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**Pesticide — Guidelines on good labelling
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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 578 was prepared by Technical Committee RSB/TC 64, *Pesticides*.

In the preparation of this standard, reference was made to the following standard:

ES 696: Pesticide – Guidelines on good labelling practice

The assistance derived from the above source is hereby acknowledged with thanks.

Committee membership

The following organizations were represented on the Technical Committee on *Pesticides* (RSB/TC 64) in the preparation of this standard.

Rwanda Food and Drugs Authority

Rwanda Forensic Institute

University of Rwanda/College of Sciences and Technology

Standards of Sustainability

CYIRA Ltd

P-TECHNIKS Ltd

Rwanda Inspectorate, Competition and Consumer Protection Authority

Rwanda Investigation Bureau

RAIDO

Rwanda Standards Board (RSB) – Secretariat

Copy for public review

Pesticide — Guidelines on good labelling practice

1 Scope

This Draft Rwanda Standard specifies the safety precautions and related matters, on the label or accompanying instructions of pesticide products.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

RS 406: 2019, *Pesticides — Terminology*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in RS 406 and the following apply.

3.1

accompanying instructions

any separate document which is supplied with the pesticide products

3.2

corrosive

substances which may on contact with living tissues destroy them

3.3

explosive

substances which may explode under the effects of flames, or are more sensitive to shocks or friction than dinitrobenzene

3.4

flammable

substance with a flash point of 21-550C; and aerosol dispensers containing over 45% by weight or over 250 g flammable components, i.e. gases flammable in air at normal pressure, or in liquids of flash point less than 100°C

3.5

hazard

represents the potential for injury to occur. It is a function of the toxicity of the chemical and degree of exposure. Even a highly toxic chemical presents little hazard to man when the means of exposure are largely eliminated

3.6

highly flammable

substances which either

- a) may ignite spontaneously in air at ambient temperature;
- b) may ignite readily and continue to burn after brief contact with a source of ignition;
- c) have a flash point below 21°C;
- d) are gases flammable in air at normal pressure;
- e) give off dangerous amounts of flammable gas in contact with water or damp air

3.7

irritant

non-corrosive substances which, through contact with skin or mucus membranes, can cause inflammation

3.8

label

written, printed or graphic material firmly attached to pesticidal product container which is a mandatory part of the product package

3.9

oxidizing

substances which may give rise to highly exothermic reaction in contact with oxidizable substances, particularly flammable substances

3.10

pictogram

a symbol which conveys a message without the use of words

3.11

risk

the probability of a hazard occurring under specified conditions

3.12

safety

the reciprocal of risk, is the probability that harm will not occur under specified conditions

3.13

supplier

the manufacturer, the formulator, bulk importer or re-packer of a particular pesticide product we wishes to market

3.14

toxicity

is a measure of the capacity of a substance to cause injury or death, and is related to dose. It is an intrinsic property of the substance. The dose-response relationship is a way of quantifying acute toxicity, and the LD50 is a crude estimate of the dose needed to kill 50% of the test animals when they exposed to the chemical by the oral, dermal or inhalation route. The value is usually expressed in milligrams of chemical per kilogram bodyweight of test animal. The smaller the LD50 value, the greater is the acute toxicity of the chemical.

4 General guidelines

4.1 The importance of clear and accurate labels

4.1.1 Labels are the principal, and sometimes the only, contact between the manufactures/supplier and the user of the product. Labels are legal documents and convey essential safety information and use recommendations

4.1.2 The appeal to the user to "read the label" can only be successful if the essential messages on the label are kept as simple and direct as possible. If a label is too complex, too technical, or badly laid out, the product may not be used correctly and the user may be exposed to unnecessary health risks. There is, therefore, a great need for clear directions which can be easily understood by all potential users

4.1.3 The basic regulations affecting label content are national regulatory requirements. In addition to these, there are additional standards within individual companies and international standards, the most important of which is the FAO international code of conduct on the distribution and use of pesticides. Labels shall conform to all of these regulations and standards.

4.2 Relevant considerations

4.2.1 Most pesticides are manufactured to be sold in different countries. As a result, accurate translation of product label into languages is necessary. In some cases, there may even be a need to have two or more

languages on the same label. However, despite the number of language translations on a label, there still remain some users who are unable to read a label. For these users, pictograms which depict safe use and use of protective clothing during application are essential. Even when pictograms are used, however, care must be taken that they are properly understood by the user

4.2.2 The increased demand for more information on how to use pesticides correctly, and the need for dual languages, hazard symbols and pictograms on labels create serious competition for space in label design. The four principal ideals to adhere to in preparing a label are:

- f) Clarity achieved by avoiding complex or excessively technical explanations and by using a clear layout with a prominent display of key words, phrases and symbols, and pictograms. Thus it is important to:
 - 1) attract the user's attention;
 - 2) tell the users what he needs to know in brief and precise terms;
 - 3) use familiar expressions and symbols; and,
 - 4) avoid ambiguous statements.
- g) Completeness ensured by using a checklist of all essential information, so that no important information or advice is omitted
- h) Conformity achieved by following existing regulations and guidelines, both national and regional/multinational
- i) Consistency assured by the standardization of label components, such as safety texts, so that label texts and layout of different labels will be as similar as regulatory requirements and user needs allow

4.2.3 Leaflets and brochures are not subject to the same regulatory rules. Nevertheless, the same principles of writing technical data in a simple and easily understood manner apply to leaflets and brochures used for advertising, just as they do for labels. In addition, whether it is a label or leaflets and brochures which provide technical information, it is essential that the information provided is accurate and can be substantiated with technical data.

4.2.4 The writer of the label also has responsibility:

- a) To the user --

Who must be able to read and understand the label

- b) To the public and the environment

To protect both public health and the environment; and

- c) To the law

To follow pertinent regulations.

