

Use of Colour Codes on Pesticide Labels for Acute and Chronic Toxicity in LMICs

Currently, FAO/WHO guidance document recommends the use of four colour codes to denote acute toxicity which are linked to the four WHO hazard classification classes. That is, Class 1a/b = red; Class II = yellow; Class III = blue; and Class U/IV = green. Although there is some variation in individual countries, the consensus is to use these four colours. What is of concern is that some pesticides are recommended to receive a colour band of “yellow”, “blue” or “green” based on WHO’s hazard classification for acute toxicity even though these are classified under the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) for chronic toxicity as mutagenic or toxic to reproduction. This discussion was aiding the review by focusing on the colour coding issue. The GHS classification thus fulfils the JMPM Highly Hazardous Pesticide (HHP)” criteria. As more countries embark on a process to identify HHPs registered for use in their country, particularly in LMICs, it becomes a crucial issue to understand the use of colour codes for toxicity specifications. The global discussion underway is to move to toward including chronic toxicity on pesticide labels to align with GHS.

About the Presenter



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DISCLAIMER: The information below represents the opinions of members participating from different countries expressed during the discussion and shall not necessarily be taken to reflect the official opinion of the DEH, UCT, SIDA or KemI.

Question 1: Is the current use of colour codes for indicating acute toxicity useful to have on pesticide labels for products sold in LMICs and should the use of colour codes continue? Why or why not?

WHY

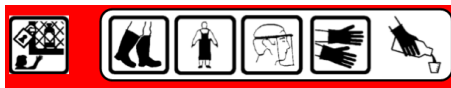


WHY NOT

- Helps the user to easily select and use a less toxic pesticide product.
- The use of colour codes is useful in LMICs because most of pesticides users in this countries are illiterate, therefore it becomes easy for them to understand the severity or toxicity of that particular pesticide.
- In every part of the world, everybody knows red color depicts hotness or danger even to children, so to some extent the color coding is helping to some extent.
- Colour codes seem to be useful only for regulators, officials monitoring pesticide management and a few who know the meaning of the colour codes.
- Colour communicate the message effortlessly but the element that may be lacking would be interpretation of the colour code which requires training and awareness raising.
- The system should continue and if anything, additional features must be incorporated to capture the aspect of chronic toxicity but this should be done in a simplistic way to avoid confusing the masses for whom the system is meant to serve.

Pesticide Label Pictograms and Colour Codes	
Meanings of Advice & Warning Pictograms	
Wear Gloves	Not for aerial application
Keep locked away and out of reach of children	Wear respirator
Wash after use	Dangerous/harmful to fish - do not contaminate lakes, rivers, ponds or streams
Wear protection over nose and mouth	Dangerous/harmful to livestock and poultry
Wear boots	Wear eye protection
Dangerous/harmful to wildlife and birds	Expiry date
Meanings of Activity Pictograms:	
Handling liquid concentrate	Handling dry concentrate
Application	
Meanings of Colour Codes: listed from the most (1) to the least (4) dangerous.	
1 Very Toxic: Extremely/ Highly hazardous. Protective equipment and clothing MUST be used.	3 Caution: Slightly hazardous. Use carefully and use protective equipment.
2 Harmful: Moderately hazardous. All safety measures stated on label MUST be used.	4 Keep Locked Away: All pesticides are poisonous. Store away from children, food and animals.
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- Big disconnect that pesticides are poisons and that if they are not used responsibly can cause serious health effects (both acute and chronic).
- Lack of education and awareness raising on this colour codes makes it useless.
- End-users were unaware of the interpretation.
- More details need to be included in the coding system.
- The customers are under the impression that pesticides readily sold at retailers are not dangerous to human health compared to the ones sold by Agro-dealers. The society has less or no information about the negative impacts of pesticide.
- A portion of the population that are red/green colourblind and can mix up 1a/1b pesticides with green label pesticides.
- Most of the information on the labels is written on the language, which the local communities could not comprehend.
- The purple colour is the most dangerous colour for pesticides in Zimbabwe and it will be difficult to introduce a new system in Zimbabwe.
- The colour code does not provide clear information about the hazards and risks associated with pesticides/chemicals to human health and the environment.



Question 2: Would it be sufficient for LMICs to use only the GHS hazard symbols on the pesticide labels to illustrate acute and chronic toxicity, without the colour codes? Why or why not.

