercial large-scale farms have an influence on what type of agrochemicals are being registered, imported, and used. By restricting the focus to farmers, we may not be able to phase out HHPs in Africa completely.
- Plantation workers and owners need to be engaged. In our survey these import or consume 60% of pesticides in several countries.
- The Pacific - Fiji has launched a national public consultative process following the ban on paraquat and is a good example.
- As farmers are not homogeneous, there is a need for different strategies. Often there is a need for "master farmers" to be the "trailblazers" for new approaches and spreading risk messages related to HHPs.
- A list of stakeholders including the ministry of health, the ministry of agriculture, the environmental authority, non-governmental organizations, farmers, and retailers can identify alternatives (Example: the ministry of health using the pesticides poisoning data can initiate the topic to the relevant stakeholders, together they can decide on viable options or alternatives. The ministry of agriculture can disseminate information to extension officers and farmers through farmer fields schools. The regulatory authority can support the initiative by informing the public of the alternative, the registration board can initiate the process of phasing out HHPs).

➤ Other newly discovered areas of alternatives to conventional pesticides are nano pesticides, alkyne chemistry for pesticides, the status of chirality in agrochemicals, the latest generation of halogen-containing pesticides, heterocyclic chemistry in crop protection, ds-RNA-based pesticides etc.
➤ Conducting participatory research with farmers on alternatives can be one way of boosting their confidence in alternatives.
➤ The industry works from research and development to extensions in the field - this covers not only products but services on implementing IPM - I have seen this for both chemical and biological alternatives used within IPM systems.
➤ Feasibility study for cultivation and propagation of the neem tree, <i>Azadirachta indica</i> in the Mahshahr Petrozone of the Persian Gulf. 4th Report (report for study, executive and experimental phases). 50pp. Feb. 2014. Mahshahr Petrozone, Mahshahr, Iran (Mahdavi, A. 2014).
➤ Sustainability standards, supermarket chains having pesticide risk reduction programs in place.
➤ Cooperative effort amongst all stakeholders involved with pesticides for a holistic approach is needed in identifying alternatives.
➤ Confidence can be built for farmers by involving them in the new technologies or methods through participatory farmer field schools and awareness through training.
➤ As a basic insect toxicologist, I have observed extraordinary insect-plant interactions that can be used as a basis for pest control.
➤ Research institutions should work closely with farmers to provide evidence that can be used by regulators in making recommendations to the public.
➤ It is important to include manufactures (manufacturers of biologicals as well as chemistries) as they would know best about their products and others could validate them.
➤ Farmers only look at things for the benefits of production & the environment, with limited attention to occupational health issues.
➤ Evidence witnessed by farmers can easily be adopted by peer farmers. However, farmers should try it by themselves in the field to see whether it works very well.

Question 3: From your experience, what are the barriers to replacing HHPs with agroecology? Please share any examples of successful interventions to overcome these barriers.

REGION	BARRIERS
AFRICA	<ul style="list-style-type: none"> ➤ In Uganda, the small-scale farmers are not aware of some of the agroecology practices that can be used to replace HHPs. In Uganda, a barrier towards implementing alternatives is regulatory shortfalls. ➤ The perception is that HHPs are cheap, and alternatives are expensive. A lot of work needs to be done to address that barrier. ➤ The main challenge in replacing HHPs with agroecology is the loyalty (bond) that has been created between farmers and these pesticides. Any new way of pest management must be approached tactfully. ➤ Alternatives are said to be more time consuming and hindering production. ➤ The pursuit of certain SDGs and economic development programs resulted in some LMICs being mindless of the adverse impacts of HHPs in agriculture. ➤ To most farmers, HHPs are perceived as more effective and are easily accessible as compared to alternatives. ➤ There are misconceptions around productivity. Most people hold the view that you cannot produce enough for the market using agroecology. ➤ Lack of awareness on the best available alternatives; weak /lack of legislation enforcement. ➤ Pesticides are seen as a “magic bullet” with an assumption that applying them is easier than approaches like agroecology. But farmers do not factor in the hidden costs of HHPs. ➤ The main barrier is a lack of knowledge. In the past few years to date farmers have been encouraged to use pesticides without talk of agroecology, so it is something that they are not aware of. ➤ Most farmers feel that agroecological practices are time-consuming. This is one problem that was mentioned by smallholder farmers in Kenya during a meeting.