4.3 Physical durability

Labels shall be resistant to the normal wear and tear encountered in transport, storage and use. These requirements apply equally to the print on the label and the material on which the information is printed. Several years of storage may elapse between manufacture and final use of the product. Without a complete and legible label during storage and at the time of final use, a pesticide is likely to present a serious potential hazard.

5 Label content

5.1 The purpose of the label is to provide the user with all the essential information about the product and how to use it safely and effectively

5.2 The content of a label is subject to national regulations. At times, there may be additional multinational or regional considerations. With these regulations in mind, the minimum information on the label shall tell the user:

5.1 What is the container?

5.1.1 Product or trade name

Associated with the product category (e.g. herbicide, insecticide, fungicide, etc)

5.1.2 Type of information

Name and code, see international formulation coding system (annex D).

5.1.3 Active ingredient

Common name and chemical name as used by ISO and IUPAC respectively and content. This should normally be expressed as *contains x g ai per kg* (for solids, viscous liquids, aerosols or volatile liquids) or *contains x g ai per liter* (for other liquids), or just "y%"

5.1.4 Net contents of the pack

The net content of the pack shall be expressed in metric units (e.g: liter, gram, kilogram which can be abbreviated to l, g and kg)

5.2 The safety information

6.2.1 There shall be a clear warning on the label in relation to:

- d) Reading the safety instructions before opening the pack.
- e) Handling, transport and storage warning symbols.
- f) Hazard classification/symbol and phrase. It is necessary to classify the product with relation to its toxicity.

6.2.2 The following shall appear on all labels – preferably in black print on a white background:

A Safety precautions

The safety text must cover the following

- a) product specific advice;
- b) good agricultural practice;
- c) relevant protective clothing;
- d) precautions when handling the concentrate (if applicable);
- e) precautions during and after application;
- f) environmental safety during and after application;
- g) safe storage;
- h) safe disposal of product and used container; and
- i) how to clean equipment (if a potential risk exists)?

B Safety pictograms

Safety pictograms reinforcing the safety text shall be included.

C Warning

The following must appear on all labels:

- a) Keep locked up and out of reach of children; and
- b) Other warning phrases may be aimed at good agricultural practices and/or steps which need taken to avoid adverse environmental effects.

D First aid advice and medical treatment

Most labels should carry first aid and medical advice, where relevant. Additional information regarding symptoms, special tests and antidotal measures may be added, where appropriate, for particular products.

E Leaflets

Any safety text on the label shall also appear on any leaflet associated with it in national official languages.

5.3 Instructions for use

6.3.1 There shall be an initial, brief statement of use, e.g. Controls aphids in top fruit, or kills broad-leaved weeds in cereals. The direction for use on the label must clearly indicate how, when and where the product can be legally used with maximum efficiency and safety according to good agricultural practice. This information may be repeated and/or expanded in a separate leaflet or technical literature, but the essential instructions must always be displayed on the label. The label must emphasize the need to read an attached (enclosed) leaflet before use, if one has been included.

6.3.1 Practical advice must be included on:

- a) how to mix and apply the product, and rate of use.
- b) when to use the product (including timing and frequency, maximum number of applications per use season), or when not to use it, e.g. during the flowering period of the crop.
- c) where to use the product – which crops, targets areas
- d) any limitations, such as susceptible crops or varieties, weather conditions, harvest interval.
- e) compatibility with other products, where appropriate
- f) how to avoid harming beneficial insects, such as bees and natural predators, or wildlife
- g) omit all non-essential information, such as sales messages, mode of action illustrations, etc.

5.4 Other information

In addition to the contents, safety information and instructions for use discussed above, the following information shall also appear on all labels:

- a) local agent/distributor name, address/telephone number. The company responsible for registration of the product in the country concerned.
- b) registration number
- c) manufacturer's name and company logo and address
- d) trade mark acknowledgment – this may have legal implications.
- e) date of manufacture
- f) formulation batch number
- g) shelf-life, from the date of manufacture/formulation

6 How to write a label?

6.1 Layout of information

6.1.1 General points

6.1.1.1 Layout shall be considered before a proof is prepared. Label may be as one, two, three or more panels. If label size allows, the three panel layout is preferred. Examples of how to structure the different labels are given in the following pages. Actual examples of labels are shown in annex A.

6.1.1.2 A panel label shall only be used where the uses of the product are limited and directions for use, general instructions, safety instructions, safety precautions and first aid require little detail. It is usually suitable for products in class III (slightly hazardous), of the WHO recommended classification of pesticides by hazard (mg/kg). It should not be the sole source of information when the pack size is small. In such circumstances, ancillary panels can be printed on a separate extension or attached leaflet.

6.1.1.3 Break up the information into small, separate paragraphs. Each block of subject matter shall have a clearly understood heading.

6.1.1.4 The information shall be structured in the sequence the user requires. As an example, for instructions on how to use the product, a possible logical sequence shall be:

- a) target crop,
- b) target organisms (e.g. aphids, striga, rust etc);
- c) warning statement (e.g. conditions when not to use);
- d) safety measures in handling, applying and disposal;
- e) application conditions (e.g. crop stage, weather, soil, etc);
- f) method of application;
- g) dose rate;
- h) mixing instructions; and
- i) advice for after spraying (re-entry period, pre-harvest interval).

6.1.1.5 Avoid expressions which could mislead or cannot be substantiated

6.1.1.6 Do not use words such as "SAFE", "HARMLESS", "NON-TOXIC" in respect of risks to humans or animals (even when used with a qualifying phrase, such as "when used as directed"), or superlatives, such as "best", "most effective", "superior control", etc.(see clause....)

6.1.1.7 Avoid using over stickers to amend label information except where necessary and agreed to by regulatory authority and the registrant. Where stickers are used they must not cover other valid aspects of the label.

