

## HAZARD OR RISK?

Why a hazard-based pesticide target offers much better protection to biodiversity at lower cost

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During the meeting of the Open-ended Working Group on the Post-2020 Global Biodiversity Framework (GBF) in Geneva, March 2022, proposals were put forward by some Parties for Target 7 (on pollution) to include text on **reducing pesticide ‘risk’ or ‘risk to ecosystems’**. We argue that the term **‘hazard’** would be more appropriate and effective. In this brief we explain why.

Delegates in Geneva pointed out that a target focusing on reducing pesticide quantity alone could perversely incentivise the use of low-dose pesticides with higher toxicity. We agree. Toxicity must be addressed in Target 7 (see [PAN/TWN brief on Target 7](#)<sup>1</sup>). However, reducing risk does not necessarily account for toxicity. Toxicity is an intrinsic property of the chemical and a key measure of how **hazardous** it is. Other aspects of hazard include persistence and potential for bioaccumulation.

All pesticides are inherently hazardous but among them, a specific group of highly hazardous pesticides (HHPs)<sup>2,3</sup> cause disproportionately much greater harm. Indeed, UN experts point to their “catastrophic impact” on the environment, human health and society as a whole<sup>4</sup>, while the UN Food and Agricultural Organization (FAO) states that HHPs “specifically contributed to declines in the populations of birds, insects, amphibians and aquatic communities”<sup>5</sup>. This category of pesticides should thus be prioritized for phasing out.



Figure 1.  
A Globally Harmonized System hazard pictogram which is accompanied by the following hazard statement: *‘Very toxic/ toxic to aquatic life with long lasting effects’*



Figure 2.  
A US Environmental Protection Agency bee hazard pictogram which is accompanied by the following hazard statement: *‘This product can kill bees and other insect pollinators’*

Examples of hazard pictograms used to warn of pesticide hazards to the environment

### The EU approach to pesticide regulation

The EU (and UK) currently follows a hazard-based approach to pesticide regulation, following the principle that if an active substance possesses intrinsically hazardous characteristics, then it is simply considered too dangerous to be used safely and should not be authorised. This approach is in line with the precautionary principle which states that “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically”. Once active substances have passed the EU’s hazard criteria, they are then assessed for risks associated to their use and mitigation measures to control risks in use are designed accordingly (see [PAN UK brief on Hazard vs Risk](#)<sup>6</sup> for a fuller description of the EU approach).

### What is the difference between hazard and risk?

There is a widespread misunderstanding of the concept of risk in pesticide management.

Risk is a function of:

- the hazardous properties of the pesticide
- the likelihood and conditions of exposure

To reduce risk, you can choose a less hazardous alternative and/or try to reduce exposure. The latter option is less effective, more complex and more costly to manage, as is well established in the ‘hierarchy of control’ literature<sup>6,7</sup>. A system which does not adequately monitor and evaluate risks can neither claim to be scientifically rigorous nor be demonstrated to be effective.

The key difference between a “hazard-based” and “risk-based” approach is that the former focuses on limiting the release of the hazardous chemical into the environment (e.g. through bans and restrictions), while the latter tends to emphasise managing / mitigating risks in use (e.g. more accurate application methods, no-spray buffer zones).

**Pesticide risk mitigation measures are less effective and more costly than hazard-based approaches because:**

Risk	Hazard
There are no established monitoring indicators for measuring pesticide risk reduction.	Hazard or toxicological data is publicly available and readily understood by regulatory authorities.
Determining risk for biodiversity is technically challenging (especially for mixtures of pesticides) and location specific. Assumptions and models may not adequately reflect the complexity and variability of risks to biodiversity.	Systems for banning hazardous pesticides and monitoring non-compliance are already well established.
The use of personal protective equipment (PPE) is often the only measure in place to manage risks associated to using pesticides, and many times are not accessible or suitable in tropical climates in the global South. PPE does nothing to reduce environmental harm.	Eliminating a hazardous pesticide at source rather than during use is the most effective efficient (and cheapest) means of preventing exposure.
The effectiveness of risk mitigation relies on millions of end users having the know-how, commitment and resources to deploy them effectively on an ongoing basis.	Regulatory decisions are taken at a national level. The main burden is on national authorities to implement their decisions and ensure farmers have access to effective alternatives.
The necessary enforcement and monitoring systems to control risk would be complex, time consuming and costly. The time taken to establish them would delay preventive action.	Banning hazardous pesticides is simple to monitor and enforce.
A risk-based approach represents business as usual. In the face of catastrophic global biodiversity loss, this is simply not good enough.	Bolder steps are needed to protect biodiversity. The counter argument is that a hazard-based approach will harm food production, but there is no evidence to support this. Numerous studies have failed to find any impact of banning hazardous pesticides on agricultural productivity <sup>8,9,10</sup> .

**In summary**, the most reliable, efficient, and cost-effective way of reducing pesticide harms to biodiversity (and human health) is to focus on eliminating the most hazardous pesticides at source rather than during use. **For Target 7 to be effective, it should thus emphasise reducing hazard rather than risk. This means reducing synthetic pesticide use and toxicity, by a measurable quantity, with priority given to phasing out Highly Hazardous Pesticides.**

References

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**Pesticide Action Network International (PAN International)** 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.

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**Third World Network (TWN)** is an independent non-profit international research and advocacy organisation involved in bringing about a greater articulation of the needs, aspirations and rights of the peoples in the South and in promoting just, equitable and ecological development.

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