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Strategic Approach to International Chemicals Management

Second meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste beyond 2020
Stockholm, Sweden, 13-15 March 2018
Item 4 of the provisional agenda*
Considerations for Beyond 2020

Highly Hazardous Pesticides – Sustainable Chemistry – Agroecology

Note by the secretariat

1. The secretariat has the honour to provide, in the annex to the present note, the document, developed by Pesticide Action Network International (PAN International); *Highly Hazardous Pesticides – Sustainable Chemistry – Agroecology.*

2. The report is presented as received by the secretariat, without formal editing.

*SAICM/IP.2/1

Annex

Highly Hazardous Pesticides – Sustainable Chemistry – Agroecology

Developed by the Pesticide Action Network International (PAN International)

Highly Hazardous Pesticides – Sustainable Chemistry – Agroecology

PAN International

February 2018

Key Points

- ***Recently, UNEP, chemical industry interests, and others have begun promoting 'sustainable chemistry' as the key concept in the sound management of chemicals; this has included attempts to describe even nonchemical alternatives as 'sustainable chemistry'.***
- ***However, ICCM4 recommended an emphasis on replacing Highly Hazardous Pesticides (HHPs) with agroecologically-based practices.***
- ***The chief inputs in agroecology are farmers' knowledge, wisdom and skill, integrated with ecological science and principles, in ways that conserve soil, water and biodiversity.***
- ***In contrast, 'sustainable chemistry' — a new and poorly defined concept — promotes continued dependence on chemicals and distracts attention from the need to shift global food production to an agroecological foundation.***
- ***PAN rejects 'sustainable chemistry' as the framework for addressing HHPs and instead endorses the agroecology framework.***
- ***Replacing HHPs with agroecologically-based practices, as called for by ICCM4, cannot be achieved through 'sustainable chemistry'.***
- ***A sound approach to pest management recognises that ecosystem-based approaches are to be developed and implemented first, in accordance with agroecological principles. A secondary role may be considered for the development and use of biological or botanical pesticides or synthetic pheromone lures and attractants.***
- ***Agroecology, including the aforementioned approach of ecological pest management, has been well established over decades and successfully implemented in all regions; there is therefore no need for the proposed***

'sustainable chemistry' framework and no justification for attempting to absorb within it practices that have already been well established in their own right.

- ***Space must be made in the international agenda on the sound management of chemicals, outside the agenda for 'sustainable chemistry', for the replacement of HHPs with agroecologically-based practices and approaches; any discussion of 'sustainable chemistry' must recognise that agroecological approaches are the primary solution to the problem with HHPs.***

Background

In 2017, the term 'sustainable chemistry' came to prominence in international chemical fora – firstly at the SAICM intercessional workshop in Brasilia in February,[1] and then again in May at a side event at the Conferences of Parties for the Basel, Rotterdam and Stockholm Conventions (where amongst others CropLife was invited to speak on sustainable chemistry and pesticides).[2]

This was the result, at least in part, of Resolution 2/7 adopted at the second session of the United Nations Environment Assembly (UNEA2) on the sound management of chemicals and waste: it invited "countries, international organizations and other interested stakeholders, including the private sector, having relevant experience with the issue of sustainable chemistry to submit to the United Nations Environment Programme secretariat, by 30 June 2017, best practices, indicating how these may enhance the sound management of chemicals, inter alia through the implementation of the 2030 Agenda for Sustainable Development, as well as the Strategic Approach to International Chemicals Management and chemicals- and waste-related multilateral environmental agreements".[3]

Further, stakeholders were invited to participate in a survey on the topic and three scholarships for a UNITAR e-Learning course in the areas of chemicals management, environment, or another topic of choice, would be awarded, chosen from the respondents.

Then, addressing "some 30 innovators, entrepreneurs and experts from around the world at a workshop on 14 September 2017 in Berlin, Germany, to share experiences and insights from sustainable chemistry start-up initiatives and companies", Achim Halpaap, Chief of UN Environment's Chemicals and Health Branch said:

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[1] First meeting of the intersessional process considering the Strategic Approach and the sound management of chemicals and waste beyond 2020. Brasilia, Brazil, 7-9 February 2017. http://www.saicm.org/Beyond2020/IntersessionalProcess/FirstIntersessional/tabid/5463/language/en-US/Default.aspx

[2] BRS Conventions. 2017. Side events. http://synergies.pops.int/2017COPs/Sideevents/tabid/4244/language/en-US/Default.aspx

[3] https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/policy-and-governance/sustainable-chemistry/sustainable

"In order to ensure that sustainable chemistry start-ups can unfold their full potential for addressing international chemicals, waste and pollution priorities, we need to give more attention and support to this emerging sector".[4]

It is clear from these events and comments that UN Environment intends to place emphasis on, and resources into, the proposed idea of 'sustainable chemistry' in order to progress sound management of chemicals and waste.