6.1.2 Label layout

6.1.2.1 One panel layout label shall carry the following information:

- a) product name;
- b) active ingredient name and content;
- c) formulation type;
- d) registration number (and reference to pertinent registration if required nationally);
- e) formulation/manufacture date;
- f) batch number;
- g) shelf-life from the date of manufacture/formulation;
- h) summary of uses;
- i) directions for use;
- j) withholding period (re-entry period, pre-harvest interval and safety period);
- k) safety precautions;
- l) warning phrases
- m) statement for good agriculture practice;
- n) first aid instructions and advice to doctors (if required);
- o) legal responsibilities;
- p) net contents;
- q) name and address of manufacture, distributor and/or registrant (as appropriate); and
- r) product/ user category

6.1.2.2 Two panel layout label shall contain the following information:

- a) the main panel shall contain the information needed to identify the product, and provide the key information on summary of uses, safety precautions and hazard symbol.
- b) the second (ancillary) panel shall contain the rest of the essential information, such as directions for use, warning phrases, etc.

6.1.2.3 Three panel layout label shall be as follows:

If label size allows the three panel layout shown in Table 1 is suggested. The main panel shall need to identify the product with other essential information, whilst the two other panels can be separately devoted to safety and instructions for use

Table 1-Three panel layout

Ancillary panel (safety)	Main panel (information)	Ancillary panel (instructions)
	Product name	
	Active ingredient (name and content)	
summary of uses	formulation type	
safety precautions	registration number	directions for use
warning phrases	formulation date	re-entry period
good agricultural practice	batch number	pre-harvest interval
first aid	net contents	legal responsibility statement
medical advice	manufacturer	
	distributor, agent, registrant	
	product/user category	
	hazard symbols	
	directions to read the label	
	pictograms	

NOTE1: Remember that the relevant local/national regulations must be observed

NOTE2: A one panel label is required for packaging materials for 5l(kg) or less, and three panel labels for greater than 5 l(kg)

6.1.3 Labels for small packs/supplementary leaflets

6.1.3.1 The increasing use of small packs to suit small holder users can present problems with labelling due to the limited space available for text. However, with knowledge of the concerned authorities, information can be printed on a separate extension or attached leaflet.

6.1.3.2 When using a supplementary leaflet, always ensure:

- a) the safety panel is on the part of the label that is glued to the pack;

- b) on the label include the instruction “read the leaflet before using the product”;
- c) the use of a separate or attached leaflet is permitted by the relevant local/national regulation. Leaflet shall be firmly attached to product container so that it stays with the product through sale and use; and
- d) key information on the label is repeated on packaging leaflet.

An example for separation of information on label and packaging leaflets is given in Table 2.

Table 2 – Information on label and packaging leaflets

Label	Packaging Leaflet	
Product name	Product name	Safety precautions
Active ingredient (name and content)	Directions for use	Warning phrases
Formulation type	Re-Entry period	Good agricultural practice
Summary of uses	Pre-harvest interval	First aid
Registration number	Legal responsibility	Advice to doctor
Formulation data	Manufacturer	
Batch number		
Net contents		
Manufacturer		
Distributor/agent/registrant		
Warning phrases		
Safety precautions		
First aid, advice for doctors		
Hazard symbols, pictograms		
“Before using product, read leaflet”	“Before using product, read the label”	

6.1.4 Label for pre-measured packs and twin/multi-packs

6.1.4.1 When a product is packed in two or more pre-measured quantities in an outer container (pre-measured packs), or when two or more products are packaged individually and sold as one unit packed together (twin/multi packs), additional labelling is required.

6.1.4.2 The outer container must be fully labeled in accordance with these guidelines. For pre-measured packs, the main panel must include the statement, "CONTAINS...MEASURED PACKS WHICH IT IS ILLEGAL TO SELL SEPARATELY."

6.1.4.3 For both pre-measured packs and twin/multi packs, the inner packs shall be labeled with the essential information: hazard symbols, product name, active ingredient statement, formulation statement, summary of uses, legal responsibilities, manufacturer, distributor, formulation date, batch number, etc., net weight. (see annex A)

6.1.5 Dual/multi-language labels

Where the label is required to be printed in more than one language, each language shall ideally have its own complete label. Translations shall convey the same meanings in each language. Only in extremely rare

circumstances will there be sufficient space on a single label for two or more complete sets of information in separate languages. This shortage of space can be overcome by having the primary language on the container label and other languages on an attached leaflet. If possible, key safety information in all required languages shall be on the label firmly attached to the container.

6.2 Style and wording of text

6.2.1 Print size and style

6.2.1.1 It is recommended that all safety text shall be at least 8-point, and that all other text shall be at least 6-point. The preferred size is 11-point. Examples of print size and style are given in annex A.

6.2.1.2 Highlighting with bold letters is more effective than using capitals.

6.2.1.3 The type face selected shall be very clear and without decorations or oddities. Avoid italics, except for Latin names, and even these shall be avoided when there is a well-defined common name.

6.2.1.4 Use clear letter separation, not close tracking.

6.2.1.5 Leave adequate space between lines of text.

6.2.1.6 Avoid vertical or diagonal text. Overprinting illustrations, logos or "ghost" pictures make text less easy to read. Wherever possible, the label shall be set out in clearly headed distinct blocks making deliberate, but not excessive, use of colour for greater impact. Clear space around blocks of statements and symbols also attracts attention.

6.2.2 Effective use of space

6.2.2.1 Since space is usually at a premium on most labels, reduce text by avoiding unnecessary information, keeping sentences short and precise, and generally making the text as economical as possible, whilst retaining all essential information.