NO AND WHY NOT	NO AND WHY NOT
<p>Familiarity: GHS symbols without colour codes would not be useful in LMICs especially at the beginning when end-users are not yet familiar with GHS hazard symbols. I think we should allow a transition period to allow end-users to be trained and made aware of GHS hazard symbols.</p>	<p>Country dynamics: Every country has their own dynamic structure of how pesticides are used and by whom. Each country would need to conduct a survey among the end-users firstly to understand what is their perception of the current labels and then decide how to proceed with updating its labeling system.</p>
<p>Misinterpretation: There are no hazard symbols for Class iii and Class U hazard classifications presently and people can additionally misinterpret the symbols if there are no color codes to back it up.</p>	<p>Contradiction with the current color codes and GHS hazard symbols: Zambia has adopted the use of both GHS hazard symbols and color codes. However, there is need to upgrade some pesticides with green color codes which are carcinogenic, mutagenic and reprotoxic substances (CMR) (Muta 1b and Repro 1b) under GHS to red color codes.</p>
<p>Using the GHS hazard symbols on the pesticide labels is not sufficient, e.g. the cross bones alone on the GHS will show the farmer that death may occur but it does not show that chronic effects will appear. Both cross bones and the color red are very frightening, thus may limit the use of such pesticides by farmers.</p>	<p>Colours codes can aid pictograms: A combination of both the symbols and colour codes is the best way of communicating hazards associated with a specific product. Almost every person can interpret colours while it is quite difficult to interpret symbols and what they mean in relation to toxicity for people who have not been educated in the interpretation of symbols.</p>
YES AND WHY	
<p>Overcome literacy barriers: The use of GHS hazard symbols together with colour codes will help to complement one another as in the LMICs some of the vulnerable population are those who did not have the opportunity to go to school and cannot read or write.</p>	
<p>Colour blindness: The GHS codes are more detailed and explanatory as opposed to the colour codes and I still have an issue with the colour blind aspect. A study was done indicating that over 30% of the population is green/red colour blind.</p>	
<p>GHS hazard symbols provide clear information to the end users of pesticides about the hazards and the risk associated with pesticides/chemicals.</p>	
<p>Restriction of highly toxic items to persons trained in the use and application of such items will be the ideal scenario. If access to all classes of pesticides exists that is where the abuse can begin. That is why we start by training the agrosshops as they are the key point in the agrochemical life cycle ...ie from the distributor to the consumer</p>	

Question 3: If colour codes should continue to be used on pesticide labels in LMICs, how can they illustrate both acute and chronic toxicity? Give examples.

Sensitizing users: Using colour codes to illustrate both acute and chronic toxicity would be clumsy and messy. It would cause more confusion rather than makes things clearer for the user. End users will need to be sensitized on what each colour and symbol mean.

Chronic toxicity: It is time the world shifts from Acute toxicity classification of hazards to Chronic toxicity because every pesticide we are exposed to has an impact on our body systems either noticeable immediately or not. It is better to use chronic hazard classification of pesticides which properly depicts the overall toxicity of almost all pesticides.

Color code classification: Red Chronic—if the formulation is classified for chronic toxicity. Red Acute—if the formulation is classified for acute toxicity. Example 1 is clear and can easily be memorised by users. Red Chronic—if the pesticide product is classified for chronic toxicity. Red Acute—if the pesticide product is classified for acute toxicity.

Incorpoarating GHS system: As people learn the do’s and dont’s of GHS - colour codes will be handy to cater for acute toxicity aspect until such a time that they are capable of interpreting the GHS fully.

Use of border lines: It is possible that colour codes illustrate both acute and chronic toxicity, e.g. one can use a pictogram which illustrate acute toxicity and it must have border lines with a colour code which illustrate chronic toxicity. Pesticides with CMRs pictograms must all have red coded border lines.

Expand colours: In order to use colour codes to illustrate both acute and chronic toxicity, a wide range of colour must incorporated to the existing ones. The existing four colour will need be expanded to include colours for chronic toxicity.

Accommodate colour blindness: If you want to use colour codes - how are you going to differentiate for colourblindness? I would suggest that the word is also written on the colour tab - red colour tab= RED to compensate for colourblind people.

Pictograms and colour codes should be viewed as complementary: Colour codes do not necessarily have to be used to depict hazards that they were not designed for. We should use the colour codes to assist understanding. It may be used to complement and bridge gaps, where there are contradictions, means to mitigate can be devised.

Colour codes should continue to be used in LMICs, provided more explanation is given on the chronic effects: e.g. yellow can continue to be used on thiacloprid accompanied by statements such as “pesticide can cause cancer and reproductive effects).

“What is key to remember is that in most countries, people understand that red denotes high danger. The purpose of the colour is to warn not to expose yourself to the product. If the red is referring to acute or chronic really doesn't matter. The is issue is not to be exposed as you will either get sick immediately or in the future”

Resources and Further Reading

1. FAO/WHO labelling guideline: <http://www.fao.org/3/a-i4854e.pdf>
2. GHS Purple Book – Eight Edition: https://www.unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev08/ST-SG-AC10-30-Rev8e.pdf

The **Division of Environmental Health (DEH)** Pesticide Discussion Forum is a bi-monthly online seminar for pesticide regulators and resource persons, as well as students in the Post-Graduate Diploma in Pesticide Risk Management (DPRM). Our aim is to provide support for managing pesticide risks and implementing risk reduction strategies. DEH is based in the School of Public Health and Family Medicine at the University of Cape Town (UCT). **This Digest was produced by: Tatum Louw** | Forum Administrator | lwxtat001@myuct.ac.za. **Prof Andrea Rother** | Forum Moderator | andrea.rother@uct.ac.za **Acknowledgement:** *Financial assistance from the Swedish International Development Cooperation Agency (SIDA), has been arranged by the Swedish Chemicals Agency (KemI)*