Sustainable chemistry and agriculture

PAN is very concerned that the 'sustainable chemistry' approach by UN Environment and others could result in chemicals being promoted where they are *not* needed. Furthermore, UN Environment has muddied the waters by including in its definition of 'sustainable chemistry' non-chemical alternatives, such as well-established agroecological approaches that exist in their own right and should in no way be subsumed under a chemistry framework.[5]

PAN rejects the proposal that 'sustainable chemistry' includes nonchemical approaches, such as agroecological practices, and draws attention to the following comments by Professor Klaus Kümmerer,[6] Universität Lüneburg, Germany:

All stakeholders, and especially chemists, should therefore initially ask themselves if nonchemical alternatives for a specifically required function or service are possible and if they are more sustainable.

Only if a thorough analysis shows that a chemical solution will be needed, should we then assess which chemical product can deliver the required function and service in the most sustainable manner over its entire lifecycle in the given context.[7]

These two comments very clearly convey the messages that nonchemical alternatives are not chemistry and that in a sustainability approach nonchemical alternatives are to be given first priority.

PAN rejects the platform of 'sustainable chemistry' in addressing the issues of HHPs, as it simply perpetuates the current chemical dependency of 'modern' agriculture and fails to address the real needs of farming, which are to produce not only food but also environmental and social outcomes.

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[4] https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/policy-and-governance/sustainable-chemistry/can

[5] https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/policy-and-governance/sustainable-chemistry/sustainable

[6] Prof. Dr. K. Kümmerer, Institut für Nachhaltige Chemie Und Umweltchemie and und International Sustainable Chemistry Collaboration Centre Leuphana Universität Lüneburg, Germany.

[7] Kümmerer K. 2017. Sustainable Chemistry: A Future Guiding Principle. *Angew Chem Int Ed* 56:2-4.

The non-sustainability of pesticides

The current use of chemical pesticides is unsustainable and environmental, health and human rights concerns have been expressed at a high level many times over many years. Most recently UNEA3 asked UN Environment to provide a report on the impacts of pesticides on human health and the environment.[8] Prior to this, in 2015, at the Fourth International Conference on Chemicals Management (ICCM4) UNEP, FAO and WHO raised concerns about HHP, noting that they cause adverse human health and environmental effects in many countries, particularly in low-income and middle-income countries.[9] These, and concerns expressed also by other stakeholders including many countries and civil society,[10] resulted in the formal recognition of HHPs as an "Issue of Concern".[11] Earlier, in 2007, the FAO Council recommended the global phase-out of HHPs,[12] and at UNEP's Fourth International Conference on Chemicals Management (ICCM4) in Nairobi in 2012, 65 countries and other stakeholders supported a proposal for a progressive ban on HHPs.[13]

These recommendations are the result of numerous peer-reviewed studies, reports, on-the-ground experience and the culmination of concern expressed over the years by civil society, farmer organisations, countries, scientists and UN agencies, that current pesticide use is unsustainable.[14]

Replacing HHPs with agroecology

When ICCM 4 recognised HHPs as an issue of concern it specifically recommended that emphasis should be on promoting agroecologically-based alternatives.[15]

This was not an isolated recommendation. Again, this recommendation is the culmination of years of studies and numerous reviews of agriculture and the global food system, and

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[8] UNEP 2017. Resolution on environment and health. United Nations Environment Assembly of the United Nations Environment Programme Third session Nairobi, 4–6 December 2017. UNEP/EA.3/L.8/Rev.1

[9] Proposal on Highly Hazardous Pesticides. International Conference on Chemicals Management Fourth session. Geneva, 28 September–2 October 2015 Item 5 (b) (ii) of the provisional agenda. SAICM/ICCM.4/8.

[10] SAICM/ICCM.4/CRP4.

[11] UNEP. 2015. Report of the International Conference on Chemicals Management on the work of its fourth meeting. SAICM/ICCM.4/15.

[12] FAO. 2007. Report of the Twentieth Session of the Committee on Agriculture (Rome, 25-28 April 2007), CL 132/9. http://www.fao.org/unfao/bodies/coag/coag20/index_en.htm

[13] UNEP. 2012. Draft resolution on Highly Hazardous Pesticides: submission by Antigua & Barbuda, Armenia, Bhutan, Dominican Republic, Egypt, Guyana, International Trade Union Congress, IPEN, Iraq, Kenya, Kiribati, Kyrgyzstan, Libya, Mongolia, Nepal, Nigeria, Peru, Pesticide Action Network, Republic of Moldova, St Lucia, Tanzania, Tunisia and Zambia. International Conference on Chemicals Management Third session Nairobi, 17-21 September 2012. SAICM/ICCM.3/CRP.16.