6.2.2.2 Gaining space on labels and attaining the correct print size is to reduce white space (that part of the label which is not printed on). White space is to be found at the ends of lines, between letters, words, lines and paragraphs, between columns and in borders around the text. Space around blocks of statements and symbols is clearly necessary in many cases, since it is a means of attracting attention to the statement, as indicated above. Nevertheless, with that reservation in mind, some hints for reducing text and white space and thus allowing larger print size are given below:

- a) Go through the text carefully and reduce long sentences and long words to shorter ones, provided the meanings are not lost;
- b) Remove any non-essential information, such as over technical descriptions of the activity of a product, or simplify these to a few words;
- c) Tabulate information on rates of use, volumes, etc.;
- d) Reduce the space between paragraphs, but not between lines;

- e) Reduce the tracking (see annex A) of less important sentences, e.g. those that are descriptive;
- f) Use abbreviations where it is certain that they will be understood;
- g) Move information to less-crowded parts of the label;
- h) Check relative widths of columns so that paragraphs end nearer the column edge;
- i) Increase the number of columns - this sometimes enables better use of space to be made at the end of short sentences, e.g., in the safety text; and
- j) Use a separate or an integral leaflet.

6.2.2.3 For texts which need to be translated into another language, it is important to remember that some languages take up more space than others.

6.2.3 Layout design and artwork

6.2.3.1 Apart from the decision as to the number of panels needed in the label, careful design of the actual label is crucial to the end user - in drawing his attention to the essential text and making it more easily understood.

6.2.3.2 Discussing the layout with the printer, in advance of proofing, can often be helpful. Do not leave the printer to lay out the text "as best he can". The printer cannot be expected to ensure all the standards are adhered to, and must be instructed precisely.

6.3 Use of colour

6.3.1 Red is a generally accepted warning colour and shall be used only to highlight warning phrases, or for hazard symbols and safety precaution instruction headings.

6.3.2 For best contrast and easy reading, the text on labels shall be mainly black on a plain white background.

6.3.3 On leaflets and brochures, colour will generally enhance attractiveness. Showing things in their true colour will increase understanding. Important parts of drawings can be emphasized by contrasting colours. But beware - too many or too intense colors can distract from the intended message.

6.3.4 Colour contrast is just as important as the colour itself. Thus, red shall always be on a white background and never on other colours, such as yellow. To maintain contrast, use strong colours on a neutral contrasting background.

- a) black on white;
- b) black on yellow;
- c) red on white;

- d) green on white; and
- e) white on blue.

A colour coding scheme based on the WHO classification of hazard of the formulation is described more fully in clause 8.

6.3.5 When a colour code is used to denote toxicity classification the relevant colour band has to be included on the label according to international and/or local regulations. The same colour is usually not permitted elsewhere on the label.

6.4 Use of illustrations/pictograms

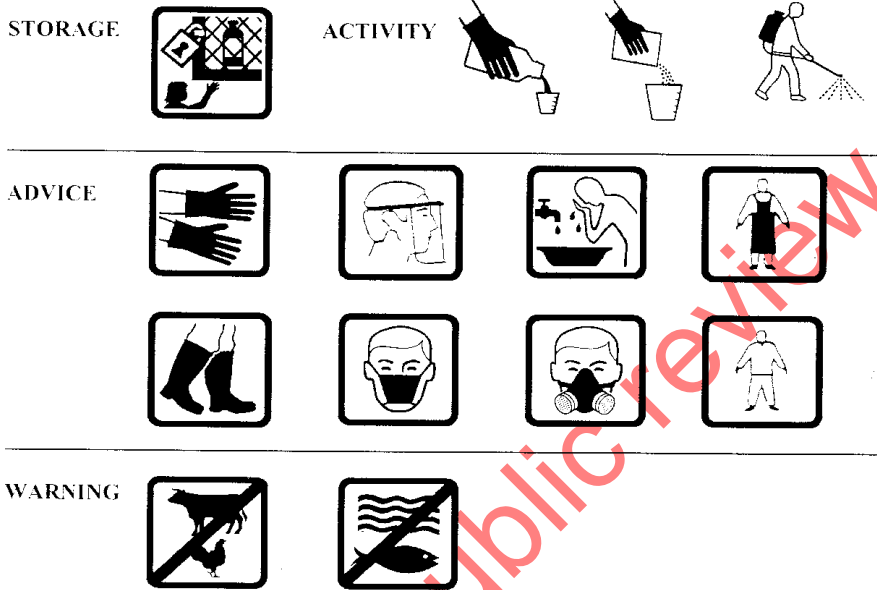
There is usually insufficient space on the label itself to include any illustrations, with the exception of mandatory or suggested hazard, safety and precaution symbols and pictograms. Illustrations are best confined to supplementary label leaflets, brochures and posters.

6.4.1 Pictograms

6.4.1.1 There are several points to note about the use of safety pictograms:

- a) Permission from regulatory authorities shall be required;
- b) Pictograms shall be introduced into the label when it is first drafted;
- c) Pictograms shall echo and reinforce safety text. If a precaution appears for which a pictogram exists, the pictogram must also appear;
- d) Conversely, a pictogram shall never be used unless the safety text carries the corresponding phrase. The overriding principle is that pictograms shall relate to the text - never contradict it or make it less clear;
- e) Only use FAO/GIFAP approved pictograms, unless it is known that the country has successfully developed pictograms reflecting local culture and practices;
- f) The two pictograms which shall appear on all labels are those depicting washing after use and locking away the product out of reach of children.

6.4.1.3 The preferred size for pictograms is 15 x 15 mm, the minimum 7 x 7 mm.



6.4.2 Illustrations

Illustrations are mainly used on leaflets, brochures and posters and they can be helpful for showing:

- a) what something looks like;
- b) how to do or not to do something;
- c) a sequence of events; and
- d) results of claimed activity.

6.5 Special purpose labels

Variations to the general principles of labelling may be necessary to suit special purposes. A few instances are discussed below:

6.5.1 Bulk material labeling

6.5.1.1 Material which is transported in bulk, either for reformulating, repacking or disposal, shall have an appropriate label attached.

6.5.1.2 The advice appearing on such a label will differ from that which appears on labels intended for farm workers and applicators. Field use recommendations shall not be included and safety in handling and storage of bulk material will differ significantly from that given on labels destined for use by those in the field.