	<ul style="list-style-type: none"> ➤ Governments are not doing enough to promote agroecology. Most of the government policies seem to be more focused on the intensification of production using synthetic pesticides.
ASIA-PACIFIC	<ul style="list-style-type: none"> ➤ One of the main barriers to replace HHPs with agroecology is the propaganda that it cannot be done successfully and with financial benefits to the farmers. ➤ There is a problem with the pesticide industry undermining agroecology to promote their own products. ➤ In the Asia Pacific region such as Vietnam, a lot of farmers mentioned that they lack the knowledge and encouragement on using alternatives. However, it was noted that once the farmers have the knowledge, a lot of them practice alternatives (i.e., agroecology) as they felt their health was better compared to when they used HHPs.
WESTERN EUROPEAN AND OTHERS GROUP	<ul style="list-style-type: none"> ➤ In most cases, farmers are not aware of the hazard of the pesticide itself. A common misconception is that if governments are registering pesticides for use, it cannot be bad. Extension workers deal with this question regularly while educating farmer's experience. Though farmers experience the symptoms of poisoning on a regular basis, they are unable to connect it with the use of the pesticide itself. Therefore, there is a need to have a binding regulation on the production, import and sale of HHPs, especially in LMICs. ➤ There is an immense amount of pressure from the industry to keep the status quo. ➤ In the past, when trying to promote agroecology, there were constraints to adoption i.e., not calculated for the additional labour time that was required, farmers were not able to source some of the alternative products that were being advocated and there were issues with the farm level production of neem-based pesticides and other botanicals. ➤ Good farmer training costs money, even if it is an investment in health, environment and productivity, and the investment is lacking. ➤ Agroecology underlies IPM - CropLife has referred to this (and the description of agroecology given earlier) in its online training (Aglearn) since 2003. ➤ In our experience in India, most of the farmers who use agroecological methods are the small and marginal holders who do not really have access to technology (let alone AI). They learn from each other, what we can do is provide them platforms to learn from each other, and along with that, counter the predatory marketing in villages.
LATIN AMERICA AND CARIBBEAN	<ul style="list-style-type: none"> ➤ Lack of knowledge on alternatives may be due to weak extension services.

OVERCOMING THE BARRIERS

- Another way to address the barriers to implementing alternatives is using a stronger marketing approach such as advertising on TV and farmer magazines.
- The opportunities for advanced digital technologies are even greater. Robotics to monitor and control pests and weeds using lasers and high voltage and monitoring growing conditions to keep plants healthy and resistant to pest and disease attack.
- There is an overdependence from many farmers on pesticides dealers, of which access to credits would be condition to free them up from this dependency.

Useful Resources:

1. UNEP paper on Issues of Concern (see section 3.5 on HHPs): <https://wedocs.unep.org/bitstream/handle/20.500.11822/33807/ARIC.pdf?sequence=1&isAllowed=y>
2. SAICM IP4 document on targets and indicators: http://www.saicm.org/Portals/12/documents/meetings/IP4/Docs/SAICM_IP4_3_Proposed-targets-TWG-SAICM-smcw-beyond-2020.pdf
3. Alternatives to Highly Hazardous Pesticides by PAN UK – Issue: <https://www.pan-uk.org/alternatives-to-highly-hazardous-pesticides-a-short-guide/>
4. Addressing Highly Hazardous Pesticides in Mozambique, FAO 2016: <http://www.fao.org/3/i5360e/i5360e.pdf>
5. Guidelines on Highly Hazardous Pesticides, FAO 2016 http://apps.who.int/iris/bitstream/handle/10665/205561/9789241510417_eng.pdf;jsessionid=36E38A93BBDF4ED02F99587249B22ACC?sequence=1
6. Rotterdam Convention; Alternatives to hazardous pesticides (pic.int): <http://www.pic.int/Implementation/Pesticides/Alternativestohazardouspesticides/tabid/8078/language/en-US/Default.aspx>
7. Guest Article: [Highly Hazardous Pesticides: Finding Alternatives and Reducing Risk by 2020 | SDG Knowledge Hub IIISD](#)
8. FAO Agroecology Knowledge Hub: <http://www.fao.org/agroecology/en/>
9. PAN UK webpage on agroecology: <https://www.pan-uk.org/agroecology/>
10. PAN Agroecology position paper: <https://ipam-global.org/pan-agroecology-position-paper/>
11. 2015 PAN International book ‘Replacing Chemicals with Biology: Phasing out highly hazardous pesticides with agroecology’: <https://www.panna.org/sites/default/files/Phasing-Out-HHPs-with-Agroecology.pdf>

12. Harrison RD, Thierfelder C, Baudron F et al. (2019) Agro-ecological options for fall armyworm (*Spodoptera frugiperda* JE Smith) management: Providing low-cost, smallholder friendly solutions to an invasive pest. *J Environ Manage* 243, 318-330. <https://www.sciencedirect.com/science/article/pii/S0301479719306097>

HHP COP: The Secretariat of the Strategic Approach to International Chemicals Management (SAICM) and the Environmental Health Division at the University of Cape Town (UCT) created this Community of Practice (CoP) to foster online discussions and address key issues related to Highly Hazardous Pesticides (HHPs) among stakeholders from governments, international organizations, industry, academia and civil society. This CoP is contributing to the SAICM/GEF project on Emerging Chemicals Policy Issues Knowledge Management Component.

This activity is supported by the Global Environment Facility (GEF) project ID: 9771 on *Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM)*.

Join the SAICM/UCT HHP CoP at: <https://saicmknowledge.org/community>

If you have any questions or require clarification on this initiative, please contact the SAICM Secretariat at saicm.chemicals@un.org or UCT at uctcops@outlook.com.