[14] See Watts MA, Williamson S. 2015. *Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology*. PAN International, Penang. http://files.panap.net/resources/Phasing-Out-HHPs-with-Agroecology.pdf

[15] UNEP. 2015. Report of the International Conference on Chemicals Management on the work of its fourth session, Annex I. SAICM/ICCM.4/15.

consequent expressions at high levels that agroecology is the future direction for agriculture.[16] In 2013, the Stockholm Convention Conference of Parties recommended that, in replacing endosulfan, priority should be given to ecosystem approaches to pest control.[17] In 2017, the POPRC, in recommending that dicofol be listed under the Stockholm Convention, again recommended that priority be given to ecosystem-based alternatives.[18] Also in 2017, the UN Special Rapporteur on the right to food, Hilal Elver, in her report on pesticides to the Human Rights Council, proposed that agroecology be promoted to replace HHPs;[19] her predecessor Oliver de Schutter had also pointed to agroecology as the way forward for agriculture, to increase farm productivity, reduce environmental damage, and improve resilience to climate change.[20] Following its first International Symposium on Agroecology in 2014, and then regional workshops, FAO will hold a 2nd International Symposium on Agroecology in 2018.[21] The High Level Panel of Experts on Food Security and Nutrition is undertaking a *Global Report on Agroecology*, to be completed in 2019. These international initiatives and findings build on the conclusions of the comprehensive UN-led International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), which concluded in 2008 that agroecology offers one of the most robust approaches available to advancing equitable and sustainable development and to reducing the harms of hazardous pesticides.[22]

In 2015, PAN published an in-depth analysis[23] of why HHPs should be replaced by agroecology, how this can be achieved at a country level and a global level, and the advantages of doing so. Case studies confirmed that the advantages of replacing HHPs with agroecology include increased overall farm yields, decreased costs of inputs, improved incomes, improved farmer health, improved food security, improve gender equity, improved climate change resilience, enhanced biodiversity, and reduced pollution.

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[16] See Watts MA, Williamson S. 2015. *Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology*. PAN International, Penang. http://files.panap.net/resources/Phasing-Out-HHPs-with-Agroecology.pdf

[17] UNEP. 2013. Report of the Conference of the Parties to the Stockholm Convention on Persistent Organic Pollutants on the work of its sixth meeting. Annex 1. Decision SC-6/8.

[18] UNEP. 2017. Revised draft risk management evaluation: Dicofol. Persistent Organic Pollutants Review Committee Thirteenth meeting Rome, 17–20 October 2017. UNEP/POPS/POPRC.13/CRP.2.

[19] Report of the Special Rapporteur on the right to food (Effects of pesticides on the right to food). A/HRC/34/48. Human Rights Council, Thirty-fourth session, 27 February-24 March 2017, Agenda item 3: Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development. http://www.ohchr.org/EN/Issues/Food/Pages/Annual.aspx

[20] De Schutter O. 2014. Report of the Special Rapporteur on the right to food. Final report: the transformative potential of the right to food. Human Rights Council, Twenty-fifth session. United Nations General Assembly. A/HRC/25/57.

[21] http://www.fao.org/agroecology/en/

[22] McIntyre, B., H. Herren, J. Wakhungu and R. T. Watson (ed). 2009. International Assessment of Agricultural Knowledge, Science and Technology for Development: Global Report. Island Press, Washington DC.

[23] Watts MA, Williamson S. 2015. *Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology*. PAN International, Penang. http://files.panap.net/resources/Phasing-Out-HHPs-with-Agroecology.pdf

Taking a food systems approach that goes beyond a focus on production, yields, and environmental impacts per unit output of specific commodities, Muller et al (2017) demonstrated that conversion of global food production to organics, combined with reduced food wastage, reduced consumption of animal products and reduced livestock numbers, could sustainably feed 9 billion people in 2050, with positive outcomes for all environmental indicators assessed, including cropland area demand, deforestation, energy, water and pesticide use.[24]

Why agroecology is not 'sustainable chemistry'

Agroecology is based on applying ecological concepts and principles to optimize interactions between plants, animals, humans and the environment.[25] Agroecology has an established framework, with a set of principles complete with a diversity of practices and approaches already proven on the ground, and well supported by scientific and academic disciplines.

Key aspects of agroecology include:[26]

- Adapting to the local environment
- Assuring favourable soil conditions for plant growth and recycling nutrients
- Diversifying species and genetic resources in the agroecosystem over time and space, including integrating crops and livestock
- Enhancing biological interactions and productivity throughout the agricultural system, rather than focussing on individual species
- Minimizing losses of water and energy
- Minimizing the use of non-renewable external resources (e.g. for nutrients and pest management)
- Maximizing the use of farmers' knowledge and skills

This, essentially, is the form that agroecological practices take. They replace chemicals with biology. Agroecology looks for local, biological and ecological solutions, not chemistry.