6.5.1.3 It is important to ensure that the national and international transport requirements are met. In addition, the following essential information shall appear on all bulk material labels as a minimum:

- a) Trade and common chemical name with percent active ingredient;
- b) Net contents;
- c) Country of origin;
- d) Emergency response telephone number;
- e) Handling advice/precautions;
- f) Storage recommendations;
- g) Advice in case of spillage;
- h) First aid advice; and
- i) Medical treatment.

Some of this information, but not all, will also appear on the transport emergency card (TREM card) and both sets of data shall be mutually consistent.

6.5.2 Chemically treated seeds

6.5.2.1 Labelling of chemically treated seed requires a different approach, since the standard seed bag or sack is not a pesticide container and only carries information of the nature, weight and perhaps origin of the contents.

6.5.2.2 Warning phrases should be applied to the outside of the container, which cannot be removed and are in the language of the area where the product is to be used. Standard warning phrases are as follows:

- a) This seed has been chemically treated - minimize handling to retain effectiveness of seed dressing;
- b) Do not re-use sacks for food or animal feed; and

- c) Do not use treated seed for food or animal feed.

6.5.3 Application by air

6.5.3.1 If a product may be applied by air, information shall be set out clearly in the general instruction section of the label. Any special authorization or legislative requirements shall also be included. Restrictions may be placed on chemicals that may be applied by air, or locations where aerial application may be undertaken.

6.5.3.2 Standard safety precaution phrases for ground application shall be used for the protection of the ground team, and instructions for pilot safety shall be included, when available.

6.5.4 Application in confined spaces

The use of pesticides in confined areas, such as glasshouses or in dwellings for public health and hygiene, may require additional safety precautions to protect workers, animals or livestock, and avoid contamination of foodstuffs etc. There shall be specified time limits for re-entry to treated premises or the harvest of crops after spraying.

6.6 How to check a label?

6.6.1 Structure of Information

- a) Is layout according to standard?
- b) Are all statements necessary?
- c) Are headings clear?
- d) Is information in logical sequence?

6.6.2 wording of text

- a) Will all likely users understand the language/message?
- b) Are abbreviations necessary and correct?
- c) Are sentences short, concise? (no more than 6-10 words).
- d) Are all instructions clear and unambiguous?

6.6.3 Print style

- a) Is the text predominantly black on a white background?
- b) Does the print size and style conform to the standards? (see annex A).

- c) Can you read all text at arm's length in normal daylight?
- d) If all the text is not clearly visible (all safety text shall be), has the user been instructed how to find the rest of the text - in the correct language?

6.6.4 The printed label shall finally be checked to ensure:

- a) The colour contrast is satisfactory;
- b) All the print is clearly legible at arm's length;
- c) The safety text is on a part of the label which is to be firmly fixed to the pack;
- d) The illustrations are relevant to the message and understandable to the user;
- e) Instructions for finding supplementary information are clear;
- f) The printed label is accurate, i.e., reads the same as the approved draft;
- g) Fold-out labels can be easily read; and
- h) Perforations and other aids are effective.

6.6.5 Quality of material

6.6.5.1 Where paper is used for labels and packaging leaflets they must be:

- a) Strong enough to avoid tearing during transport and handling;
- b) Durable to withstand storage;
- c) Coated to resist wetting and smudging of text; and
- d) Able to accept print without smearing.

6.6.5.2 Ink and adhesive must also be durable and not affected by extremes of climate or the contact with the product.







7 Hazards

7.1 Hazard classification

Potential hazard is assessed on the formulation or product in the pack and therefore takes into account the properties of the solvents, diluents or other adjuvants, in addition to the active ingredient. Therefore, the

classification of pesticides by hazards shall be according to the WHO classification and one of four coloured bands shall be assigned with a corresponding hazard statement and one of two hazard symbols, which denotes classification of hazard in use, is placed along the bottom of the label (see Table 3).

Table 3 – Determination of WHO hazard classification based on acute LD₅₀ (rat) of formulated

Hazard	Information to appear on label				Acute LD ₅₀ (rat) of formulation			
	Hazard statement	Band colour	Hazard symbol	Symbols and words	oral		dermal	
					Solid	Liquid	Solid	Liquid
Ia Extremely hazardous	VERY TOXIC	PMS RED 199 C		 VERY TOXIC	5 or less	20 or less	10 or less	40 or less
Ib Highly hazardous	TOXIC	PMS RED 199 C		 TOXIC	5-50	20-200	10-100	40- 400
II Moderately hazardous	HARMFUL	PMS Yellow C		 HARMFUL				
III Moderately hazardous	CAUTION	PMS Blue 293 C		CAUTION	> 500	> 2000	> 1000	> 4000
Products unlikely to present a hazard in normal use		PMS Green 347 C			> 2001	> 3000		

NOTE1: PMS is a colour matching system, mainly used by printers, devised and patented by Pantone, Inc. USA.

NOTE2: See Table 5 of the WHO recommended classification of pesticides by hazard.

7.1.1 Calculation of LD50 values for formulations where data are not available (mg/kg)

It is always preferable to have experimental data on the formulation. However, where experimental LD₅₀ data are not available, estimated values may have to be used. These can be estimated from the LD₅₀ values of the unformulated technical grade active ingredient published by WHO and FAO by means of the following formula:

7.1.1.1 Formula for estimating LD50 values for a product containing one active ingredient

The estimated LD50 is calculated from the formula:

$$\frac{TX100}{C}$$

where:

T is the acute oral LD₅₀ of the active ingredient in mg/kg; and

C is the % concentration of the active ingredient in the formulated product.

These estimated values hold reasonably true for solid preparations but usually give a low estimate of the toxicity of liquids.

7.1.1.2 Formula for estimating LD50 values for a product containing two or more active ingredients

It is not possible to include classification of mixtures of pesticides in the guidelines; many of these are marketed with varying concentrations of active constituents. There are three possible approaches to the classification of mixtures, in order of preference:

- a) require the formulator to obtain reliable acute oral and dermal toxicity data for rats on the actual mixture as marketed; or
- b) classify the formulation according to the most hazardous constituent of the mixture as if that constituent was present in the same concentration as the total concentration of all active constituents;

$$\frac{CA}{TA} + \frac{CB}{TB} + \frac{CZ}{TZ} = \frac{100}{TM}$$

Where:

C is the % concentrations of constituents A, B, ..., Z in the mixture;

T is the oral LD₅₀ values of constituents A, B, ..., Z; and

T_M is the oral LD₅₀ value of the mixture.

The formula can also be used for dermal toxicities provided that this information is available on the same species for all constituents. The use of this formula does not take into account any potentiation or protective phenomena.

7.1.2 Inhalation toxicity

7.1.2.1 Inhalation hazard from commercially formulated products is unlikely to cause problems under normal open air conditions, and is not usually taken into account. Special precautions may need to be included, however, for a product used in confined areas such as fumigants, or if the product contains a volatile and/or toxic solvent.

7.1.2.2 The product (formulation) may present other potential hazards. It could be irritating to the skin or eyes, explosive, corrosive, flammable, highly flammable or oxidizing.

7.1.2.3 As distinct from safety pictograms, a hazard symbol denotes a hazard in use in transport or in storage. The product classification system described shall not be confused with international transport and storage hazard classification symbols. Some hazard symbols are also related to national, regional or international schemes and shall be used with care.

7.1.2.4 Hazard symbols shall never be simply copied from one label to another if the product is destined for a different country. Advice shall always be sought.

7.2 Product/user categories

The primary considerations in categorizing pesticide products are who the user will be and/or the use for which the product is intended. Three categories for formulated products are recommended, based primarily on the WHO recommended classification of pesticides by hazard.

7.2.1 Domestic

Where the product is marketed to consumers for use in and around a dwelling, the intent of the DOMESTIC category is to provide consumers with relatively safe products for such uses as insect and rodent control within the home, weed control in gardens etc. DOMESTIC CLASS products shall meet the following criteria:

7.2.1.1 Products that fit into "class III" (slightly hazardous) or "Products unlikely to present a hazard in normal use" of the WHO recommended classification of pesticides by hazard".

7.2.1.2 No special precautions or equipment required for inhalation hazard.

7.2.1.3 Products and containers can be safely discarded by placing in household garbage.

7.2.1.4 Package sizes limited to amounts that can be safely stored by consumers and used in a single season.

7.2.2 Commercial

7.2.2.1 Where the product is to be marketed for general use in the commercial activities it shall be specified on the label. More descriptive words such as AGRICULTURAL or INDUSTRIAL may also be used. The intent of

the COMMERCIAL category is to provide operators engaged in farming or commercial pest control operations with products that can be used safely and efficaciously in their particular business. COMMERCIAL products shall meet the following criteria: Products that fit into class II (moderately hazardous), class III (slightly hazardous) or "Products unlikely to present a hazard in normal use" of the WHO recommended classification of pesticides by hazard.

7.2.3 Restricted

7.2.3.1 Where additional limitations respecting the display, distribution, use or operator qualifications shall be specified on the label because of safety concerns for humans, plants, animals or the environment. The intent of the RESTRICTED category is to limit the availability of relatively hazardous products to situations where they can be used safely. These products may be considered more hazardous because of inherent toxicity or because of intended use in environmentally sensitive areas. Such areas shall include forest and aquatic sites of application. RESTRICTED products meet the following criteria:

7.2.3.2 Products that meet the criteria of class Ia (extremely hazardous) or class Ib (highly hazardous) of the WHO recommended classification of pesticides by hazard.

7.2.3.3 Potentially significant environmental risks

In some circumstances 2 categories of products may be sufficient i.e. a restricted category and a general category for all other products.

Product/User categories can be used primarily to distinguish the appropriate channels of distribution and sale and to direct product to users with varying degrees of training. For example, sale of restricted products shall be limited to certain outlets with special storage conditions and to distributors and users who have received special training in their handling and use.

7.3 Determining hazard symbols and statements

7.3.1 Once the information on a product is complete, a decision can be made on the appropriate hazard symbols, warning phrases and safety precautions, withholding periods and first aid instructions to be used. At this stage, a check shall be made of existing labels for similar products to ensure that assignments and statements are consistent.

7.3.2 Annex B and C provides the following information:

- a) Standard hazard symbols.
- b) Standard phrases amplifying the hazard symbols.
- c) First aid instructions and advice to doctors.
- d) Withholding period statements.
- e) Warning phrases and standard phrases for good agricultural practice.

7.3.3 A label for an extremely hazardous class Ia product, used on food crops, will require information from all the categories listed above, whereas a product in class III, not used on food crops, will require only a minimal number of the statements set out in annex B and C.

7.4 Use of positive statements on labels

7.4.1 Occasionally, positive statements on labels, that a product is safe with respect to certain organisms in certain situations or circumstances, can be helpful. Specific claims on the safety of a product to bees, beneficial insects, fish, etc., when used correctly, are permitted, provided scientific evidence is available to support the claim.

7.4.2 The main criterion for inclusion of such phrases on a label or supporting leaflet is that they can be substantiated by scientific evidence. It is important that research results or quotations from scientific literature are not misused, or that scientific terms and irrelevancies are not used to make claims appear to have a scientific basis that they do not possess.

7.4.3 It is also necessary to avoid including all general statements such as "safe", "harmless", "non-toxic", etc., even when they are accompanied by a qualifying phrase such as "when used as directed".

Annex A (normative)

Print size and style guide

A.1 General

The right hand edge of this sheet is marked with print size graduations. Point size is the distance between the top of a capital letter and the bottom of a lower case descender. This text is 12 point (pt).

A.2 Minimum print sizes

A.2.1 All safety text shall be at least 8 point, and all other text shall be at least 6 point. The preferred size is 11 point.