Key agroecological inputs are farmers' knowledge and skills. Other key inputs are locally adapted seeds, healthy soil, clean water and biodiversity. Other, external, inputs – particularly those with harmful impacts on health or the environment – are minimised. A farmer looks carefully at her/his agroecosystem; chooses crops and varieties that are best suited to it to minimise stress that would result in pests and diseases and that best fit the food and fibre needs and culture of the family and community; then maximises the health of the soil particularly the microbial life to ensure plants are as healthy as they can be, to

[24] Muller A, Schader C, El-Hage Scialabba N, Brüggemann J, Isensee A, Erb KH, Smith P, Klocke P, Leiber F, Stolze M, Niggli U. 2017. Strategies for feeding the world more sustainably with organic agriculture. *Nat Commun* 14;8(1):1290. doi: 10.1038/s41467-017-01410-w

[25] http://www.fao.org/agroecology/overview/en/

[26] Watts MA, Williamson S. 2015. *Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology*. PAN International, Penang. http://files.panap.net/resources/Phasing-Out-HHPs-with-Agroecology.pdf

again reduce the likelihood of pests and diseases. The farmer then employs other strategies such as diversifying species, intercropping, using mulch to improve soil health, using compost, adding microorganisms, augmenting biological controls, etc.

When agroecological practices are not sufficient, then there may be a role for the deployment of such things as pheromone lures for mating disruption (pheromone lures are synthetic versions of the sex hormones of pests). Some pesticides may be used in agroecology, including organic agriculture, but they are the option of last resort. Farmers might spray biological control organisms such as *Bacillus thuringiensis*, a soil bacterium useful for controlling lepidopteran pests. Or they may apply nuclear polyhedrosis viruses[27]– naturally occurring insect-specific viral pathogens that play an important role in natural control of insect populations. Preparations of the live *Helicoverpa armigera* nuclear polyhedrosis virus, which can be prepared by farmers and village cooperatives, are applied by foliar spraying. The larvae of *H. armigera* ingest the virus and they begin to die within 2-5 days. But it must be recognised that these inputs have been part of agroecology for a long time, that they play a minor role in agroecology, and are NOT the principle around which it is organised. Additionally they are always natural, altering as little as possible the ecological niches and the relationships between the components of agroecosystems. Importantly, there is no reason that these inputs should be subsumed under the newly invented and poorly defined construct of 'sustainable chemistry'.

Agroecology has as well, a crucial role to play in adapting to climate change and variations. Climate change is manifesting with increased intensity of rains, droughts, winds and temperature variations, with equally intense impacts on productive systems. The design of agroecological systems makes it possible both to reduce the emission of greenhouse gases that cause these intense climate fluctuations and also to adapt critically to the established changes. On the one hand agroecological tillage and integrative nutrition of soils through the composting and recycling of the organic matter, as well as the use of alternative or renewable energies, reduce the emission of carbon dioxide, methane gas and nitrous oxide responsible for global warming. On the other hand, agroecological strategies and practices such as crop rotations and associations, green manures, plant cover, agroforestry, and the use of locally-adapted seeds allow the generation of sustainability and adaptability and response to the increases in and unpredictability of rainfall, changes in temperature and strong winds.

Agroecology is based on knowledge, flows, relationships and processes rather than inputs. It provides a profound way of analyzing reality, integrating systems, taking a holistic perspective and, from there, proposing locally and ecologically appropriate solutions. Agroecology integrates community knowledge and scientific knowledge, in turn integrating technological, biological, productive, food, cultural, philosophical and spiritual dimensions. These technologies and agroecological techniques should be based on the needs and possibilities of the communities and their natural environment and in no way fall within the reasoning, accumulation logics and practices of transnational

[27] Nuclear polyhedrosis viruses, part of the family of baculoviruses, are virus affecting insects, predominantly moths and butterflies (lepidoptera). Preparations of these viruses can be used to kill lepidopteran pests.

companies or so-called 'sustainable chemistry'. Agroecology does not involve the continuation of dependence on chemicals.

Conclusion

The international chemical management community has already accepted that agroecological practices and approaches, not "safer chemicals" are the preferred option for replacing HHPs.

There is a wealth of evidence that HHPs can be, and are being, successfully replaced by agroecological approaches, and PAN rejects any attempts to replace this agroecology framework with a 'sustainable chemistry' framework.

Instead, PAN requests that UNEP and others create space and resources within the international framework for the sound management of chemicals to promote and assist with the replacement of HHPs with agroecology, as a matter of highest priority.

Pesticide Action Network (PAN) is a network of over 600 participating nongovernmental organizations, institutions and individuals in over 90 countries working to replace the use of hazardous pesticides with ecologically sound and socially just alternatives. PAN was founded in 1982 and has five independent, collaborating Regional Centres that implement its projects and campaigns.

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