A.2.2 For labels which may not be read in perfect conditions, it is sensible to aim for a minimum of 8 point for all text.

A.3 Examples of print sizes

- | | |
|--|-------------------|
| a) This is an example of 6 point print. Under most practical conditions in the field it is likely to be difficult to read, and thus shall be used only where there is absolutely no alternative. | 6 point (1.25 mm) |
| b) This is an example of 8 point which, in most cases, shall be the minimum on labels | 7 point (1.75 mm) |
| c) Bold print can be used at this size but not below | 8 point (2 mm) |
| d) This is an example of 10 point print which is easy to read for most people in most conditions | 10 point (2.5 mm) |
| e) This is an example of 11 point, the size preferred by FAO | 11 point (2.7 mm) |

A.4 Print style

A.4.1 Condensed print shall never be used.

A.4.2 Condensed print is difficult to read at any print size.

A.4.3 Leading is the space between lines, measured in points, on labels, the minimum shall be 2 point for ease of reading.

A.4.4 How easy is it to read this sentence? (+10).

- A.4.5 How easy is it to read this sentence (standard)?
- A.4.6 *Italic print shall be used for Latin names only.*
- A.4.7 **Bold print shall be used for emphasis.**
- A.4.8 Print on a label shall all run in the same direction and shall never overlap, even in a different colour.

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Annex B (normative)

Safety statements

B.1 Introduction

Proposals for safety precautions, first aid instructions, advice to doctors and warnings phrases are initially drawn up by companies or persons submitting labels for approval, and are based on knowledge of the chemical, its formulations, uses, toxicity and potential hazards. The final decision concerning the acceptance of these proposals is, however, the responsibility of the registering authority. These guidelines provide standard statements to be used on product labels.

The statements used must convey understanding of potential hazard in a clear, concise way and in a minimum of words. Other phrases or variations shall not be needed, except in special circumstances not adequately covered by this document.

B.2 Safety statements

B.2.1 "KEEP LOCKED UP OUT OF REACH OF CHILDREN" – This statement should be included on the main panel of each label.

B.2.2 The statements set out below in CAPITAL letters should appear on the label in CAPITAL letters, followed by the appropriate phrase or phrases in lower case letters.

B.2.3 DO NOT smoke, eat or drink when using this product.

B.2.4 The product is:

- a) harmful
- b) toxic,
 - 1) if swallowed
 - 2) if in contact with the skin; and
 - 3) if inhaled
- c) irritating to,
 - 1) eyes;
 - 2) skin; and

- 3) respiratory system.

B.2.5 WHEN WORKING WITH OR PREPARING PRODUCT AVOID:

- d) dust;
- e) smoke;
- f) vapour;
- g) spray mist;
- h) gas; and
- i) contact with mouth, skin and eyes.

B.2.6 WEAR:

- a) synthetic rubber gloves;
- b) apron;
- c) overalls
- d) rubber boots;
- e) goggles;
- f) face shield;
- g) head cover or hood;
- h) dust mask; and
- i) respirator.

B.2.7 IF CONTAMINATION OCCURS:

Immediately take off heavily splashed or contaminated clothing, wash affected parts thoroughly with plenty of water and wash clothing before re-use.

B.2.8 AFTER USE:

- a) wash hands and exposed skin before eating, drinking or smoking.

b) wash overalls, boots, hat and other protective clothing thoroughly, especially inside of gloves.

B.3 First aid instructions and advice to doctors

B.3.1 Mandatory for all products

B.3.1.1 If skin or eyes are contaminated, wash immediately and thoroughly with plenty of water.

B.3.1.2 If skin has been splashed, remove contaminated clothing, wash skin well, and avoid exertion. Get medical attention. Show the label if possible.

B.3.1.3 Confirmation of diagnosis is by (state special test recommended).

B.3.1.4 Specific treatment recommended (state any special antidotal measures).

B.3.1.5 Other measures of treatment or precaution ...

B.3.1.6 Further information is available from (give address and phone number of distributor, manufacturer or competent authority, as most suitable).

Annex C (normative)

Agriculture practice

C.1 Withholding period statements

- C.1.1** DO NOT apply later than ... days/weeks before harvest.
- C.1.2** DO NOT treat/apply to stock later than ... days before slaughter.
- C.1.3** Dangerous/harmful to live stock. Keep livestock out of treated areas for at least ... hours/days after last treatment.
- C.1.4** Keep unprotected persons out of treated areas at least ... days after last treatment.
- C.1.5** Keep animals/children out of treated areas for ... days/hours after last treatment.
- C.1.6** DO NOT use treated product for human consumption for ... hours/days after last treatment.
- C.1.7** DO NOT process into food for ... days after last treatment.
- C.1.8** For use on following crops only, with stated minimum interval between last application and harvesting.
- C.1.9** Ventilate treated areas/buildings for ... hours before re-occupation.

C.2 Statements and phrases for good agricultural practice

C.2.1 Animal and the environment

- C.2.1.1** Dangerous/harmful to domestic animals and wildlife.
- C.2.1.2** Keep stock out of treated areas until all the weeds are dead.
- C.2.1.3** Dangerous/harmful to fish; do not contaminate lakes, rivers, ponds or streams with waste chemical or used container.

C.2.2 Food and animal feedstuffs

- C.2.2.1** DO NOT apply to food or feed crops
- C.2.2.2** DO NOT apply to surfaces coming into contact with food.

C.2.2.3 Keep away from food, drink and animal feeding stuffs.

C.2.3 Treated seed

C.2.3.1 This seed has been chemically treated – DO NOT handle unnecessarily.

C.2.3.2 DO NOT re0use sacks for food or animal feed.

C.2.3.3 DO NOT use treated seed for food or animal feed.

C.3 Care, use and disposal of containers and baits

C.3.1 Keep tightly closed in original labelled container.

C.3.2 DO NOT re-use this container for any other purpose.

C.3.3 Keep labelled container in a safe place away from food, children and animals.

C.3.4 Remove used container and dispose of safely.

C.3.5 Empty containers should be washed out.

C.3.6 Mark baits "POISON" and place out of reach of children and animals.

C.3.7 Disposal of baits and spillage.

C.3.8 Remove all baits and burn dead pests after treatment is completed.

C.3.9 Remove any spillage and bury in a safe place.

C.4 Care of equipment, area to be treated and occupants of treated areas

C.4.1 Keep application equipment in good condition, free from leaks and external contamination.

C.4.2 DO NOT use where food could be contaminated.

C.4.3 Remove or cover food before treatment

C.4.4 Before treatment remove livestock, birds, fish, domestic pets.

C.4.5 DO NOT apply to clothing, bedding of fabrics.

C.4.6 Warn occupants against placing food onto treated surfaces.

C.4.7 Keep animals/birds/domestic pets/children away from premises or materials being fumigated or ventilated after fumigation.

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Annex D
(normative)

International formulation coding system

The following is the list of formulation types and their international codes as introduced by GIFAP and now adopted by FAO. As far as possible, these two letter codes shall be used on labels.

Code	Formulation type	Code	Formulation type
AB	Grain bait	LA	Lacquer
AE	Aerosol generator	LS	Solution for seed treatment
AL	Other liquids to be applied undiluted	MG	Microgranule
BB	Block bait	OF	Oil miscible flowable concentrate (oil miscible suspension)
BR	Briquette	OL	Oil miscible liquid
CB	Bait concentrate	OP	Oil dispersible powder
CG	Encapsulated granule	PA	Paste
CS	Capsule suspension	PB	Plate bait
DC	Dispersible concentrate	PC	Gel or paste concentrate
DP	Dustable powder	PO	Pour-on
DS	Powder for seed treatment	PR	Plant rodlet
EC	Emulsifiable concentrate	PS	Seed coated with a pesticide
ED	Electrochargeable liquid	RB	Ready-to-use-bait
EO	Emulsion, water in oil	SA	Spot-on
ES	Emulsion, for seed treatment	SB	Scrap bait
EW	Emulsion, oil in water	SC	Suspension concentrate
FD	Smoke tin	SG	Water soluble granules
FG	Fine granule	SL	Soluble concentrate
FK	Smoke candle	SO	Spreading concentrate
FP	Smoke cartridge	SP	Water soluble powder
FR	Smoke rodlet	SS	Water soluble powder for seed treatment
FS	Flowable concentrate for seed treatment	SU	Ultra-low volume (ULV) suspension
FT	Smoke tablet	TB	Tablet
FU	Smoke generator	TC	Technical material
FW	Smoke pallet	TK	Technical concentrate
GA	Gas	TP	Tracking powder
GB	Granular bait	UL	Ultra-low volume (ULV) liquid
GE	Gas generating product	VP	Vapour releasing product
GG	Macrogranule	WG	Water dispersible granules
GP	Fro-dust	WP	Wettable powder
GR	Granule	WS	Water dispersible powder for slurry treatment
GS	Grease	XX	Others
HN	Hot fogging concentrate		
KN	Cold fogging concentrate		

Annex E
(informative)

Flow chart for checking the draft label

E.1 Define the user

Who will be utilizing label information?

E.2 Determine label function

- c) To inform;
- d) To instruct;
- e) To gather relevant information; and
- f) To persuade user to "READ THE LABEL"

E.3 Determine label

(what information shall be included?)

E.4 Determine contextual constraints

- g) Type of container;
- h) Extent of information required;
- i) Space problems;
- j) Possible use of leaflet;
- k) Durability of label.

E.5 Does the draft label

- a) Present appropriate information?
- b) Present this clearly and concisely?
- c) Use graphics where necessary?

- d) Compare favourably with similar product labels on file?

E.6 Review and edit information

E.7 Evaluate and approval

- E.7.1** Does the label achieve its purpose?

YES – Approve draft label for final printing and registration.

NO – Redraft

- E.7.2** Does the printed label read the same as the approved draft?

- E.7.3** Can fold-out labels be read easily?

- E.7.4** Are perforations and other aids effective?

Annex F
(informative)

Checklist for reviewing label content

Tick the box to indicate that the label carries the item referred to and that it is satisfactory: "YES" or not: "NO".

1. Information appearing on the label	YES	NO
1.1 Company name (and correct logo, if applicable)		
1.2 Product name (and logo, if applicable)		
1.3 Product type (e.g.: herbicide, insecticide, ...)		
1.4 Formulation type (e.g.: EC, WP, SC, ...)		
1.5 Active ingredient, common name and content		
1.6 Statement of use		
1.7 Net content		
1.8 Instruction to read safety advice before opening pack		
1.9 All trademarks correctly acknowledged		
1.10 Name, address and telephone number of manufacturer		
1.11 Distributor, agent and/or registrant		
1.12 Telephone number for emergency response		
1.13 Label code		
1.14 Storage stability		
1.15 Registration number		
1.16 Batch number		
1.17 Manufacture date		
1.18 Expiry date		
2. Safety precautions		
2.1 "Keep locked up and out of reach of children" warning		
2.2 Safety pictograms		
2.3 A box for first aid/medical treatment		
2.4 Any other locally required additional precautions		
3. Instructions for use		
3.1 "Use only as directed" statement		
3.2 Pests controlled		
3.3 Approved uses		
3.4 Method of application		
3.5 Application rates		
3.6 Timing and frequency of application		
3.7 Pre-harvest intervals		
3.8 Re-entry periods		
3.9 Simple language style and clear headings have been used		
3.10 Every statement is clear and unambiguous		
3.11 No information is repeated		
3.12 Complex instructions have been tabulated		
4. General		
4.1 Printing size and style conforms to standards		
4.2 Language will be understood by all users		
4.3 Colour contrast satisfactory		
4.4 Illustrations unambiguous		
4.5 Does it meet all local regulations?		

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